The use of the repertory grid as a technique using group data to assess changes in learning

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by

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Dedicated to Sophie and John from whom I have learned so much.

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Declaration

I hereby declare that the work reported in this these has not been previously submitted for any degree. All material in this thesis is original except where indicated by reference to other work.

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I have the great fortune of a close, supportive extended family and I thank them, brothers and sisters all. And one or two near and distant friends. They know the haul this has been.

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Abstract

In this thesis, I look at the use of the repertory grid as a technique for assessing learning and for assessing changes in learning as a result of taking a course in psychology. The thesis looks into the cognitions of trainee teachers (called 'novices') and a comparison group of experienced psychologists (called 'experts') regarding "psychology topics in teaching and learning". As a group, the novices completed repertory grids before and after the psychology course. Experts completed one repertory grid. Analysis of the repertory grids revealed six main construct categories (called 'themes'). The themes were found to apply to both novice and expert grids. There are shifts in emphasis between the themes identified in the data of the novices before and after the lecture courses, and there were significant differences between the number and distribution of the themes between the novice grids and those of the experts. The results point to the potential of using the repertory grid technique in assessing learning using group data, identifiying changes in learning over time, and comparing expert and novice cognitions. Implications of the technique for further investigation into learning and expertise are discussed along with possible extensions.

CHAPTER 1

Contextual framework

1.1. Introduction

The purpose of this study is to examine the possibility of using the repertory grid as a technique to examine group data within the domains of the psychology of teaching and learning, and expertise. The research is conducted using a technique identified as potentially able to make known and measure beliefs. The repertory grid technique is used as a way of identifying and measuring intuitive beliefs about psychological topics used in teaching and learning in student teachers (novices) and experienced psychologists (experts). It assesses whether there is any significant change in the beliefs of novices after a taught course of psychology. The study also looks into the differences and patterns of use of personal cognitions or beliefs of novices and a group of experts regarding the psychological concepts that were taught.

1.2. Context of the research

The research work was carried out in my first year in the Education faculty at a College of Further Education where my role was primarily teaching and co-ordinating Higher Education courses. Initially in the Health and Community Care faculty, I had spent five years teaching psychology, mainly to vocational groups such as health professionals and social workers, but also on the more traditional courses, such as Advanced Level Psychology. The novices for this study came from the Further and Adult Education Teacher's Certificate course, which is a course for teachers in post-compulsory education and training. The Certificate is

seen as an opening into Further Education and, for some, as a preliminary prerequisite course for the Certificate in Education (Cert Ed)/Post Graduate Certificate in Education (PGCE) which is becoming increasingly essential in the Further Education Sector.

The interest in this research stemmed originally from my experiences with the health professional and social work groups. The first part of the psychology curriculum of the Diploma in Nursing (University of Durham) examined the concept of 'health care beliefs' and the first assessments of the psychology module involved assessing individual presentations to the group and written essays on this topic. I became intrigued by apparent discrepancies/incongruities between the roles (and functions) of some of the experienced, post-registration nurses and, to a lesser extent, the social work groups, and the views expressed/attitudes towards health and health care beliefs. Evidence from the assessments and discussions in class suggested some students held beliefs with potentially serious implications. For example, debates about whether or not smokers should be allowed to have surgery often resulted in unanticipated but perhaps unsurprising negative responses.

Awareness of intuitive, possibly limiting, individual beliefs in nursing and social work students encouraged me to investigate beliefs about psychological concepts in teaching and learning in a objective, measurable way in order to be aware of potential opportunities and difficulties which might help me create a more effective learning environment. An initial appeal of the method used here was in the possibilities it offered in approaching the problem.

Reflection, flexibility and criticality in thinking are essential qualities in teaching; as is a fundamental belief, central to teacher training, in the potential of each individual to achieve, as advocated by Carl Rogers (1983). One of the aims of the study was to bring to light students' personal beliefs in order to inform theory and

practice. This would help me to be mindful of potential opportunities and difficulties, which in turn would help me to create a more effective learning environment. An ultimate objective would be to encourage individual and collaborative learning. Any substantial themes and differences in how the themes were used by novices and experts, would then be available for me to draw upon when working either with individuals or collectively, for instance, in class discussions. Establishing and maintaining a culture/environment whereby it is possible to identify and share beliefs and facilitate critical reflection is in line with the basic tenents of teaching and the ethos of the 'reflective practitioner' (Dewey,1933).

The justification of this research study, therefore, lies partly in its fundamentally scientific nature and is substantiated by the relevance of the data for educational use.

1.3. Preview of the Chapters

The initial section of Chapter 1 provided the general context of the study and offered a brief rationale. This Chapter continues with a description and discussion of the theoretical background of Personal Construct Psychology and its underpinning philosophy and continues with discussion of the theory that is associated with the repertory grid technique. Finally, the research questions (and hypotheses) of the study are summarised.

Chapter 2 focuses on the justification of the repertory grid technique as a tool for use with group data in eliciting beliefs and measuring how they change over time and how novices and experts differ from experts, illustrating the ways in which the repertory grid has been applied in similar contexts. It introduces the technique itself, discussing the notion of 'constructs' and 'elements' in terms of selection and elicitation.

Chapter 3 gives a brief background to the course and the students involved in the research. It looks at intuitive beliefs and awareness, and the nature of learning and expertise.

Chapter 4 details the method used in the study and concludes with the results. It examines the qualitative and quantitative methodologies used in the study, particularly content analysis and multidimensional scaling. The Chapter also includes the analytical bases of the research and reliability measures.

The concluding chapter critically evaluates issues raised in the previous chapters. The implications and suggestions for future consideration are summarised.

Theoretical framework

1.4. Personal Construct Psychology

Personal construct psychology (PCP) is based on George Kelly's (1905-1967) personal construct theory. The major work associated with the theory "The Psychology of Personal Constructs: A Theory of Personality", was published in two volumes in 1955,. It is an original and idiosyncratic approach based in clinical psychology and has remained quietly popular and influential. Personal construct theory is a radical theory and difficult to classify. Gross (1996) classifies it as a 'total psychology' (p.744). According to Bannister and Fransella (1986) it is a theory which attempts to 'redefine psychology as a psychology of persons' (p 4) thus incorporating separate areas of psychology, for example, 'learning' or 'cognitive' theory. Viney (1990) describes it as an alternative methodology for the social sciences and Candy (1981) suggests it could be used as a basis for reformulating educational programmes and Slater (1977) described it as a methodology for mapping mental structure. Shaw and Gaines (1992) link Kelly's original intuitions which formed the basis of personal construct psychology to 'its

foundational role in cognitive and computational knowledge presentation' (Shaw and Gaines, 1992 p23).

Kelly's approach is both phenomenological and positivistic, it recognises the significance of the subjective experience although the focus is on the thinking being. The phenomenological aspect involves the individual having a private logic, making cognitive deductions about aspects of life. It places importance on the subjective experience of the individual. The theory and methodology on the other hand focus on cognitive processing rather than on the affective, experiential aspect of humanistic approaches. It focuses on the individual as "a knowing, thinking being" (Phares, 1991 p175).

1.5. Underpinning philosophy: Constructive alternativism

The philosophy underpinning Personal Construct Psychology (PCP) is that of constructive alternativism (Kelly, 1955, 1963), a philosophical position which theorises that, though unable to grasp all there is to know about the world at large, we are capable of interpreting or construing experiences in a variety of ways within the limitations of our own personal space. Constructive alternativism looks at how we explore, interpret and select the most appropriate theories to apply to a particular situation, object, idea. The theories determine the range of options open to us and we can only operate within the limitations of our own personal 'psychological space'. This may be defined as a multidimensional expanse where elements of our experience may be located and classified. It is a gradually assimilated construction rather than a pre-existing world of elements of our experience (Shaw and Gaines, 1992). We then evaluate the theories in terms of how useful they are to us, although not, according to Kelly, in terms of an absolute truth.

'Constructive alternativism may be compared with epistemological assumptions and fragmented data collection and whilst it does not argue against the collection of information, neither does it measure the truth by the size of the collection. Indeed it leads one to regard a large accumulation of facts as an open invitation to some far-reaching reconstruction which will reduce them to a mass of trivialities'

Kelly, 1970 p1

Tindall suggests, however, that we can extend our knowledge and understanding by using inventive ways to construe and to transform and by being continually open and prepared to update and reconstruct our theories taking into account experience (Tindall, 1994). In the light of this apparent censure, this study will discuss the usefulness and significance of the technique in collecting and collating a reasonably large amount of information in order to identify and measure beliefs.

1.6. Personal Construct Theory

Kelly's Personal Construct Theory (PCT) of personality is idiosyncratic and complicated. It evolved from a fundamental belief of 'man [sic] as scientist' and an in-depth review of the Personal Construct Theory is beyond the scope of this study. The main point of relevance for this study is that Personal Construct Theory argues that our perceptions influence our expectations which in turn influence our perceptions and that this occurs through our construct systems which change over time to assimilate new information and which are unique to the individual (Stewart, 1998).

The conceptual framework of the theory may be seen in terms of Kelly's presentation of personal construct theory as a 'geometry of psychological space' (Shaw and Gaines, 1992). The dichotomous dimensions created in psychological

space would provide a co-ordinate system for our experience. It is the process of differentiating and integrating rather than an identifiable class of elements that form the essence of PCT '...our psychological space is a space without distance and...the relationships between directions change with the context'. (Kelly, 1969 adapted from Shaw and Gaines, 1992 p25).

Personal construct theory is an original, carefully defined approach in psychology and is full of original and idiosyncratic terminology reflecting Kelly's broad interests. Kelly axiomatised his personal construct theory as a fundamental postulate and eleven corollaries to explain how personal constructs are used to anticipate events and affect psychological change, see Table 1.1. The corollaries have been selected and interpreted according to their usefulness in relation to this study.

The theory comprises a fundamental postulate 'A person's processes are psychologically channelized by the ways in which he [sic] anticipates events' (Kelly, 1955, 1963 p.46) and eleven corollaries which put forward explanations of how we use the personal construct system to predict or anticipate the future. This view was shared in the early 1970s by Joynson (1974) who in his in-depth analysis 'Psychology and Common Sense' argued that as human beings we are able to understand ourselves and have the intellectual power to enable us to predict and control our behaviour, reminiscent, of course, of Kelly's theory.

In these terms we are seen as managing our lives by behaving like scientists. This is in the sense of constantly making predictions or hypotheses about what we perceive, what we think will happen, and testing and attempting to validate our theories or construct system. The 'system' in Kellyian terms applies to the interrelatedness of a person's perceptions (Bannister and Fransella, 1986). Where our expectations don't quite match or validate out expectations, we modify and revise these perceptions. The implicit assumption is that in making predictions

Table 1.1 Personal Construct Theory fundamental postulate and corollaries

Fundamental Postulate	A person's processes are psychologically channelized by the ways in which he [sic] anticipates events.
Range Corollary	A construct is convenient for the anticipation of a finite range of events only.
Construction Corollary	A person anticipates events by construing their replications.
Modulation Corollary	The variation in a person's construction system is limited by the permeability of the constructs within whose ranges of convenience the variants lie.
Organisation Corollary	Each person characteristically evolves, for his [sic] convenience in anticipating events, a construction system embracing ordinal relationships between constructs.
Dichotomy Corollary	A person's construction system is composed of a finite number of dichotomous constructs.
Individuality Corollary	Persons differ from each other in their construction of events.
Commonality Corollary	To the extent that one person employs a construction of experience which is similar to that employed by another, his [sic] psychological processes are similar to those of the other person.
Experience Corollary	A person's construction system varies as he [sic] successively construes the replications of events.
Choice Corollary	A person chooses for himself [sic] that alternative in a dichotomised construct through which he [sic] anticipates the greater possibility for extension and definition of his [sic] system.
Fragmentation Corollary	A person may successively employ a variety of construction subsystems which are inferentially incompatible with each other.
Sociality Corollary	To the extent that one person construes the construction process of another he [sic] may play a role in a social process involving the other person.
	Adapted from Fransella and Bannister (1977) A Manual for Repertory Grid Technique

about the future we are seeking a sense of order and predictability in relation to our external world (Kelly, 1955, 1963). From these personal theories we produce hypotheses or expectations about future events.

Kelly's description of 'man [sic] the scientist' refers to the idea that as human beings the way we make sense of events around us is to investigate our own personal theories or construals about situations and experiences in everyday life. We then test these hypotheses experimentally, that is, we take risks, and behave according to our expectations and then we observe the outcomes. They provide a proactive frame of reference for understanding current experience and future action, we do not merely respond but rather anticipate in the light of experience. Theories and operational concepts about our personal worlds are generated from the past experience of the individual and may be explicit and systematic or they may be more implicit, vague and untested (Rawlinson, 1995). The notion of intuitive theories and learning will be discussed further in Chapter 3.

Kelly used the term 'constructs' for these operational concepts. Lifshitz (1974) describes them as 'present abstractions placed on past experiences and likely to be used by the person in dealing with future interactions. Constructs describe and interpret. They also set limits beyond which it is difficult for a person to perceive reality (Lifshitz, 1974).

Kelly describes the distinction between constructs and concepts "[Constructs] unlike concepts include an element of anticipation, rather than a concrete feature or entity, based on recognition of patterns of experience and outcomes of personal actions. They are 'an interpretative act of someone' (Kelly, 1955, 1963 p.106), they are considered processes not actual things.

Depending upon the outcome of our behaviour, our hypotheses are either validated or rejected, our expectations are fulfilled or abandoned. Our theories are modified, we change our perception and behaviour. This then determines how we approach subsequent behaviour experiments (Fransella and Bannister, 1977). Psychological change, therefore, is achieved through constant observation, testing, modification and amending of constructs which represent the predictions

we make, in order to make sense of, and have an affect in controlling, our personal world.

The outcomes of this experimentation are individual constructions of reality pertinent at that particular moment in time within what Kelly described as the 'limited ranges of convenience' (Kelly, 1955, 1963 p.11). Kelly's expression relates to the Range Corollary, which indicates the limitations of the constructs. It indicates the breadth and scope of the constructs we employ to make sense of the world. Thus a construct such as 'love' might for some people have as its focus affection for close family, friends, partner, but may eventually be used in relation to the feeling about music, mountains, skiing; 'it is all those things to which people might eventually find the construct applicable' Bannister and Fransella (1986 p14). We look for evidence that will confirm our theories (with the accompanying risk of the hypotheses becoming self-fulfilling). Our perception of reality or our model of the world, therefore, involves personal interpretations in order that predictions might guide subsequent behaviour. Kelly's theory proposes that personal constructs are not permanent or enduring entities but modify and develop with experience. We actively construct our reality rather than simply experience it and make sense of what we see against our pre-existing theories about the world, and we cannot respond effectively to the world unless we can make sense of it. This intuition underlies PCP and will later be discussed in terms of 'implicit or intuitive theories'.

Kelly, therefore, proposed that we function by making guesses about people, events, situations, objects etc., in PCP termed 'elements', and construe the world in such a way as to ensure that, generally, our predictions are confirmed or validated. This may have implications, for example, in our choice of partner, decisions we make in interpersonal relationships, in our professional lives, in our relationships and perceptions, for example, of students or situations, or how we perceive concepts as in the focus of this study. Unvalidated constructions may

lead to constructs or construct systems having to be changed. Ambivalence occurs when more than one hypothesis is perceived to be appropriate. We may relax our constructs to cope with an inadequate or inappropriate construct system so that events may be accommodated within the 'range of convenience'. In other words, our hypotheses may become less specific, more ambivalent, in order to minimise the risk of unvalidated constructs. It could be argued that the converse would apply that as our constructs become more comfortable or fitting they become more specific and compact.

PCP, therefore, involves construing in a dynamic way. The focus of the corollaries is essentially on individual experience, eight of the corollaries, however, are relevant in some way to the study. The Range Corollary has already been discussed in terms of Kelly's notion of 'range of convenience'. The 'construction corollary', states that 'A person anticipates events by construing their replications' (Kelly, 1955, 1963 p.50). This corollary emphasises a distinguishing concept in Kelly's approach to psychology, that of the significant role of the future on our behaviour. The techniques developed were aimed at reflexively applying this anticipatory modelling activity to the self. Kelly saw people as being motivated by the need to deal effectively with future events. It is from this corollary that the idea of templates or personal constructs stems.

> *Constructs are used for predictions of things to come, and the world keeps rolling along and revealing these predictions to be either correct or misleading. This factor provides the basis for revision of constructs, and, eventually, of whole construction systems ...new things keep happening and our predictions keep turning out in expected or unexpected ways. Each day's experience calls for the consolidation of some aspects of our outlook, revision of some, and outright abandonment of others.* Kelly, 1955, 1963 p14

Some constructs within the range of convenience are more amenable to assimilation, or in Kelly's terminology, are more permeable than others. They fit in to the modulation corollary, which Kelly describes as a "particular kind of plasticity ... the capacity to embrace new elements" (Kelly, 1955, 1963 p80). Some are broader (superordinate) than others and subsume and manage other more narrow and subordinate constructs (Bannister and Fransella, 1986) and it is anticipated that there will be evidence of this in this study. Kelly theorised that constructs form a systematic hierarchically organised network. The 'organisational corollary' states that 'Each person characteristically evolves, for his [sic] convenience in anticipating events, a construction system embracing ordinal relationships between constructs' (Kelly, 1955, 1963 p56)

The organisational corollary suggests that there are certain constructs that are closely related to each other. The way one dimension is construed will have an effect on another associated dimension. According to this corollary, how a person construes associated constructs will give further insights regarding significance attached to the construct and clarify patterns of behaviour. A person's behaviour may be affected by the influence of a construct contained within another higher in the hierarchy with which it is ordinally associated. In other words, some constructs have more influence on behaviour than others. There are superordinate constructs at the top of the hierarchy which comprise and subsume and have implications for subordinate constructs. The original grid techniques restricted clarification of constructs to naming originally elicited constructs.

The 'dichotomy corollary' is useful in understanding the method of eliciting constructs and so is included here. Briefly it states that constructs are linked together in networks made up of a multitude of similarity-difference, or bipolar, dimensions, for example, 'concrete-abstract'. Similarity is contrasted with difference dimensions to obtain the meaning of the construct, thus a construct can only be understood by reference to both poles.

The data required is individual data rather than group data. When bipolar dimensions are consistently linked they make up a personal framework, termed construct system. For example, the constructs 'concrete-abstract', 'understandable-incomprehensible' may be linked with 'efficient-inefficient', suggesting that the individual has a construct system in which concreteness and understandability are associated with efficiency. The difference pole is not necessarily a logical opposite it depends on the individual's perception, an idiosyncratic opposite pole, 'concrete-artificial', is as valid to the individual as a logical one. Within this temporal framework or construct system which structures our reality the linking between constructs will not always be "clear and appropriate" some parts of it "will be clear and appropriate while others remain fuzzy" (Tindall, 1994, p74).

It will be seen that both the 'individuality' and 'commonality' corollaries surface within the study. The 'individuality corollary' expresses the idea of individual differences. People often perceive or behave differently in the same situation. On the other hand, the 'commonality corollary' of Personal Construct Theory assumes that there will be major common interests and similar construct patterns within a social group, that constructions systems that can be communicated can be widely shared (Kelly, 1955, 1963). Lifshitz (1974) hypothesised that "professional groups, which vary in training and relevant experience, have common constructs which are similar within each group, yet differ from each other as a function of the amount of professional education undergone by each".

Finally, the 'experience corollary' states that 'a person's construction system varies as they successively construe the replication of events' (Bannister and Fransella, 1986 p14). Kelly argued that 'The Experience Corollary has profound implications for our thinking about the topic of learning' (Kelly, 1955, 1963 p75). Kelly's definition of learning is that it has no definition. Learning is like any other class of

psychological process, inherent to the person, not an isolated topic that has laws and is generalisable. He argues that

> *the problem of learning is not merely one of determining how* ***many*** *or what kinds of reinforcements fix a response or how* ***many*** *nonreinforcements extinguish it, but rather, how does the subject phrase the experience, what recurrent themes ... does he [sic] define*
>
> Kelly, 1955, 1963 p77

The notion of themes fits neatly into this study as it will examine learning and try to locate recurrent themes in learning by novices and by experts.

1.7. Development of the method

The repertory grid is the methodological component of PCT and will be the subject of Chapter 2. The techniques, which have evolved from personal construct psychology (PCP), and the personal construct theory (PCT) offer a way of investigating individual and group processes, and analysing the patterns of beliefs. In PCT terms we create beliefs or theories, or as Kelly called them 'transparent templets [sic]' or 'personal constructs' which we then attempt 'to fit over the realities of which the world is composed' (Kelly, 1955,1963 pp8-9).

The method of eliciting the constructs will be described in full later in the study, however, it is worth briefly outlining at this point the main aspects of the design of the repertory grid. The constructs are elicited by comparing elements, a term used to denote people, objects, events or situations, and in this study, concepts used in the psychology of teaching and learning. These elements are presented in groups of three (triads) and the subjects is asked to choose two which are similar and which are both in some important way different from the third. The subjects

then give a label for the two similar elements and one for the different element. These labels then yield the bipolar dimensions that together form subjects' constructs.

Essentially, the grid is devised in the form of a type of interview with the flexibility of a qualitative method of information gathering designed to elicit representative personal constructs and examine the constructs within a specific domain (Beail, 1985). In addition to offering a rich source of qualitative information, its mathematical formulation is designed for a wealth of statistical tests, some of which are used in this study. A variety of grids have been developed since the original form devised by Kelly. There are a range of elicitation, scoring and analytical procedures. Rather than looking at systems within individual grids this study concentrates on identifying and classifying construct categories common to novices and experts by counting the constructs and comparing the data.

1.8. Research questions and hypotheses

Much of the research, which has been carried out with the framework of Personal Construct Theory, focuses on the development of the repertory grid technique to assess individual differences in cognitive structure (Adams-Webber, 1979). The research work here explores the potential for using the repertory grid with group data for exploring and quantifying construction and change in belief patterns/intuitive theories of novices, before and after a course of study, and as a tool to compare novices' patterns with experts' patterns. This research sets out to explore novices' (trainee teachers') beliefs in terms of construct dimensions classified into main themes, using a repertory grid technique. It will investigate changes in beliefs and assess whether differences can be identified between the beliefs of experts and novices using the same concepts in psychology. It will look at the questions of learning and changes in learning.

The experimental aim of the study was to investigate the possibility of using the repertory grid technique to identify and quantify:

(a) some of the important beliefs/cognitions of students on a part-time teacher training course (novices) and of a group of experienced psychologists (experts) about psychology topics used in teaching and learning;

(b) learning in relation to changes in novices' beliefs/cognitions after a course of psychology; is there a pattern?

(c) differences between the students' (novices') beliefs and those of experienced psychologists (experts) on what they believe to be the most important themes of the topics

Presuming the repertory grid technique was able to identify and quantify construct categories classified into main themes, two hypotheses were also made, in addition to the research questions above. The first relates to frequency of novices' constructs in terms of the themes classified as a result of the intervention of the course; the second relates to the frequency of construct categories (called themes) identified by the novices and the experts. As previously discussed, Kelly defines constructs in several ways. He identifies constructs "as patterns that are tentatively tried on for size. They are ways of construing the world...to chart a course of behavior". He goes on to argue that we seek to improve our constructs by increasing our repertoire "by altering them to provide better fits, and by subsuming them with superordinate constructs or systems" (Kelly, 1955, 1963 p9). It would then follow that the researcher could predict that after a course of study, wherein the novices' intuitive theories are informed by explicit taught theories, the number of construct categories (themes) would reduce as subjects redefine and consolidate their cognitions/perceptions. Secondly, fewer construct categories (themes) should be evident in the experts' grids than that of the novices as a result of their experience in the field of psychology. Thirdly, it was thought that significantly more of the triad elements would be differentiated by the same choice

of similar and different elements than those that changed, that is that the groupings would remain essentially stable but that the Themes would change. If this was the case then it could be argued that this would provide a measure for identifying fundamental change in thinking on the basis of the same initial choice of elements rather than different conceptualisation occurring as a result of different combinations of the elements within each triad.

It was hypothesised that:

Hypothesis 1: the overall number of categories (Themes) identifying novices' intuitive beliefs about the psychology topics would be fewer on the second occasion of the grid (T2) than the first (T1)

Hypothesis 2: the number of categories (Themes) identifying experts' intuitive beliefs about the psychology topics would be fewer than those of the novice group.

Hypothesis 3: the same grouping of similar and different elements in triads would appear novices grids at both T1 and T2 but the constructs elicited by the triad would change.

CHAPTER 2

Eliciting knowledge and beliefs and assessing change

2.1. Introduction

Personal Construct Psychology (PCP) is supported by a theoretical structure that may be applied to knowledge acquisition and representation (Shaw and Gaines, 1992). Chapter 1 considered the theoretical basis of the repertory grid technique in terms of Personal Construct Theory (PCT) and its fundamental philosophy. It combines a constructivist approach to human cognition, based in positivist scientific methodology. It could be seen even from the necessarily limited exploration in the previous chapter that underpinning the method is a complex and challenging theory.

Kelly's research designs are an integral part of his Personal Construct Psychology, and as such the initial Chapter provided a relatively brief and selective theoretical background. Personal Construct Theory argues that theoretical entities, which Kelly called 'constructs', are bipolar contrasts that we create when we categorise aspects of our worlds. Repertory grids are a method of collecting and encoding such contrasts for further study (Tomlinson and Johnson, 1994)

The Repertory Grid is often seen in terms of quantitative data (Tindall, 1994) despite its' staunchest advocates' insistence on the qualitative nature of the approach. The methodology associated with the Personal Construct Theory (PCT) provides a theoretically powerful and attractive framework for representing cognitive processes and the focus of this study is the application of a technique as a tool rather than a technique inseparable from its underpinning theory and

philosophy. There are aspects of the theory introduced in the previous chapter which may be relevant and will be selectively considered in relation to the findings.

Stewart (1998) acknowledges that the repertory grid technique can be learned and applied without too much reference to PCT. Schakleton and Fletcher (1984) also acknowledge that the repertory grid can be used as a stand-alone technique without the need to make reference to the main theory. In other words, you do not have to believe in Kelly's PCT in order to use the technique.

This Chapter focuses on justifying in terms of previous studies and research the use of the technique in identifying learning, assessing changes in learning in novices after a taught course, and for comparison of novices and experts. It explains the technique and illustrates ways in which the technique has been applied to the elicitation and assessment of learning and expertise.

2.2. Eliciting knowledge and beliefs

The repertory grid techniques associated with PCT and developed by George Kelly are described in his two 1955 volumes 'A Theory of Personality: The Psychology of Personal Constructs'. The techniques continue to be developed. Implications for psychology lie in the possibility for repertory grids to clarify how individuals and groups perceive salient aspects of their personal worlds at given moments in time.

> *Behind each single act of judgement that a person makes (consciously or unconsciously) lies his [sic] implicit theory about the realm of events within which he is making judgements. Repertory grid technique is, in its multitude of forms, a way of exploring the structure and content of such implicit theories*
>
> Fransella and Bannister, 1977 p2

Applications include clinical, management and educational fields and there is an increasing interest in the technique from industry. Investigation into how we develop interpersonal relationships with people who appear to validate our construct systems is one common illustration. Other examples are exploration of teachers', social workers', and health professionals' construct systems, which provide frameworks for exploring beliefs and attitudes or contribute to the understanding of interactions with learners, clients or patients, or between professionals.

Kelly's work as a clinical psychologist and in the development of the technique ensured an historical tradition of PCP in clinical applications and these applications dominate in the literature and have been extensively reported. Phares (1991) suggests there has been a recent renewal of interest in Kelly's work, especially his approach to therapy, and describes how Kelly advocated experimentation in cognitive change within the safe environment/context of grid techniques.

Fransella and Bannister (1977) review the diversity of repertory grid usage in their comprehensive 'Manual for Repertory Grid Technique'. They advocated the technique as an effective research tool for exploring personal constructs, individuals' perceptions of people and events and reflecting these back to an individual in order to effect change in behaviour or learning (Fransella and Bannister, 1977). They give brief overviews of examples including cognitive structure and complexity, psycho-pathology, psychotherapy, person perception and interpersonal relationships, developmental psychology, learning, and language (Fransella and Bannister, 1977). Fransella and Bannister, for example, used supplied constructs and elements supplied in a nomothetic way, that is, to identify characteristics shared by everyone, and an epistemological way, that is, asking general questions about how knowledge develops with thought-disordered schizophrenics. Fransella used it extensively on research on stutterers in relation to change in group psychotherapy.

In recent years the popularity of the grid as a technique in education and industry has been developing. Today, applications include management and educational as well as clinical fields and there is an increasing interest in the technique from industry. Stewart (1998) suggests that for industrial and commercial applications in personnel and training, for example, training-needs analysis and market-research purposes, the attractions of the grid include limited observer bias and the central process of construct elicitation. These features enable the researcher to view a product from perceivers' perspectives "without the distortion caused by intimate and specialised knowledge of the product ... without your prejudicing the outcome" (Stewart, 1998 Ch 1 p6).

These qualities of the technique are used to look at beliefs, in this case, intuitive beliefs using concepts in psychology as elements. It is applied to elicit novices' perceptions in a non-judgemental, incremental way. Much as in the same way a market research agency might like to acquire peoples' perceptions of a product in an impartial way.

2.3. A tool for eliciting and assessing learning

Beail (1985) emphasises that "the repertory grid is a flexible and diverse methodology not a standardised test with a set procedure". He goes on to maintain that the difference between grids and tests is that grids do not have norms and though normative data is starting to be collected (by some clinicians) this is "the exception rather than the rule" (Beail, 1985 p 22).

The repertory grid technique has evolved from its original conception as a therapeutic tool based on people as elements to concepts. As well as providing rich qualitative data the repertory grid is a highly flexible tool which is "often used quantitatively and on occasions completely divorced from its theoretical underpinning" (Tindall, 1994 p75). That is, it has developed into a cognitive

knowledge elicitation technique. Burton, Shadbolt, Hedgecock and Rugg (1986), for example, used the technique in classifying rocks and justified the use of the repertory grid technique relating it to studies on rock classification which produced comparable results to other classification techniques.

There are common techniques for eliciting beliefs and standard techniques for eliciting knowledge (Stevenson, Manktelow and Howard, 1988). General techniques for knowledge elicitation include protocol analysis and concept sorting (or scaling). Three popular methods have been applied to eliciting knowledge and beliefs in psychology. These are through controlled experiments, various forms of self-reports such as surveys and interviews, and 'objective' tests and techniques, for example, self-reports or interviews. What most of these have in common is that they pose direct questions aimed at a conscious knowledge or awareness. The repertory grid on the other hand is a subtle technique. Shaw and Woodward (1990), for example, justify the repertory grid as an appropriate technique for knowledge elicitation on the basis of the original development of the theory and associated technique in the context of clinical psychology which was, therefore, concerned to have techniques which would "by-pass cognitive defences". This raising of awareness or consciousness without influencing the outcome is an important characteristic of the technique.

The repertory grid was developed to provide a formal, mathematical framework for the theoretical basis of Kelly's Personal Construct Theory. It has been described as a "particular form of structured interview"; it is a process which explores peoples' thinking and which "formalises this process and assigns mathematical values to the relationships" (Fransella and Bannister, 1977 p4). The identification of patterns of construing in a formalised fashion is another of the attractions for using the repertory grid technique.

The results of the repertory grid have often been looked on as a map of the construct system of an individual, a sort of idiographic cartography, that is, looking at the unique individual, as contrasted with, say, the nomothetic cartography, that is, looking at shared characteristics, as in Osgood et al's, 1957 semantic differential (Fransella and Bannister, 1977). The semantic differential is a method related to the Stephenson's Q-sort technique developed in 1953 and bears some similarity to the style of the bipolar pairs of describing words and measurement used in the repertory grid. The semantic differential is a method of measurement (of attitudes) which assumes a hypothetical semantic space, and is designed to be used nomothetically, comprising various bipolar pairs of adjectives using a seven-point scale (Gross, 1996). The theory and assumptions of the repertory grid are clearly different. The format of the grid, especially when the repertory grid is used on a scale between 1 - 11 points is, however, similar to the semantic differential devised by Osgood et al in 1957, and it has been used here nomothetically.

2.4. Applying the repertory grid technique to group data

Kelly's PCP is popularly classified as an idiographic approach to human behaviour in that it sees each person as being individually unique. The repertory grid was originally designed to demonstrate the cognitive or perceptual systems of individuals. Kelly's theory proposes that the purpose of grids is to enable us look at the way in which individuals' thinking evolves, to inform us of limitations and possibilities. The concept behind the repertory grid was to explore the idiosyncratic nature of individuals' perceptions and the differences between individuals.

This study uses Kelly's technique in an essentially nomothetic rather than idiographic way, that is, topics or elements are provided on grids designed for individual members of a group to complete and the group data aggregated. The repertory grid technique is applied to group data to identify beliefs and assess

changes in learning, that is, a tool to examine group data rather than as a method of individual reflection. For purists this is controversial in the sense that exponents of the original theory emphasise the importance of the theory in relation to idiographic rather than nomothetic applications and interpretations. Bannister and Fransella (1986), however, conclude that

> *Methodologically, the grid can be used either to investigate the individual or particular aspects common to many subjects without violating the theoretical assumptions that we are all unique in certain other respects.*
>
> Bannister and Fransella, 1986 p54

Most of the work with the technique focuses on the individual; however, research with groups has also been done, though often based on comparing the individual construct systems. Since its inception repertory grid designs based on Kelly's Personal Construct theory of 1955 have been applied to group data and the analysis of characteristics within and between groups (Burnard and Morrison, 1989, 1991, Morrison, 1989, 1991, March and McPherson, 1996, Rawlinson, 1995, Lifshitz, 1974, Corporaal, 1991, Jankowicz, 1997, Fournier, 1995, Hargreaves, Galton and Robinson, 1996). Examples of the use of group or aggregated data are found in areas such as nursing, education, business, organisational behaviour and social work.

Two studies by Burnard and Morrison (1989, 1991) looked at nurses' perceptions of interpersonal skills and the findings suggested differences in the way nurses viewed skills in nursing. Morrison (1989, 1991) in two studies using repertory grid techniques to generate both qualitative and quantitative data, assessed in the first study nurses' self-perceptions, and in the second identified distinct categories which reflected nurses' perceptions of caring. In another study with nurses (March and McPherson,1996) the important attributes of a nurse were identified and

significant differences were found between student and qualified nurses in some of the characteristics applied. Rawlinson (1995) reviews a number of studies including his own comparative study which found important similarities (for example, an emphasis on personal qualities) and differences (for example, an emphasis on intellectual characteristics) in nurses' and social workers' perceptions, Jankowicz (1997) used group data to determine the attitudes and values concerning fraud and security issues. Hargreaves, Galton and Robinson (1996) were able to derive a classification of constructs used by primary teachers in assessing arts' schoolwork and found high levels of intercorrelation and significant differences in terms of assessment.

Three studies are particularly relevant to this study. Fournier (1995) in a study on personal change following organisational entry (during graduates' transition from university to employment) found significant change in the nature of graduates' constructs. A study by Corporaal (1991) examines and compares the thinking of first and third year prospective teachers. Lifshitz (1974) used a modified version of the Kelly's (1955) Role Repertory Test on groups of professionally trained and experienced social workers and students of social work to examine the common characteristics and changes taking place during social work training. To test her hypothesis that training would make a difference she compared the younger, less experienced students to the older and more experienced supervisors for similarities in common construct patterns within the groups and differences between the groups as a function of the levels of professional education.

The studies, notwithstanding the odd statistical anomaly (for example, misuse of the Chi-square test), provided some important insights using group data analysed in various ways. These studies yielded some comparable results and were useful for identifying constructs within the domains within which they were used, thus suggesting that group data can safely be used to yield important insights into the domain used in this study.

2.5. The repertory grid technique

Kelly's original technique used roles as elements and was designed for use with an individual and clinical psychologist. The Role Construct Repertory Test (Rep Test) involved using significant others for eliciting personal constructs e.g. mother, father or someone I admire, someone I dislike etc. However, elements are anything that give rise to construing and should be "personally relevant to the participant ... and both appropriate to and representative of the topic explored" (Tindall, 1994 p75).

Historically, then, the original form of the repertory grid technique, the Rep Test, used people as elements. It was succeeded by the repertory grid Test (repertory grid) as the main research tool where an element could be any topic. The repertory grid is a flexible tool which may be used in various ways to discover the essential constructs we use for perceiving aspects of our reality (Kelly, 1955, 1963, Bannister and Fransella, 1986, Beail 1985, Gross, 1996).

The repertory grid is a method of collecting and encoding contrasts. It has three essential components: a grid composed of a matrix of cells; a set of provided, and/or elicited stimuli relevant to the research, called elements; and bipolar descriptive pairs, again provided and/or elicited labels called constructs. The cells of the grid are completed by dichotomously allocating the elements to either pole of the construct using a tick (✓) or a cross (✗) resulting in a two-dimensional, numerical matrix, which may be statistically analysed. The repertory grid used in this study is a partially standardised one, consisting of provided elements and triads of elements to elicit constructs. From each triad the subject chooses two topics (elements) which are considered similar, but different from a third. The rest of the elements are then assigned by the subject to either end of the construct. The elements are then regrouped in various ways, to produce further triads and more constructs and then analysed.

PCT depends upon the ability to define and measure a person's ways of thinking or constructs. Kelly termed the principles involved elements and constructs.

2.5.1 Selection of elements

Elements need to vary on dimensions relevant to the topic to provide a broader picture of a person's construing and to enable comparisons to be made (Fransella and Bannister, 1977, Tindall, 1994, Gross, 1996). Elements should be discrete, non-evaluative and homogeneous (Stewart, 1998). Both element and contextual vagueness are problems for elicitation of constructs. Too broad a context or elements lead to the problem of element and contextual vagueness, or conversely, too narrow a context or elements, which has the advantage of eliminating ambiguity, reduces validity (Yorke, 1985). A conscious effort was made, therefore, to try and reduce the difficulty of the task by providing a reasonably specific context and homogenous elements.

As an objective of the study was to investigate change due to the process of learning, topics from the psychology component of the course were used as the elements. The elements were concepts which fitted in with Kelly's stipulation of being 'within the range of convenience [and] representative of the pool from which they are drawn' (Kelly, 1955,1963 p13). The concepts were topics of the psychology course attended by the novices and were, therefore, relevant to the context. The topics used were representative of the titles found in introductory psychology courses and texts (see Hayes and Orrell, 1987, Hayes, 1988, Gross, 1992, 1996) and in the psychological sections of teacher training texts (see Child 1986, Reece and Walker, 1994, 1997, Curzon, 1990, 1997). This was thought to be, at least to an acceptable level within the context of the study, within the "range of convenience" of the constructs to be used.

Exponents of PCP caution against using elements to form constructs about which they have no experience. Psychology is an area upon which by its inherent

nature, everyone has a view, or intuitive theory (examples are 'personality' or 'intelligence'). The 'need to know' aspect in relation to this study is what novices' present or pre-existing thinking is about the concepts to provide a baseline for assessing change in that thinking after a taught course. An aim of providing elements of a 'homogeneous' kind is to enhance validity, as they are more likely to stimulate the elicitation of constructs across the range of elements (Yorke, 1985, Stewart, 1998). Pilot work indicated that two of the concepts should be refined to avoid ambiguity as elements on the grid 'Elements which have no clear purpose in the grid merely provide statistical "noise" (Yorke, 1985 p387).

A decision was made to supply the subjects with the elements and to elicit the constructs. The elements were supplied on the grid rather than identified using initially individual, then collective, elicitation of elements as has been suggested by some researcher (for example see Thomas and Harri-Augstein, 1985). There can be problems in aggregating group data across larger sets of data. Using identical sets of elements enables the constructs to be treated in a standardised form by using dichotomous rating and there are a variety of statistical techniques designed to identify patterns, which are used in this research. In designing the repertory grid technique the experimenter is faced with a variety of methodological considerations and the possible multiple ways in which grid data may be analysed. Decisions about the design of the grid relate to "the nature of the elements to be used, forms of construct elicitation and the format (ranking, rating or bipolar allotment) in which the subject is to respond" (Fransella and Bannister, 1977 p9).

The decision to provide rather than elicit the elements was also based on pilot work for this study which showed that when asked to produce elements based on psychology topics in teaching and learning' it was not manageable to let subjects elicit their own elements, or even elements which had been previously collectively chosen. The elicitation of elements from the group increased the amount of time the process took, did not produce a representative sample of psychological

concepts and led to the complication of inappropriate mixing of names and concepts in psychology. This would exacerbate the problem of potential vagueness associated with some grid designs and confirmed criticism that the process produces elicited elements of considerable heterogeneity (Yorke, 1985).

2.5.2 Elicitation of constructs

Fransella and Bannister cite Kelly (1969) "A construct is like a reference axis, a basic dimension of appraisal [it is] a discrimination, *not* a verbal label" p2-3, that is, it is on a continuum. According to Kelly (1963) the constructs elicited should be permeable. Meaning that they should applicable to the remaining elements in the grid other than those originally selected or identified.

In terms of PCT, constructs are considered as being dichotomous, of an either-or distinction, for example, 'warm-cold' and this study uses Kelly's original dichotomous form of the grid (Pope and Keen, 1981). The repertory grid has been developed on the premise that a person has the ability to construe bipolar dimensions and that these can be measured by identifying the similarities and contrasts in experiences. Constructs should, therefore, be explicitly bipolar, in other words, the opposite or difference pole should be stated against the similarity pole "by stating what a person or thing is, one is stating that which he [sic] or it is not" (Fransella and Bannister, 1977 p14).

In making comparisons by asking for ways in which elements are similar and different invariably produces descriptions of a dichotomous, though not necessarily symmetrical, kind. The format of the constructs are as contrasts rather than simple semantic opposites so subjects were encouraged in this study to find the contrast rather than attach a simple negative describing its opposite pole. Stewart (1998) argues for the benefits of disciplining the mind to express the essentials. She relates this to the way the triadic comparison procedures work

asking for both a similarity and a difference, gets out both ends of each construct, and as a result the data are much tighter, crisper, easier to understand and contain less dissimulation.

Stewart, 1998 Ch2 p6

The purpose of the study was to investigate whether common beliefs could be identified from the constructs. The decision was, therefore, made to allow constructs to be elicited in an unconstrained way by the subjects during the process of completing the grids. Closer examination of the constructs may reveal similarities and differences in the actual use of construct labels. Shaw (1994) used a computational tool (SOCIOGRID) to examine terminology used in a domain using common elements. She argues that terms and descriptions people use to label the constructs may vary. She concluded, however, that a technique, which promoted the sharing of data derived from individual grids through an objective analysis, would encourage a thorough, unrestrained exploration of the conceptual framework of a domain. Supplying the constructs would have made significant assumptions regarding shared meaning (Yorke, 1985) which was unacceptable here.

2.6. Analysing repertory grid data

A range of elicitation, rating and scoring procedures and methods of analysis have been developed from the original basic technique (Fransella and Bannister, 1977, Beail, 1985). Repertory grid data can be analysed in a wide range of ways, from simple descriptive means to more complex analysis using sophisticated statistical programs and a range of statistical analyses has been used here. The interpretation of the grid will depend on the way "the grid was designed, produced and the purpose for which it was used" (Beail, 1985 p 19). All methods of analysis

attempt to reveal patterns of interrelationships between entities in the grid (Shaw and Gaines, 1995, Morrison, 1991, Beail, 1985).

In this study, the methods included a content analysis of the constructs to identify the themes used by the subjects, quantitative analyses of the frequency with which the themes were used, the number of different themes used, the grouping of the elements in a triad and whether the choice of themes changed as a function of learning. These quantitative analyses reveal local changes in conceptual organisation brought about through learning. Global changes in conceptual organisation are examined using multi-dimensional scaling techniques.

2.6.1 Scoring of the grid

There are various ways of scoring the subjects' responses on repertory grid which depend on the purpose of the grid and mode of elicitation. Experimenters use anything from a two-point binary scale to nine-point scale (Stewart, 1998). The larger the scale the more difficult it is to discriminate and the process is correspondingly slower. Studies eliciting constructs from children, for example, suggest that the use of the simplest forms of scoring the responses is the most appropriate. This study uses Kelly's original binary scale, subjects indicate that an element is either similar or different to the poles of the construct. In, say, a 4 point scale, subjects would give a rating from 1 to 4 to indicate the similarity of an element to the similarity pole. In addition to the kind of discrimination required by the practitioner the context of the study is relevant to the scale chosen as well. For this study a binary scale was decided on in the context of time constraints available within a 'working' classroom situation. The scoring was relevant due to the purpose of the grid, which was to elicit beliefs across subjects, rather than look at construct systems within individual grids. Simplicity of scoring in the completion of the grid, in reducing time taken and anxiety levels, was chosen over the more demanding tasks of ranking or rating on a more diverse scale.

2.7. The attractions of the technique as an aid to learning

The repertory grid is described as a flexible assessment device originally developed to help individuals discover fundamental constructs which underpin their self and interpersonal perceptions (Kelly, 1955, 1963, Bannister and Fransella, 1986, Beail, 1985). An initial attraction to the technique as the focus for this research work was the seductive idea that it does not assume interpretation of others' perceptions. Constructs, or ways of thinking, would be elicited from the individual in an essentially unconstrained way and not introduced or defined by the researcher.

The literature highlights the idiographic nature of the technique which encourages individuals' perceptions and which in turn could provide a catalyst, generated by the individuals themselves, for change. Kelly's repertory grid allows the exploration of personal abstractions and generalisations (Kelly, 1955, 1963, Bannister and Mair, 1968). This study uses a repertory grid technique as a method of eliciting learning and assessing changes in learning. It is designed to give subjects (students and experienced psychologists) enough freedom to express specifically, in their own terms, what they consider to be the major characteristics of psychology topics used in teaching and learning. As the same method was used for both groups (twice for the students and once for the experienced psychologists' group) a comparison between their reactions provides an operational definition of educational change.

Within the context of educational change and learning, it is seen as essential in relation to trainee teachers' learning in that there is the potential for empowerment as it emphasises and values the trainee teachers' own perceptions. The basis of the repertory grid is that of self-identified constructs that are supported by data presented quantitatively and relatively objectively with minimal external bias or interference. Groups, as well as individual subjects are thus provided with a

process for group and self-generated feedback, subsequent reflection and ultimate modification, in other words, further learning.

2.8. Repertory grid, learning and expertise

Chapter 1 concluded with the research questions formulated for this study which were to use the repertory grid technique to identify conceptual categories related to psychology topics used in teaching and learning, how they change and how they compare to those of experts. There are various ways of eliciting knowledge as described above. The technique used in this study synthesises with the cognitive/psychological orientation of the study. It is a method which is suitable for identifying students' cognitions, using their own way of conceptualising rather than conceptual ideas and means developed by the researcher, such as in questionnaires and structured interviews.

Studies have shown the data produced by the repertory grid technique to be reliable and valid (Corporaal, 1991). The applications illustrated in this Chapter show how flexible the technique is and its potential in investigating beliefs or ways of thinking.

CHAPTER 3

Beliefs, Learning and Expertise

3.1. Introduction

The previous chapter showed how the repertory grid technique has been applied as an effective research tool in identifying beliefs, looking at changes in learning and comparisons in novice and expert thinking. This chapter looks at the three constructs central to the study: beliefs, learning and expertise.

3.2. Beliefs or intuitive theories

Kelly's theory proposes that the way we organise our thinking does not depend on permanent or enduring entities but it changes and develops with experience. We do not simply passively experience our reality but make sense of what we see against our *pre-existing theories* about the world, further, he argues that we cannot respond effectively to the world unless we can make sense of it (Kelly, 1955, 1963).

Chapter 2 first introduced the idea that behind our behaviour are implicit theories or intuitive beliefs and that we make conscious or unconscious judgements based on those theories or beliefs. The notion of personal theories as highlighted in Chapter 1 was central to Kelly's PCT.

> *Each day's experience calls for the consolidation of some aspects of our outlook, revision of some, and outright abandonment of others*
>
> Kelly, 1955, 1963 p.14

The body of knowledge into beliefs is in the main exploratory and descriptive. It is often on a small scale (including individual case studies) and uses interchangeable terms, for example, implicit theories, beliefs, concepts, personal constructs, perspectives etc. (Corporaal, 1991). The research topics range from specialist areas such as physics (McCloskey and Kargon, 1988, Clement, 1991) or mathematics (Schoenfield, 1985) to looking at roles, 'what is an interpersonally skilled person?' (Burnard and Morrison, 1991), caring attitudes and behaviours (Dyson, 1996). This research falls into the small, but not tiny, category, and somewhere in the middle of the range.

Stevenson and Palmer (1994) argue that we have pre-conceived beliefs or intuitive theories about our world that have probably been learned in an implicit way. For example, our beliefs about concepts such as 'intelligence' or 'personality' develop without us being aware and become internalised, not available to conscious analysis. They suggest that intuitive theories need to be understood as they have 'far reaching consequences for learning'. They go on to suggest that once the intuitive theories are recognised and understood 'they are amenable to change' (Stevenson and Palmer, 1994 p 127).

The indications that the way teachers think has an influence on their actions, was established from research generated in the 1970s looking at student teachers' cognitions. The line of investigation came about as a response to the predominant behaviourist approach to effective teacher behaviour (Corporaal, 1991). Research on teachers' beliefs has included Clark and Peterson's (1986) study which identified 'teachers' theories and beliefs' as one of three categories of teachers' cognitions. Corporaal's (1991) study elicited cognitions directly from trainee teachers in the same way as this research study attempts to do in terms of identifying the subjects' conceptual organisation.

Pre-conceived beliefs or intuitive theories are suggested as potential inhibitors of learning, "pre-existing, inconsistent, knowledge turns out to be remarkably resistant to change ...it seriously interferes with the new learning" Stevenson and Palmer (1994 p127). Clement (1983) suggests that learners need to become aware of the intuitive theories they have and evaluate them in terms of empirical evidence. An example of the negative effect of pre-conceived beliefs was revealed by experiments which investigated intuitive theories of mechanics which found that subjects' (not unreasonable) misconceptions of the principles of mechanics, interfered with their learning (McCloskey, 1983). "Misconceived theories are most likely to arise in domains where the observable evidence is invisible or ambiguous" (Stevenson and Palmer, 1994 p129). Concepts in psychology could arguably be categorised as such. On the other hand, there is the argument that intuitive theories can be developed in new learning (diSessa's (1983) cited in Stevenson and Palmer (1994)).

It is the outing or bringing to mindfulness of the intuitive theories, which is a basic idea behind the use of the repertory grid, making explicit or concrete something which is implicit or abstract.

3.3. Mindfulness or 'conscious awareness'

Langer (1992) contrasts the two concepts of 'mindfulness' and 'mindlessness'. She defines 'mindfulness' as 'a state of conscious awareness in which the individual is implicitly aware of the context and content of information' (Langer, 1992 p289). She describes 'mindfulness' as a condition of receptiveness to new things, where the individual will actively construct categories and distinctions. She compares this with 'mindlessness' where the individual will be context-dependent, oblivious to novelty and passively reliant on familiar categories and distinctions.

In a study on perceptual disorder Chanowitz and Langer (1981) found that subjects who were not given reason to consider information appear to accept the information uncritically. In studies involving identifying various uses for an unfamiliar object Langer and Piper (1987) found that subjects who were given conditional rather than unconditional information (it "could" be rather than "was" a dog's toy) were able to reassess significantly more novel uses for the original object. Interestingly, an unpredicted finding was that the process of imagining novel uses for an object also appears to enable information already accepted uncritically to be reassessed.

Langer (1992) argues that by focusing on readily available information, we may mindlessly direct our attention away from a vast quantity of less available information. Similar to the research on mindfulness, Bereiter and Bird (1985) in their study found improved reading and comprehension in children who think aloud supporting the argument of the beneficial effects of active participation in the learning process over passive receptiveness. The idea of active and explicit involvement versus passive and implicit knowledge absorption will be taken further in the discussion on prior knowledge.

This study investigates the possibility of identifying implicit beliefs, as 'people are often quite unaware of their unawareness' (Stevenson et al 1988, p568) and measuring those beliefs. In relation to teaching it argues for the repertory grid as an effective tool for eliciting beliefs in a 'mindful' manner in order to introduce critical reflection, encourage openmindedness, receptiveness and flexibility to new learning.

When information is given in absolute (vs conditional) language, is given by an authority, or initially appears irrelevant, there is little manifest reason to critically examine the information and thereby recognize the way it may be context-dependent. Instead, the individual mindlessly forms a cognitive commitment to the information and freezes its potential meaning. Alternative meanings or uses of the information become unavailable for active cognitive use.

Langer, 1992 p289

Certainly, in the context of the classroom the teacher is perceived as the 'authority' or 'expert'. Psychology, however, as a subject as a whole is often perceived as 'common sense' (Gross, 1996). As such it is reasonable to argue that students' specific implicit beliefs would be particularly strong as a result of many years of internalising experiences and influences, and, therefore would be resistant to change. Furthermore, because of the longitudinal, ingrained, aspect actually identifying what those beliefs might be would be difficult to externalise or clarify in response to direct questioning. Raising to the consciousness implicit beliefs at the beginning of a course in psychology may enable prior knowledge to be identified and encourage individuals in the group to be aware of the existence of their own beliefs. The power of the expert, however, is a strong force for novices to contend with. The intention also was to try to encourage from the beginning of the course an interactive learning environment where the learners feel they can contribute and participate in the learning process.

Research described in chapter 2 identifies the repertory grid as a way of exploring these implicit or intuitive theories by bringing them to mind in a subtle way. Once accessible for conscious scrutiny, pre-conceived beliefs are available then for change or receptive to new learning.

3.4. Learning

Personal Construct Psychology has been widely used in the research and support of learning processes (Pope and Keen, 1981, Shaw and Gaines, 1995). Kelly claimed that with the grid techniques 'the personal construct system can be viewed cybernetically' and can be used to study problems of generalisation of learning (Kelly, 1955, 1963 p146). The inference is that 'It is possible to develop a complete theory of cognition, action, learning and intention with the geometry' (Shaw and Gaines, 1992 p25). It is not the intention, within the confines of this study, to explore the computational knowledge representation possibilities which the tools of personal construct psychology offer (and which is discussed in depth in Shaw and Gaines, 1992). This illustration serves only to reinforce the originality of vision and the strong theoretical foundations of the grid as a knowledge acquisition method.

The technique is used here to examine group data with the purpose of distinguishing patterns of thinking about topics or concepts in psychology. It enables changes in thinking to be identified by changing patterns over time and between groups. Any distinctive changes in the way concepts are perceived is taken as an indication of learning by novices and between novices and experts. It does not attempt to focus on the technique as a method for analysing the organisation of the network, or construct system, in an individual's grid. The study, then, aims to see whether distinguishable categories can be discerned and whether there are changes in behaviour or learning in terms of ways of thinking after an intervening course in psychology. It also aims to see if there are differences between novice and expert thinking, and if there are, what those differences might be.

3.5.1 Definitions of Learning

'Learning' may be considered to be about our perception and understanding of the world and how we come to behave in certain ways. Curzon (1997) reviews some definitions of learning ranging from the more superficial dictionary definitions which refer only to 'knowledge acquired by study' to those which emphasise the dynamic nature of learning. Biehler (1993) defines learning, for example, as 'the *active* creation of knowledge structures from *personal experience'* [my italics]. Curzon (1997 p11) provides a summary of the various definitions: 'the nature of learning is inferred from *changes in behaviour*; learning occurs as the result of given *experiences* which precede changes in behaviour; learning involve '*behaviour potentiality*'. 'Behaviour potentiality' refers to the capacity to perform or modify a behaviour at a future date (Curzon, 1997).

Child (1986) also offers a useful definition that incorporates learning unconsciously acquired, and covert beliefs and attitudes, as well as observable performance. 'Learning occurs whenever one adopts new, or modifies existing, behaviour patterns in a way which has some influence on future performance or attitudes...This reasonably permanent change in behaviour must grow out of past experience' (Child, 1986 p81). The concept of learning is complemented by a definition of teaching as 'a system of activities intended to induce learning, comprising the deliberate and methodical creation and control of those conditions in which learning does occur' (Curzon, 1997 p21).

3.5.2 Prior knowledge, expectation and learning

> *Learning through understanding ... consists of evaluation as well as the integration of new information with old ... such evaluations are very difficult, primarily because they require conscious attention and the deliberate use of one's pre-existing knowledge.*
>
> Stevenson and Palmer, 1994 p11

It has been argued that prior knowledge may have a negative effect on learning, and that, pre-existing, pre-conceived beliefs or intuitive theories may impede new learning, however, and this is crucial here, "once they [intuitive theories] are *recognised and understood, then they are amenable to change*" [my italics] (Stevenson and Palmer, 1994 p127).

One of the aims of using the repertory grid is to focus attention on individual beliefs and to invoke a conscious awareness of the possibilities or limitations of prior knowledge. Langer argues that the distinction between mindfulness and mindlessness relates to how we initially view information, and that 'the minfulness/mindlessness distinction focuses on the categorisation of information even before further processing occurs' (Langer, 1992 p 301). Studies on perception show that it is an active process, our expectations or preconceived ideas, colour what we see. An illustration is when we encounter ambiguous information. Where there are equally plausible explanations for a figure I5 I4 I3 I2 Il or E D C I3 A , for example, mindless control and automatic processing is invoked. We process in terms of practice and familiarity resulting in inattention to the alternative explanations on offer. When we become aware of the ambiguity of the figure, we become aware of the environmental stimuli, in this case whether we are expecting to see a line of numbers or letters, and conscious interpretation of information within the context of what we see occurs. Mindful and controlled processing informs what we perceive 'Mindfulness is a conscious awareness of the larger context through which information is understood' (Langer, 1992 p301).

Successful learning can result from elaborative learning, however, Kintsch (1994) suggests that the major determining factor in learning text is how much it overlaps with prior knowledge. It would, therefore, seem reasonable to suggest that for successful learning to occur within a knowledge domain that it is desirable to be able to assess how closely matched the prior knowledge of a domain is in individuals and groups of learners. The repertory grid is put forward as one way

which could do this. If the themes are comparable, for example, then it is likely that the novice and expert group have an overlapping or shared frame of reference (Hutchinson, 1998). Another important factor is that it relies fundamentally on the generation of constructs from the individuals themselves rather than those presented by the experimenter. This is with the premise that constructs that subjects generate are their own and in some way important to them and therefore may be more effective for learning than explicitly stated information. This again fits in with the argument that active participation in the learning process is more effective for learning than passive knowledge absorption (Kintsch, 1994).

3.5.3 The repertory grid as an overview

Anderson (1995) explores the idea of elaborative processing and the usefulness of giving topics in advance, advance organisers as they are called by Ausubel (1968). Frase (1975), for example, found when comparing two groups, that the experimental group when given topics in advance to think about before a text reading task and answering questions on the text, did much better than the control group in answering the questions. Kintsch (1994) argues for the benefits of the active engagement of the mind and suggests that content overlap and prior knowledge and the application of advance organisers within the learning context facilitates learning. In the context of understanding text he puts forward the argument that background knowledge is important. He strengthens his argument by putting forward Vygotsky's concept of proximal zones, that is, that there are 'areas at the borders of what is already known where future growth or learning can take place successfully' Kintsch (1994 p297).

Kintsch's (1994) research on reading is by extension relevant here. He argues that readers only absorb what they are reading at a surface level if it is not presented in a sufficiently challenging way. Readers may think they understand the text but in fact their understanding is incomplete. He concludes that for understanding to occur at a deeper level more intense situational processing

needs to be encouraged. Situational processing involves the situation described in the text being represented separately and forming a supplementary store of prior knowledge, that is, inferred, schema-based information (Stevenson, 1993). 'Learning requires the active construction of a situation model, integrating text information with the reader's prior knowledge'. (Kintsch, 1994 p302). Developing this argument, for readers read students studying psychology, it would follow that an activity or indeed a whole course 'that spells everything out and explains everything to the last detail does not leave enough room for constructive activities on the part of the learner' (Kintsch, 1994 p301).

The idea of constructive learning is central to why the repertory grid was used here. The psychology topics used as elements provide an overview of the course, the repertory grid technique was used to tap into pre-established knowledge and to identify intuitive theories about the topics. It provides the advance organisers which help make connections with the topics to be studied and begins the process towards deeper levels of learning by encouraging less concentration on the surface features and more impetus to look for connections.

3.5.4 Motivation and learning

Finally, a brief note on motivation, 'a major determinant of learning' (Stevenson and Palmer, 1994 p133), which links in with the learner-centred idea discussed above and concept of self-generation of pre-established knowledge, self-efficacy and relevance. The kind of negative (and defensive) experiences and beliefs in learning generated by previous negative learning experiences or emanating from a perception of lack of innate ability are barriers which need to be removed to generate motivation and enable new learning to begin.

The grid does not 'teach' a topic, rather it relates the concepts to the novice's personal experience in order to facilitate the process of making sense of the topic. Innovative work has been pioneered by Thomas and Harri-Augstein (1985) and

Harri-Augstein and Thomas (1991) using PCT and repertory grid techniques to support self-organised learning which is beyond the scope of this study. One example which relates to motivational aspects and which is relevant here was Thomas's use of a form of intensive 'conversational' repertory grid to explore the topic of statistics in social sciences which students found a difficult topic to learn. He used statistical concepts, for example, 'probability', 'mean' and 'frequency' as elements. Thomas argues that this enables exploration of thoughts and feelings about a topic in the individuals' own terms, thus moving towards 'making the topic more relevant, positively interesting, and therefore more available to be learned' (Thomas and Harri-Augstein,1985 p39).

The group of students who attend the Teaching Certificate course offer all the opportunities and challenges of adult learners, defined here as an older student beyond the age of twenty, who typically are in, or have experience of, full-time employment. Curzon (1997) suggests that the older student comes to education with a variety of problems which are unique to the adult learner. For many of the students the Teaching Certificate is the first time back in formal education since their mandatory secondary education. Reece and Walker (1997) emphasise that learners, in whatever environment, should be treated as individuals. However, they suggest that adult learners come to any course with four prevalent expectations.

Adult learners have generally chosen to return to education of their own volition, therefore, there are expectations of being *taught*, and that they *will* learn. They also expect to work hard both within the learning environment and in private study. They expect the work to be relevant to them in their vocational or occupational areas and, finally, adult learners expect to be treated as adults rather than have the 'school experience'. Often adult learners will express negative feelings related to their experiences in compulsory education many of which relate to a perceived

or actual lack of respect shown to them. All this has a bearing on beliefs and learning.

It has been assumed by educational theorists like Knowles (1990) and Mezirow (1990) that adults like to learn in a different way to that used with children. That is, adults prefer an andragogic approach, that is they prefer a more self-directed, student-centred approach to learning, rather than a pedagogic, or teacher dominated approach. Practical experience, particularly with larger groups of students, has shown, however, that adult learners like those in this study, far from demonstrating the desire or motivation to work autonomously, initially tend to expect teaching in a way more reminiscent of pedagogy. The tendency for many adult learners to expect to be spoon fed and demand an didactic approach is perhaps understandable as it is a comfortable, undemanding approach to teaching for both the expert (the teacher) and the novice (the learner). In terms of developing confidence and thinking it is the teacher's role to facilitate the development from dependent to more independent learning, to encourage learners to assume responsibility for their own learning, to think about the learning process, develop the skills of reflection and actively participate in the learning process.

3.6. Expertise

The issue of a novice/expert divide can be contentious and before looking at the construct 'novice-expert', further background to the novices is given below to help set-the-scene.

3.6.1 Brief background to the student teachers (novices)

The abilities, qualifications, experience and motivation of the groups who enrol on the initial teacher training certificate vary enormously. The characteristics of the group are shown in Table 3.1 and indicate the wide range of occupations of the

Table 3.1 Characteristics of the Student Group

Subject (S) Number [n=20]	Occupational Area	Teaching Subject	Sex M/F	Age	Previous knowledge of psychology pre course (self-rated 1-10*)	Previous knowledge of psychology post course (self-rated 1-10*)
S1	Eclectic	Liberal arts/Humanities/ Human Studies	M	36	5	5
S2	Chef	NVQ Catering/Hygiene	M	29	1	1
S3	Part-time Lecturer	Creative Studies (Fashion)	F	35	1	1
S4	Beauty Therapist	Beauty Therapy	F	20	3	4
S5	Catering	Catering	M	23	1	1
S6	Counsellor	Anxiety Management/ Relaxation	M	47	5	5
S7	Mature Student/ p-t English Lecturer	English	F	43	4	4
S8	Driving Instructor	Driving Instruction	M	39	1	1
S9	Primary Teacher	Crafts	F	46	5	5
S10	Driving Instructor	Driving Instruction	F	37	1	2
S11	Accounts Office Manager	Spanish/EFL	F	43	4	6
S12	Beauty Therapist	NVQ Level III Beauty Therapy	F	21	5	6
S13	Tutor/Trainer Adult Literacy	Basic Education Adult Literacy	F	53	5	5
S14	Care Worker	Adult Learning Disabilities	F	25	8	4
S15	Hairdresser	Hairdressing	F	23	1	3
S16	NNEB Childminder/Trainer	Childcare/Basic Training	F	36	1	1
S17	Biomedical Scientist	Science/Maths	F	39	1	1
S18	Hotel and Catering	Restaurant Studies	F	23	2	3
S19	Registered General Nurse	Nursing Studies	F	25	7	4
S20	Registered General Nurse - ITU	Nursing Studies - Critical Care	F	35	3	1

* 1 Virtually no knowledge - 10 in-depth knowledge

students. Entry onto the course is by informal interview and the prerequisites for admission are a qualification in a specialist area to NVQ Level III (A Level equivalent) or equivalent, or substantial training experience in a vocational/occupational area together with a minimum of thirty hours teaching practice over the duration of the course. The definition of "or equivalent" means that students with all levels of ability and from all kinds of backgrounds are represented on the course. Students come to the course with differing educational and vocational qualifications and experience. Teaching areas range from practical and vocational areas such as crafts, beauty therapy and nursing to the more traditionally academic areas, such as biomedical science, history and theology. The course is always well represented with the 'new' vocational areas, for example, computers, media studies and sports science. Qualifications are consequently on a broad continuum, including doctorates.

3.6.2 What makes an expert, an expert?

An expert is a skilled person in any domain ranging from simple motor skills to complex cognitive thinking and thinking involves both conscious and unconscious processes (Stevenson et al, 1988).

Anderson (1995) reviews the characteristics of the development of expertise, how it is transferred from one domain of expertise to another and its implications. He identifies three stages in the development of expertise, the first of which is relevant here. He argues that the cognitive stage involves the development of declarative knowledge. Within the nature of expertise the explicit use of declarative knowledge 'knowing that' precedes the application of procedural knowledge, 'knowing how".

Anderson (1995) argues that expertise does not develop in the same way in all the domains, instead it is the particular domain which suggests the type of expertise. 'Experts adapt themselves to the characteristics of a particular domain' (Anderson,

1995 p289). He maintains that some domains have different strategic approaches, optimally suited to that domain and which may be applied generally to the way knowledge is organised. For example, in certain domains which have few established principles, such as computing, the differences between thinking in novices is similar to that of experts in that it has a initial broad base. In domains such as physics and geometry which have accepted, established laws and principles is easier to predict differences in expert and novice approaches. This equates with the idea that experts and novices will have quite distinct ways of thinking in these domains. Chi, Feltovich and Glaser (1981) in their research on how expert and novice physicists classified physics problems into categories, found that experts thought in top-down ways, involving more compact theoretical principles. On the other hand, the novices looked for detail and relied more on surface features. These results amongst others (see Lesgold, 1988, on studies with radiologists and Anderson, 1995, computer programming) suggests that experts thinking extends beyond the meaning of the words presented, a recognition of the underlying theory described by the words.

Experts' categorisation, therefore, involves theoretic thinking emphasising the importance of declarative or conceptual knowledge (Stevenson, 1993). Anderson (1995) supports this argument suggesting that most experts develop their thinking from reliance on surface features to reasoning forward and using underlying principles. These aspects have some bearing on the results found in this study and will be considered in relation to the findings.

Psychology, the domain in this study, though sometimes contradictory and multifarious (take for example, the difference in the perspectives of learning theories such as behaviourism and cognitivism) contains established laws and principles and in this sense it is aligned with the scientific or mathematical domains. It also has its own technical language which enables experts to represent conceptual knowledge more economically and to consolidate thinking.

On the other hand, Anderson (1995) suggests that jargon is a hindrance to novices' conceptualisation. He believes that an important dimension of growing expertise is the development of a set of new constructs to represent key aspects of thinking. Again, these aspects are relevant to this study and will returned to.

Stevenson (1993) suggests limitations in Anderson's definition of expertise in that she argues that declarative or conceptual knowledge is under-represented. She argues that the declarative knowledge involves adaptive knowledge, a type of knowledge essential in the description of an expert. Whilst Anderson's model of the acquisition of expertise assumes that automatic procedures are used as opposed to the application of deliberate strategies to declarative knowledge by novices, acquisition of declarative (or conceptual) knowledge is an important characteristic of expertise and is essential for transferring procedural knowledge to new situations. Anderson's model assumes that novices think using domain-free strategies functioning on declarative knowledge. Experts, however, have domain-specific strategies which operate automatically when they are within their knowledge domain. These domain specific strategies are called 'production rules'. They are 'if-then' rules. Declarative knowledge of the stimulus conditions is coded in the 'if' part of the rule and the action required in those conditions are encoded in the 'then' part of the rule. Hence, the relevant conditions in the environment activate the 'if' part of the rule causing the action to be carried out. These production rules are what enable experts to execute actions automatically, in the appropriate conditions.

Holyoak (1991) distinguishes between adaptive expertise as meaning-rich knowledge, involving the use of concept learning, and routine knowledge which is made up of specific rules and automatic procedures used in the application of procedural knowledge and not involving the understanding of the concepts in a particular domain. Stevenson (1993) argues that expertise is domain specific and that the use of declarative knowledge specific to the domain underlies the

difference between routine and adaptive expertise, that expertise in declarative or conceptual knowledge needs to be there for a full understanding of the concepts of the domain. This may involve analogical thinking defined as a process whereby knowledge is transferred from one domain to another (Holyoak, 1991).

Schneider, Körkel and Weinert (1989) argue that there are distinct differences between experts and novices, and that their findings support the assumption that this was not based on levels of tested intelligence. Rather it is the subjects' prior knowledge and not their general intelligence that is the crucial factor in explaining learning. For example, low aptitude soccer experts (aged 11) comprehended a text about soccer better than the same aged soccer novices, with high aptitude. The importance of domain-specific knowledge would suggest that prior knowledge should be considered in the design of a programme of study. The conclusion that can be drawn from this is that it seems important to identify novices pre-existing knowledge, and then to find ways of exploiting their capabilities in the domain of psychology. On the recommendation of Walker (1987), Schneider et al (1989) suggest that "one way to teach general cognitive abilities such as organising, inferencing, and comprehension monitoring is in the context of specific knowledge domains" (Schneider et al, 1989 p 311).

In summary, this chapter explored three important constructs underlying the study: beliefs, learning, and expertise. It argues that we have intuitive beliefs or theories and recognises the importance of these implicit theories for learning. What we believe prior to a course of study, therefore, has important implications for how we take on board new learning. Sometimes the implicit theories inhibit new learning. The trouble is that we are not always conscious of our implicit theories. It is argued that the method used in this study would be effective in revealing those tacit, implicit theories. Then, when we are able to recognise what they are, they are accessible and potentially receptive to change.

Learning was defined and discussed in terms of prior knowledge, advance organisers and motivation. The method could provide an overview or prerequisite advance organisers on which to build new learning. Motivation is part and parcel learning and the method, with its' andragogical aspect of active engagement, challenge and personal relevance, is put forward as fulfilling these criteria.

Finally, expertise was discussed and it was suggested that experts think in qualitatively different ways, recognising that they can infer underlying theory beyond surface features. They can conceptualise knowledge and consolidate thinking using domain specific language in a more effective way than novices. Expertise is characterised in domain specific terms. It was concluded that experts are more adept in employing declarative knowledge because of their apprehension of the domain, rather than in any global understanding sense.

The repertory grid method is suggested as a technique which will tap prior-knowledge and which will separate the experts from novices in the specific domain of psychology.

CHAPTER 4

Analysis of data, method and results

4.1. Methodologies of the study

Essentially, analysis of the grid involves examination of a) the content and b) the structure. The constructs elicited during the grid completion process provide qualitative data for content analysis, and contribute also quantitative data. Data for structural analysis is provided during the process of selection of elements within the triads and completion of rows in the grid. This is presented in nominal terms by a tick (✓) for a rating of 1, or a cross (✗) for a rating of 0. The selection denotes how the subject perceives the relationships between the elements.

The structural analysis also refers to subjects' differentiation between constructs. That is, it compares how the subjects choose the constructs, which constructs they choose, the change in the constructs, and between groups. In this study the content of the constructs concerns the qualitative method of analysis, while the use of constructs and the structural relationships between elements refers to the quantitative method of analysis.

A wide range of possible relationships could have been explored (Beail, 1985, Bannister and Fransella, 1986, Denicolo and Pope, 1997, Stewart, 1998). The following sections show how the grids have been analysed in terms of qualitative data and the use of multidimensional scaling.

4.2. Qualitative Analysis - The content of the constructs

The content of the constructs is explored using content analysis involving the use of objective, standardised steps for the analysis of content (Phares, 1991), to produce a qualitative category framework for classifying the constructs used to describe the similarities and differences perceived during the elicitation procedure (Stewart, 1998). The analysis is qualitative in the sense that the constructs elicited from the subjects involved interpretation and classification by the researcher. In analysing subjects' cognitions, a crucial assumption was that the descriptions provided by the subjects, and the meaning of the constructs were similar. This is something which the final chapter will discuss further.

4.2.1 Content analysis technique

Content analysis is a useful technique for aggregating and classifying meanings of statements such as those identified in a group of grids. It involves attributing meaning to the constructs produced during the elicitation process. In the study a series of categories was selected for the subjects' constructs using a process of progressive refinement of the meanings of the constructs until a manageable number of categories was found into which all the constructs were assigned. The content analysis process involves painstaking effort and time and the phases of data analysis were systematic and comparable to some of the strategies suggested for use in other analyses of qualitative data, for example, those used in grounded theory (Bartlett and Payne, 1995). The process involved developing numerous categories and successively refining the categories until they were saturated, that is, they could stand no more refining, and providing definitions for the final formulation of categories.

The classification system was devised from a grounded approach which meant that categories were developed by identifying common ways of thinking as reflected by the constructs elicited at both times of the grid. The classification

process used objective, standardised stages as advocated by Phares (1991), and suggested by Bartlett and Payne (1995). It was developed by identifying common areas of beliefs reflected by the personal construct dimensions elicited by the grids.

A decision was taken to adopt a re-elicitation strategy, that is subjects produced their own construct labels at both time 1 and time 2. This resulted in unconstricted constructs generated at both times of the grid, before and after the intervention, using the same elements. Thus, potentially completely new constructs were possible after the intervention. The classification method, therefore, was most consistent with Kelly's intuitive idea of a dynamic and experiential psychology. Most published studies using the repertory grid over a period of time, however, provide constructs originally elicited at the initial grid for subsequent application or applications of the grid (see Wilkinson, 1982, Arnold and Nicholson, 1991). The process of unconstrained elicitation at both times 'has some important implications for the analysis of change' (Fournier, 1995, p151). It is more limited in scope for quantitative comparative analysis of change, for example, individual construct systems within the grids cannot be compared if the constructs are different and the comparative content analysis on the nature of constructs elicited at both times is an important indicator of change. Fournier's (1995) longitudinal study, for example, looked at the trends in new and disappearing constructs over the period of time, therefore, she was able to make comparisons in a more direct way. The effort in this study in the volume of work involved in sensitively interpreting the constructs at both times of the grid were taken on board because of the advantages of allowing the subjects to have unconstrained elicitation. This was consistent with the theoretical framework of PCP, but moreover, it meant that in a study which wanted to look at change in group behaviour, the scoring was not biased by constraints in the parameters of thinking. It was felt that a truer picture of change in thinking could be generated if

'free' elicitation was offered. If the subjects had been restricted by the provision of constructs (even if these were previously their own from the previous grid) then the responses generated would have been constrained and, therefore, limited. Thus, it was felt worth the extra volume of content analysis as it enhanced validity and gave a more reliable assessment of change in learning.

A wide variety of elements have been used to elicit constructs. Thomas and Harri-Augstein (1985) list a range from Descriptions of Pain to Love Spoons! To my knowledge no other study has used these psychology topics or similar ones, therefore, there were no predetermined categories in mind.

4.2.2 Content analysis and reliability

Content analysis remains, regardless of conscientious efforts to conduct the process as 'scientifically' as possible, a subjective process involving interpretation and categorisation. It generates quantitative data that is based on classification systems and qualitative judgements and is, therefore, judgement-based nominal data (Holsti, 1968). There is a problem of objectivity with judgement-based coding of constructs into classifications. It is important to be aware of the coding process and to report and explicitly state an estimate of the reliability of the coding process based on a sample of the initial judge's coded responses. To ensure interjudge reliability, an adequate classification system that is as unambiguous as possible, which gives operational definitions for coding categories and clear directions for judges are all important in minimising bias (Perreault and Leigh, 1989).

Independent judges can disagree in the way categories are devised to provide a classification procedure for a set of statements and in what constitutes a term or idea to be categorised. These two aspects were resolved in this study by negotiation and discussion. Judges can also disagree in the way in which constructs are assigned to categories. It is, therefore, important to verify the

interpretation and classification as reliable, or to invalidate the analysis as a person's idiosyncratic judgement. The Perreault-Leigh Index is a measure advocated for use with repertory grid data (Jankowicz, 1994). Perreault and Leigh (1989) devised an inter-rater reliability index developed from Cohen's Kappa, a reliability measure they describe as a conservative measure. Cohen's kappa involves fixed marginal frequencies, which they argue is most appropriate when there is reason to expect set response patterns and when judgements are based on established standards. Judgement-based, or coded nominal scale data, such as that in content analysis, requires a measure of reliability which assumes free marginal distributions such as that used in the Perreault-Leigh Index which is less context-specific (Perreault and Leigh, 1989).

4.3. Multidimensional scaling (MDS)

Multidimensional scaling methods can be applied to data produced by the repertory grid. Multidimensional scaling (MDS) is a technique that visually illustrates clusterings of elements, graphically plotting the relationship between the elements in the multidimensional space. Multidimensional scaling on the data provides a way of internally analysing a matrix of similarity (or of dissimilarity) (Young and Harris, 1993). The grids produced a similarity matrix for each subject and these are analysed using a multidimensional scaling technique implemented on SPSS (Norusis, M. J./SPSS Inc., 1993). The results were used to examine global changes in conceptual organisation as a result of learning.

The similarity measures are assumed to be representative of the psychological association between the topics. The binary ratings (1 or 0) provide the distance matrices, giving a measure of psychological distance between the concepts and the output reveals latent structures in the data. The structure of the statistical relationship between the concepts is represented in multidimensional space from which the cognitive structures of the subjects may be inferred (Stevenson,

Manktelow and Howard, 1988). The more frequently associated topics are linked closer together in space and form clusters of topics, the more they indicate commonalities between the topics.

The advantages and limitations of the multidimensional scaling technique are those related to any scaling technique, that is, they are interpretative rather than affirmative. There are limitations to the use of multidimensional scaling techniques for knowledge elicitation and inferring cognitive structure. Firstly, the mapping in multidimensional space reflects the ordering derived from statistical techniques, that is, the distances between the topics are relative, rather than absolute. Secondly, the structures are subject to anomalies which result from the scaling and are complex in terms of interpretation (Stevenson, Manktelow and Howard, 1988). The variables (the topics) and their units of measurement and values associated with them are subjective (Young and Harris, 1993). Having accepted that, multidimensional scaling is used here to see if there are any patterns can be observed in the cognitive organisation of the elements as provided by the repertory grid technique and whether these too will point to differences in novice and expert thinking and support or confound the discussion on experience and learning.

Method

4.4. Subjects

Subjects were 20 trainee teachers, 15 female and 5 male, aged 20 - 53 years.

The group was an opportunity sample of 20 usable grids, that is, subjects who completed the grids at both initial (T1) and subsequent (T2) testing. The sample came from students who attended the same course but on two different days. There were no significant differences between the groups other than the day of

attendance. They were trainee teachers on a part-time initial teacher training course at a College of Further/Higher education. Subjects were mature students who worked as part-time or full-time teachers in further education and nursing or in industry, business or commerce (collectively called 'novices'). The characteristics of the student/novice group are shown in Table 3.1 (page 45). Each student in the group rated their level of previous knowledge of psychology, the overall mean for the group was 3.2 pre-course, and 3.15 post-course. This was on a 1-10 point scale with 1 being 'virtually no knowledge of psychology' and 10 'in-depth knowledge of psychology'.

In addition, a sample of ten psychologists, (collectively known as 'experts') were used to provide a comparison group. The sample consisted of three female and three male psychology lecturers and two female and two male psychology researchers who also taught psychology. Between them, the experts covered a range of research specialisms in psychology. The psychologists' age range was similar to the student group (24-55 years). The experts completed one grid and did not go through the intervention. In addition, as the lecturer on the programme delivering the psychology component, I completed two grids at the same times as the student group, one at the beginning and one at the end of the psychology component of the course, although only the first grid was used in the analysis.

The novice group and the expert psychologists were instructed separately by the same experimenter. Neither group was prepared for the task of completing the repertory grid in advance. None of the novices had previous knowledge of what was expected. Some of the experts had previously encountered the repertory grid; however, not in this particular format.

4.5. Materials

4.5.1 Questionnaires

A simple pre- and post-questionnaire was designed to record student self-ratings of the level of their knowledge of psychology on entering the course on a scale of 1 - 10 points, with 1 being 'virtually no knowledge of psychology' and 10 'in-depth knowledge of psychology'. The questionnaire was conducted as an initial needs analysis for the course and to provide an estimate of the level of entry behaviour in relation to the novices' knowledge of psychology. The information was necessary to help establish the level of the student, which had implications as far as their 'novice' status was concerned. Occasionally, because of the nature of the teacher training programme, 'experts' in psychology have been amongst the students taking the course and this would have been a factor which could have affected the results. The questionnaire asked for age, sex, occupation and teaching area (Appendix 1). It also contained questions that are not specific to this study. The students' expected degree of relevance or usefulness, enjoyment of the psychological aspects of their teaching and learning and level of difficulty perceived were also included for information and scaled using a similar 1 - 10 point scale. They did not form part of the study at this point in time.

4.5.2 Repertory grid

The grid consists of a matrix: the columns representing the elements and the rows providing the designated spaces for allotting dichotomous scores, a tick (✓) or a cross (✗). An example of a grid is shown in Fig. 4.1 overleaf. Twelve representative concepts (single words or two word phrases) were selected from

Constructs (similarities) (✓)	Visual Perception 1	Social Perception 2	Memory 3	Learning: Behaviourist 4	Learning: Cognitive 5	Intelligence 6	Motivation 7	Communication 8	Teacher Characteristics 9	Personality 10	Group Dynamics 11	Social Influence 12	Constructs (differences) (*x*)
1			○						○	○			1
2				○	○	○							2
3	○			○			○						3
4		○			○	○							4
5										○	○	○	5
6		○					○	○					6
7					○		○			○			7
8			○						○			○	8
9	○							○			○		9
10		○	○			○							10
11				○					○		○		11
12	○							○				○	12

Fig 4.1 A repertory grid

the list of topics of teaching sessions to provide the elements for the grid, for example, Visual Perception, Motivation. These were written along the top of the grid and numbered 1 to 12 (figure 4.1). The concepts were offered in the order in which they featured in the course's scheme of work.

Alongside the matrix are two columns with spaces for words or phrases to be written on both poles. One designated for the similarity pole of the construct, the other for the contrasting or difference pole. These were also numbered 1 to 12. Each concept was presented in triads across the grids in such a way that each concept was compared with either 5 or 6 other concepts. The ellipses in the rows of figure 4.1 indicate the three elements in each triad used in the study.

4.6. Design and procedure

4.6.1 Questionnaire

The novices' were given the initial questionnaire upon commencement of the course, at the beginning of the introductory session/teaching session. At this stage they were informed that this was part of a study on student perception and learning and that they would be told more about it later in the course. The questionnaire was also given upon completion of the course of psychology. Debriefing was completed at the end of the course and the results of the questionnaire were discussed with the students.

4.6.2 Repertory grid design

4.6.2.1 Matrix

A 12 x 12 repertory grid was designed for both testing times, pre-programme and post-programme. Previous research (Tindall, 1994) and pilot work suggested that the 12 x 12 design was an acceptable number of row and columns for comfortable completion of the grid within the constraints of groups working in a classroom context. This design also fitted in with the randomisation of the triads

described below in that it was possible to randomise equally across the columns and rows. The 12 construct dimensions and 12 scores per construct dimension led to a matrix of 144 data points per subject per grid.

4.6.2.2 Elements

Twelve representative psychology concepts taken from the list of topics for the course were used as the twelve elements and were supplied across the top of the grid. The same twelve elements were used on both occasions, for novices and for experts. Chapter 2 detailed the reasons for the selection of the elements.

4.6.2.3 Triads

The stimulus items (elements) were presented in triads in each row. The triad method for eliciting constructs was based on Kelly's theory as to how constructs are initiated (Fransella and Bannister, 1977) as previously discussed. They are denoted by ellipses and are presented in triads. The elements that provide the initial stimulus for the construct elicitation in each row were randomised, although the elapsed time between the completion of the two grids would help dissipate order effects (Cooligan, 1995).

The selection of triads was restricted in that each row could have only three identified elements, indicated by ellipses, from which constructs were elicited. The other selection procedure for the triad involved even allocation across the columns so that individual columns (representing elements) were not favoured and each column had an equal number of three ellipses. Apart from these restrictions the three ellipses were randomly allocated to each row.

Some tendency for subjects sitting close to each other to look at each others' grids and to copy constructs had been noted in pilot work. Randomisation of the order of the rows would overcome this difficulty. It was not possible to totally isolate individuals in the classroom context beyond providing sufficient private

space and asking them to complete the grid alone, emphasising that the task required individual perceptions rather than consensus.

4.6.2.4 Constructs

The constructs were elicited in an unconstrained way by the subjects during the process of completing the grid at both T1 and T2. Kelly's original dichotomous form of the grid (Pope and Keen, 1981) was used. The previous Chapter detailed the rationale behind this decision.

4.6.2.5 Scores

In the context of this study Kelly's simple dichotomous, two-point scale, a tick (✓) or a cross (✗) were used. Subjects first identified the two similar and one difference element within a triad. Then they identified the two poles of the construct. After that, they allocated the remaining nine elements in the row to one pole of the construct by using a tick (✓) if they thought the element was similar to the two similar elements in the triad and a cross (✗) if they thought the element was similar to the different element in the triad.

4.6.3 Tasks

There were two conditions comprising an identical task for the novices in this study. The experts completed the same task but on one occasion only.

The novices completed the task before and after the psychological input of the course, a time span of six months. The second grid was, therefore, completed after the relevant psychological concepts had been covered. The experts completed the task at approximately the same time as the second grid of the students. The task was to complete the repertory grid using the elements provided. The constructs were freely elicited, in other words, the subjects were able to write down how they perceived the similarities and differences in their own words.

The subjects were informed that the purpose of the study meant it was important that the process of eliciting constructs involved individuals within a group responding to the concepts in their own personal way. In order to allow maximum personal freedom and to minimise anxiety about self-disclosure, the groups were invited to put their names on the repertory grids only if they wished to do so, to leave it anonymous or to use a pseudonym if they preferred. They were also asked to contribute their thoughts about the topic or any aspect of the grid and on the process of completing the task. These have been included in the verbatim transcriptions. For analysis purposes, however, the grids were numbered and the same number kept for both T1 and T2. This ensured that anonymous grids could be identified at T2.

4.6.3.1 Standardised instructions

Standardised instructions on how to complete of the repertory grid were explained to the groups and also given to them in written format (Appendix 2).

Subjects were asked to complete the grid using the three selected elements or topics in each row denoted by ellipses (rings). They were asked to specify *an important way in which two of them are alike and the third different.* Alongside the grid matrix were spaces for constructs to be written on both poles (similarity and difference). Ticks showed that two elements were considered similar, a cross identified the contrast element. Subjects were asked to write their ways of thinking about the topic under the appropriate columns: the left hand side, designated 'Constructs (similarities) (✓)', for the way in which they considered the topics to be alike and the right hand side, under 'Constructs (differences) (✗) for the way in which they considered them to be different. They were asked to place ticks (✓) in the two appropriate rings and a cross (✗) in the remaining ring.

The subjects were instructed that a single word may be sufficient to describe the construct, however, they could use a phrase or even a sentence if needed. Each

row was to be completed in this way. Having completed the triads for each row in this way, subjects were then asked to return to the first row and fill in the remaining boxes with a tick or a cross according to whether they felt each element fitted more with the similarity or the difference pole.

The second grid (Task 2) was completed in the same way.

The whole process was illustrated in a step by step approach on an overhead projector to all the novices. Examples of dichotomous pairs unrelated to this study so as not to influence the subjects' choice of constructs, but sufficient to show an example of the process were given to the subjects. Aspects of the process were repeated as necessary to ensure comprehension as far as possible. The researcher was on hand throughout the process to clarify any aspect of the process of completing the repertory grid.

During the elicitation process a sample of subjects were consulted for further clarification of the meaning of the construct where this was not immediately obvious to the researcher and some subjects highlighted on the grids what they identified as the salient points of their constructs.

Subjects were given 1 hour to complete each repertory grid. An example of a completed grid is shown in fig 4.2 overleaf.

Constructs (Similarities) (✓)	Visual Perception 1	Social Perception 2	Memory 3	Learning: Behaviourist 4	Learning: Cognitive 5	Intelligence 6	Motivation 7	Communication 8	Teacher Characteristics 9	Personality 10	Group Dynamics 11	Social Influence 12	Constructs (differences) (x)
1 subjective	x	✓	⊘	x	x	x	✓	✓	⊘	⊘	✓	✓	1 objective
2 how people learn (process)	x	✓	x	⊘	⊘	⊘	✓	✓	x	x	✓	✓	2 what they learn with (product)
3 active processes	⊘	✓	x	⊘	✓	✓	⊘	✓	✓	✓	✓	✓	3 passive processes
4 mental processes	✓	⊘	✓	✓	⊘	⊘	✓	✓	✓	✓	✓	✓	4 social processes
5 influence of other people	x	✓	x	✓	✓	x	✓	✓	✓	⊘	⊘	⊘	5 the individual more
6 more overt signals	✓	⊘	✓	✓	✓	✓	⊘	⊘	✓	x	✓	x	6 more subtle sources
7 emotional	x	✓	x	✓	⊘	x	⊘	✓	✓	⊘	✓	✓	7 not involving feelings
8 phenomenological	x	✓	⊘	x	x	x	✓	✓	⊘	x	✓	⊘	8 Cognitive (positivistic)
9 interaction between people	⊘	✓	x	x	✓	x	x	⊘	x	✓	⊘	✓	9 not interpersonal - one way
10 Cognitive psychology	✓	⊘	⊘	✓	✓	⊘	x	x	x	x	x	x	10 social psychology
11 'nurturist' argument	x	✓	x	⊘	✓	✓	✓	x	⊘	x	⊘	✓	11 'nativist' argument
12 group	⊘	✓	x	✓	✓	x	✓	⊘	✓	✓	✓	⊘	12 individual

Fig 4.2 A completed repertory grid

Results

4.7. Categorisation of constructs

The process of classifying the constructs was painstaking and systematic, involving several stages. The grids produced in all 1224 construct poles from 612 rows. The sequence of stages was as follows: transcription of the data from the grids, initial identification of the construct dimensions, sorting of the constructs, followed by a succession of sorts to further refine the constructs into categories, coding and final classification with operational definitions. On this basis six main themes of construction were identified after all the categories were saturated plus a 'remaining' category for the constructs which did not reach 15% of the overall classification.

First, the grids were transcribed *verbatim* into a Microsoft Access database. Second, once the grids were transcribed the process of definition of the constructs involved repeatedly reviewing and interpreting the essential semantic meaning of the construct. Both poles of the construct were considered so that the meaning of the construct could be understood as clearly as possible. This simultaneously provided the researcher with increasing familiarity with the constructs and resulted in achieving more satisfactory groupings of the constructs into themes. Once a semantic meaning was attached the construct poles were defined and labelled as construct dimensions. The analysis then involved coding the constructs and repeated sorts of the construct data until the categories were saturated and homogenous categories (Appendix 3) were operationally defined and labelled. The coding commenced with the initial sort which identified 109 categories (Appendix 4a), the second sort collapsed this down to 51 categories (Appendix 4b) and so on successively reducing (Appendix 5) until six main themes were identified (Appendix 3). Burke and Noller (1995) highlight in their study using content analysis of grids Landfield's (1971) caution that a construct

should not be categorised if the meaning of a construct was unclear to the researcher. One 'miscellaneous' category was, therefore, utilised. The 'miscellaneous' category (Theme VII) contained constructs which were unclear to the researcher, unable to be assigned to any category, or assigned to categories which had less than 15% distribution over the whole sample.

4.7.1 Interjudge reliability

Repeated sorts were conducted for two reasons, 1) to successively refine categories 2) to minimise researcher bias. The constructs elicited by the novices, at T1 and T2, and by the experts were content analysed using the classification method. The initial step in estimating interjudge reliability was conducted by the experimenter after all the constructs were coded and assigned to categories for the first time. It is important to complete and undertake an iterative process, that is coding and evaluation, taking corrective actions, and re-evaluating to identify coding problems as early as possible, and to correct them before fundamental complications arise (Perreault-Leigh, 1989). The first sort produced 109 categories (Appendix 4a) which was considered too great a number to produce a useful classification framework. The process was then repeated using an independent judge to assess the adequacy of both the construct labels and categories used to encompass the substantive meaning of the construct on a sample of the constructs. When a difference occurred between the two raters in either the labels assigned to the construct, or in a category itself, the operational rules used to code the data were clarified or redefined and new categories were reformulated as necessary until agreement was reached. The process was repeated and categories were refined and altered until the process achieved satisfactory agreement using the Perreault-Leigh Index (1989) on a sample of the final sorting and classifications by an independent rater on the experimenter's codings. Finally, the experimenter completed a final evaluation on the whole sample of the codes for each construct without reference to the previous coding to check for reliability over time which resulted in a .88 agreement with the initial test.

Qualitative analysis

4.8. Qualitative data: content of the constructs

The construct dimensions produced six classifiable themes. The theme labels and dimensions of themes are described in Table 4.1. A theme is defined as a group of, usually, dimensional representative constructs, with a common content and which occur in at least 15% of the subjects' constructs (Corporaal, 1991). There was one miscellaneous or 'remaining' category. The 'miscellaneous' category, Theme VII, consisted of the words and terms used by the subjects which could not be classified under the main themes or which did not form a substantial theme. A theme which was shared less than 15% of the subjects (Corporaal, 1991), for example, the 'teaching/learning situation' was shared by just 13% of the subjects and was, therefore, not classified as one of the six main themes but placed under the 'miscellaneous' category. There was a simple percentage agreement between two raters of 81.2% and the Perreault-Leigh Index inter-rater reliability measurement discussed earlier, provided a level of agreement of .88.

4.8.1 Themes and representative constructs (similarities and differences between novices and experts)

The qualitative part of the analysis relates primarily to the first research question. This was to see if beliefs about psychology topics in teaching and learning could be identified and quantified using the repertory grid technique. Each of the main themes is examined in turn. Available literature was reviewed to try and identify where the themes may have previously been found. Not unexpectedly, because of the idiosyncratic nature of the elements used in this study and lack of previous research using psychology topics, there were only a limited number of similar themes found in previous studies. Those that were found, and psychological and educational theory, were used to support the existence of the themes.

Table 4.1 Theme categories with representative constructs and descriptors

Theme Code	Theme (main category)	Characteristics of theme (with examples of dimensions and descriptors) NB the bulleted ordinary type are dimensions, the bulleted italicised type are descriptors which are also dimensions, and the descriptors are in italics.
I	Interactional	Characterised by: individual versus group • self versus others *"self aims – relating to others"* • interpersonal versus other people *"can be done one to one - more people involved"* • individual versus group interaction *"individual/private - important in interactions"* • *"individual – group"*
II	Theoretical	Characterised by: object versus action • concepts *versus* actions *"hypothetical entities (concepts) - actions"* • noun *versus* act *"noun signifying one person's reason for action/inaction - can be an act of receiving"* • *"physical – mental"* • *"theory – practice"*
III	Procedural knowledge	Characterised by: thinking versus doing • cognition *versus* actions *"thought controlled - demonstrated by actions"* • cognitive process *versus* active characteristics *this is taking in information - is how and what you do, affects the type of person you are "* • insight *versus* skills *"how we see things (insight) - skills"* • *"information processing - personal characteristic"*

IV	Environment	Characterised by: internal versus external environment • *personal – surroundings* • individual ability *versus* external *one's individual ability - external influence* • cognitive process *versus* societal *"thought process - this looks at society"* • *"individual – social"*
V	Perspective	Characterised by: active versus passive • subjective *versus* objective *"human/subjectivity - theory/objectivity"* • affective *versus* non affective *"to do with feelings - not to do with feelings"* • conscious *versus* unconscious *"conscious reflection - subconscious/animalistic"* • *"changing – constant"*
VI	Relational	Characterised by: extrapersonal versus intrapersonal • extrapersonal *versus* intrapersonal *"to do with yourself and other people - individual driving force"* • public behaviour *versus* individual experience *"role/preconceptions/public behaviour - individual experience"* • extrapersonal *versus* instinct *"the way we see others and react depends on the things we are used to - a basic instinct"* • *"mainly intrapersonal - mainly extrapersonal"*
VII	Miscellaneous	Miscellaneous and no substantial theme • misc/external *"could be thought of as same thing - differing facts"* • student *versus* teacher *"concerned with student - concerned with teacher"* • needed for learning *versus* individual *"required elements for learning - can learn alone"* • *"linked - not linked"*

The six Themes together with a seventh miscellaneous Theme are shown in Table 4.1, together with the Theme's primary description and some representative constructs included in each Theme.

4.8.1.1 Theme I - Interactional

Theme I was classified as having a common theme which may be characterised as 'individual versus group'. The 'individual' end of the construct may be literally one person, or one person with another person. The focus on one end of the construct is that of 'individuality' and at the other end the focus is on 'the group'. Other examples of constructs with a common content which make up Theme I are 'self versus others' derived from the subjects' descriptions of *"self aims - relating to others"* and 'interpersonal versus other people' a dimension label derived from "*can be done one to one - more people involved*".

There is support for the existence of the Interactional Theme in previous research. Corporaal (1991) distinguished the 'individual versus group' dimension in her study on the cognitions of prospective teachers on various programmes of learning. Corporaal's research used statements about "good teaching" as elements, relating to motivation, communication skills etc. One explanation of her findings focused on the perceived importance of the individual, or self. This corresponds with Kelly's idea expressed in his Individuality corollary which emphasises the uniqueness of the individual (Kelly, 1955, 1969). It could be expected that the notion of individuality would be a predominant aspect of a person's thoughts, indeed, within the themes categorised here, most are concerned in some form with the individual.

Interaction between the individual and other people in teaching is fundamental and unavoidable, as in any situation where individuals work with others. It could even be argued that the perceived responsibilities and duties involved in the teaching situation further accentuate this aspect. Corporaal (1991) suggests that this is understandable in the light of inexperience as trainee teachers and the idea

that prospective teachers have concerns about themselves in relation to others (for instance, their students).

A complementary explanation for the popularity of the Interactional Theme, characterised by the 'individual versus group' dimension is based on the subjects' use of language, as well as its meaning. Clark and Clark (1977) argue that spatial and relational dimensions in a language do not occur arbitrarily and that the human perceptual apparatus is tuned to pick out one end of a dimension rather than another. A similar differentiation could be applied in dimensions such as '*individual-group*'. This 'linguistic marking' (Clark and Clark, 1977) refers to the propensity of one of a pair of adjectives, for instance, *long-short* being 'marked'. This salient end is called the unmarked pole and the non-salient end is called the marked pole. This 'linguistic' distinction between unmarked and marked adjectives is analogous to the distinction which Kelly (1955, 1963) made between the nominal pole, the description evoked by the similarity side of the pole, and the contrastive pole, that resulting from describing how it is different. One characteristic of 'marking' is that the unmarked pole occurs more frequently. The unmarked adjective then in this case is *individual*. Almost all the subjects produced the 'individual' side of the bipolar construct under 'similarity', that is, it occurs more frequently as the nominal pole, thus providing the underlying distinction represented by the dimension.

4.8.1.2 Theme II - Theoretical

The theoretical theme is based on the idea of conceptual knowledge, it is characterised by object versus action. This embodies concrete aspects of our experience and the grouping of this knowledge into categories, often referred to as declarative versus procedural knowledge of how to do things.

Theme II has similarities to a theme described by Corporaal (1991) which she described as 'ends versus means', an example of a dimension is *goals of*

education - means. Lifshitz (1974) in her research with social work students, also considers conceptual constructs.

The dimensions of the theme fit in with a frequent distinction in psychology between declarative knowledge, knowledge we are usually aware of, that is, facts and concepts or 'connected propositions', versus procedural knowledge, knowledge concerned with actions or skills or 'production systems' (Stevenson et al, 1988). Declarative knowledge may be seen as explicit, whilst procedural knowledge is often implicit (Anderson, 1995). Examples, such as, *concepts-actions* and *noun-act* illustrate the declarative versus procedural dichotomy. The theme provides evidence of the distinction between declarative knowledge and of procedural knowledge and our awareness of these two aspects of knowledge, it would be useful to support research into the cognitive processes underlying a skill.

4.8.1.3 Theme III - Procedural knowledge

Theme III is best characterised by action, which represents a distinction between internal mental actions (i.e. processes) and external physical actions. There was again partial evidence of the existence of this theme in Lifshitz' 1974 study with social workers where she describes a category she termed 'intellectual characteristics' represented by *abstract thinking.* Examples of dimensions in Theme III are 'cognition versus actions', *thought controlled-demonstrated by actions* and 'insight versus skills' *how we see things (insight)-skills.* Theme II was explored in the context of a distinction between declarative and procedural knowledge. The essence of Theme III is based on Anderson's idea of procedural knowledge and focuses on 'knowing how' and distinguishes between mental actions and physical actions.

The presence of this theme reflects an awareness of mental and physical processes. Within the context of teaching and learning it is interesting again to see how this theme presented itself. It may be associated with Dewey's notion of

the reflective practitioner and indicative of an awareness of a distinction identified by Schön (1983, 1987) as reflection-on-action versus reflection-in-action. The former being a tacit, subconscious type of thinking enabling professionals to quickly move into action. The latter is a more conscious, analytical process.

4.8.1.4 Theme IV - Environment

Theme IV is characterised by internal versus external environment, examples of dimensions are *inner feeling-contributes to atmosphere*, and cognitive processes versus societal, for example, *thought process-this looks at society* and *one's individual ability-external influencers.* There is no substantive evidence in the literature for this construct though this inside-outside construct is reflected to some extent by a category found by Corporaal (1991) 'teaching situation versus matters surrounding the teaching situation', an example of which is 'inside the classroom versus outside the classroom.

The existence of this theme makes sense in terms of the nature of psychology and the teaching and learning context. Human beings do not exist in a vacuum and many topics in psychology, for example, intelligence, personality and motivation, highlight internal and external influences. Much discussion within educational programmes also involves consideration of the ways in which personal processes and perceptions as well as the broader context, external factors, such as the environment and culture, influence the teaching and learning situation.

4.8.1.5 Theme V - Perspective

Theme V, Perspectives and processes on thinking and feeling, is characterised by active versus passive, examples of dimensions are *changing-constant*, *human/unpredictable-conditioning/mechanistic* and *conscious-unconscious.* A similar theme is found in research on attitudes of prospective teachers by Bunting (1984) and in Corporaal's study of prospective teachers with her affective or evaluative dimension. Corporaal (1991) illustrates the essence of the theme with

reference to the dimensions of directive *versus* non-directive and progressive *versus* traditional which lie at the heart of teacher beliefs and continued educational debate. Similarly the beliefs represented in the Perspective Theme are fundamental to the major theories and debates in psychology, for example, the dichotomies of active *versus* passive roles, conscious *versus* unconscious behaviour and changing *versus* constant variables. The evidence of this theme in the grids of the novices and experts is not surprising as it permeates both educational and psychological debate.

4.8.1.6 Theme VI - Relational

The last major category is Theme VI, characterised by public performance *versus* the private individual. It is representative of the idea of the intrapersonal *versus* extrapersonal characteristics of the individual. This theme, like Theme I, reflects Kelly's 'individuality corollary' which expresses the idea of uniqueness and individual differences. Kelly made the point that different individuals often perceive or behave differently in the same situation.

In previous research similar dimensions to intrapersonal versus extrapersonal were classified in separate categories. For example, a study of nurses' perceptions of interpersonal skills (Burnard and Morrison, 1989) identified 'disposition towards others', defined as how the individual thinks or feels about others, and 'disposition towards self', defined as how the individual thinks or feels about him/herself. Lifshitz' (1974) study on cognitions of social workers identified a category which she called intrapersonal characteristics, an example of which was *self-awareness.*

The relational theme hits a familiar note in terms of psychological theory. Much of psychological theory recognises the distinction between an individual's performance or behaviour and how the person thinks or feels privately.

4.8.1.7 Theme VII - Miscellaneous

The remaining constructs that did not fit in to the major categories were placed in the miscellaneous pile. Having said that there were some potentially interesting themes that were excluded because they were not shared by 15% of the subjects, for example, teaching versus learning situations.

4.9. Introspective reports

Sixteen novices and six experts provided written introspective comments (Appendices 6, 7). These introspective reports provided further insights into the cognitive processes and procedural completion of the task. The sixteen novices provided written introspective comments on one or both occasions. Most comments, verbal and written, related to the completion of the task which was identified at T1 to be "*difficult*" but at T2 "*easier to complete this time*". Comments of the cognitive process identified problems with making "*clear distinctions*" and "*hard not to contridict [sic] yourself*".

Six experts also provided comments related to their perceptions of the content and procedures. Two experts identified their own underlying constructs as "individual processes vs interpersonal processes" and "social/non-social, cognitive/non-cognitive". Four out of the six comments reiterated the challenges involved in "*distinguishing a difference*" and three identified particular, but different, triads which they found ambiguous.

Quantitative analysis

4.10. Distribution in selection of themes across the sample

In this section I consider the number of subjects who used each theme, regardless of the number of times they used it. Table 4.2 And Fig 4.3 show the data for novices at T1 and T2, and for experts.

Across the sample, the largest percentage of individual subjects who used a theme was the experts who all had construct dimensions that were classified under Theme II, the Theoretical Theme. The theme that attracted the highest percentage of novices was Theme I, the individual - group or Interactional Theme. This was true for both T1 and T2, with 95% and 90% respectively. Theme I attracted 80% of individual experts. The theme that was used by the fewest number of novices in T1 was Theme II, which was used by 55%. In T2 the theme which was used by the fewest novices (30%) was Theme V, the Perspective Theme. 40% of experts had constructs that were common to Theme VI, and only 30% of experts had constructs that were allocated to the miscellaneous category (figure 4.3).

Fisher Exact Probabilities Tests and binomial tests were used to compare the number of experts and novices choosing each time. Separate analyses were done on the differences in the number of experts and novices choosing each theme and on the number of novices for T1 and T2 for each theme. Significantly fewer novices used Theme II at T1 compared with experts (p = .012). At T2 it was no longer significant (p = .07). Binomial distribution tests failed to identify any significant differences in the number of novices who chose each theme between T1 and T2.

Table 4.2 The number and percentage of individual subjects (novices T1, T2 and experts) who used the main construct categories (Themes I - VII)

Main Themes	No. of novices T1 (N = 20)	% novices T1	No. of novices T2 (N = 20)	% novices T2	No. of experts (N = 10)	% experts
I	19	95	18	90	8	80
II	11	55	14	70	10	100
III	16	80	13	65	5	50
IV	16	80	14	70	6	60
V	14	70	6	30	6	60
VI	16	80	10	50	4	40
VII	14	70	17	85	3	30

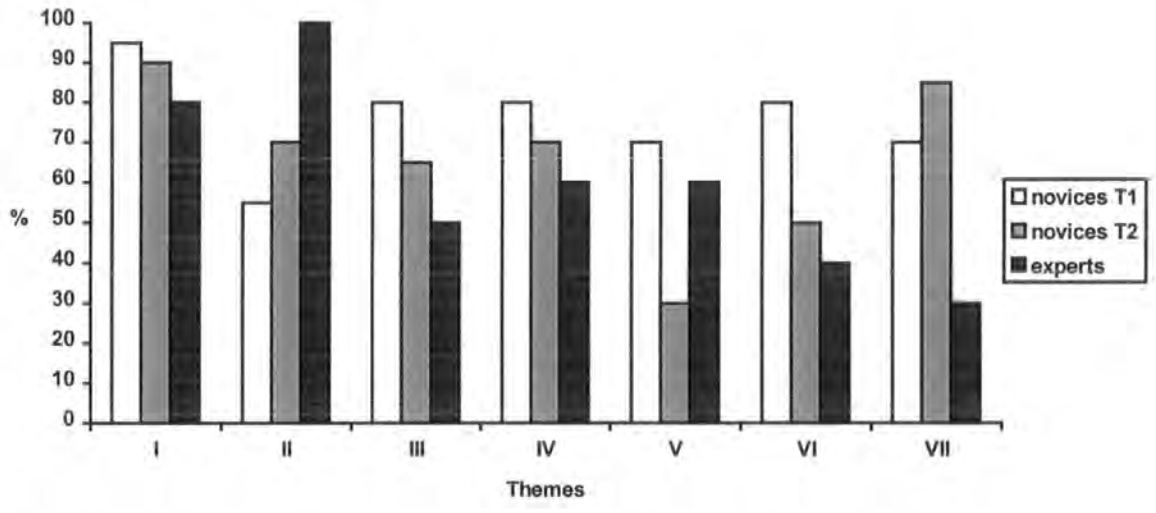

Fig 4.3 The percentage of subjects (novices T1 and T2, and experts) who used each theme

Analyses of the numbers of subjects using the remaining themes did not throw up any apparent differences in the use of themes by experts and novices or by novices at T1 and T2

4.11. Change over time in novice data

4.11.1 Mean number of times each theme was identified by novices over time

Figure 4.4 shows the comparison in the mean number of times each theme was identified by novices at T1 and T2, the tables of means are found in Appendix 8.

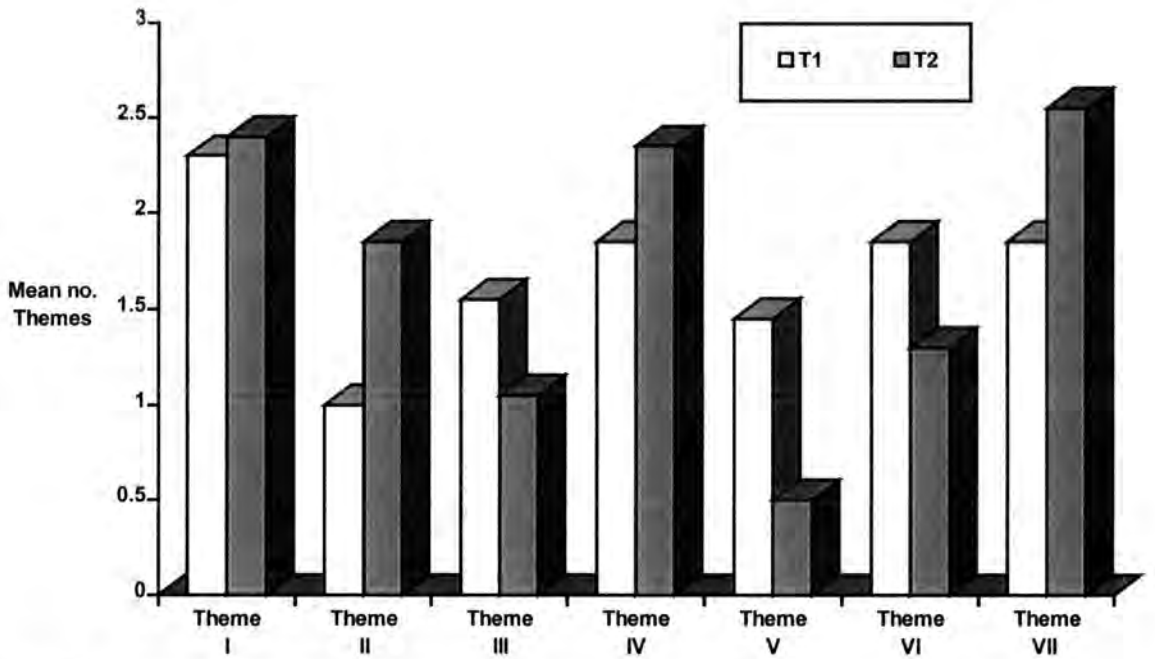

Fig 4.4 mean number of times each theme was identified by novices at T1 and T2

A two factor repeated measures analysis of variance (ANOVA) was carried out on the data from the novices at T1 and T2. The design was a 2 (Time) x 7 (Theme) analysis of variance. The results showed the main effects of Time and Theme

failed to reach significance (Time : F = 1.00, d.f = 1, 28, P = .330, Theme : F = 1.76, d.f. = 6, 114, P = .113), however, the interaction between Theme and Time was significant (F = 3.4, d.f. = 6, 114 P = . 004).

To examine the interaction, individual comparisons of T1 versus T2 were carried out for each theme using repeated measures analysis of variance. In order to take account of the number of comparisons, the alpha level was set at .01. Two comparisons just missed significance with this alpha level: the difference between T1 and T2 for Theme II (F = 6.16, d.f. = 1, 19, P = .023) and Theme V (F = 7.3, d.f. = 1, 19, P = .014).

4.11.2 The number of different themes identified for novices T1 and T2

Subjects did not always use the same number of themes at T1 and T2. For example, subjects might use 6 themes at T1 and 4 themes at T2. The mean number of different themes used at T1 was 5.25 out of a possible 7, and at T2 was 4.45 out of a possible 7 (Table 4.3). The total number of times different themes were used at T1 and T2, were compared using a binomial test (one tailed) (Appendix 9). Novices' grids produced significantly fewer themes in the second grid (T2) than in the initial grid (T1), (n = 15, s = 1, P = < .0005, one tailed).

4.12. Configuration of elements in triads between T1 and T2

4.12.1 Number of repeated triads groupings

A simple count of the same and different triad selection (column 11 Appendix 3) was made. The analysis identified that the mean number of times the novices used the identical combination of similar (✓) and different (✗) elements at T1 and T2 was 7.35 out of a possible 12. A sign test was carried out on the number of triads which changed from T1 to T2 and showed that a significant number of subjects used the same triad configuration at both T1 and T2 (n = 11, s = 2, P = .033, one tailed).

4.12.2 Triad groupings and mean number of repeated themes

The mean number of repeated themes on both occasions, irrespective of the triad pattern selected, was 3.85 out of a possible 12. The mean of themes which changed from T1 to T2 was 8.15 out of 12, which means 67.92% changed the theme they used to define the element triads in the construct row (n = 12, s = 0, P < .0005, one tailed).

Table 4.3 Number of different themes classified for novices T1 and T2

Novice number	Total number of themes classified for novices T1 [N=7]	Total number of themes classified for novices T2 [N=7]
1	6	4
2	5	5
3	6	5
4	5	4
5	5	4
6	3	5
7	6	4
8	5	4
9	6	5
10	6	5
11	5	5
12	5	5
13	5	4
14	4	4
15	6	6
16	6	5
17	7	4
18	4	3
19	5	4
20	5	4
	105	89
Mean	**5.25**	**4.45**

4.13. Comparison of novices and experts

The analyses in the previous sections support the idea of identifiable themes and quantifiable changes in the use of themes by novices over time. This section analyses the differences between the novices' and the experts' thinking.

Comparisons in the composition and the number of different themes used by novices and experts provides another way of assessing beliefs and changes in learning.

4.13.1 Distribution of constructs in themes by novices T1 versus experts

The mean number of times each theme was identified by the novices and experts is shown in figure 4.5 and figure 4.6.

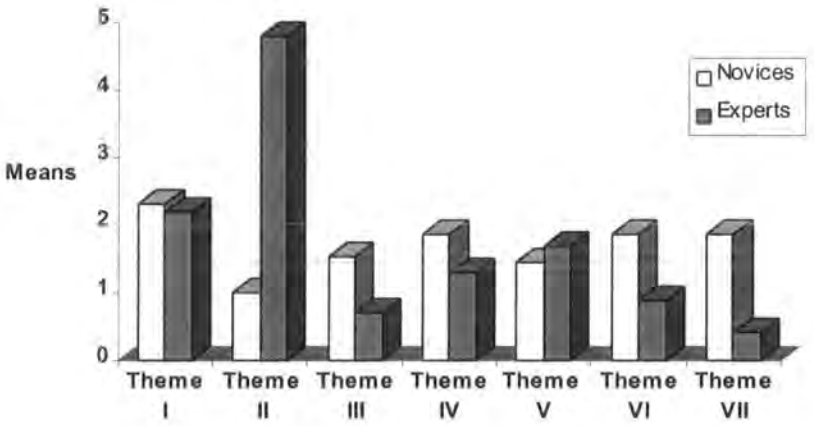

Fig 4.5 mean number of times each novice at T1 and each expert selected each theme

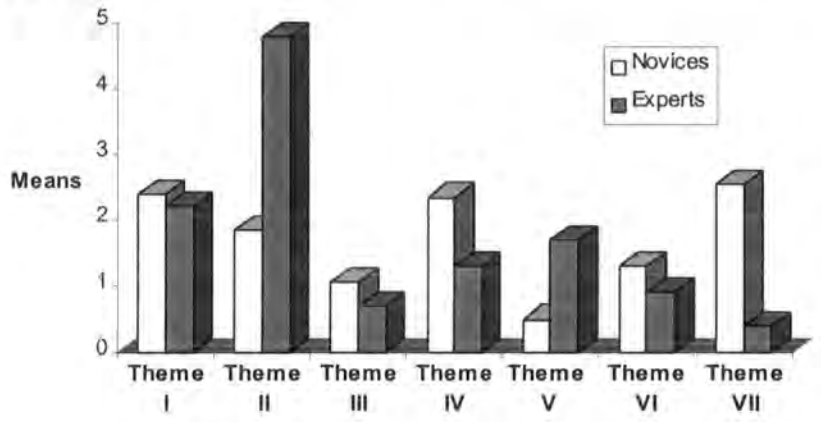

Fig 4.5 mean number of times each novice at T2 and each expert selected each theme

An analysis of variance (ANOVA) was carried out on the data from the novices' grids at T1 and the experts' grids. The design was a 2 (group) x 7 (Theme) analysis of variance with repeated measures on the last factor. The results showed a main effect of Theme (F = 3.54, d.f. = 6, 168, P = .002) but a non significant main effect of group (F = < 1). There was, however, a significant interaction between group and Theme (F = 6.46, d.f. = 6, 168, P < .000). In order to examine the interaction, individual analyses of variance were conducted on the individual themes. An alpha level of .01 was assumed to take account of the number of comparisons to be made. There was significant difference between the novices T1 and the experts in Theme II (F < 24.15, d.f. 1, 28, P < .0000). Theme III failed to reach significance at the required alpha level (F < 4.99, d.f. 1, 28, P = .034). No other comparisons approached significance.

4.13.2 Distribution of constructs in themes by novices T2 versus experts

An analysis of variance (ANOVA) was then carried out on the data from the novices at T2 and the experts. The design was again a 2 (group) x 7 (Theme) analysis of variance with repeated measures on the last factor. The results showed a main effect of Theme (F = 4.82, d.f. 6, 168, P < .000) but no significant main effect of group (F < 1). However, there was a significant interaction between group and Theme (F = 4.37, d.f. 6, 168, P < .000). In order to examine the interaction, individual analyses of variance were conducted on the individual themes, as before, an alpha level of .01 was assumed to take account of the number of comparisons to be made. There was significant difference in Theme II (F < 9.44, d.f. 1, 28, P < .005), Theme V failed to reach significance at the required alpha level (alpha = .01) (F < 5.26, d.f. 1, 28, P = .030). The 'miscellaneous' Theme VII just missed significance (F < 6.28, d.f. 1, 28, P= .018. No other comparisons approached significance.

4.13.3 Number of different themes used by novices T1 and experts

The number of different themes used by the experts was then compared to the number used by the novices at T1 (see Appendix 9), using the Mann-Whitney *U* test for unrelated subjects. The means were 5.25 themes for the novices T1 compared to 4.3 for the experts ($U = 58.5$, $P < .03$, one tailed).

4.13.4 Number of different themes used by novices T2 and experts

The number of times themes were classified by the experts was then compared to those of the novices at T2 using the Mann-Whitney *U* test for unrelated subjects. There was no significant difference between the two groups ($U = 79.0$, $P = < .11$, one tailed).

4.14. Examining global changes: Multidimensional Scaling (MDS)

A multidimensional scaling method was used to visually illustrate groupings of elements in multidimensional space. The ratings, either a tick (✓) or a cross (✗), produces a notional count of 1 or 2. The ratings can then be used to plot the topics or concepts in psychology (in repertory grid terms called elements) in a multidimensional space and then scaled for visual identification of two dimensions. The binary ratings are converted into distances and used to plot the topics in a multidimensional space and then scaled to be illustrated in two visible dimensions in diametrically opposing topics. The elements are represented by points in a multidimensional space, the pairs of points which have the strongest relationship in terms of similarity are closest and those which are most dissimilar are represented by points which are far apart (Young and Harris, 1993). The plot produced as a result of the interpretation of individuals' similarity matrices using the MDS technique can then be used to give conceptual insight by graphically presenting underlying structures in the clusters of topics and revealing commonalities in the data.

Multidimensional scaling was applied to the correlation matrix of the triadic comparison data. The multiple distance matrices were analysed using the individual differences Euclidean distance model, known in multidimensional scaling literature as INDSCAL (Young and Harris, 1993). Multidimensional scaling aims to reduce data to its minimum dimensionality. A two dimensional scaling solution was produced for the 12 concepts or topics in psychology used as the elements to elicit the constructs in the repertory grid. The grid data yielded similarity matrices of the topics in two dimensional space, for the novices in T1 and T2 illustrated in figs 4.7 and 4.8 and for the experts in fig 4.9. The similarity matrices were then interpreted using the MDS technique to produce a plot of the 'concept space' of the topics.

Figures 4.7 and 4.8 show the grouping of the topics in the multidimensional space when the ratings for all the novices in T1 and T2 are considered. Figure 4.9 shows the experts' group plot. Where the topic labels are unclear because of proximity to each other the topics are typed in the shaded boxes in the corresponding corner. The plots show a qualitative difference in the responses at T1 and T2 in the novices' responses and between the novices T1 and experts.

4.14.1 Novices T1 group plot

It is just possible to make out two dimensions, tentatively specified as individual characteristics/psychological processes and social/cognitive. The 'individual' pole is characterised by three elements *motivation*, *personality* and *teacher characteristics*, the 'psychological processes' by *learning: behaviourist* and *visual perception* (fig 4.7). The 'social' pole in dimension 2, is characterised by *group dynamics* and *communication*; the 'cognitive' pole is characterised by *intelligence*, *memory* and *learning: cognitive*.

As far as the overall organisation of the plot is concerned, the first grid shows that there were few discernible groupings in the concept space. The novices had some small localised groups consisting of a pairs of topics. In the lower left hand

corner of the plot two topics *social influence* and *social perception* were closely located in the space. *Motivation* and *personality* were situated closely in the top right hand quarter and *learning: behaviourist* and *visual perception* closely grouped in the bottom right hand section. There was some indication of other looser groupings with *group dynamics, communication* and *teacher characteristics* situated in the top left hand section *Intelligence, memory* and *learning: cognitive* are grouped loosely on the right hand side of the dimension.

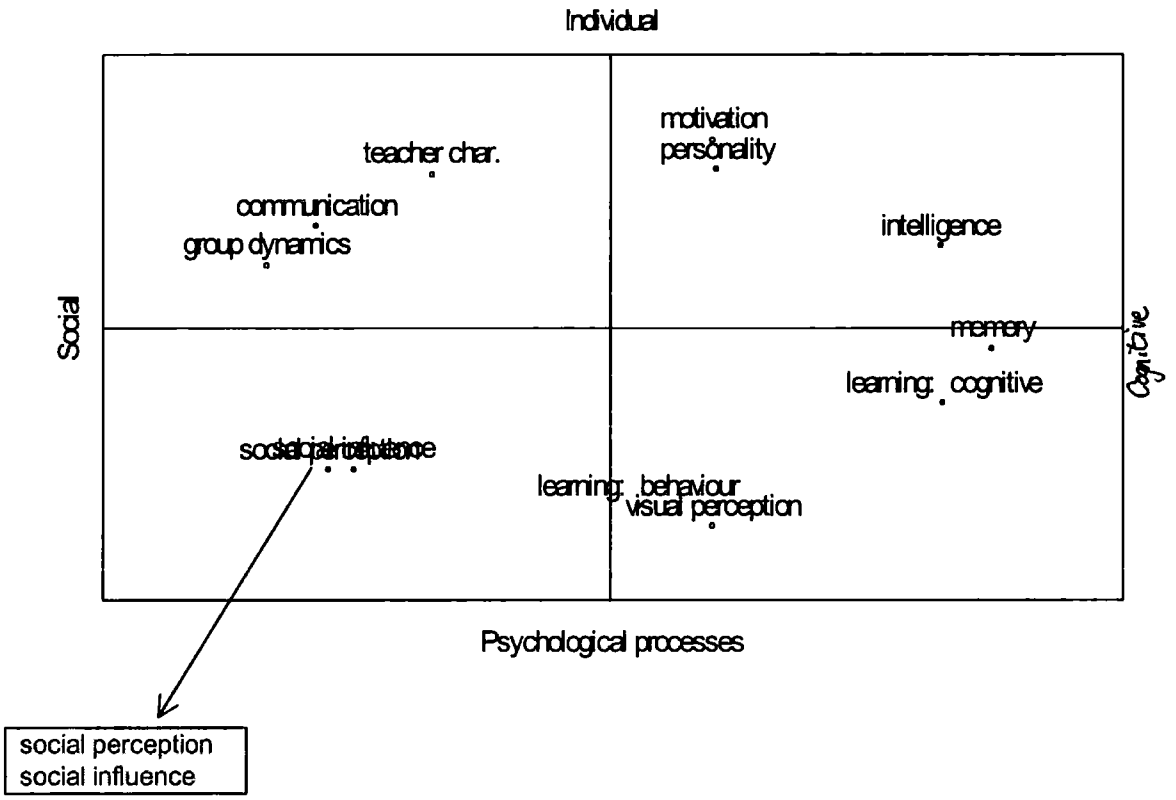

Fig 4.7 The location of the twelve concepts used in the repertory grid triadic comparison procedure by novices (n = 20) T1 in two dimensional space using multidimensional scaling (MDS)

4.14.2 Novices T2 group plot

The dimensions indicated on the novices' second group plot (fig 4.8) are unclear on the vertical dimension, dimension 1 and tentatively called individual - group. The horizontal dimension is called social - cognitive. The vertical 'individual'

dimension contains *personality* and *visual perception*, the 'group' pole is characterised by the single *communication* element. On dimension 2 the 'social' pole is characterised by *social perception*, *social influence* and *group dynamics*; the 'cognitive' pole by *memory*, *intelligence, learning: cognitive* and *learning: behaviourist.*

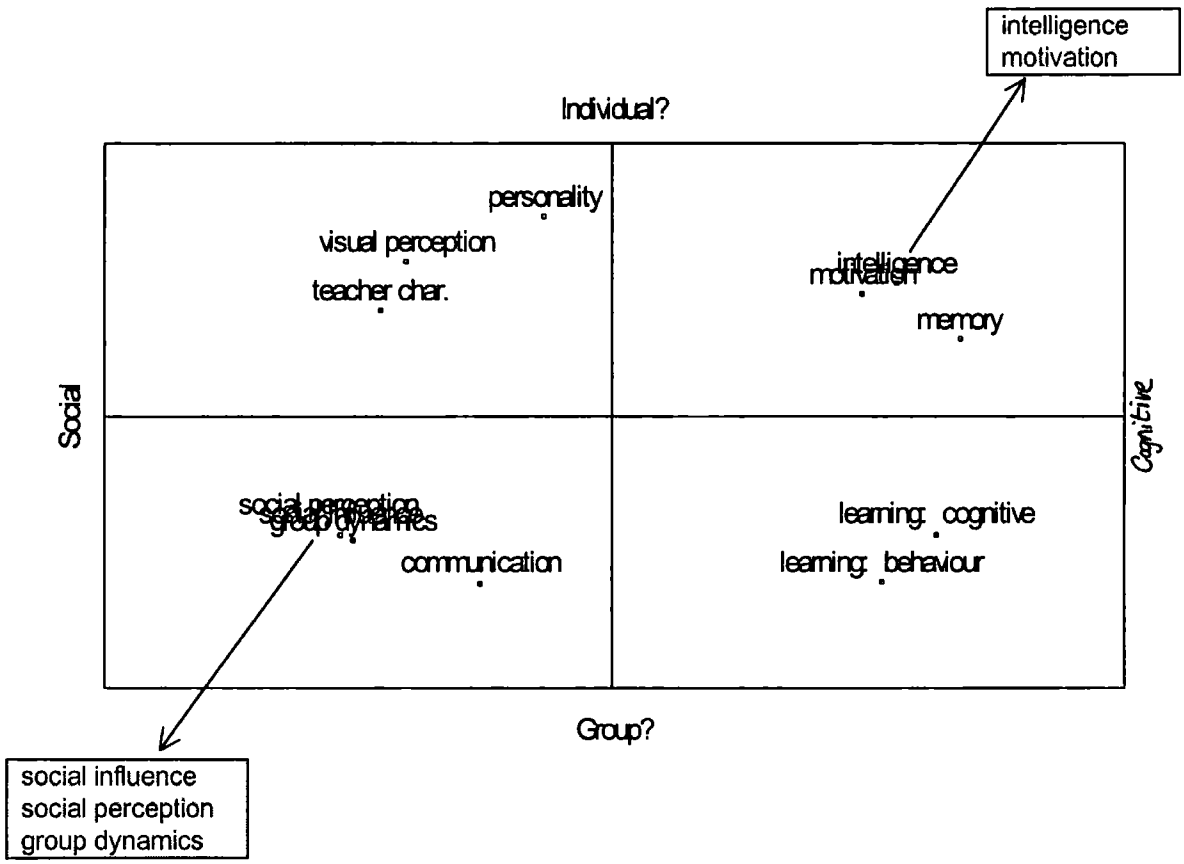

Fig 4.8 The location of the twelve concepts used in the repertory grid triadic comparison procedure by novices (n = 20) T2 in two dimensional space using multidimensional scaling (MDS)

Figure 4.8, novices T2, shows distinct groupings within the overall organisation of the plot. The same two topics which featured as a pairing in T1, *social influence* and *social perception* are now joined by *group dynamics* and *communication* in the bottom left hand section to form a prominent grouping of four topics. Diametrically opposite to the first group is another prominent grouping consisting

of the three topics of *intelligence, motivation* and *memory. Learning: cognitive* and *learning: behaviourist* now form a distinct pairing in the bottom right hand section of the concept space. Finally, a loose cluster of three topics is evident in the top left hand section consisting of *personality, visual perception* and *teacher characteristics.*

4.14.3 The expert group plot

There is some evidence in the expert group plot (fig 4.9) of two dimensions, one individual characteristics or personality/group on the vertical dimension and

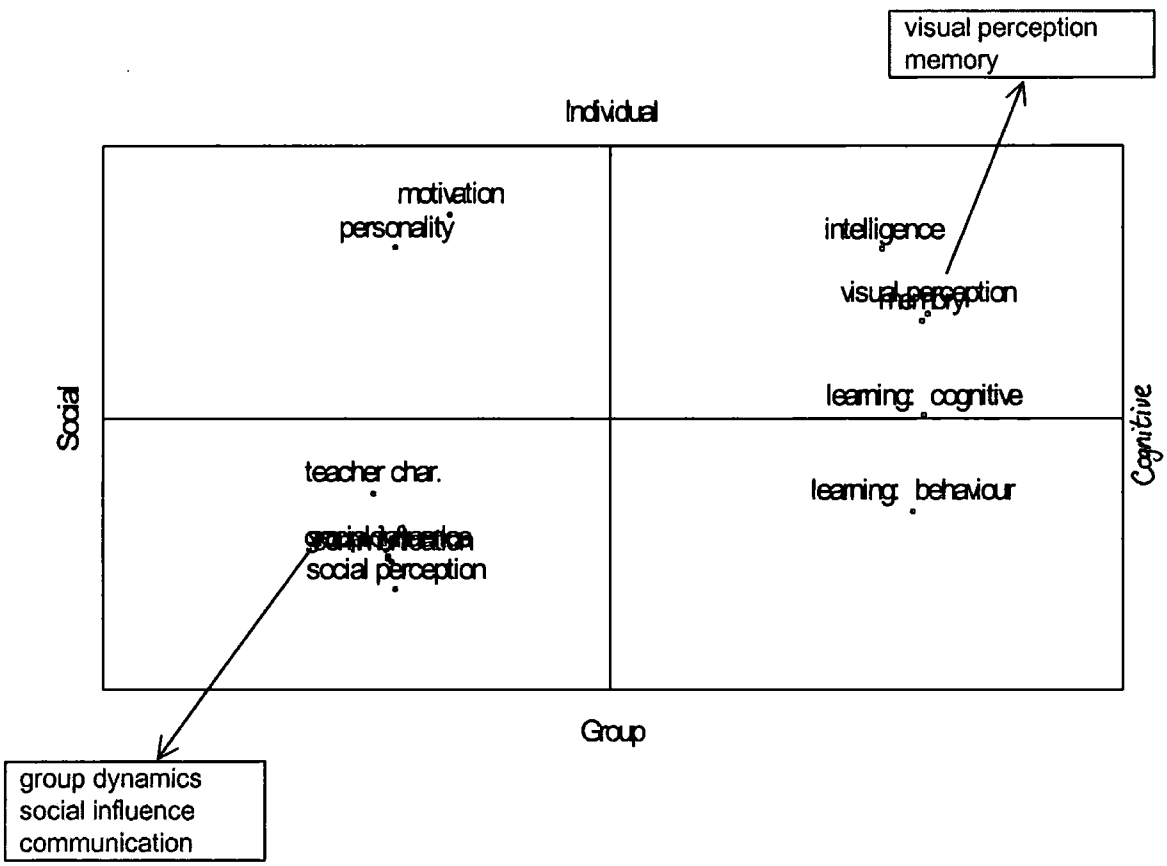

Fig 4.9 The location of the twelve concepts used in the repertory grid triadic comparison procedure by experts in two dimensional space using multidimensional scaling (MDS)

social/cognitive on the horizontal dimension. The 'personality' end of the pole contains *motivation* and *personality* and the 'group' end has the elements

communication, *social influence, group dynamics* and *social perception.* Dimension 2 has *learning: characteristics* form a distinct cluster of five topics. Diametrically opposite is another cluster of three topics *intelligence, visual perception* and *memory.* Finally, two other groupings are evident, *motivation* and *personality* in the top left hand section and *learning: cognitive* and *learning: behaviourist* are grouped in the bottom right hand section of the concept space.

4.14.4 Distribution of weightings - novices T1, T2 and experts

The INDSCAL programme in the SPSS MDS programme enables individual subjects to be located along the same dimensions in which the topics were placed in the space. Each subject's similarity matrix can then be identified and observed in terms of how it is reflected by the group space. Figures 4.10 and 4.11 plot the location of the novices, numbered 1 to 20, T1 and T2 in relation to the concept space and figure 4.12 plots the location of the experts, numbered 1 to 10, in relation to the concept space. The nearer the individuals are to the line which extends from the point of origin to the maximal weighting on both dimensions (the bottom left hand corner for the novices, the bottom right hand corner for the experts) the more similar are the cognitive structures of the individuals to the overall group cognitive structure revealed in the group space.

Observations of figures 4.10 and 4.11 indicate that the novices in T1 and T2 are reasonably well represented by the concept space with novices showing somewhat more variability at T2. The majority of individual novices, particularly in T1, appear close to the line, with some tailing off, particularly in T2. The distribution of experts' weightings are also reasonably close to the line which shows that all the experts are adequately represented by the group space.

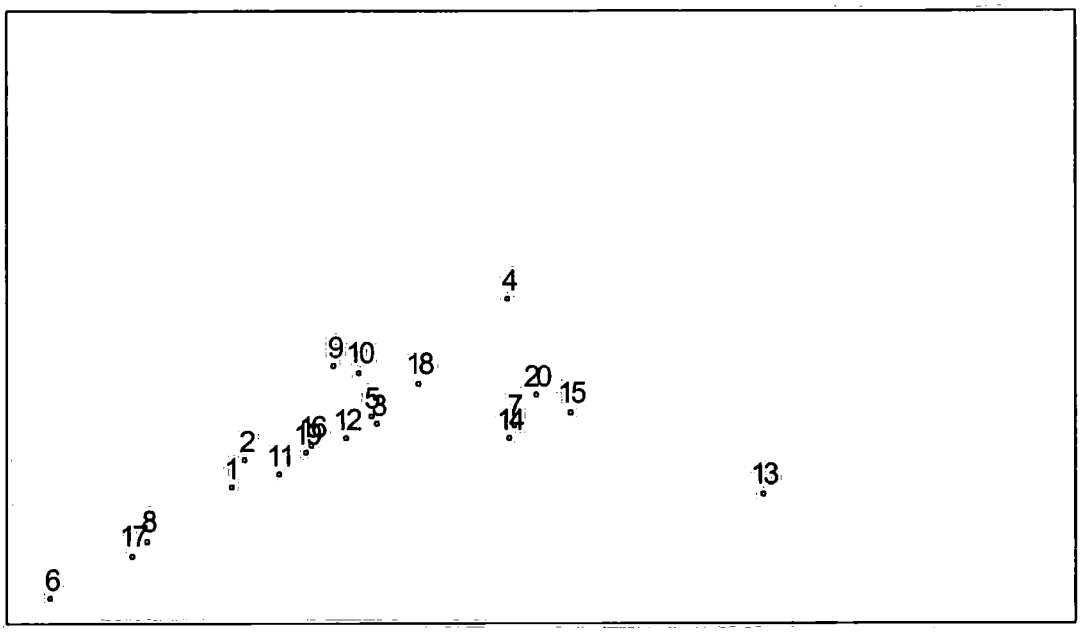

Fig 4.10 The distribution of the novices (n = 20) T1 in relation to their weightings on the two dimensions in the concept space

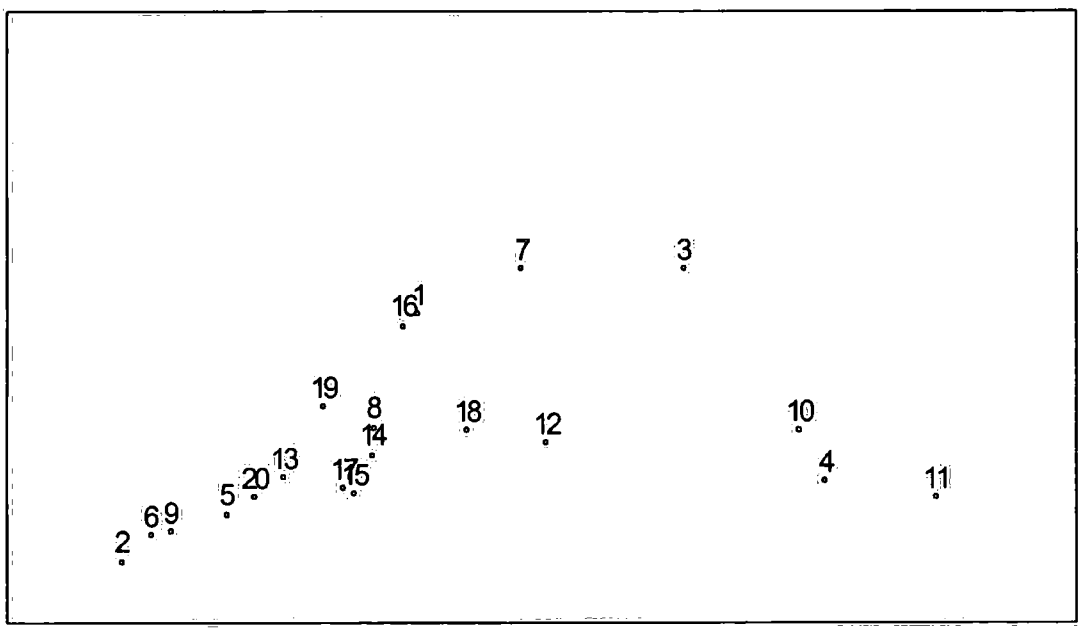

Fig 4.11 The distribution of the novices (n = 20) T2 in relation to their weightings on the two dimensions in the concept space

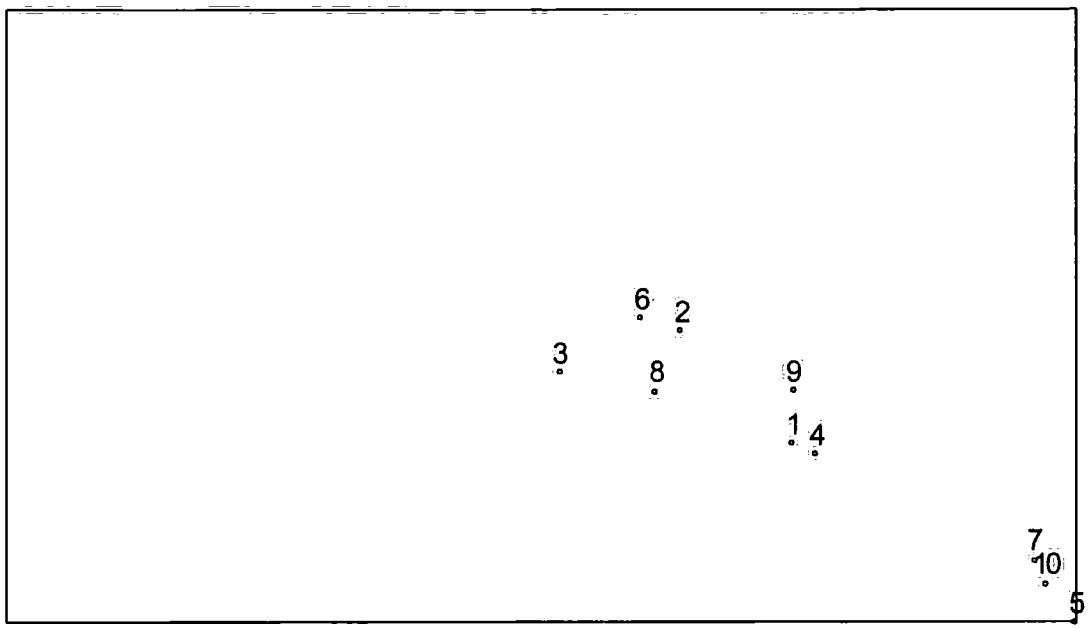

Fig 4.12 The distribution of the experts (n = 10) in relation to their weightings on the two dimensions in the concept space

CHAPTER 5

Final discussion

5.1. Introduction

The analyses of data proved to be an exacting and complex task. It did, however, reveal some exciting results. The final chapter summarises the results of the study, and the interpretations made. Chapter 5 considers the implications of the research, particularly in relation to the repertory grid technique and for learning. It takes a critical look at methodological issues involved in the repertory grid as a tool for assessing learning and summarises where the research was felt to be successful and drawing attention to potential weaknesses which might have affected the results. Implications for future studies are also given.

Summary of results

5.2. Self-rating of prior knowledge and introspective reports

The results of the questionnaire discussed in Section 1 established the level of novices according to their mean self-ratings of 3.2 on the scale of 1-10, or 'fairly limited prior knowledge of psychology'. Over one third of the group identified themselves as having virtually no knowledge of psychology in the pre-course questionnaire. Overall the response to the questionnaire established a mean self-rating on the level of previous knowledge of psychology as 3.2, this remained virtually the same (3.15) in the post-course questionnaire, thus indicating that the students generally perceived themselves to have a fairly limited knowledge of psychology. Generally, the rating remained the same for the end questionnaire, or

slightly up. In two cases the high scorings of 7 and 8 fell to a more realistic 4 for the novices concerned.

Introspective reports by novices and experts on completing the repertory grid highlighted aspects of the cognitive process and completion of the task. A number of novices' comments, verbal and written, related to the completion of the task (especially at T1) and suggested that it was a taxing but stimulating task, a typical comment related to being made to "think so hard about a concepts you hear about every day". Some subjects found it difficult to make choices between specific elements "*thinking them one thing but to write them down is harder*". One expert remarked that he found the "*similarities aspect between 2 topics reasonably OK. My main problem was in distinguishing a difference*". A 'non-applicable' option, not offered at the time due to analytical and statistical convenience, may have been appropriate for some subjects; as one expert commented she found herself "*forced to make seemingly meaningless judgements about how these applied to other topics*". A novice put it more evocatively "*it was like putting a lime with an apple or a banana*".

Cognitive content and processes were highlighted in some of the comments. Subjects identified their ways of thinking, for example, "established/variable and controlled/uncontrollable influences kept coming to mind". Four out of the six comments highlighted the complexity involved making meaningful distinctions and identified ambivalence. Three experts, for example, identified particular triads (each a different triad) which for them proved difficult to distinguish. The process of levels of thinking and procedural knowledge came across in comments from both groups "I was defining a lot. It becomes easier to understand and compare that way".

5.3. Content and structure of the constructs

5.3.1 Identifying beliefs

The first aim, research question (a), of this thesis was to identify some of the important beliefs/intuitive theories of students on a part-time teacher training course (novices) and a group of experienced psychologists (experts) about psychology topics used in teaching and learning. Qualitative analyses of the content of the constructs revealed six main themes: Theme I, described an interactional construct; Theme II, described a theoretical construct; Theme III, a procedural knowledge construct, Theme IV described a perspective construct and Theme VI a relational construct. Theme VII was used to for the remaining constructs and consisted of 'miscellaneous' constructs. These same Themes were used by both novices and experts.

5.3.2 Changes in learning

Aim (b) considered changes in learning as a result of taking the psychology course. The results showed that most of the novices used Theme I. By contrast, Theme II was used by the fewest number of novices at T1. However, there were no significant differences in the number of novices using each theme at T1 and T2.

Examination of the number of times each Theme was used by the novices revealed that they used Theme II more often at T2 than at T1 and that they used Theme V more often at T1 than at T2. Thus there was some evidence of change in the novices' use of Themes after taking the psychology course, but only in the frequencies of using two of the Themes.

An alternative measure of change was the number of different Themes each novice identified at T1 and T2. H*ypothesis 1*, proposed that the overall number of Themes would be fewer on the second occasion (T2) of the grid than the first (T1).

The results showed that novices used marginally significantly fewer Themes at T2 than at T1.

Another route for change lay in which two elements within a triad were regarded as similar. *Hypothesis 3* proposed that the novices would choose the same grouping of elements in the triads at both times of the grid but the constructs produced as a result of the grouping selected would change. The results showed that a significant number of subjects chose the same two elements at T1 and T2. However, despite the fact that over 60% of the triads were grouped in the same way at T1 and T2, the extent to which the Themes stayed the same at the two times was only 32%.

5.3.3 Differences between novices and experts

The third aim of the thesis (c) was to examine the differences in choice of Themes between novices and experts. The results showed that the same six themes were used by both experts and novices. However, Theme II was used significantly more often by experts than by novices at T1.

In comparing the number of times each Theme was used, the experts used Theme II significantly more than novices at T1 and the novices at T1 used Theme III marginally more often than experts. There were no other significant differences between the numbers of experts and novices at T1 using each Theme.

When use of themes by novices at T2 were compared with that of the experts, the results showed a significant difference in the use of Theme II, which was more often used by the experts. Two comparisons were marginally significant: Theme V was used less often by novices at T2 than by experts, indicating a reduction in the use of Theme V from T1 to T2. Theme VII (a miscellaneous category) was used more often by novices at T2.

Hypothesis 2, proposed that the experts would use fewer Themes than the novices. When the number of different Themes used was examined, it was found that novices at T1 used marginally significantly more themes than experts but this difference disappeared at T2.

5.4. Global structure of the elements - MDS

Multidimensional scaling was used as an additional aid to understanding global conceptual change as a function of learning. Two dimensions were tentatively labelled in the novices' T1 group plot. There were few clear groupings in the overall organisation of the concept space. The overall group space at T2 shows more distinct groupings more closely approximating the overall organisation of the experts' group space. The plot of the novices' data at T2 was different from both the novices' plot at T1 and the experts' plots. One dimension of the novices at T2, the social/cognitive dimension, was very similar to the same dimension in the experts' plot. However, the other dimension in the novices' plot at T2 was quite unlike the second dimension in clear categorisation or labelling. Thus, while progress was made towards expertise in one dimension, there was evidence for increasing incoherence in the other. This is comparable to the changes in the use of themes identified above.

Interpretation of results

5.5. Prior knowledge of psychology and introspective reports

The major purpose of the questionnaire was to provide an estimate of the level of knowledge of psychology. The novices self-rating of their previous knowledge of psychology remained consistent, providing a reliable gauge of their status as novices. In the context of the formative and summative assessments, the self-rating was overall a realistic estimate of their knowledge and established them as

'appropriate' novices. The findings from the prior knowledge questionnaire helped to estimate the level of knowledge of psychology, from the self-ratings students generally perceived themselves as having fairly limited knowledge of psychology. Why this perception remained constant after a psychology course can only be speculated upon, but it may be due to the fact that the course was demanding and may have left them with that feeling of 'the more you know, the more you have to learn'. It would be interesting to see if the grids were repeated on those who had continued with psychology, whether this self-rating would change. This conscious perception, however, conflicted with the results from the repertory grid which showed significant local and global changes in conceptual organisation as a result of taking the course. Local changes involved changes in the frequencies with which some Themes were used, reductions in the number of Themes used, and changes in the interpretations of the triads. Global changes were revealed in the multi-dimensional scaling results.

Three of the sample have progressed to the Certificate in Education/PGCE, one withdrew when he found the academic level of the Certificate too high. Interestingly, the student who withdrew from the early stages of the Certificate in Education had managed to complete the foundation teacher training course but had struggled with the course, particularly with the psychology assignment. He needed a substantial amount of facilitation with both the content and the structure of the psychology assignment. This subject had rated his pre-course and post-course level of knowledge of psychology as 5, above the average for the group, denoting that he felt he had a reasonable knowledge of the subject. The content analysis on his grids showed a pattern which fitted in with the overall group to the extent that he elicited the average amount of classified constructs (Themes), 5 at pre-course and 4 at post-course. Where he differed from many of the group was in the substantial amount of constructs, which were categorised as 'Miscellaneous'. The subject's constructs remained at variance with the rest of the

group in that his constructs could not generally be grouped in the main Theme areas. It may be useful for future studies to monitor whether students who did not do well in the formal written assignments had equally 'non-conforming' constructs indicating, perhaps, a generally unfocused construct system.

The introspective reports provided valuable insights. The grid seems to have generated careful thought, it was felt to be rewarding, and it challenged unconscious or established thinking. Two examples are useful in illustrating the challenge and change to thinking recognised in completing the grid. These are *I also found it hard to explain the differences on paper (thinking them is one thing but to write them down is harder)* and *Some of my views change as I have read up and understood the psychology terms.* One of the difficulties might be related to a problem in differentiating between the elements in the initial elaboration of dichotomous constructs. From the point of view of a challenge to thinking or reflection, the repertory grid achieved some of its intended aims. It generated careful thought, it was felt to be rewarding, and it challenged unconscious or established thinking.

5.6. Identification of Themes

All six main themes were used by novices at both times of the grid and by experts. Kelly's 'commonality corollary' of Personal Construct Theory assumes that there will be major common interests and similar construct patterns within a social group, (Kelly, 1955, 1963). The qualitative part of the analysis revealed that there were representative themes in the novice and expert grids.

Previous research has highlighted the Interactional Theme (Theme I) and explanations focused on the perceived importance of the individual or self, as found in other research (Corporaal,1991) and which supports Kelly's individuality

corollary (Kelly, 1955, 1963). Theme I was also discussed in terms of 'linguistic marking', that is, the subjects' use of language, as well as its meaning.

Theme II, the Theoretical Theme was discussed in terms of conceptual or declarative knowledge. It was argued that declarative knowledge is integral to psychology in particular and the teaching and learning context in general. The ways in which patterns in novices' use of Theme II changed over time, and differed significantly between novices and experts were also discussed and were summarised earlier. This theme seems to be a particularly simple theme, since it is used most by the experts and shows a degree of learning in the novices.

Theme III related to procedural knowledge and focused on 'knowing how'. It was suggested that this theme reflected an awareness of mental and physical processes and was discussed in relation to the notion of the reflective practitioner. Theme IV, the Environment Theme highlights how internal and external influences are relevant in psychology and affect teaching and learning. It would be interesting to see whether there would be differences in novices' notions of these broad contextual elements as they progress to higher level programmes where there is greater emphasis on the broader context.

Theme V, the Perspective Theme revolved around the idea of subjectivity and objectivity and the difference of active participation and passive acceptance, a theme which permeates both educational and psychological debate. The experts used this theme with the same frequency as the novices at T1. However, at T2, the novices' frequency had dropped considerably. This suggests that Theme V is a particularly complex theme and that some unlearning is needed before progress towards expertise can be made.

The final major theme was Theme VI, the Relational Theme, which was thought to make sense in terms of psychological theory in that it recognises the distinction

between an individual's performance or public behaviour and the private behaviour.

Finally, the constructs that did not fit into any of the main themes were placed in Theme VII, Miscellaneous. It is recognised that the limitations in aggregating data and analysing group rather than individual grids meant that potentially important constructs were designated to the waste bin because of the classification restrictions.

5.7. Patterns of thinking

Having established six substantial themes in the content analysis, the next step was to identify common trends or patterns in the data. This started by discovering how subjects' selected themes; and continued to look at changes over time in novices' learning, as indicated by the composition of the themes and grouping of triads; and similarly, comparisons between novices' and experts' that identify similarities and differences in thinking.

5.7.1 How subjects 'voted'

The number of subjects who used each theme, (Table 4.2 and fig 4.3) provided a broad representation of the themes that were generated by novices and experts. The number of subjects using the themes changed over time and there were differences between novices and experts in the number of subjects choosing each theme. Two themes stood out here, the Interactional Theme (Theme I) and the Theoretical Theme (Theme II).

The way the subjects chose was interesting in that most novices selected Theme I, the 'individual versus group' or Interactional Theme in their grids, both at T1 and at T2. This fits in with the discussion on the qualitative analyses of content which initially highlighted the individual versus group focus. The importance of the

distinction between the individual and others is further sustained here. Theme I remains the most stable, evenly distributed theme in terms of number of subjects, both over time and between groups. Theme I was highly favoured by the experts and was the second most popular by this group and thus identified the least differences between the novices and experts.

The Interactional Theme (Theme I) was one which has been identified in previous research on trainee teachers' cognitions. Corporaal (1991) found that 17.95% of the trainee teachers' had constructs which could be classified under an Interactional Theme though it was, in fact, the theme overall least identified by subjects in her study. Corporaal's study, which looked into differences between first year and third year students, found that significantly more first year students shared this theme than third year students. She admits that the differentiation she found between students did not have an easy explanation. In relation to the topic area, that of "good teaching" she suggests that it may be attributed to the implicit theories involved in the type of training the groups received. The differentiation between how many novices, at T1 and T2, and experts selected each theme, did not occur in this study. There were no significant differences in the number of subjects', novices T1 and T2, and experts, who selected this theme. This fits more into the results Corporaal had expected to find.

Theme II, the Theoretical Theme, was the only theme that produced a significant result in this analysis. All the experts had constructs that were classified under the Theoretical Theme. Contrarily, the novices at T1 used Theme II significantly less often, with only around half the novices identifying constructs classified under this theme. Notably, by T2, however, Theme II had gained ground and there was no longer a significant difference between the novices and experts.

The theme was explored in terms of declarative versus procedural knowledge and this was the first evidence that experts' thinking could be thought of as distinct

from that of novices. All the experts elicited constructs in this theoretical theme compared with the novices at T1, which provided evidence of a dramatic contrast between novices and experts in terms of a group of the declarative/procedural distinction. Importantly, though, change was also evident in the novices at T2. The results suggest, therefore, that this distinction between two types of knowledge is not part of the implicit belief system that novices bring with them to a course in psychology. By extension, the results further suggest that the distinction is not a "common sense" belief held by non-psychologists. This fits in with Chi, Feltovich and Glaser's (1981) research on how experts and novices categorise and provides evidence that illustrates Anderson's (1995) notion of adaptation of novices to the characteristics of a particular domain after a course of study.

5.7.2 Change in novices' thinking over time and comparisons with experts

Quantitative analyses revealed change in novices' thinking after a taught course of psychology and contrasts with expert grids. The differences between novices and experts have implications for change in learning and so they are discussed together here. These comparisons were useful in identifying what happens during learning to bring about changes in conceptual organisation.

5.7.2.1 Subjects' use of Themes

The first pattern distinguished from the data in the initial analysis was that all six main themes were used by novices and experts. There were no significant differences over time but there were between novices and experts in the use of Themes. Lifshitz (1974) hypothesised that "professional groups, which vary in training and relevant experience, have common constructs which are similar within each group, yet differ from each other as a function of the amount of professional education undergone by each". This is borne out by the interaction found between the group and theme. The Theoretical Theme (Theme II), stood out when novice and expert data were compared. Novices appear to be much less likely than experts to distinguish between concepts and actions (Theme II). It was found that

Theme II was used significantly more often by the experts than by the novices at T1. The same difference in Theme II was not found, however, between experts and novices at T2. This is evidence of a transition in novices' thinking after learning about the specific domain and can be understood in the light of the discussion in Chapter 3 on domain-specific learning and expertise.

5.7.2.2 How often the Themes were used

Change in learning relating to Theme II was also evident in the statistical analysis on the number of times each theme was identified. Although there was no overall effect of time or Theme in the novices' grids, there was significant interaction between time and Theme. Two themes which just missed the set significance level were the Theoretical Theme (Theme II), and the Perspective Theme (Theme V). The number of constructs elicited by novices in Theme II was greater at T2 after the intervention.

Changes in Theme II can be explained in terms of being important indicators of developing conceptualisation and declarative knowledge. The implications of changes in the Theoretical Theme are that changes occur during learning and novices increase their of theoretical constructs to more resemble experts usage. Novices, before they learn domain-specific information, are limited in their knowledge of causal theories in relation to psychological topics, which results in constraints in conceptualisation. Experts, as experienced lecturers and knowledgeable theorists would more confidently classify in theoretical terms. Their more extensive domain knowledge means that they are more able and comfortable to form classifications along theoretical lines. It is, therefore, reasonable to suggest that experts would be expected to use theoretical terms more frequently to describe the topics as a result of their domain-specific declarative knowledge and facility with the jargon of the domain. Commensurately, intermediate learners, that is learners after a course on psychology, would be expected to know more about the topics, have a stronger

idea of how they fitted in to teaching and learning, would be able to conceptualise them and increase their use of theoretical constructs, and this is what happened here.

It was found that here were differences also in Theme V over time. The novices at T2 used marginally more Theme II (Theoretical) constructs whereas they used marginally fewer constructs related to the Perspective Theme (Theme V) at T2. This suggests that Theme V was a particularly complex theme, and it might indicate some unlearning before progress was made.

Experts produce marginally more of Theme V compared to the novices in T2. Theme V, the Perspective Theme relates to active versus passive poles, examples are *changing-constant* and *subjective-objective*. It would be expected that experts for reasons of their more differentiated theoretical knowledge would be aware of the issues of subjectivity and objectivity. It is not clear, however, why the results did not identify increasing awareness of this dichotomy by novices after having been exposed to the values related to teaching identified during the course. It may be that this is an area that needs further emphasis on the course, for example, focusing more initially on the notion of ambiguous figures (visual perception) and impression formation (social perception).

On the other hand, this also fits in with the idea of novices at T2 being at an intermediate state at the end of the course of psychology. A similar 'backward step' being found in a longitudinal study with social workers by Ryle and Breen (1974) which showed the same type of retrograde step at the intermediate stage. The fact that novices' ability to distinguish between active and passive (Theme V) decreased after the course of learning shows that change occurs at different times and in different Themes. Thus suggesting that learning is not uniformly progressive, there may be times when learning appears to have reversed rather than taken a step forward.

Novices compared to experts are less likely to distinguish between concepts and actions and more likely to distinguish between different kinds of action (Theme III). Further, the novice-expert difference is maintained in Theme II but lost in Theme III after the novices participated in a psychology course.

Not entirely unexpected, though, was the fact that novices produced more miscellaneous constructs than experts. This provided evidence of a less specific focus than that of experts. According to Anderson (1995) the technical language or jargon associated with a specific domain enables experts to more economically represent conceptual knowledge and consolidate thinking whilst for novices it is rather a hindrance than a help to their conceptualisation. It is an important dimension differentiating experts from novices, experts have the experience and perhaps the confidence to categorise new constructs to represent key aspects of thinking. The technical language or jargon associated with a specific domain facilitates experts in clarity of thinking and representation of conceptual knowledge. For novices it makes the domain less comprehensible, so less accessible and, therefore, hinders their conceptualisation. Experts who have the experience and conceptual knowledge, would presumably also be comfortable with the technical language and have the confidence to be more specific in their thinking.

In summary, these results suggest that changes in the frequency with which specific Themes are used continues to occur slowly during learning as it approximates expert usage. The natures of Theme II and V suggest that novices are much less likely than experts to distinguish between concepts and actions (Theme II) and that their ability to distinguish between active and passive (Theme V) decreased when learning commenced. Thus there were changes in different directions in different Themes, suggesting that sometimes change is a backward rather forward step.

5.7.2.3 Hypothesis 1

Hypothesis 1 predicted that there would be evidence of consolidation of learning between the first and second novice grids. It was thought that the novices elicited a greater number of constructs in the first grid before the intervening course of psychology because of limitations in domain-specific knowledge, confidence and coherence in their thinking. It was predicted that the number of different themes characterising novices' intuitive beliefs about topics in psychology would change. It was hypothesised that the overall number of themes would decrease after a period of intervention. That is, individual novices would identify fewer themes on the second occasion of the grid (T2), after a period of learning, than on the first grid elicitation (T1), before a period of learning. This was found to be the case, there were significantly fewer different construct categories or themes elicited by the novices in T2 compared with the number elicited in T1.

Hypothesis 1 focused on the idea of consolidation of learning after an intervention in which novices' intuitive theories are informed by explicit taught concepts in psychology. This would mean that the number of themes would reduce as subjects redefine and consolidate their cognitions. This can be understood in terms of accommodating new understanding, altering our thinking to provide a better fit.

The issue of change in the way novices think was first identified in the overview of frequency in the numbers of subjects selecting themes. One explanation as to why novices produced fewer categories at T2 could be can be related to the findings in Lifshitz's (1974) study on social work students. Her findings lead her to suggest that there was a developmental pattern of concept internalisation, with the less experienced social workers moving from the more concrete descriptive categories to more abstract thinking. Thus resulting in fewer but larger categories, here termed Themes.

Lifshitz relates the type of assimilation into larger chunks to Piaget's classical description of cognitive development (Liftshitz 1974). The change in themes such as Theme II which appears to happen in this research, refers to a similar development in experience related to knowledge and learning. The discussion here, however, does not pursue the developmental argument in terms of highlighting a move from concrete to more abstract thinking as identified by Litshitz (1974). The argument here looks at the evidence from a different perspective in line with Kelly's idea introduced in Chapter 1, that we seek to improve our constructs to 'provide better fits, and by subsuming them with superordinate constructs' (Kelly 1955, 1963 p9). The notion of change in thinking and a consolidation of learning is supported by the significant reduction in the number of construct categories or themes that the novices elicited in T2 compared with the number elicited in T1. This would fit in to Kelly's idea of altering our constructs to better fit in with superordinate constructs. Arguably, the novices elicited a larger number of constructs in the first grid before the intervening course of psychology as a result of limitations in knowledge and lack of coherence in their thinking.

5.7.2.4 Hypothesis 2

Thus, novices produced significantly fewer themes after the course of psychology. *Hypothesis 2* predicted that the number of different themes categorising experts' beliefs about the psychology topics would be fewer than that of the novice group. That is, the number of different themes would be fewer in line with the idea of a simpler, less disorganised picture of psychology and would occur because of their experience in the field of psychology. There was some support for *hypothesis 2* in that it was found that the number of different themes classifying experts' thinking was marginally fewer than those of the novice group at T1 but this difference disappeared at T2. This idea of consolidation or accommodation of learning fits into the change in thinking of novices after a taught course as the inexperienced become more experienced.

Concept learning permeates our lives, we need to categorise events (or objects), grouping them into manageable chunks in order to be able to made sense of the world. Without this form of classification there would be cognitive chaos, the inability to make inferences and predictions about the world would culminate in an inability to learn. 'Not only do concepts themselves have to be learned, but having concepts enables further learning to occur' Stevenson (1993 p182). Stevenson goes on to discuss classical and probabilistic views of concept learning. Briefly, the former relies on classification according to necessary and sufficient lists of features, the latter being characteristics rather than defining features.

It is a third, theory-based view, though, which seems to fit more closely here. This view is defined as the apprehension of the theoretical relations and, importantly here, 'that the instances of a category share a set of features is a consequence of the causal relationships that underlie a person's knowledge of a concept' Stevenson (1993 p183). Consequently limitations in a person's causal theories of psychology would result in restrictions in concept learning. This argument is further supported by Murphy and Medin's (1985) findings that underlying knowledge determines concept membership and Barsalou and Sewell's (1984) findings that context can also affect concept membership. It seems reasonable to argue that experts would have more developed theories, compared with novices, particularly before a course of psychology, and after a course of psychology.

The pattern of assimilation of constructs into larger categories identified in this study corresponds with the pattern found in Lifshitz's 1974 study with novices' cognitions becoming more like their experienced counterparts over time and after an intervention. This expert-novice difference mirrors the change in novices from T1 to T2 in that the number of Themes used decreases as learning progresses.

So far, the evidence continues to provide some support for the idea that experts have a more coherent, less disorganised picture of psychology as a result of their

domain specific knowledge. The novices too appear to have acquired a more coherent picture of psychology. However, this is not the whole story. Novices at T2 showed less organisation than experts in their use of Theme V and in their global organisation (see next section). They also increased their use of the miscellaneous category, although this increase was not significant. Taken together these findings suggest that learning occurs in a piece-meal fashion, with progress being made in some respects and backward steps occurring in others.

5.7.2.5 Hypothesis 3

Hypothesis 3 proposed that the novices would choose the same grouping of elements in the triads at both times of the grid. On the other hand, it was thought that the constructs produced as a result of the selected group would change. Triad groupings remained essentially stable, with 60% of the groupings being unchanged at T2. A significant number of novices maintained the same topics in terms of their similarity and difference yet changed the constructs associated with the grouping. This indicated that the way the novices thought about the individual elements remained the same whilst categorisation of the similarities and differences between the elements changed. This was established by the significant number of novices who changed theme they used to define the elements in the construct row.

There appear to be few bases of comparison in the literature for the degree of change, however, Field and Landfield (1961) found that 80% of constructs were similar in a second grid completed after a period of two weeks. In a longitudinal study over a nine month period Fournier (1995) identified change in graduates' constructs after joining a large organisation ranging between 30 and 60 percent for most subjects, averaging at 45%. She argues that even taking into account possible "errors" this indicates some important change in constructs during the intervening period. The percentage level of different themes being identified here,

67.92% is, therefore, relatively high indicating substantial change in the novices' cognitions.

Hypothesis 3 was supported by the significant number of novices who grouped the same two elements at T1 and T2, which suggests that change did not occur at this level of conceptual organisation. With almost two thirds of the triad configurations remaining the same and conversely two thirds changing, it could be argued that this supports the idea that a fundamental change in thinking about the topics themselves had occurred rather than a change in thinking about which topics were similar and which were different. This suggests that the technique was able to identify change in the way novices conceptualise the topics based on their original combination of topics, rather than change their views about which topics are similar and different. For a large proportion of the novices, their perceptions about the ways in which elements are similar and different remain unchanged. This supports *hypothesis 3* and provides a measure of fundamental change in thinking about the topics, rather than the different triad combinations producing different thinking, indicating important change in thinking after the course of psychology. It appears that conceptual change as a result of taking the psychology course is due to a change in the *interpretation* of the triads rather than to a reorganisation of the elements within the triads.

5.8. Global structure of the elements

Multidimensional scaling revealed a complex change in global conceptual structure as a result of learning. The results highlight the differences in cognitive organisation between novices and experts and the changes in thinking about the concepts after a period of time. There is evidence that the novices' thinking was both more and less disorganised at T1 than at T2 and in comparison with the experts. Also the organisation of novice concepts appears to have changed after the intervention of the course of psychology.

The findings are that novices at T1 were similar to the experts in one dimension but seemingly less coherent than the experts in the other. The Social/Cognitive dimension is less organised at T1 while the novices' plot at T2 more closely resembles that of the experts in alignment of the cognitive elements in the dimensions. The second dimension, the Individual/Psychological Processes or Group dimension is more tightly organised at novices T1 than novices T2. Indeed, it is difficult to identify this dimension at all at novices T2. However, although well organised, the dimension at novices T1 is different from that of the experts. This is evident from the fact that the dimension was best thought of as an Individual/Psychological processes dimension at novices T2 whereas it was best seen as an Individual/Group dimension in experts. Clearly a distinction between Individual and Group is more coherent than one between Individual and Psychological Processes. The seeming disruption in this dimension by novices at T2 may reflect the instability of a conceptual system that is undergoing considerable change from an incoherent to a coherent structure; this change temporarily leading to a more disorganised system than was apparent before learning. The more smooth changes in the organisation of the Social/Cognitive dimension suggests that this dimension is less complex, so more easily learned and more easily grouped and may even, in a simple form, be part of the "common sense" knowledge held by lay individuals.

The overall organisation of the elements in the novices T1 plot shows evidence of limited conceptual grouping, two elements relating to social psychology, for example, were grouped together. However, the elements were spread out around the edges of the plot. The overall impression though was more of dispersion than differentiation. It would seem reasonable to suggest that the apparent lack of differentiation and uncertainty in grouping was due to lack of prior-experience, and domain-specific knowledge. There were more distinctive conceptual groupings in novices T2 compared to novices T1. It seems that the novices may be becoming

more adept at 'chunking' knowledge and the overall organisation bears a closer resemblance to the experts' clustering of elements than at T1, which is in line with the idea of novices at T2 progressing to an intermediate stage of understanding. This slots in nicely with the discussion on *hypothesis 1* and supports the idea of consolidation in thinking, here involving the elements rather than the construct themes, to better fit new understanding after a taught course of psychology.

To focus on the element of teacher characteristics, this element remains more closely associated with the 'individual' in the novices' space at both T1 and T2. Teacher characteristics in the experts' group space, on the other hand, designates teaching as being firmly grounded in the social/group sphere rather than being indicative of inherent individual aspects related to the teacher. The experts appeared to be more aware of the external influences of the context rather than an emphasis on the characteristics of the individual. This may, therefore, be a useful area for development in the course.

Implications of the research

5.9. Introduction

The findings of this study point to considerable possibilities in using the repertory grid to identify and measure learning and changes in learning. Implications for the technique and for learning together with considerations that introduce a cautionary note, and implications for future research are the focus of this last section.

It is worth first acknowledging that the sample was fairly small, though it contained a cross section of students representative of this type of course. It would have been useful to have a control group of novices on a course that did not contain a

psychology component. Additionally, it would have been interesting to re-elicit the grid with the experts after a period of time to see if there were any further changes.

5.10. The repertory grid – pause for thought

Some disadvantages in using the technique are discussed in this section and suggest some caution in generalisation of the data. The triadic elicitation procedures involved in the task and the process and interpretations involved in content analysis come under particular scrutiny.

5.10.1 The task

The task involved a shortened and modified version of Kelly's Repertory Grid and although students were allowed an hour to complete the task, some of the students, especially with the first grid took over an hour to complete. The allocation method used was a straightforward tick or cross. It is safe to speculate that the task would have been even more time-consuming had the rating scale been more complex. It is recognised, however, that whilst the dichotomous allocation of elements within the grids had the advantage of simplicity, it allowed no scope for 'shades of meaning' (Yorke, 1985 p391). The limitations in meaning were first identified in Chapter 1 where it was argued the original grid techniques restricted clarification of constructs to naming originally elicited constructs. Some constructs may have more influence on behaviour than others. This study was not designed, however, to delve further and investigate potential hierarchical integration within individuals' personal construct systems.

Another methodological issue became apparent. The vast majority of studies, including all but one of those referenced in this study, have used the original triadic elicitation procedure. The studies, however, did not identify the demanding aspect of the triadic elicitation procedure; this is not an aspect that receives much attention by proponents of the technique. (The discussion relating to the

technique is usually in terms of the subjects identifying potentially 'threatening' constructs rather than the procedure itself). Dyson (1996) found, however, that the normal triadic elicitation technique was difficult for subjects to articulate adequate descriptors where the concepts were complex.

Yorke (1985) agrees that the triadic elicitation procedure, though widely used, does not always facilitate the generation of constructs. A relatively simple dyadic elicitation method, which could be used in some circumstances, has been used in studies with children, and may be worth exploring. Yorke (1985) suggests that the construing pairs of elements is not incompatible the with original PCT and that the advantages in a group situation are that it makes fewer cognitive demands on the subjects and makes administration simpler for the researcher! Having said that a major disadvantage is that "the analysis is tedious and can place heavy burden on the expert, therefore some experts' have resisted the technique" (Burton et al,1986). The aims of this study, however, were ambitious in the sense of not taking the conventional and more comfortable routes to assessing learning.

In asking students to think of ways in which two concepts are different from a third offers the opportunity, however, for imagination and conditional learning to draw out previously inaccessible information to conscious awareness.

Stewart (1998) eloquently summarises the 'thinking' aspect

> *"It is a great discipline to have to put words into their context, a great preventer of sloppy thinking ... the data are much tighter, crisper, easier to understand and contain less dissimulation"*
>
> Stewart, 1998 Ch2 p6

5.10.2 Content analysis

Repertory grid research using content analysis has been criticised by Takens (1981) as having technical problems and giving 'the impression of a rather

protracted trials-and-error effort' (p252) with categories being eliminated in the process, because of low inter-judge agreement scores. He also suggested that the final result was not subjected to cross-validational research. This criticism was borne in mind here and great care was taken in terms of ensuring validity and reliability.

It is more convenient to use pre-selected categories, but, as Stephens and Gammack (1994) found, the known categories proved incompatible with how subjects thought. The essence of the successive and systematic narrowing down the categories was a deliberate strategy in identifying the superordinate construct without preconceived, and, therefore, potentially enforced and biased classification. Although some of the categories were identified in other research, for example, the individual-group category, it is possible that these similar categories only occurred by chance. The main point is, though, that the categories in this study came purely from the data and did not include any pre-conceived categories. It may be that future research could use the categories identified in this study in order to establish whether the categories are generalisable.

It is acknowledged in this research that although the content analysis was completed as rigorously and objectively as possible, and conscious effort was made to avoid presupposition and hypotheses, it does not ignore the possibility of influence from unconscious conceptualisation and *a priori* theoretical assumptions on the part of the researcher (Scott, 1996). The potential problem of the influence of previous research findings affecting the interpretation did not arise; however, as to my knowledge the elements within the domain were unique and had not been used before as elements in a repertory grid.

It may have been helpful to have started off with a supplied construct in row 1 to use as a baseline for group data. It might also have been valid to have given subjects a couple of free choices at the end of the 12 rows instead of only having

stipulated stimulus elements. However, this would have complicated the procedure unnecessarily.

The repertory grid is evidently a technique that made subjects think, but it is not unproblematic, nor is it completely unbiased. In a sense it is linguistically reductionist, which might mean that it is insufficient in eliciting meaning from individuals. Many people have difficulty in reflection. The use of language is often idiosyncratic and personal and inadequate in conveying the total meaning. Repertory grid techniques 'rely on people's ability to be introspective, to reflect on their experiences and assume that the idiosyncratic quality of such experiences can be captured and communicated via language' (Tindall, 1994 p 88). This was borne out to a degree by some of the introspective comments and so she may have a point. The original repertory grid was designed to work on an individual level where meaning can be negotiated and an individual produces reasonably manageable chunks of data. Identification of meaning is more illusive with subjects completing the grids in a group context. Having said that, there were some strong indications of potentially exciting discoveries and patterns in the data here, sufficiently thought provoking and to suggest further investigation using the technique in addition to other methods (see, for example, Stevenson et al, 1988).

5.11. Implications for learning

Earlier chapters discussed the efficacy of the method for eliciting beliefs and changes in learning. An initial appeal of the repertory grid as the method here was the attraction of not assuming interpretation of others' perceptions and constructs were elicited in an unconstrained way rather than provided by the experimenter. This was true in relation to limitations and bias involved in alternative traditional methods. Some interpretation by way of inescapable definition of the construct dimensions and allocation and description of themes was involved; essentially though it was the individuals themselves who provide the essence and originality

of the thinking processes. This is in line with the fundamental principle of andragogy, the idea of reflection, validity and with the basic philosophy of Kelly's original theory.

It is also a technique, which avoids potential social pressure that is sometimes evident in alternative methods of assessing knowledge, which engenders an invalid consensus. It has the potential to promote collaborative rather than competitive learning.

Chapter 3 argued that what the learner already knows or perhaps does not know about the domain can limit learning. Kintsch (1994) stated that research will progress by looking at practical ways in which prior knowledge can be determined. The repertory grid technique is put forward here as one way of identifying what Kintsch's calls 'zones of learning'. It also fulfils the well-known argument for active participation over passive acceptance in the learning process. Kintsch argued that putting knowledge on a plate would result in a kind of mindless acceptance. Having said that, Britton and Gulgoz (1991) argue that novices, as opposed to experts, require coherent and explicit information and found learning where novices were given well organised, efficiently explained information. The findings would concur with the fact that the grid was found to be a difficult task and some students in their comments identified the difficulties they experienced with the lack of coherent information especially with the first grid and ambiguities they found. But the benefits of searching for a way to express how they perceived the topics were also expressed. The repertory grid certainly set the wheels of the brain in motion.

The method enabled comparison between the way the novices thought before and after the course of psychology and between the novices and experts, which provided an operational definition of educational change. Corporaal (1991) commented on the marked difference between her study and other research

studies that constantly indicate contrasts in learning. She noted that relatively few differences emerged from her research data between the various groups in her study of prospective teachers and reflected on whether her research was optimally realised using the repertory grid on the relatively large-scale research and learning. In this study, differences were apparent, however, identifying change after a taught course and indicating that the novices underwent considerable change in their thinking over time.

The findings here seem to indicate the importance of Kelly's grid in measuring implicit rather than explicit knowledge as there was a contradiction in what novices' thought they had learnt, as indicated on the self-ratings, and what the grids actually showed. According to Langer (1992) mindfulness offers 'potential freedom from self-imposed limitations' (p302). It could be argued, therefore, that mindlessness results in uncritical acceptance of information with resultant negative educational implications.

Experimental results support the idea that mindfulness allows individuals to benefit from previously unconscious knowledge and that mindlessness can be characterised by minimal information processing and single-minded, rigid encoding of particular content way and this may have behavioural consequences for the person (Langer, 1992). The repertory grid technique has the potential to encourage individuals to draw out into consciousness, thinking about a domain or topics in a domain, 'exposing' within a group environment commonalties and differences in beliefs or intuitive theories within that domain. In conceptual terms it is a flexible tool for assessing learning which sees the potential rather than the limitations in learners, it involves learners in criticality rather than passive acceptance and, therefore, is relevant for supplementing strategies in teaching as well as experimental work.

It was identified earlier that for learning to be successful, particularly with adult learners, it needs to be relevant. Uncritical acceptance occurs if given by expert or authority, that is, a teacher, resulting in minimal reflection, additionally when information is given in absolute rather than conditional language' (Langer, 1992 p 292). Langer cites her research with Langer and Imber (1979) that 'indicated that conscious awareness of [a task] could free persons from mindlessly engaging in scripted behaviour'. In other words, 'rigid invariant behaviour', could leave that information inaccessible to conscious recall. They and Gilbert, Krull, and Malone, (1990) hypothesised that 'when an individual is presented with information not viewed as personally relevant, the individual will not be motivated to question the information and may accept it uncritically' (Langer, 1992 p292). Furthermore, they argue that it could be expected that uncritical acceptance of information would happen if the information was not found to be personally relevant, or when information is given by an authority or expert (the teacher). Linking in with intuitive theories would enhance relevance, develops confidence and encourage motivation in the learner. Bringing to consciousness intuitive beliefs enables change or building on prior knowledge for progressing cognitive learning.

It follows from the constructivist viewpoint that tools such as the repertory grid allow learners to investigate their intuitive theories and the relativity and pluralism of their ways of thinking are relevant in subjects such as psychology that are approached at least in part in a positivistic way. It is inappropriate to deliver psychology within a vocationally orientated teaching course in a didactic 'received wisdom' way. It assumes privileged knowledge on the part of the 'expert' being delivered to empty vessels, the 'novices'. (Shaw and Gaines, 1995).

Trainee teachers need to be encouraged to be flexible and adaptable within their practice and to become 'reflective practitioners'. Reflection was defined by Schön in two distinctive ways as 'reflection-in-action' a tacit, subconscious type of thinking enabling teachers to respond effectively to situations as they occur 'reflection-on-

action', and as a more conscious and analytical process enabling teachers to make sense of and share their practice, (Schön, 1983, 1987). Teachers whether 'novices' or 'experts' can be encouraged to do this by sharing their experiences, perceptions and their intuitive theories.

Teachers, however, are often perceived as imparting 'privileged knowledge' as an expert to novices. Psychology courses reinforce this by assessing performance via the traditional routes of examinations, essay and assignments whereby measurements can be made regarding the assimilation and regurgitation of the knowledge they have received. This does not augur well for the principle of 'reflective practice'. A learning environment suitable for reflective learning is based on the recommendations and beliefs of Carl Rogers who advocated a co-operative environment, which nurtures less defensive, more adaptive and creative learners.

5.12. Implications for future studies

A repertory grid technique used at the outset of a course could be a vehicle for accessing unconscious beliefs and provide category constructs which would have individual and group relevance. Relevance, relating the topic to personal, self-identified categories might, therefore, be a useful strategy in teaching to establish and maintain interest and encourage less rigid single-mindedness and insensitivity, for example, to the context-dependent nature of behaviour. The expectation within this study, therefore, is that if learners are enabled from the beginning of the course to think in critical ways about the topics they will be covering during the course, and to consciously access their own and the groups' beliefs within the 'safety' of the repertory grid, that this would allow subjects to reassess the information they receive in novel contexts. The novel context being their attitudes and the way they function within their teaching environments.

The repertory grid could be used to look at perceptions of trainee teachers and gain insights into teachers' thinking and practice (Day, Pope and Denicolo, 1990). Using the Role Repertory Test, say, to discover how they feel about students. Although concerns about what the data might reveal and sensitivity might prohibit its' comfortable use; it is a powerful tool.

Standard techniques for externalising expert knowledge as identified in such studies by Stevenson, et al (1988) on developing expert systems, computer based techniques emulating a human expert in a given subject area (Romiszowski, 1988), can be problematic in that they rely on experts' verbal reports and assume they have conscious access to all their cognitive processes. Added to that, experts may have acquired implicit hypotheses which may not coincide with publicly available domain knowledge, making it extremely difficult for them to articulate their knowledge explicitly (Adams-Webber, 1995). The repertory grid can be harnessed to explore the perceptions of subjects in relation to different cognitive tasks in a mindful way. Tasks used as elements would provide more information as to how we problem solve. The repertory gird technique can measure the responses and assess changes in how we address problems in order to evaluate cognitive organisation and provide another strategy for establishing a coherent account of subjects' knowledge.

The repertory grid can be used as an effective technique for presenting a conceptual model of concepts in a domain, or to inform the design of information systems (Stephens and Gammack 1994). The question of extensions of the repertory grids as computer-based interactive and collaborative learning systems is beyond the scope of this study (see, for examples, www.enquirewithin.co.nz, Stewart, 1998 and WebGrid, Shaw and Gaines, 1995). However, there are important implications in terms of tools which may be used in times of reduced contact time and with the facility and imperative of interactive learning technology.

In addition to identifying similarities and differences in learning, for use in the development of the course content and delivery, and course evaluation (Fisher, Russell, McSweeney, 1991), the repertory grid technique has the potential to enable individuals and group to identify and focus on idiosyncratic and unanticipated aspects of particular ways of thinking. This may in itself lead to re-evaluation and change.

5.13. Conclusions

The repertory grid is not an easy technique to learn (Stewart, 1998), and it creates practical and conceptual problems for the analyst (Hill, 1995). The analyst's interpretation of the content of the grid, construing the constructs, proved to be a enormous task. The task was painstaking and various sorts were made, particularly in view of the difficulty in interpreting accurately and impartially what the person actually meant to convey when using the construct and the difficulty in effectively grouping abstruse words into common categories.

The intricate process of content analysis is compounded by the fact that meaning cannot be negotiated with individual members of the group and, therefore, the competence of interpretation and necessity of reliability checks such as those championed by Perreault-Leigh (1989) become even more crucial. The complexity, responsibility and sheer volume of work involved on the researcher's part in the content analysis of multiple grids, particularly if unconstrained elicitation of constructs is permitted as it was in this case, is sufficient to pose the question of whether the technique for group data as completed in this study can practically be used within organisational contexts where there are restrictions of time and resources.

Additionally, despite the fact that repertory grids date back to the 1950s, the research procedure is still novel to most people. The relatively unconventional

methodology may be resisted by subjects used to completing the more comfortable, more convenient but ultimately less illuminating questionnaire-type or interview procedures where the researcher provides the questions. The aim of this study, however, was not to ask predetermined questions but to ask that the subjects use their own conceptual apparatus and in these terms the methodology was successful in stimulating thinking and measuring change and differences in thinking.

Intuitive beliefs about the domain of knowledge, how the knowledge applies in practice and the relevance to the learner 'will impede learning if they are contrary to actual practices of subject experts' (Stevenson and Palmer, 1994 p127). New learning seems evident here as far as group data is concerned (rather than within individuals) after the course of psychology. This study shows that the learning has been amenable to change, and in significant ways it seems to have become more in line with that of the experts

Bannister and Fransella (1986) argue that Kelly's theory is 'an attempt to build a theory with a very wide range of convenience, a theory not tied to one particular concept-phenomenon. It is not a theory of 'learning' ... is certainly not a 'cognitive theory', although many textbooks have tried to categorise it as such' (p4). Criticism that PCT concentrates on the cognitive aspects of experiences and behaviour to the detriment of the subjective experience is no barrier here. This study used the technique associated with PCT to concentrate on the identification of constructs and how constructs change. The focus is acknowledged as being essentially cognitive and rational in its approach rather than exploring the subjective experience. An experimental tool, which offers a subtle and indirect approach, however, fits in with Kelly's philosophy of a non-factional approach. A dichotomy between subjectivity and objectivity would be irrelevant; for Kelly 'the distinction usually made between cognition and affect was inappropriate' Pope and Keen (1981 p 28).

The study has shown in particular that novices learn in a piecemeal fashion making forward steps in some aspects and backward steps in other aspects of the domain being learned. Whilst taking on board cautionary notes discussed in this section, the results of the study point to the repertory grid as an effective tool in eliciting intuitive beliefs about the topics in psychology, offering measurable thinking for public (or private) scrutiny. Thus, to refer back to the argument put forward by Stevenson and Palmer (1994), enabling or developing new learning.

> *"The grid is truly a technique and one which is only limited by the user's lack of imagination."*
>
> Fransella and Bannister, 1977 p59

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APPENDICES

PRE-PROGRAMME QUESTIONNAIRE

Please complete the following questionnaire which relates to the **psychology component** of the programme. The information you offer will be kept confidential and there is no need to give your name/age unless you wish to. Results of the questionnaire will be available at the end of the programme.

Name: _____

Occupational background: _____

Teaching subject area: _____

Sex: Male/Female (delete as appropriate)

Age: _____

How would you rate your previous knowledge of pscyhology?

virtually no knowledge 1 2 3 4 5 6 7 8 9 10 **in-depth knowledge?**
(circle the appropriate number)

Please indicate what you expect to gain from the psychological input of the programme in terms of

1 how **relevant** to teaching and learning you expect the psychology to be

not relevant 1 2 3 4 5 6 7 8 9 10 **extremely relevant**
(circle the appropriate number)

2 how **useful** you expect it to be

not useful 1 2 3 4 5 6 7 8 9 10 **extremely useful**
(circle the appropriate number)

3 how much you expect to **enjoy** the psychology component

not enjoyable 1 2 3 4 5 6 7 8 9 10 **extremely enjoyable**
(circle the appropriate number)

4 how **difficult** you expect it to be

not difficult 1 2 3 4 5 6 7 8 9 10 **extremely difficult**
(circle the appropriate number)

Thank you for completing the questionnaire.

Appendix 2

THE REPERTORY GRID

You are invited to put your name on the repertory grid if you wish to do so; to leave it anonymous or to use a pseudonym if you prefer. If you have any thoughts about the topics or any aspect of the grid, or if you would like to make any comments about the process of completing the grid, please do so on the reverse side. Any contributions you make will be appreciated and will help me with my research.

Instructions for completing the grid

The columns of the grid represent twelve psychological topics you will be covering over the next six months on this course. These topics are identified along the top of the grid.

1 Each row has three boxes which contain rings. Look at the topics whose corresponding boxes contain a ring.

2 Row by row of the grid think of *some way in which any two of the three ringed topics are similar to each other and different from the third.*

3 Write your ways of thinking about a topic alongside the row. These ways of thinking are known as 'constructs'. Describe the way in which the two topics are similar on the left hand side under 'Constructs (similarities) (✓)' and tick (✓) in the appropriate rings; and the way in which they are different to the other topic on the right hand side under 'Constructs (differences) (✗)' placing a cross (✗) in the appropriate ring. Please be as concise as possible. A single word may be sufficient, but please feel free to use a phrase or even a sentence if you think it is needed. Complete all the rows in this way.

4 Now return to the beginning and taking each row in turn, look at the construct you have given and decide whether each of the remaining topics (from 1-12) in that row is best described by the construct on the left (similarity) or the one on the right(difference). For example, if you think that the topic relates more to the 'similarity' side put a tick (✓) in the box of the appropriate column; for those you think relate more to the 'difference' side put a (✗) in the box of the appropriate column.

Continue this process until all twelve rows are completed. Please do not leave any boxes blank.

THANK YOU FOR COMPLETING THE GRID.

Anne-Marie Dobing

Appendix 3

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
1	1	1	Memory Personality	Memory and personality are qualities of persons	qualities	Teacher characteristics relate to the style used for teaching	style	Teacher Characteristics	VI	yes
1	1	2	Learning: Cognitive Intelligence	Cognitive learning needs intelligence to work	capacity	Behaviourist learning relied on memory of pos and neg reinforcement	cognitive process	Learning: Behaviourist	II	no
1	1	3	Learning: Behaviourist Motivation	If motivation on the level of pain/pleasure is invoked this might be e.g. of "Behaviourist" learning	emotion	V P is our name for the way the mind receive info from the eyes	name	Visual Perception	II	no
1	1	4	Social Perception Learning: Cognitive	Social perception can involve cognitive learning about one's social environment	social environment	Intelligence is a complex thing which we may have more or less of (relatively)	personal attribute	Intelligence	IV	yes
1	1	5	Group Dynamics Social Influence	G D and S I go together because G D are systems of S Is	systems	Personality related to singular subject	single subject	Personality	II	no
1	1	6	Social Perception Communication	Subject "A" might project a determinate social image to Subject "B" as a form of communication	projection	Motivation is something the subject has (e.g. fear of heights motivates me to climb down) or can be given (e.g. payment for work)	attribute	Motivation	VI	yes
1	1	7	Motivation Personality	Pers and Motiv are attributes of individuals	individual attribute	Any type of learning is an action rather than an attribute	action	Learning: Cognitive	III	yes
1	1	8	Teacher Characteristics Social Influence	Social Inf could be an e.g. of a teach char a tool used in the classroom	tool	Memory considered a faculty or ability could be objectively tested/measured	measurable faculty	Memory	II	yes
1	1	9	Communication Group Dynamics	Communication a vehicle of interrelationships in a group	group interaction	Visual Perception is 'inside' an individual	individual	Visual Perception	I	yes
1	1	10	Memory Intelligence	Complex faculty used in learning	faculty	Is a personal thing	personal	Social Perception	III	yes
1	1	11	Teacher Characteristics Group Dynamics	Made out of information about class	information	Paradigm or viewpoint in the areas of teaching, psychology etc.	theory	Learning: Behaviourist	II	yes
1	1	12	Visual Perception Social Influence	Social inf and Vis Percept are both subjective	subjective	Communication is determinate (it means what is means not wot U think it means)	determinate	Communication	V	no

Comment: *I would have preferred to write a paragraph or so on each topic*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
1	2	1	Memory Personality	Everyone has	group	Only teachers have	Individual	Teacher Characteristics	I	yes
1	2	2	Learning: Behaviourist Learning: Cognitive	Ways of explaining the same thing	single meaning	hypothetical construct with many meanings	multi-meaning hypothetical construct	Intelligence	II	no
1	2	3	Visual Perception Learning: Behaviourist	1 [visual perception] may be e.g. of 4 [learning: behaviourist]	examples	Can be a given thing from outside individual	external entity	Motivation	II	no
1	2	4	Social Perception Learning: Cognitive	actions	actions	attribute	attribute	Intelligence	III	yes
1	2	5	Personality Group Dynamics	could be thought as same thing	misc	effect/externalisation	effect	Social Influence	VII	no
1	2	6	Social Perception Communication	can be an act of receiving	action	Noun signifying one person's reason for action/inaction	noun	Motivation	II	yes
1	2	7	Motivation Personality	Ill defined (but universally accepted concepts)	universally accepted concepts	less accepted as real	less accepted	Learning: Cognitive	II	yes
1	2	8	Teacher Characteristics Social Influence	Special case	example	individual faculty	faculty	Memory	II	yes
1	2	9	Communication Group Dynamics	Special case	example	individual faculty	faculty	Visual Perception	II	yes
1	2	10	Memory Intelligence	Hypothetical entities (concepts)	concepts	actions	actions	Social Perception	II	yes
1	2	11	Teacher Characteristics Group Dynamics	Descriptions (in classroom)	concepts	Paradigm	theory	Learning: Behaviourist	II	yes
1	2	12	Communication Social Influence	Special case	example	The way one interprets sense data	cognitive process	Visual Perception	II	no

Comment: *This was something of a task; meaning that it seemed difficult to answer from intuition.*
This time is was easier, but whether this was because the first attempt was like practice, or whether it was the effect of the intervening period of study and thought.

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
2	1	1	Teacher Characteristics Personality	changing	changing	constant	constant	Memory	V	no
2	1	2	Learning: Behaviourist Intelligence	personel abilities	personal abilities	influenced	influenced	Learning: Cognitive	IV	no
2	1	3	Learning: Behaviourist Motivation	self identified	self	outside events	outside events	Visual Perception	IV	yes
2	1	4	Social Perception Intelligence	built in ability	in-built	differing facts	differing facts	Learning: Cognitive	VII	no
2	1	5	Group Dynamics Social Influence	structured	structured	alone	alone	Personality	V	yes
2	1	6	Social Perception Communication	relating to others	others	self aims	self	Motivation	I	no
2	1	7	Learning: Cognitive Motivation	own goals	personal	academical	academic	Learning: Cognitive	II	no
2	1	8	Memory Teacher Characteristics	alterd, changed	changeable	unchanging	unchanging	Memory	V	no
2	1	9	Visual Perception Group Dynamics	sight/perception	faculty	teachable	teachable	Communication	V	yes
2	1	10	Memory Intelligence	Private (to individual)	private individual	alter - change	changing	Social Perception	V	yes
2	1	11	Teacher Characteristics Group Dynamics	affecting each other	interactive	personel	personal	Teacher Characteristics	I	no
2	1	12	Visual Perception Social Influence	take in	take in	give out	give out	Communication	V	no

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
2	2	1	Memory Personality	development	development	can be taught	taught	Teacher Characteristics	VI	no
2	2	2	Learning: Behaviourist Learning: Cognitive	Schools of learning	schools of learning	both individual + social	individual and social	Intelligence	II	no
2	2	3	Learning: Behaviourist Motivation	Concepts of psychology	concepts	individual/personal	individual	Visual Perception	II	yes
2	2	4	Learning: Cognitive Intelligence	individual	individual	Other peoples' perception	others	Social Perception	I	no
2	2	5	Group Dynamics Social Influence	People's influence structure groups	groups	personal	personal	Personality	I	yes
2	2	6	Social Perception Motivation	Egos influenced by (how we are seen)	how we are seen	Not in are control	not in our control	Communication	VII	no
2	2	7	Learning: Cognitive Motivation	motivation	motivation	personal	personal	Personality	III	no
2	2	8	Memory Teacher Characteristics	personal	personal	groups	groups	Social Influence	I	no
2	2	9	Visual Perception Group Dynamics	inter active with others	others	personal	personal	Communication	I	yes
2	2	10	Memory Intelligence	ones self	self	How others affect/see us	others	Social Perception	I	yes
2	2	11	Teacher Characteristics Group Dynamics	inter active with group	group interaction	personal	personal	Learning: Behaviourist	I	no
2	2	12	Communication Social Influence	groups/affective	group	Singular	singular	Visual Perception	I	no

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
3	1	1	Teacher Characteristics Personality	own personality	personal	not essential	not essential	Memory	VII	yes
3	1	2	Learning: Behaviourist Learning: Cognitive	learning mode	learning mode	not essential	not	Intelligence	II	yes
3	1	3	Learning: Behaviourist Motivation	learning mode	learning mode	own view	own view	Visual Perception	II	yes
3	1	4	Social Perception Learning: Cognitive	Influenced by life	experience	not essential	not	Intelligence	IV	no
3	1	5	Personality Social Influence	Own personality (ideas)	individual	other people's ideas	others	Group Dynamics	I	yes
3	1	6	Social Perception Communication	oral, views of others	extrapersonal	Push, drive (learning mode)	Intrapersonal	Motivation	VI	yes
3	1	7	Learning: Cognitive Personality	The way you think	cognitive individual	The way you are driven	individual drive	Motivation	III	no
3	1	8	Memory Teacher Characteristics	good teaching methods	teaching methods	does not relate to teaching	not	Social Influence	II	no
3	1	9	Communication Group Dynamics	More than one point of view	group	Your own view	individual	Visual Perception	I	yes
3	1	10	Memory Intelligence	own intelligence	individual	View on the whole	general	Social Perception	IV	yes
3	1	11	Teacher Characteristics Group Dynamics	group teaching ideas	group	can be achieved by self	individual	Learning: Behaviourist	I	yes
3	1	12	Visual Perception Social Influence	The way you think	individual thinking	More than one person's thoughts	group process	Communication	I	yes

Ss no	T1/ T2	Row no	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
3	2	1	Teacher Characteristics Personality	Teacher's personality would come over when teaching	extraperson al	A good memory would help but not necessary in teaching	intrapersona l	Memory	VI	yes
3	2	2	Learning: Behaviourist Learning: Cognitive	both learning modes	learning modes	Maybe intelligence would help (this is a difficult one)	process	Intelligence	II	yes
3	2	3	Learning: Behaviourist Motivation	needed in most learning areas	needed in learning	Your view of someone/something by sight	view by sight	Visual Perception	VII	yes
3	2	4	Learning: Cognitive Intelligence	Learning modes -ways of thinking	cognitive process	Can be influenced by experience and other people	experience/ influence	Social Perception	IV	no
3	2	5	Personality Social Influence	your own personality could be influenced by others	interpersona l interaction	others' views, could have a link	others' views	Group Dynamics	I	yes
3	2	6	Social Perception Communication	others peoples views could be passed on	others interaction	Would be self (personality)	self	Motivation	I	yes
3	2	7	Motivation Personality	both are personality based, self influenced	individual	can be influenced by others	others	Learning: Cognitive	I	no
3	2	8	Teacher Characteristics Social Influence	Teaching methods could be influenced by social influences	teaching methods	a good memory would help but not necessary in teaching	not necessary in teaching	Memory	II	no
3	2	9	Communication Group Dynamics	View of two or more, passing on ideas etc	group interaction	One's own views	individual cognition	Visual Perception	I	yes
3	2	10	Memory Intelligence	Personality linked	individual	Influences of others	others	Social Perception	I	yes
3	2	11	Teacher Characteristics Group Dynamics	teacher could encourage the group dynamics	interpersona l interaction	Learning mode (self)	individual	Learning: Behaviourist	I	yes
3	2	12	Visual Perception Social Influence	social influence would affect the way you see things	individual cognition	communication would be linked	misc	Communication	VII	yes

Comment: *I found this as difficult to do as the first one. Some of my views change as I have read up and understood the psychology terms. I did find that I thought a lot of the O [ellipse] linked and find it difficult to pick the one that did not, changing my mind all the time.*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
4	1	1	Teacher Characteristics Personality	a teacher personality influences the teachers characteristics and the way they teach	extrapersonal	is the way we remember	intrapersonal	Memory	VI	yes
4	1	2	Learning: Cognitive Intelligence	is the ability to learn	ability	acknowledgement of a person behaviour	behaviour	Learning: Behaviourist	III	yes
4	1	3	Visual Perception Learning: Behaviourist	visual contact is the first contact often we make a judgement on the way we expect the behaviour	assumption	is given, not assumed, visual grounds	given, not assumption	Motivation	V	no
4	1	4	Learning: Cognitive Intelligence	the ability to learn or the speed at which things picked up can be measured or are intelligence	intrapersonal	Is seeing people around us and having an opinion about them	extrapersonal	Social Perception	VI	yes
4	1	5	Group Dynamics Social Influence	social groups affect group behaviour	social behaviour	personality is very individual and changes only as we grow and learn	individual process	Personality	IV	yes
4	1	6	Social Perception Communication	are perception of a person can alter the way we communicate with them	interpersonal interaction	is gathered or altered from the environment	environment	Motivation	IV	no
4	1	7	Learning: Cognitive Motivation	For myself learning is easier if I feel motivated either from my teacher or group from wanted to learn it	extrapersonal	Is part of 1 person that can not be changed easily or can be called upon to have a different one	intrapersonal	Personality	VI	yes
4	1	8	Teacher Characteristics Social Influence	Key points of the characteristics of the teacher are called upon with different social influences	extrapersonal	is an ability which we call upon to learn	ability	Memory	VI	yes
4	1	9	Communication Group Dynamics	within a group communication is needed to do info and to give it, people in that group act differently some more dynamic than others	group interaction	Individual. Is seeing, and taking in what is around us	individual	Visual Perception	I	yes
4	1	10	Memory Intelligence	are intelligence grows and get better as are memory takes in infor	cognitive process	Is seeing, it does not always effect learning ability	seeing	Social Perception	III	yes
4	1	11	Learning: Behaviourist Group Dynamics	Within a group are behaviour alters depending upon other or stronger persons in the group	group interaction	are part of a person which are needed at different time	personal	Teacher Characteristics	I	no
4	1	12	Visual Perception Social Influence	How we are perceived by others can have an effect the way we can influence others in social situation	others	Can be done without any visual contact or influence from a social group	individual	Communication	I	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
4	2	1	Teacher Characteristics Personality	The way in which the teacher teaches can be due to their personality	extrapersonal	Is personal to the person	intrapersonal	Memory	VI	yes
4	2	2	Learning: Cognitive Intelligence	born with	born with	learned	learned	Learning: Behaviourist	VI	yes
4	2	3	Learning: Behaviourist Motivation	motivation can encourage learning	encourages learning	visual perception can only cause learning problem if communication not there	learning difficulty	Visual Perception	VII	no
4	2	4	Learning: Cognitive Intelligence	Interlinked towards gaining new skills	learning process	Does not contribute to learning process	not	Social Perception	VII	yes
4	2	5	Group Dynamics Social Influence	affects with others while in group	interpersonal interaction	Born with (possibly)	born with	Personality	VI	yes
4	2	6	Motivation Communication	Can effect each other	effect each other	personal thought	personal cognition	Social Perception	VII	no
4	2	7	Learning: Cognitive Motivation	motivation is an important part of learning	part of learning	personality does not always interup with it	not always	Personality	VII	yes
4	2	8	Teacher Characteristics Social Influence	In social influences can alter the teacher's teaching	teaching process	memory is a personal thing	personal	Memory	VI	yes
4	2	9	Communication Group Dynamics	Within group dynamics, communication plays an important role	interaction	visual perception can be a personal experience	personal	Visual Perception	I	yes
4	2	10	Memory Intelligence	Intelligence is sometimes measured by the amount we remember	measured	Social perception can not be measured	not measured	Social Perception	II	yes
4	2	11	Learning: Behaviourist Teacher Characteristics	the way of the teacher can influence the learning	influences learning	group dynamics may not interfere with this	not learning process	Group Dynamics	VII	no
4	2	12	Visual Perception Social Influence	can effect each other	interrelated	does not allway effect them	not	Communication	VII	yes

Comment: *Can be difficult to make clear differences between each of them as when linked together. I found it hard to think about why a paired the titles up. But it was easier this time round.*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
5	1	2	Learning: Cognitive Intelligence	Both to do with brainpower	cognitive process	Behaviour depends on other outside influences, as well as personnel feelings	outside influences	Learning: Behaviourist	IV	yes
5	1	3	Learning: Behaviourist Motivation	Motivation will affect your behavior	behaviour	Visual perception will not affect	not	Visual Perception	III	yes
5	1	4	Learning: Cognitive Intelligence	Both to do with brainpower	cognitive process	Is outside influence	outside influence	Social Perception	IV	yes
5	1	5	Group Dynamics Social Influence	Social influence once within a group	group interaction	Individual personalities will help or hinder group dynamics	individual	Personality	I	yes
5	1	6	Social Perception Communication	How you see others can affect how you interact with them	extrapersonal	Your motivation is a personal thing	intrapersonal	Motivation	VI	yes
5	1	7	Motivation Personality	What sort of person you are has a direct affect on how motivated you are	intrapersonal	The ability to learn is different	ability	Learning: Cognitive	III	yes
5	1	8	Teacher Characteristics Social Influence	A persons social background can influence his character	social background	Memory is something we are born with	born with	Memory	IV	no
5	1	9	Communication Group Dynamics	You would need communication skills to interact with groups of people	interpersonal	This is how you see others as they stand not how they get along - one-way process	intrapersonal	Visual Perception	VI	yes
5	1	10	Memory Intelligence	How intelligent you are can depend on and is tested by how much you remember	cognitive process	Social perception is how you see and react to others outside work environment	interpersonal	Social Perception	VI	yes
5	1	11	Learning: Behaviourist Teacher Characteristics	The way the teacher is has a direct affect upon the rest of the group	interaction	This is an ability we already have	ability	Group Dynamics	I	no
5	1	12	Communication Social Influence	The way we see others and react depends on the things we are used to	extrapersonal	To communicate is a basic instinct	instinct	Visual Perception	VI	no

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
5	2	1	Teacher Characteristics Personality	Characteristics are directly a result of your personality	individual	Less like the other two but is still similar to them	misc	Memory	VII	yes
5	2	2	Learning: Cognitive Intelligence	Go hand in hand with each other, with one you get the other	inter-dependent	Instinctive	instinct	Learning: Behaviourist	VII	yes
5	2	3	Learning: Behaviourist Motivation	A behaviouristic approach to learning is mainly fueled by motivation	learning process	Is only as the person alone sees a certain thing	individual cognition	Visual Perception	VII	yes
5	2	4	Learning: Cognitive Intelligence	Depending on how intelligent you are will depend on how much you will learn cognitively	cognitive process	Is due to the way in which you lived your life prior to that minate	experience	Social Perception	VI	yes
5	2	5	Group Dynamics Social Influence	Both group things and are about people with people	group interaction	Personality affects all aspects of your life	individual	Personality	I	yes
5	2	6	Social Perception Communication	How you see others will alter the way you communicate with others	interpersonal	Can alter from hour to hour it will depend on all sort of outside problems e.g. diet - sleep etc	changeable	Motivation	VII	yes
5	2	7	Motivation Personality	How motivated you are will be greatly affected on your and your peers personalities	extrapersonal	How brain thinks only	cognitive process	Learning: Cognitive	VI	yes
5	2	8	Memory Teacher Characteristics	The character of the teacher can greatly affect a person's memory for the good or bad	intrapersonal	Is an "outside the classroom" concept and only comes into classroom in (e.g.) group dynamics	outside influence	Social Influence	IV	no
5	2	9	Communication Group Dynamics	Communication is essential to group dynamics. Without it there is not interaction	group interaction	Is personal, the way one person sees something. It is not a group thing	individual	Visual Perception	I	yes
5	2	10	Memory Intelligence	How much you remember is a measure of intelligence - how you will do in a test	intrapersonal	How a group sees another being will not affect their memory or intelligence	extrapersonal	Social Perception	VI	yes
5	2	11	Learning: Behaviourist Teacher Characteristics	Teacher characteristics will directly affect the learning of their students	teacher affect	Is an interaction of students personalities and social behaviour	group interaction	Group Dynamics	I	no
5	2	12	Communication Social Influence	How you get along with another being is greatly affected by how you are influenced	extrapersonal	Is "personal sight" how one person sees something and interprets it	individual cognition	Visual Perception	VI	no

Comment: *This exercise is very taxing on my brain because some things are very similar but also very difficult and vice versa, and you have to direct it and analise it closely. I did enjoy doing it but I feel I don't know enough to come to any definate conclusions.*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
6	1	1	Teacher Characteristics Personality	must not clash	must not clash	not applicable	misc	Memory	VII	no
6	1	2	Learning: Behaviourist Learning: Cognitive	Interactive. Match	interactive	not required	misc	Intelligence	VII	yes
6	1	3	Learning: Behaviourist Motivation	Pavlov's dogs e.g.	misc	sight not needed in Pavlov's experiment on the healing properties of saliva	not needed	Visual Perception	VII	yes
6	1	4	Learning: Cognitive Intelligence	Cannot learn without thinking	individual learning/ thinking	no link	misc	Social Perception	VII	yes
6	1	5	Personality Group Dynamics	Required for integration	integration	a debatable matter that this is the odd man out	misc	Social Influence	I	no
6	1	6	Motivation Communication	One is no good without other	inter-dependent	no link	no link	Social Perception	VII	yes
6	1	7	Learning: Cognitive Motivation	Reinforcement	reinforcement	is this required?	required?	Personality	VII	yes
6	1	8	Memory Social Influence	Peer group pressure	group	not required	not required	Teacher Characteristics	I	no
6	1	9	Visual Perception Communication	1 & 8 reinforce eachother	interrelated	One can learn alone	individual learning	Group Dynamics	VII	yes
6	1	10	Memory Intelligence	Go together (link)	linked	no link	no link	Social Perception	VII	yes
6	1	11	Learning: Behaviourist Group Dynamics	A feeling of belonging	emotion	not required	not	Teacher Characteristics	V	no
6	1	12	Visual Perception Communication	Reinforcement	reinforcement	not required	misc	Social Influence	VII	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
6	2	1	Teacher Characteristics Personality	Self	self	teacher may not be required	teacher not needed	Memory	VII	no
6	2	2	Learning: Behaviourist Learning: Cognitive	Forms of learning	forms of learning	Not always required	not	Intelligence	II	yes
6	2	3	Learning: Behaviourist Motivation	Must be motivated to learn	needed for learning	not always required	not	Visual Perception	VII	yes
6	2	4	Learning: Cognitive Intelligence	Linked together	link	not applicable	no link	Social Perception	VII	yes
6	2	5	Group Dynamics Social Influence	Social influence can affect group dynamics	interaction	not always required	not	Personality	I	no
6	2	6	Motivation Communication	Both needed to learn	needed for learning	Not applicable	not	Social Perception	VII	yes
6	2	7	Learning: Cognitive Motivation	Feelings involved	subjective	one is or is not	objective	Personality	V	yes
6	2	8	Memory Teacher Characteristics	Retention of knowledge	cognitive	may not be applicable	misc	Social Influence	III	no
6	2	9	Visual Perception Communication	Both methods of communication	methods	social	social	Group Dynamics	II	yes
6	2	10	Memory Intelligence	Both required	required	may not be required	not	Social Perception	VII	yes
6	2	11	Learning: Behaviourist Teacher Characteristics	Required elements for learning	elements needed for learning	Can learn alone	individual	Group Dynamics	VII	no
6	2	12	Visual Perception Communication	Retention and feedback	process	may not be applicable	misc	Social Influence	VII	yes

Comment: *I <u>still</u> felt totaly confused with this exercise.*
I felt that a lot of the 3 circled points were related and felt difficulty in separating one item from the other two.
A lot of the points raised, (marked X) I felt were non applicable to either column.

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
7	1	1	Teacher Characteristics Personality	Public	public	Private	private	Memory	VI	no
7	1	2	Learning: Behaviourist Learning: Cognitive	External influence	external influence	Personal	personal	Intelligence	IV	yes
7	1	3	Visual Perception Motivation	Individual	individual	Group activity. Theory - observed responses	group interaction/theory	Learning: Behaviourist	I	yes
7	1	4	Learning: Cognitive Intelligence	Inherent to an extent	inherent	Non-inherent	non-inherent	Social Perception	III	yes
7	1	5	Personality Group Dynamics	Human values	human values	Ideology/conditioning	ideology/ conditioning	Social Influence	V	no
7	1	6	Social Perception Communication	Group	group	Personal	personal	Motivation	I	yes
7	1	7	Motivation Personality	Personal and changeable	changeable	Progressive. Process/ongoing learning	progressive	Learning: Cognitive	V	yes
7	1	8	Teacher Characteristics Social Influence	Role/preconceptions/public behaviour	public behaviour	Individual experience	individual experience	Memory	VI	yes
7	1	9	Communication Group Dynamics	Inter-active	active	Passive	passive	Visual Perception	V	yes
7	1	10	Social Perception Memory	Experience	Experience	Inherent	inherent	Intelligence	IV	no
7	1	11	Teacher Characteristics Group Dynamics	Practice	practice	Theory	theory	Learning: Behaviourist	II	yes
7	1	12	Visual Perception Social Influence	Passive	passive	Active	active	Communication	V	no

Comment: *I found this exercise very difficult, but feel that it is the need to make clear distinctions between the categories which causes problems.*

This is not an inherent characteristic and seems to have been learned.
Having been taught to question everything and develop arguments, it now seems I am incapable to clarity. One or two word answers leave me disagreeing with my own comments.
Binary vision would be useful, but I have been deconstructing categories for some time and find that there are only grey areas.
Too much reading against the grain, perhaps. Sorry.

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
7	2	1	Memory Personality	Internal interaction	internal	External, role/observable	external	Teacher Characteristics	VI	no
7	2	2	Learning: Behaviourist Learning: Cognitive	Cumulative	cumulative	inherent to a marked degree	inherent	Intelligence	IV	yes
7	2	3	Visual Perception Motivation	Variable	variable	predictable	predictable	Learning: Behaviourist	V	yes
7	2	4	Learning: Cognitive Intelligence	Individual	individual	Culture/ideology	cultural	Social Perception	IV	yes
7	2	5	Group Dynamics Social Influence	Extrovert	extrovert	introvert	introvert	Personality	VI	no
7	2	6	Social Perception Communication	Group influence	group	self/personal	personal	Motivation	I	yes
7	2	7	Motivation Personality	Human/subjectivity	subjective	theory/objectivity	objective	Learning: Cognitive	V	yes
7	2	8	Teacher Characteristics Social Influence	Role/expectations	extrapersonal	retrospective/personal	intrapersonal	Memory	VI	yes
7	2	9	Communication Group Dynamics	Social interaction	interaction	individual	individual	Visual Perception	I	yes
7	2	10	Memory Intelligence	Personal/natural	personal	Cultural/ideology	cultural	Social Perception	IV	no
7	2	11	Teacher Characteristics Group Dynamics	Human/unpredictable	unpredictable	conditioning/mechanistic	mechanistic	Learning: Behaviourist	V	yes

Comment: *Once again, I found this extremely stressful - something to do with the boxes.*
I tend to disagree with my own answers and feel that I need from time to think - it is also very difficult to think amidst low-level noise.

I hope I never need to complete this type of form again.
During psychology lessons we have been presented with arguments and ideas - many new areas have been opened up and there has been a great deal to think about.

Unfortunately, this grid forces bi-polar thinking upon us and therefore seems at odds with what we have been learning about learning.

I have not 'made up my mind' about any of these new concepts.

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
7	2	12	Communication Social Influence	Group reality	group	individual reality	individual	Visual Perception	I	no
8	1	1	Teacher Characteristics Personality	Must be linked	linked	not linked	not linked	Memory	VII	yes
8	1	2	Learning: Behaviourist Learning: Cognitive	Listen and learn	cognitive process	intelligence doesn't mean knowledge	not knowledge	Intelligence	VII	no
8	1	3	Visual Perception Learning: Behaviourist	Take in what you see	cognitive process	doesn't help motivation	doesn't help motivation	Motivation	III	no
8	1	4	Social Perception Learning: Cognitive	Perception leads to learning	learning process	intelligence in inbuilt	in-built	Intelligence	VI	no
8	1	5	Personality Group Dynamics	Personality can help group to interact	interaction	More involved	more involved	Social Influence	IV	no
8	1	6	Motivation Communication	Difficult to motivate without communication	interrelated	you can be good at this but without others it's not much good	misc	Social Perception	VII	yes
8	1	7	Motivation Personality	Your personality helps you motivate	interpersonal	knowledge alone won't help	not	Learning: Cognitive	VI	yes
8	1	8	Memory Teacher Characteristics	Memory can help form characteristics	influence	no connection	misc	Social Influence	VII	no
8	1	9	Visual Perception Communication	If you take things in around you then you communicate better	individual	how group interacts doesn't necessarily affect other two	group interaction	Group Dynamics	I	no
8	1	10	Memory Intelligence	A good memory will make you appear intelligent	interpersonal interaction	doesn't help	not	Social Perception	VI	yes
8	1	11	Learning: Behaviourist Teacher Characteristics	You learn from listening to and watching other people	individual cognition	how group interacts doesn't necessarily affect other two	group	Group Dynamics	I	yes
8	1	12	Visual Perception Communication	Can be one to one	interpersonal	more people involved	group	Social Influence	I	no

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
8	2	1	Teacher Characteristics Personality	Good personality one of main characteristics	teacher	Linked but not so strongly	linked less strongly (to teaching)	Memory	VII	yes
8	2	2	Learning: Cognitive Intelligence	Ability to "teach" oneself	ability	Student will be taught	taught	Learning: Behaviourist	IV	no
8	2	3	Learning: Behaviourist Motivation	Need to motivate to teach	needed in teaching	Linked but not so closely	partly linked	Visual Perception	VII	no
8	2	4	Learning: Cognitive Intelligence	Self-taught	cognitive process	Not to do with knowledge	not knowledge	Social Perception	II	no
8	2	5	Personality Social Influence	Personality fashioned over long period	nurture	Need not affect others	misc	Group Dynamics	VII	no
8	2	6	Motivation Communication	Closely linked	linked	Not necessarily verbal	not verbal	Social Perception	VII	yes
8	2	7	Motivation Personality	Good teacher characteristics	good characteristics	More self-acquired	self-acquired	Learning: Cognitive	IV	yes
8	2	8	Teacher Characteristics Social Influence	Characteristics influence students	influence students	Not directly linked	not	Memory	VII	no
8	2	9	Communication Group Dynamics	Group interaction	group interaction	Individual	individual	Visual Perception	I	no
8	2	10	Memory Intelligence	One helps the other	interrelated	Not an individual thing	not individual	Social Perception	VII	yes
8	2	11	Teacher Characteristics Group Dynamics	Teacher will need to teach	teacher	Group work	group work	Group Dynamics	VII	yes
8	2	12	Communication Social Influence	Closely linked	misc	Doesn't help other two	misc	Visual Influence	VII	no

Comment: *Although I don't fully understand the meaning of some of the topics I felt it was easier to fill in this time, it certainly took less time.*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
9	1	1	Teacher Characteristics Personality	Interactive attributes requiring more people	group interaction	Individual ability or tool	individual ability	Memory	I	yes
9	1	2	Learning: Cognitive Intelligence	Requiring or producing - conceptualisation	conceptual	Reflex reactions requiring little thought	reactions	Learning: Behaviourist	II	no
9	1	3	Learning: Behaviourist Motivation	Depending on several factors	multi-factorial	Primary reaction	primary reaction	Visual Perception	II	no
9	1	4	Learning: Cognitive Intelligence	Interdependent natural ability. Nature	ability	Nurture	nurture	Social Perception	IV	no
9	1	5	Group Dynamics Social Influence	Pressure on individual by several others	group interaction	An individual response	individual	Personality	I	yes
9	1	6	Social Perception Motivation	Social perception shapes motivation	interpersonal process	Physically-based skill - secondarily dependent on social and motivational factors	skill	Communication	VI	no
9	1	7	Motivation Personality	Inter-related and interdependent	inter-dependent	Related to raw intelligence - innate ability	innate ability	Learning: Cognitive	VII	yes
9	1	8	Teacher Characteristics Social Influence	Influences from other people	others	Linked to raw intellectual capacity of individual	individual capacity	Memory	I	yes
9	1	9	Communication Group Dynamics	Group participation demands	group interaction	Visual perception can be successful - solitarily	individual	Visual Perception	I	no
9	1	10	Memory Intelligence	Physical/mental abilities i.e. natural aptitude	natural ability	Accident of birth - position in pecking order etc	environment	Social Perception	IV	yes
9	1	11	Teacher Characteristics Group Dynamics	Interactive with others	others interaction	Individual, personal	individual	Learning: Behaviourist	I	no
9	1	12	Visual Perception Communication	Physically learned or based	physical	Abstract	abstract	Social Influence	V	no

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
9	2	1	Teacher Characteristics Personality	Great interaction here - interdependent to a large extent	interaction	Memory plays only a small part in shaping relationships especially new ones	limited interaction	Memory	I	yes
9	2	2	Learning: Behaviourist Learning: Cognitive	These overlap and are to do with learning from what is around and in one's close environment	environment	This is an ability to develop and retain what is learnt and is not a learning process	ability	Intelligence	IV	no
9	2	3	Visual Perception Learning: Behaviourist	These two learning processes will continue almost involuntarily to a degree	learning processes	This alone cannot be a learning situation - merely salt and pepper to the process	addition to learning	Motivation	II	no
9	2	4	Social Perception Learning: Cognitive	Experience of surroundings teaches. A different environment teaches differently	environment	Basically unchanged by environment, except in extreme cases of malnutrition, isolation etc	nature	Intelligence	IV	no
9	2	5	Group Dynamics Social Influence	These 2 are influences on personality and 11 is a specialised form of 12	external	This is the individual's response	individual response	Personality	IV	yes
9	2	6	Social Perception Communication	These are interdependent in a social situation	interaction	Motivation is not very important to social interaction	not	Motivation	I	no
9	2	7	Motivation Personality	Motivation and personality give the impetus to learn but not learning situations	attitude	This is a process not an attitude to learning	process	Learning: Cognitive	V	yes
9	2	8	Teacher Characteristics Social Influence	These are influences of others upon an individual	others	This has little to do with others - mere the individual ability	individual	Memory	I	yes
9	2	9	Visual Perception Communication	1 & 8 are processes of gathering information	information processing	These may be influenced by 1 & 8	misc	Group Dynamics	V	no
9	2	10	Memory Intelligence	Although can be marginally improved they are genetically limited	innate	The environment shapes one's social perception and that perception can be changed by a change in the environment - for better or worse	environment	Social Perception	IV	yes
9	2	11	Learning: Behaviourist Teacher Characteristics	These two are part of the same process. Students experiences are managed by the teacher	teacher process	Groups are not necessary to behaviourist learning nor a teacher's characteristics	group	Group Dynamics	VII	no
9	2	12	Communication Social Influence	Both involve interaction with others, both will be modified by personality and situation	others	This is a solitary activity. No processing or use of information necessary	individual	Visual Perception	I	no

Comment: *I felt a need for a third category*
eg +ve and neutral
+ N/A as sometimes the last option did not seem to have characteristics of either side and it was like putting a lime with an apple or a banana.

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
10	1	1	Teacher Characteristics Personality	A persons personality may well influence the way in which they teach	extrapersonal	Tool needed in learning	tool	Memory	VI	yes
10	1	2	Learning: Behaviourist Learning: Cognitive	How we think often affects our behavior	cognitive process	It is not necessary to be intelligent to learn or improve	not	Intelligence	III	yes
10	1	3	Learning: Behaviourist Motivation	linked	linked	our view of a situation	personal	Visual Perception	VII	yes
10	1	4	Learning: Cognitive Intelligence	Broaden knowledge, will to succeed	cognitive process	Does not affect our view of others	extrapersonal	Social Perception	VI	yes
10	1	5	Personality Social Influence	Upbringing may affect personality	upbringing	May not effect behaviour within a group	group interactive	Group Dynamics	IV	yes
10	1	6	Social Perception Communication	Our view of people is often influenced by talking to them	extrapersonal	Motivation is not often apparent from first meeting	not apparent	Motivation	VI	yes
10	1	7	Learning: Cognitive Motivation	The need to succeed drives us to achieve	individual drive	not affected by our make-up	not	Personality	III	no
10	1	8	Memory Teacher Characteristics	Memory re-call may be necessary for successful teaching	ability for teaching	Would not necessarily affect the other topics	not	Social Influence	VII	no
10	1	9	Visual Perception Group Dynamics	Observing individuals within a group	group	Visual observations - no need to communicate	observations	Communication	I	no
10	1	10	Memory Intelligence	These two are often grouped together	misc	Group view of someone may not indicate intelligence	group	Social Perception	VII	no
10	1	11	Learning: Behaviourist Teacher Characteristics	How much do I draw from teachers delivery	individual	Group behaviour	group behaviour	Group Dynamics	I	yes
10	1	12	Visual Perception Social Influence	The way we view others may be influenced by our social background	perspective	We are able to judge people without communication observation	judgement	Communication	V	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
10	2	1	Teacher Characteristics Personality	One's personality may well influence certain characteristics displayed in teaching	extrapersonal	It does not always deemed necessary to have a good memory	intrapersonal	Memory	VI	yes
10	2	2	Learning: Behaviourist Learning: Cognitive	How we behave is influenced by our thinking	cognitive influence	Not necessarily linked	not	Intelligence	III	yes
10	2	3	Learning: Behaviourist Motivation	If people are motivated to get on they will behave in a more determined fashion	(affective) behaviour	How we see others does not affect our ability to succeed	ability to succeed	Visual Perception	III	yes
10	2	4	Learning: Cognitive Intelligence	Thinking and intelligence may be linked	linked	Our own views	own views	Social Perception	VII	yes
10	2	5	Personality Social Influence	Our personality may be influenced by our social background	social background	This would not affect group work	group	Group Dynamics	IV	yes
10	2	6	Social Perception Communication	These rely on one another	interdependent	Would not affect our communicating skills	not affect communication	Motivation	VII	yes
10	2	7	Motivation Personality	Motivation and the need or will to succeed often found in ones' personality or make-up	inherent	Our thoughts may not affect	cognition	Learning: Cognitive	III	no
10	2	8	Teacher Characteristics Social Influence	These two may be linked, or certain characteristics may stem from one's social upbringing	social upbringing	Memory does not necessarily influence	not	Memory	IV	no
10	2	9	Communication Group Dynamics	It would be hard to enter into group dynamics without communication	group interaction	How we see others would not affect our communicating with them - or should not	individual	Visual Perception	I	no
10	2	10	Social Perception Intelligence	How we view others around us may be affected by our intelligence	extrapersonal	It is not necessary to have a good memory to be intelligent - not always go together	intrapersonal	Memory	VI	no
10	2	11	Learning: Behaviourist Teacher Characteristics	Working on one's own	individual	Working in a group	group	Group Dynamics	I	yes
10	2	12	Visual Perception Social Influence	How we see others would be influenced by our upbringing	individual upbringing	No link to others	misc	Communication	IV	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
11	1	1	Teacher Characteristics Personality	Personality's derived partly from personal characteristics	personal	Memory of things does not necessarily affect your personality. Tool	individual tool	Memory	III	yes
11	1	2	Learning: Behaviourist Intelligence	Behaviourist learning need intelligence to decide whether to copy group influence or rebel against it. Tool.	tool	Cognitive learning does not need intelligence required to make decision. One way.	one way	Learning: Cognitive	II	no
11	1	3	Visual Perception Learning: Behaviourist	How you see things affects Behaviourist learning because you have to see to copy. Influence	extrapersonal	Motivation is a personal characteristic	intrapersonal	Motivation	VI	yes
11	1	4	Social Perception Intelligence	How you see people needs intelligence to decide how you see them. Tool	tool	Cognitive learning is not necessary to decide how you see people. One way	one way	Learning: Cognitive	III	no
11	1	5	Personality Group Dynamics	Group dynamics is the interaction of individual personalities. Two way	interaction	Social influence has little to do with group dynamics it is more a one-way thing.	one-way	Social Influence	I	no
11	1	6	Social Perception Communication	Social perception is how you see people. They use communication to let you see this	extrapersonal	Motivation is a personal thing	intrapersonal	Motivation	VI	yes
11	1	7	Motivation Personality	Motivation and personality are both personal characteristics	personal	Cognitive learning is something you can do even if you don't particularly want to. Not personal	capacity	Learning: Cognitive	III	yes
11	1	8	Teacher Characteristics Social Influence	Teacher characteristics and social influence both communicate themselves to students. Not personal	interaction	Memory is a personal thing	personal	Memory	I	yes
11	1	9	Visual Perception Communication	Visual perception is how you see things, this communicated to you by means of sight etc. One way	individual	Group dynamics is personal interaction between people. Two way	interpersonal interaction	Group Dynamics	I	no
11	1	10	Social Perception Memory	How you see people is affected by memory of how you have seen other people. Acquired	acquired	Intelligence is something you are born with.	born with	Intelligence	IV	yes
11	1	11	Learning: Behaviourist Group Dynamics	Group dynamics is social interaction behaviourist learning is learned from this. Two-way	interaction	Teacher characteristics are individual	individual	Teacher Characteristics	I	yes
11	1	12	Visual Perception Communication	How you see things is communicated by what you are seeing. One way	individual	Social influence may affect others not necessarily you	others	Social Influence	I	no

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
11	2	1	Teacher Characteristics Personality	Influence of people and the individual	interaction	remembering things learned	cognitive process	Memory	I	yes
11	2	2	Learning: Cognitive Intelligence	non-habitual, needs thought	cognitive	habits	habits	Learning: Behaviourist	II	no
11	2	3	Visual Perception Learning: Behaviourist	you act as you see	action	Individual driving force	individual	Motivation	III	yes
11	2	4	Learning: Cognitive Intelligence	ability to choose based on experience	experience/ ability	How you see people	personal view	Social Perception	III	no
11	2	5	Group Dynamics Social Influence	to do with groups	groups	individual	individual	Personality	I	no
11	2	6	Social Perception Communication	To do with yourself and other people	extrapersonal	individual driving force	intrapersonal	Motivation	VI	yes
11	2	7	Motivation Personality	individual	individual	learned as a result of past experience	experience	Learning: Cognitive	IV	yes
11	2	8	Teacher Characteristics Social Influence	influence the individual	individual	remembrance of past experience	experience	Memory	IV	yes
11	2	9	Communication Group Dynamics	To do with yourself and other people	extrapersonal	How you see things	intrapersonal	Visual Perception	VI	no
11	2	10	Social Perception Memory	how you see or remember something external	external	individual	individual	Intelligence	VI	yes
11	2	11	Learning: Behaviourist Group Dynamics	influence of other people	others	influence of one individual	individual	Teacher Characteristics	I	yes
11	2	12	Communication Social Influence	to do with other people	others	how you see things	individual cognition	Visual Perception	I	no

Comment: *The last part, - completing the remaining boxes is very difficult, since many of the columns do not equate with the comments expressed. It is also difficult at times to find a suitable comment which links the two ticks (part 2) although you know that there is a definite connection.*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
12	1	1	Teacher Characteristics Personality	Personality affects the way you teach	extrapersonal	Memory does not	not	Memory	VI	yes
12	1	2	Learning: Cognitive Intelligence	Intelligence determines how well you learn and understand	cognitive process	Behaviour is more about personality	personality	Learning: Behaviourist	III	no
12	1	3	Learning: Behaviourist Motivation	Motivation will effect how you learn	intrapersonal	Visual perception is learning and feeling by things you see	extrapersonal	Visual Perception	VI	yes
12	1	4	Learning: Cognitive Intelligence	Intelligence determined how well you learn and understand	individual cognition	Social perception is how you look and feel about other people	extrapersonal	Social Perception	VI	yes
12	1	5	Personality Group Dynamics	Your personality effects how you intermingle with people	interaction	Social influence is more the way you appear to people with the way you look etc	individual	Social Influence	I	yes
12	1	6	Social Perception Communication	How you communicate affects how people think of you	interaction	Motivation is more your willing to do something	individual	Motivation	I	yes
12	1	7	Motivation Personality	Motivation and personality is how and what you do affects the type of person you are	active characteristics	This is taking in information	cognitive process	Learning: Cognitive	III	yes
12	1	8	Memory Teacher Characteristics	Memory is a good teaching characteristic	(teaching) characteristic	Social influence shouldn't affect	not affect	Social Influence	VII	yes
12	1	9	Communication Group Dynamics	If you communicate well, you will participate better with group dynamics	extrapersonal	This is judging and feeling just by looking	intrapersonal	Visual Perception	VI	yes
12	1	10	Memory Intelligence	The better memory you have, the more intelligent you are	cognitive process	This is how you look at other people	extrapersonal	Social Perception	VI	yes
12	1	11	Teacher Characteristics Group Dynamics	How you intermingle with people affects how you teach. How you act	teacher interaction (teaching) behaviour	This does not affect the way you teach	not	Learning: Behaviourist	VII	yes
12	1	12	Visual Perception Social Influence	People look at you and decide what social class you are so this decides how much you influence them	impression formation	Communication decides on the person you really are, rather than the way you look	actual	Communication	V	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
12	2	1	Teacher Characteristics Personality	Your personality initiates how you teach	extrapersonal	This is your ability to retain information	ability	Memory	III	yes
12	2	2	Learning: Behaviourist Learning: Cognitive	These are both methods in which you learn	methods of learning	This is how knowledgeable you are	knowledge	Intelligence	II	no
12	2	3	Learning: Behaviourist Motivation	You need motivation to learn	individual	This doesn't affect your motivation to learn	does not affect learning	Visual Perception	VII	yes
12	2	4	Learning: Cognitive Intelligence	Intelligence enables the ability to learn	ability	This is how you view other people	extrapersonal	Social Perception	VI	yes
12	2	5	Personality Group Dynamics	Your personality depends on how you work in a group	individual/ group interaction	This is the effect you have on people	affect on others	Social Influence	I	yes
12	2	6	Social Perception Communication	How you communicate depends on how you feel about the people you are with	cognitive process	This is how much 'urge' you have to do something	drive	Motivation	VI	yes
12	2	7	Motivation Personality	Motivation depends on your personality	individual	This is a certain way of learning	learning process	Learning: Cognitive	II	yes
12	2	8	Memory Teacher Characteristics	You need memory to be a good teacher	cognitive process	This is the effect you have on people	extrapersonal	Social Influence	VI	yes
12	2	9	Communication Group Dynamics	How you communicate iniates how you work in a group	interaction	This is your impression gathered by what you see	individual	Visual Perception	I	yes
12	2	10	Memory Intelligence	How good your memory is affects your intelligence	cognitive process	This is how you view other people	extrapersonal	Social Perception	VI	yes
12	2	11	Teacher Characteristics Group Dynamics	How you behave towards a group affects the way you teach	extrapersonal	This is how you are able to learn	ability	Learning: Behaviourist	VI	yes
12	2	12	Visual Perception Social Influence	You might judge what standard a person is by what they look like	individual view	This is the ability to express yourself	ability	Communication	III	yes

Comment: *I didn't find this one as hard as the first one.*
I wasn't sure if I 'waffled' too much on my explanations to each one, but I find it quite hard to summarize more than I have.
I found I was defining a lot.
If becomes easier to understand and compare that way.
I am very curious to what it all means!!

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
13	1	1	Teacher Characteristics Personality	Personality is closely linked with teacher characteristics	closely linked	Memory is a 'tool' needed in learning	learning tool	Memory	VII	yes
13	1	2	Learning: Behaviourist Learning: Cognitive	Methods of learning	methods of learning	Part of the students make-up	make-up	Intelligence	II	yes
13	1	3	Learning: Behaviourist Motivation	Behaviourist learning can affect motivation	has affect	Visual perception is how you see concepts	how you see concepts	Visual Perception	III	yes
13	1	4	Learning: Cognitive Intelligence	Learning through understanding can depend on intelligence	cognitive process	Social perception is instinctive and can be biased	instinctive	Social Perception	III	no
13	1	5	Personality Group Dynamics	Your personality can alter group dynamics	interpersonal interaction	Social influence can be ignored	not	Social Influence	VII	yes
13	1	6	Motivation Communication	Motivation is often what drives communication	extrapersonal	Social perception is inward and does not need communication	intrapersonal	Social Perception	VI	yes
13	1	7	Motivation Personality	Personality can affect motivation	affect	Method of learning	method of learning	Learning: Cognitive	II	no
13	1	8	Teacher Characteristics Social Influence	Social influences can affect a teachers personality	extrapersonal	Memory is a 'tool' needed in learning	tool	Memory	VI	yes
13	1	9	Visual Perception Communication	Visual perception is a form of communication	form of communication	Group dynamics is about the way people interact	people interaction	Group Dynamics	VII	no
13	1	10	Social Perception Memory	Social perception is often formed by memories	cognitive process	Intelligence is part of a students make-up	inherent	Intelligence	III	no
13	1	11	Learning: Behaviourist Group Dynamics	Behaviourist learning can affect group dynamics	interpersonal interaction	The teachers characteristics should not affect group dynamics	teacher	Teacher Characteristics	VII	no
13	1	12	Visual Perception Communication	Visual perception is a form of communication	communication mode	Social influence is absorbed from our surroundings	environment	Social Influence	IV	no

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
13	2	1	Teacher Characteristics Personality	Teacher characteristics are related to personality	related	Memory has nothing to do with communication or teacher characteristics [not related]	not related	Memory	VII	yes
13	2	2	Learning: Behaviourist Learning: Cognitive	relate to methods of learning	methods of learning	Is innate (although can be altered by training)	innate	Intelligence	II	yes
13	2	3	Learning: Behaviourist Motivation	Stimulus-response can produce motivation	external	Visual perception is to do with what the brain sees	internal	Visual Perception	VI	yes
13	2	4	Social Perception Learning: Cognitive	Learning from perception is part of cognitive learning	learning process	Intelligence does not necessarily help cognitive learning or social perception	not	Intelligence	VII	no
13	2	5	Personality Group Dynamics	The personalities in a group directly affect the dynamics of the group	individual influence on group	Social influence does not have a great affect on personality or group dynamics	no great affect	Social Perception	I	yes
13	2	6	Motivation Communication	Communication can increase or decrease motivation	affects	Social perception does not affect motivation	does not affect	Social Perception	VII	yes
13	2	7	Learning: Cognitive Motivation	Experiential learning can aid motivation	experiential learning affects motivation	Personality does not necessarily affect motivation	not	Personality	VII	no
13	2	8	Teacher Characteristics Social Influence	Teacher characteristics can be affected by social influence	interaction	Method of storing information	method	Memory	II	yes
13	2	9	Communication Group Dynamics	Without communication group dynamics collapse	group	Visual perception has nothing to do with group dynamics	not group	Visual Perception	I	no
13	2	10	Social Perception Intelligence	If you are treated as intelligent learning can increase	learning process	Method of storing information	cognitive process	Memory	II	no
13	2	11	Teacher Characteristics Group Dynamics	Teacher characteristics can affect group learning	interpersonal interaction	Behaviourist learning does not affect teacher characteristics or group dynamics	not	Learning: Behaviourist	VII	no
13	2	12	Communication Social Influence	Social influence can affect way communicate	interaction	Visual perception is nothing to do with communication	not	Visual Perception	I	no

Comment: *the more I thought about it the more I wanted to change it*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
14	1	1	Teacher Characteristics Personality	(Characteristics) dependent on personality	dependent	Memory collection of past events can be drawn on but will not alter personality or characteristics	collection past events	Memory	III	yes
14	1	2	Learning: Behaviourist Learning: Cognitive	Someone with a learning disability will still be able to learn but in a different way than a intelgent person	ability to learn	Sometimes intelgence needs to be present to learn	needed to learn	Intelligence	VII	no
14	1	3	Visual Perception Learning: Behaviourist	We learn every time we see and perceive what we have seen	intrapersonal	We do not need to be motivated to see and perceive what we are learning	intrapersonal	Motivation	VI	yes
14	1	4	Social Perception Intelligence	We need the inteligence to be able to perceive socially or individual. Before we can learn	necessary for learning	To learn we first need the intelgence	learning capacity	Learning: Cognitive	VII	no
14	1	5	Personality Group Dynamics	When many personalities are jelled together within a group setting they will bring out the best or worst in each individual	interpersonal interaction	Social influence will not affect a persons personality	individual	Social Influence	I	yes
14	1	6	Social Perception Communication	Social perception is influenced by communication	affects	Motivation does not need to be present	does not	Motivation	VII	yes
14	1	7	Learning: Cognitive Motivation	The need to learn stems from motivation dependent or not on personality	intrapersonal	Personality - something that grows through life whether motivated or learning	developmental	Personality	III	yes
14	1	8	Memory Teacher Characteristics	Memory contributes to teacher characteristics to teach can reflect on past events	intrapersonal	Social influence needs no contribution to memory or characteristics	not	Social Influence	VII	yes
14	1	9	Visual Perception Group Dynamics	Group dynamics needs visual perception	misc	Communication	communication	Communication	VII	no
14	1	10	Social Perception Intelligence	To perceive in any way we need even the slightest intelgence	cognitive process	Memorys are to reflect and be drawn on	entity	Memory	III	no
14	1	11	Teacher Characteristics Group Dynamics	Teachers characteristics will influence group dynamics	influence	The behaviourist will not be affected by the other 2	misc	Learning: Behaviourist	VII	no
14	1	12	Visual Perception Social Influence	Social influence will affect our perception	extrapersonal	Communication needs not to be present	not	Communication	VII	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
14	2	1	Teacher Characteristics Personality	Teacher characteristics depend on own personality	depend on	Memory differs because although you can draw on past experiences for teaching personality helps develop t/characteristics	experience	Memory	VII	yes
14	2	2	Learning: Cognitive Intelligence	To learn even the simplest of task we need basic intelligence	ability	Learning Behaviourist: Will learn from visual perception (how they perceive things)	cognitive process	Learning: Behaviourist	III	no
14	2	3	Visual Perception Learning: Behaviourist	Behaviourist will first learn from visual perception and act to how they perceive situations	extrapersonal	We do not need to be motivated to behave, or perceive	intrapersonal	Motivation	VI	yes
14	2	4	Learning: Cognitive Intelligence	To learn we need basic intelligence and need to be motivated	cognitive process	Social perception - does not depend on inteligence or learning	not	Social Perception	III	no
14	2	5	Personality Group Dynamics	Students personality depends on whether they will gel together as a group	individual affect on group	Social influence differs	misc	Social Influence	I	yes
14	2	6	Social Perception Communication	As well as personality the teacher can draw on good and bad memorys to assist them	used in teaching	Motivation not needed to communicate	not needed	Motivation	VII	yes
14	2	7	Learning: Cognitive Motivation	Need to be motivated to learn	need motivation to learn	Personality differs. Personality is not present when we are motivated to learn at the beginning	not necessary in learning	Personality	VII	yes
14	2	8	Memory Teacher Characteristics	Teacher can draw on past memorys to help project himself to the students	extrapersonal	Social influence differs becose we can choose wether or not to listen or memorize influences	intrapersonal	Social Influence	VII	yes
14	2	9	Visual Perception Group Dynamics	If the teacher has good characteristics this will motivate the students and encourage good group work	extrapersonal	Visual perception differs	misc	Communicat ion	VII	no
14	2	10	Social Perception Memory	Social perception will be influenced by past memorys	intrapersonal	Social perception. Intelligence is how others perceive what we project not intelgence	extrapersonal	Intelligence	VI	no
14	2	11	Learning: Behaviourist Group Dynamics	Group work can influence a learning behaviourist	misc	Teacher characteristics can be good or bad a behaviourist will continue as normal unless they have more influence	teacher immaterial	Teacher Characteristi cs	VII	no
14	2	12	Visual Perception Social Influence	Social influences often change our own perception of things	interpersonal perception	Communication differs. Social influence affects visual perception communication does not affect	not	Communicat ion	VII	yes

Comment: *Although this is our second attempt as this piece of work I still felt confused, mainly when filling in each section it is very hard not to contridict yourself. I also found it hard to explain the differences on paper. (thinking them is one thing but to write them down is harder.*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
15	1	1	Teacher Characteristics Personality	Personality promotes own characteristics in teaching (variable)	variable	Memory is a fixed subject not variable	fixed	Memory	V	no
15	1	2	Learning: Cognitive Intelligence	Intellegence + cognitive reflect on ability	ability	The way you behave is not an ability	behaviour	Learning: Behaviourist	III	no
15	1	3	Learning: Behaviourist Motivation	How quick/slow motivation will reflect on what response/ behaviour you have to a situation	extrapersonal	How I see something is not relevent to the other two	intrapersonal	Visual Perception	VI	yes
15	1	4	Learning: Cognitive Intelligence	Learning abilities responding to each other	abilities	This is not used in the same text	not	Social Perception	VII	yes
15	1	5	Personality Social Influence	Personality represents the strength or influence socially to an individual	interaction	This is a group meaning not an individual	group	Group Dynamics	I	no
15	1	6	Social Perception Communication	How you see others is how you will respond + communicate with them changeable in situations	extrapersonal	Motivation is a persons own way	intrapersonal	Motivation	VI	yes
15	1	7	Motivation Personality	Strong personality encourage quick motivation	intrapersonal	The ability of a person is not encouraged by anything else	ability	Learning: Cognitive	III	yes
15	1	8	Teacher Characteristics Social Influence	Actions reflecting on each other	reflexive actions	Fixed process	fixed	Memory	V	yes
15	1	9	Communication Group Dynamics	Group meanings	group	Individual meanings	individual	Visual Perception	I	yes
15	1	10	Memory Intelligence	Being able to know, store and use information to you own advantage	intrapersonal	How I see others is not relevent to this text	extrapersonal	Social Perception	VI	yes
15	1	11	Learning: Behaviourist Group Dynamics	Different backgrounds will allow different behavior to occur	background	Individual Teaching Ability	individual ability	Teacher Characteristics	IV	no
15	1	12	Communication Social Influence	How you communicate with others will reflect how you influence them (personal communication)	interpersonal interaction	This is not a group analysis (group communication)	not	Visual Perception	I	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
15	2	1	Memory Personality	Individual student characteristics	student character-istics	Teachers influence towards students	Teachers' influence on students	Teacher Characteristics	VII	no
15	2	2	Learning: Behaviourist Learning: Cognitive	Two concepts of learning	concepts	The way we are individually abilited	ability	Intelligence	II	no
15	2	3	Learning: Behaviourist Motivation	Behaviourism + motivation are the way we behave and how quick	personal behaviour	What we see and how we see	individual cognition	Visual Perception	III	yes
15	2	4	Learning: Cognitive Intelligence	The mind	mind	Visual, what we see	visual	Social Perception	II	yes
15	2	5	Personality Group Dynamics	Personality influences the group	affective	Something we can not change	not changeable	Social Influence	V	no
15	2	6	Social Perception Communication	External influencers	external influence	Ones individual way	individual	Motivation	IV	yes
15	2	7	Motivation Personality	One's own personality generaly reflect own motivation	personal attribute	Learning concept	learning concept	Learning: Cognitive	II	yes
15	2	8	Teacher Characteristics Social Influence	How the teacher comes over is the way it is socially influenced	social process	ones own ability	individual ability	Memory	IV	yes
15	2	9	Communication Group Dynamics	You need to be able to communicate to be involved in a group	group interaction	Individually what one sees	individual	Visual Perception	I	yes
15	2	10	Memory Intelligence	One's individual ability	individual ability	External influence	external influence	Social Perception	IV	yes
15	2	11	Learning: Behaviourist Teacher Characteristics	Teacher reinforces the behaviourists learning	teacher influence	Group members influence the rest of the group	group interaction	Group Dynamics	VII	no
15	2	12	Communication Social Influence	Groups	group	Individual	individual	Visual Perception	I	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
16	1	1	Teacher Characteristics Personality	Contributes to atmosphere	atmosphere	Inner feeling	Internal	Memory	IV	yes
16	1	2	Learning: Cognitive Intelligence	To do with understanding	understanding	Not to do with understanding	not understanding	Learning: Behaviourist	V	no
16	1	3	Learning: Behaviourist Motivation	Encouraging influence	influence	Personal	personal	Visual Perception	IV	yes
16	1	4	Learning: Cognitive Intelligence	To do with achievement	achievement	Not to do with achievement	not achievement	Social Perception	V	yes
16	1	5	Group Dynamics Social Influence	Group influence	group	Personal	personal	Personality	I	yes
16	1	6	Motivation Communication	Skill	skill	Understanding	cognitive process	Social Perception	III	no
16	1	7	Motivation Personality	To do with feelings	affective	Not to do with feelings	non affective	Learning: Cognitive	V	yes
16	1	8	Teacher Characteristics Social Influence	Influencing factors, outside	outside factors	Inner	inner	Memory	IV	yes
16	1	9	Visual Perception Communication	Personal	personal	Outside influence	outside influence	Group Dynamics	IV	no
16	1	10	Memory Intelligence	Personal	personal	Surroundings	environment	Social Perception	IV	yes
16	1	11	Learning: Behaviourist Teacher Characteristics	One influences the other	influence	Does not influence	not	Group Dynamics	VII	no
16	1	12	Visual Perception Communication	Visual presentation	visual	Non visual	not visual	Social Influence	II	no

Comment: *The hardest thing I've done in year's.*
I felt I was working 'blind'.

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
16	2	1	Teacher Characteristics Personality	Attitude	attitude	In built abilities	in-built abilities	Memory	V	yes
16	2	2	Learning: Behaviourist Learning: Cognitive	Learning	learning	Individual ability	ability	Intelligence	IV	no
16	2	3	Learning: Behaviourist Motivation	Both connected with reward	reward	seeing	seeing	Visual Perception	VII	yes
16	2	4	Learning: Cognitive Intelligence	Knowledge	knowledge	Visual	visual	Social Perception	II	yes
16	2	5	Group Dynamics Social Influence	Influencing factors	influencing factors	Characteristics	characteristics	Personality	IV	yes
16	2	6	Social Perception Communication	One can influence the other, outside	outside influence	Is in build and can be encouraged	in-built	Motivation	IV	no
16	2	7	Motivation Personality	Characteristics	characteristics	Knowledge	knowledge	Learning: Cognitive	III	yes
16	2	8	Teacher Characteristics Social Influence	Both outside influencing factors	outside influence	A skill that can be developed	skill develop	Memory	IV	yes
16	2	9	Communication Group Dynamics	Influence through communication	influence	Understanding of visual	cognitive process	Visual Perception	IV	no
16	2	10	Memory Intelligence	A skill that is developed	skill develop	Outside influence	outside influence	Social Perception	IV	yes
16	2	11	Teacher Characteristics Group Dynamics	Personality of individuals	individual	Learning with rewards	learning process	Learning: Behaviourist	IV	no
16	2	12	Visual Perception Social Influence	Outside influences that can be seen	external	Verbal	verbal	Communication	VII	no

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
17	1	1	Teacher Characteristics Personality	Personal (seen)	explicit	(Not seen)	Implicit	Memory	VI	no
17	1	2	Learning: Cognitive Intelligence	Mental	mental	Physical	physical	Learning: Behaviourist	II	yes
17	1	3	Learning: Behaviourist Motivation	Demonstrated by actions	actions	Thought controlled	cognition	Visual Perception	III	yes
17	1	4	Learning: Cognitive Intelligence	Ability	ability	Influenced by society	society influence	Social Perception	IV	yes
17	1	5	Personality Group Dynamics	Genetic/born with no control over	born with	Controlled by other people	external control	Social Influence	IV	no
17	1	6	Social Perception Communication	Dependant on external factors	external factors	Personal	personal	Motivation	IV	yes
17	1	7	Motivation Personality	Established	established	Can be taught/trained	trained	Learning: Cognitive	V	yes
17	1	8	Memory Teacher Characteristics	Established	established	Variable	variable	Social Influence	V	no
17	1	9	Visual Perception Communication	Involve interaction with other people/objects	interaction	Does not involve interaction established traits	not interaction	Group Dynamics	I	no
17	1	10	Memory Intelligence	Controlled	controlled	Variable according to surroundings	variable	Social Perception	V	yes
17	1	11	Learning: Behaviourist Group Dynamics	Concerned with student	learner	Concerned with teacher	teacher	Teacher Characteristics	VII	yes
17	1	12	Visual Perception Social Influence	Sub-conscious	sub-conscious	Visible/physical	physical	Communication	V	no

Comment: *When carrying out this exercise the two sets of words established/variable and controlled/controllable influenced kept coming to mind.*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
17	2	1	Teacher Characteristics Personality	Personal	personal	Influencing factor	influencing factor	Memory	IV	no
17	2	2	Learning: Cognitive Intelligence	Thinking/mind	cognition	Doing/participate	action	Learning: Behaviourist	III	yes
17	2	3	Learning: Behaviourist Motivation	Learning	learning	Seeing	seeing	Visual Perception	VII	yes
17	2	4	Learning: Cognitive Intelligence	Mind	cognitive	Group	group	Social Perception	I	yes
17	2	5	Personality Social Influence	Personal	personal	Group	group	Group Dynamics	I	no
17	2	6	Social Perception Communication	Influence	external	Inbuilt/personal	in-built/personal	Motivation	IV	yes
17	2	7	Motivation Personality	Inborn/personal	in-born	External	external	Learning: Cognitive	IV	yes
17	2	8	Teacher Characteristics Social Influence	Influence	influence	Inborn	Inborn	Memory	IV	no
17	2	9	Communication Group Dynamics	All take part and contribute/Discuss	group interaction	Own perception. Own personal view	personal view	Visual Perception	I	no
17	2	10	Memory Intelligence	Inborn/personal	inborn	External factors	external factors	Social Perception	IV	yes
17	2	11	Learning: Behaviourist Group Dynamics	Student	student	Teacher	teacher	Teacher Characteristics	VII	yes
17	2	12	Communication Social Influence	Affected by external factors	external factors	Inborn	Inborn	Visual Perception	IV	no

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
18	1	1	Teacher Characteristics Personality	Born with personality which can be transfered to teaching characteristics	extrapersonal	Born with memory - does'nt affect personality or teaching characteristics	intrapersonal	Memory	VI	yes
18	1	2	Learning: Behaviourist Learning: Cognitive	Learn other 2	learned	Born with intelligence	born with	Intelligence	IV	no
18	1	3	Visual Perception Learning: Behaviourist	Developed from what's been learnt	developed	How much motivation is dependent on you. Born	born with	Motivation	IV	yes
18	1	4	Learning: Cognitive Intelligence	Depending on how intelligence we are may affect how much we learn	cognitive process	Social Perception everyone can have	general process	Social Perception	IV	no
18	1	5	Group Dynamics Social Influence	Learnt - developed from others	developed	Born with personality	born with	Personality	IV	yes
18	1	6	Social Perception Communication	Communication and social perception will affect each other (personal views etc.)	interpersonal interaction	Motivation won't affect this	not	Motivation	I	yes
18	1	7	Motivation Personality	Born with personality and motivation. To do something	born with	Cognative Learning is external to personality	external	Learning: Cognitive	IV	yes
18	1	8	Memory Social Influence	Social influence may affect your memory	affect cognition	These won't change because of the other two	constant	Teacher Characteristics	V	yes
18	1	9	Communication Group Dynamics	The way group acts and the way you communicate may change depending on situation	changeable	Visual perception of something will stay the same	constant	Visual Perception	V	no
18	1	10	Social Perception Memory	Social perception what you learn from others to for perception. Memory what remembered. Developed	developed	Born with intelligence (certain amount)	born with	Intelligence	IV	no
18	1	11	Learning: Behaviourist Teacher Characteristics	Teacher characteristics and way taught to teach is learnt and you develop yourself	individual	What group develops overall	group	Group Dynamics	I	yes
18	1	12	Visual Perception Social Influence	This will be affected and may change the way we think	changeable	The way we communicate will not change because of these	not changeable	Communication	V	yes

Comment: *There are some groups that can be linked twice, hard to decide which can be used*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
18	2	1	Teacher Characteristics Personality	Teaching characteristics will depend on personality	depend on trait	Born with memory	born with	Memory	III	yes
18	2	2	Learning: Cognitive Intelligence	Both affected by how much we learn	affected by learning	anyone/thing can learn	all can learn	Learning: Behaviourist	IV	no
18	2	3	Visual Perception Learning: Behaviourist	Affected by what's learnt	learned	In-built characteristic	in-built	Motivation	IV	yes
18	2	4	Social Perception Learning: Cognitive	Affected by others	influenced	In-built characteristic	in-built	Intelligence	IV	no
18	2	5	Group Dynamics Social Influence	Influence of others	influenced	Personality in-built	in-built	Personality	IV	yes
18	2	6	Social Perception Communication	Developed/learnt from others	developed	In built characteristic	in-built	Motivation	IV	yes
18	2	7	Motivation Personality	In built characteristic	in-built	Learn't	learned	Learning: Cognitive	IV	yes
18	2	8	Memory Social Influence	Social influence may affect our memory	affect cognition	Once developed will remain same	constant	Teacher Characteristics	V	yes
18	2	9	Visual Perception Group Dynamics	Affects what we think	affects thinking	Will communicate no matter	constant	Communication	V	no
18	2	10	Memory Intelligence	In-built character	in-built	Way people affect	people influence	Social Perception	IV	no
18	2	11	Learning: Behaviourist Teacher Characteristics	Learn't	learned	Affected by others socially	social interaction	Group Dynamics	IV	yes
18	2	12	Visual Perception Social Influence	Affected by others	others' influence	In-built characteristic	in-built	Communication	IV	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
19	1	1	Teacher Characteristics Personality	How we can transfer skills to others	extrapersonal	Past memories may influence us. What we want to remember ourselves	intrapersonal	Memory	VI	yes
19	1	2	Learning: Behaviourist Learning: Cognitive	How we think can affect the way we want to learn	affects learning	Level of ability and learning	level of ability and learning	Intelligence	III	no
19	1	3	Visual Perception Learning: Behaviourist	Appealing visual aids affects learning	learning process	Controlled by ourselves and influenced by society	individual + society	Motivation	IV	no
19	1	4	Learning: Cognitive Intelligence	Demonstrate ability to learn logically	ability	Behavioural	behaviour	Social Perception	III	yes
19	1	5	Personality Group Dynamics	Introvert/extrovert, affects behaviour within a group	individual	Affects us within society as a whole	societal	Social Influence	IV	yes
19	1	6	Motivation Communication	Necessary to progress and transfer skills	progress	Behavioural	behavioural	Social Perception	III	no
19	1	7	Motivation Personality	Type of person we are affects how we progress	individual	Learning process	learning process	Learning: Cognitive	IV	no
19	1	8	Memory Teacher Characteristics	Previous memory's may influence type of teaching	intrapersonal	Behavioural	behavioural	Social Influence	VII	no
19	1	9	Communication Group Dynamics	Transfer skills within a group	group	How we see things	intrapersonal	Visual Perception	I	yes
19	1	10	Memory Intelligence	Learning process and how we perceive learning	learning process	How we interact with and see others	interpersonal interaction	Social Perception	VI	yes
19	1	11	Learning: Behaviourist Teacher Characteristics	Teaching skills. Affects reaction to learning	teaching skills	Within a group	group	Group Dynamics	I	no
19	1	12	Visual Perception Social Influence	How we perceive and are changed by surroundings	influence of surroundings	How we express ourselves	individual expression	Communication	IV	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
19	2	1	Teacher Characteristics Personality	Intelligence process	intelligence process	Thought process	thought process	Memory	III	yes
19	2	2	Learning: Cognitive Intelligence	Thought process	thought process	Conditioning	conditioning	Learning: Behaviourist	II	no
19	2	3	Learning: Behaviourist Motivation	Learning concept	learning concept	Eye contact	eye contact	Visual Perception	II	no
19	2	4	Learning: Cognitive Intelligence	Thought process	thought process	This looks at society	society	Social Perception	IV	yes
19	2	5	Personality Group Dynamics	People and change	people and change	Interaction	interaction	Social Influence	IV	yes
19	2	6	Social Perception Motivation	Influence	influence	Interaction	interaction	Communication	IV	no
19	2	7	Learning: Cognitive Personality	Thought process	thought process	Attitude	attitude	Motivation	III	no
19	2	8	Teacher Characteristics Social Influence	Interactive	interactive	Thinking	thinking	Memory	I	no
19	2	9	Communication Group Dynamics	Skills	skills	How we see things (insight)	insight	Visual Perception	III	yes
19	2	10	Memory Intelligence	Both thought processes	cognitive process	View of society	societal	Social Perception	IV	yes
19	2	11	Teacher Characteristics Group Dynamics	Teacher-centred	teacher	Concept	concept	Learning: Behaviourist	II	no
19	2	12	Visual Perception Social Influence	Both view by one person	individual	Interactive - between others	others	Communication	I	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
20	1	1	Teacher Characteristics Personality	Changeable	changeable	Memory can't	not changeable	Memory	V	yes
20	1	2	Learning: Behaviourist Learning: Cognitive	Both types of learning	types of learning	Don't need intelligence to learn	not needed to learn	Intelligence	II	yes
20	1	3	Visual Perception Learning: Behaviourist	Both connect with observation	observation	Not connected by observation	not observation	Motivation	II	yes
20	1	4	Social Perception Intelligence	Thought processes	thought process	Action rather than thought processes	action	Learning: Cognitive	III	no
20	1	5	Group Dynamics Social Influence	Group	group	Singular	singular	Personality	I	yes
20	1	6	Motivation Communication	Active	active	Passive	passive	Social Perception	V	no
20	1	7	Motivation Personality	Dependant on person	personal	Constructive i.e. make something	constructive	Learning: Cognitive	III	yes
20	1	8	Teacher Characteristics Social Influence	These can change	changeable	Memory can't	not changeable	Memory	V	yes
20	1	9	Communication Group Dynamics	Group	group	Singular	singular	Visual Perception	I	no
20	1	10	Memory Intelligence	Need memory to retain knowledge	cognition	Social perception not really connected	not	Social Perception	VII	yes
20	1	11	Learning: Behaviourist Teacher Characteristics	Individual ??	individual	Group	group	Group Dynamics	I	no
20	1	12	Visual Perception Communication	Type of communication	type communicatio n	Don't need to communicate	not needed to communicate	Social Influence	II	no

Comment: *now know I've got no. 2 wrong*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
20	2	1	Teacher Characteristics Personality	Personality	personality	Ability	ability	Memory	III	yes
20	2	2	Learning: Behaviourist Learning: Cognitive	Concepts	concepts	Not a concept	not a concept	Intelligence	II	yes
20	2	3	Visual Perception Learning: Behaviourist	Visual stimuli	stimuli	Learning concept	learning concept	Motivation	II	yes
20	2	4	Learning: Cognitive Intelligence	Knowledge	knowledge	Perception	perception	Social Perception	II	no
20	2	5	Group Dynamics Social Influence	The group/society	group/ society	Self	self	Personality	IV	yes
20	2	6	Social Perception Communication	To be accepted	interpersonal interaction	Self	self	Motivation	IV	no
20	2	7	Motivation Personality	Attitude	attitude	Theory	theory	Learning: Cognitive	II	yes
20	2	8	Teacher Characteristics Social Influence	People	group	Personality as opposed to ability	individual	Memory	I	yes
20	2	9	Visual Perception Communication	Eye contact	eye contact	Not eye contact	no eye contact	Group Dynamics	II	no
20	2	10	Memory Intelligence	Ability	ability	Attitude	attitude	Social Perception	III	yes
20	2	11	Teacher Characteristics Group Dynamics	Influence	influence	Learning concept	learning concept	Learning: Behaviourist	II	no
20	2	12	Visual Perception Social Influence	One way	individual	Two way	interaction	Communication	I	no

Comment: *If a thought arises it was strong initially and at first I thought it was correct for a particular line - but it wasn't. It was then very hard to disregard it.*

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
21	1	1	Teacher Characteristics Personality	subjective	subjective	objective	objective	Memory	V	yes
21	1	2	Learning: Behaviourist Learning: Cognitive	how people learn (process)	process	what they learn with (product)	product	Intelligence	II	yes
21	1	3	Visual Perception Motivation	active processes	active	passive processes	passive	Learning: Behaviourist	V	no
21	1	4	Learning: Cognitive Intelligence	mental processes	mental process	social processes	social process	Social Perception	IV	yes
21	1	5	Group Dynamics Social Influence	influence of other people	others	the individual more	individual	Personality	I	yes
21	1	6	Social Perception Communication	more overt signals	overt	more subtle sources	subtle	Motivation	V	no
21	1	7	Motivation Personality	emotional	affective	Not involving feelings	not affective	Learning: Cognitive	V	yes
21	1	8	Teacher Characteristics Social Influence	Phenomenological	phenomenological	Cognitive (positivistic)	positivistic(cognitive)	Memory	II	yes
21	1	9	Communication Group Dynamics	Interaction between people	group interaction	Not interpersonal - one way	one way	Visual Perception	I	yes
21	1	10	Memory Intelligence	cognitive psychology	cognitive psychology	social psychology	social psychology	Social Perception	II	yes
21	1	11	Learning: Behaviourist Group Dynamics	'nurturist' argument	nurture theory	'nativist' argument	nature theory	Teacher Characteristics	II	no
21	1	12	Communication Social Influence	group	group	individual	individual	Visual Perception	I	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
21	2	1	Teacher Characteristics Personality	Effected by social (classroom) context	social context	Emphasis on cognitive	cognitive	Memory	IV	yes
21	2	2	Learning: Behaviourist Learning: Cognitive	Learning theories (academic) explicit	explicit theories/ academic	Controversial - not explicit, undertones of value judgements	implicit	Intelligence	II	yes
21	2	3	Learning: Behaviourist Motivation	To do with the subjective (personal)	subjective	Cognitive - impersonal (scientific)	cognitive	Visual Perception	V	no
21	2	4	Learning: Cognitive Intelligence	Linked by theory of maturation adaptation/developmental (Piaget)	developmental theory	Not linked to develop. theory	not	Social Perception	II	yes
21	2	5	Group Dynamics Social Influence	Social psychology - groups (macro)	macro	Individual (micro)	individual	Personality	IV	yes
21	2	6	Social Perception Motivation	Constructivist (individual making sense) dynamic within person	constructivist	Social psy. theory (dynamics - outside person)	social psychology	Communication	II	no
21	2	7	Motivation Personality	Subjective person (emotional)	subjective	Thinking person (impassive)	objective	Learning: Cognitive	V	yes
21	2	8	Teacher Characteristics Social Influence	Applied. Interaction (in classroom) involving external influence of others	external interaction	Mechanics of individual (in classroom). Internal.	internal individual	Memory	I	yes
21	2	9	Communication Group Dynamics	Related to social interaction (group)	group interaction	Physical emphasis (individual)	individual	Visual Perception	I	yes
21	2	10	Memory Intelligence	Cognitive theories	cognitive theory	More emphasis on (social) experience and expectation	social	Social Perception	II	yes
21	2	11	Teacher Characteristics Group Dynamics	Dynamic - interpersonal relationships (larger grps). Influenced by more complex context. Applied.	societal (macro)	1 to 1 - more passive - objective theory. (Simpler, individual).	individual (micro)	Learning: Behaviourist	IV	no
21	2	12	Communication Social Influence	Question of interpretation of previous social experience.	social experience	To do with interpretation of individual experience (cognitive)	individual experience	Visual Perception	IV	yes

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
22	0	1	Teacher Characteristics Personality	Individual characteristics that have an influence on interpersonal processes	interpersonal processes	Cognitive principles underpinning an individual's capacity and performance	cognitive principles	Memory	II	n/a
22	0	2	Learning: Cognitive Intelligence	Individual and concerned with performance	individual performance	Individual, but more concerned with low level processes which less depends on intelligence	individual basic process	Learning: Behaviourist	III	n/a
22	0	3	Learning: Behaviourist Motivation	Individual: both concerned with knowing (although a lot of 'behaviourist' learning requires little effort)	cognitive individual	Individual but doesn't require effort (and so minimal involvement of motivation).	basic individual	Visual Perception	III	n/a
22	0	4	Learning: Cognitive Intelligence	Individual	individual	Group/interpersonal	group/interpersonal	Social Perception	I	n/a
22	0	5	Group Dynamics Social Influence	Interpersonal processes	Interpersonal processes	Individual characteristics	individual	Personality	I	n/a
22	0	6	Social Perception Communication	Interpersonal	interpersonal	Individual (tho' can be influenced by others)	individual	Motivation	I	n/a
22	0	7	Motivation Personality	Goal-setting: based on characteristics of the learning (individual)	individual goal setting	General principles that don't change with characteristics of the learner	general principles	Learning: Cognitive	II	n/a
22	0	8	Teacher Characteristics Social Influence	Interpersonal: teacher characteristics influence what is learned and how	interpersonal	Individual - particularly relevant for the learner	individual	Memory	I	n/a
22	0	9	Communication Group Dynamics	Social/inter-personal	social	Individual	individual	Visual Perception	IV	n/a
22	0	10	Memory Intelligence	Characteristics of individuals that contribute to learning	individual characteristics	Interpersonal processes	interpersonal process	Social Perception	I	n/a
22	0	11	Teacher Characteristics Group Dynamics	Interpersonal processes	interpersonal processes	Individual processes and actions (may be automatic)	individual	Learning: Behaviourist	I	n/a
22	0	12	Communication Social Influence	Interpersonal	interpersonal	Individual	individual	Visual Perception	I	n/a

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
23	0	1	Teacher Characteristics Personality	External. Teaching skills need to interact on many	external	Internal. Others can be immediate M. incremental	internal	Memory	IV	n/a
23	0	2	Learning: Behaviourist Learning: Cognitive	Methods used for learning various skills. Both can be used in learning process.	learning methods	Often culturally determined and measured. Of teaching. Learning may equate more with - method	culturally determined and measured	Intelligence	II	n/a
23	0	3	Visual Perception Learning: Behaviourist	Beh. methods used for vis. task training in amnesics	methods	Individual level - Neuropsych. method	neuro-psychological method	Motivation	II	n/a
23	0	4	Learning: Cognitive Intelligence	Training IQ \= cog. additive factors	cognitive factors	Not necessarily influenced by IQ or Cog. power	not	Social Perception	II	n/a
23	0	5	Group Dynamics Social Influence	Group D greatly influenced by SI	influenced	Can remain stable despite other 2	stable	Personality	V	n/a
23	0	6	Social Perception Motivation	Social perceptions influences M	influence	Skill can be independent from others	skill	Communication	IV	n/a
23	0	7	Motivation Personality	May be interactive and visible. Enhance learning.	interactive external	Invisible - inferred by beh.	internal	Learning: Cognitive	VI	n/a
23	0	8	Teacher Characteristics Social Influence	Social perceptions. '- and +' T characteristics may influence	influence	Important but not a much as other 2	misc	Memory	VII	n/a
23	0	9	Visual Perception Communication	Human and A communication often perceive visually	individual	Not at the individual level	not individual	Group Dynamics	III	n/a
23	0	10	Memory Intelligence	Again 2 can be interactive and additive	interactive	Often culturally determined	cultural	Social Perception	IV	n/a
23	0	11	Learning: Behaviourist Teacher Characteristics	Deliberate and conscious methods employed to 'train'	conscious methods	Socially implicit rules as (10) above	social rules	Group Dynamics	V	n/a
23	0	12	Communication Social Influence	Soc. Influence could ' + or -'ive effects on C	influence	Can be dealt with as an immediate process	immediate process	Visual Perception	VII	n/a

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
24	0	1	Teacher Characteristics Personality	Wide amount of elements involved	wide elements	Single element	single element	Memory	II	n/a
24	0	2	Learning: Behaviourist Learning: Cognitive	Creating/learning new things	learned	Born with faculties	born with	Intelligence	IV	n/a
24	0	3	Visual Perception Learning: Behaviourist	1 approach to it e.g. cognitive	Single approach	Many approaches to explaining it, cognitive, emotion, Freudian	Many approaches [theories]	Motivation	II	n/a
24	0	4	Social Perception Intelligence	Based on looser ideas	loose ideas	Based on structured/rigorous ideas	structured ideas	Learning: Cognitive	II	n/a
24	0	5	Group Dynamics Social Influence	Many people	group	1 person	individual	Personality	I	n/a
24	0	6	Social Perception Communication	Frequently word related. A lot of linguistic importance.	linguistic	Linguistics not important - glands/drives etc. are	glands/drive	Motivation	II	n/a
24	0	7	Motivation Personality	Wide sources	wide source	Narrow source	narrow source	Learning: Cognitive	II	n/a
24	0	8	Teacher Characteristics Social Influence	Personality related	trait	Computational - cognitive, mechanical	computational /cognitive/mechanical	Memory	II	n/a
24	0	9	Communication Group Dynamics	Social	social	Computational	computational	Visual Perception	II	n/a
24	0	10	Social Perception Intelligence	Vague category to be taught about	vague category	Specific clear idea	specific idea	Memory	II	n/a
24	0	11	Teacher Characteristics Group Dynamics	Complex, many factors to be aware off	complex factors	Simple - few factors to be manipulated. to study	simple factors	Learning: Behaviourist	II	n/a
24	0	12	Communication Social Influence	Concerned with language/meaning (explicit)	language/meaning explicit	Concerned with abstract manipulation (implicit)	abstract (implicit)	Visual Perception	II	n/a

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
25	0	1	Teacher Characteristics Personality	Not manipulable	not manipulable	Experimental	experimental	Memory	II	n/a
25	0	2	Learning: Cognitive Intelligence	Trendy	trendy	Old fashioned	old fashioned	Learning: Behaviourist	V	n/a
25	0	3	Learning: Behaviourist Motivation	Conscious	conscious	Unconscious	unconscious	Visual Perception	V	n/a
25	0	4	Learning: Cognitive Intelligence	Evolutionary basis	evolutionary	Cultural basis	cultural	Social Perception	IV	n/a
25	0	5	Group Dynamics Social Influence	Non-metric	non-metric	Metric	metric	Personality	II	n/a
25	0	6	Social Perception Communication	Interactional	interaction	Individual	individual	Motivation	I	n/a
25	0	7	Motivation Personality	Commercial	commercial	Academic	academic	Learning: Cognitive	II	n/a
25	0	8	Teacher Characteristics Social Influence	Social	social	Cognitive	cognitive	Memory	IV	n/a
25	0	9	Communication Group Dynamics	Soft	soft	Hard	hard	Visual Perception	V	n/a
25	0	10	Memory Intelligence	Stable	stable	Variable	variable	Social Perception	V	n/a
25	0	11	Teacher Characteristics Group Dynamics	Interactive/dynamic	interaction	Static	static	Learning: Behaviourist	V	n/a
25	0	12	Communication Social Influence	Loose	loose	Tight	tight	Visual Perception	V	n/a

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
26	0	1	Teacher Characteristics Personality	Attributes of person	attribute	Processes within and between people	interpersonal process	Memory	I	n/a
26	0	2	Learning: Behaviourist Learning: Cognitive	Lower order constructs	low order constructs	Higher order constructs	higher order constructs	Intelligence	II	n/a
26	0	3	Learning: Behaviourist Motivation	Important elements in Behaviourism (e.g. Hull)	elements	Not important topics in behaviourism	not important topic	Visual Perception	II	n/a
26	0	4	Learning: Cognitive Intelligence	Mainly intrapersonal	intrapersonal	Mainly extrapersonal	extrapersonal	Social Perception	VI	n/a
26	0	5	Group Dynamics Social Influence	Social psychology	social psychology	Not social psychology	not	Personality	II	n/a
26	0	6	Social Perception Communication	Involves more than one person (logically)	group	Can be thought of at individual level	individual	Motivation	I	n/a
26	0	7	Motivation Personality	Psychodynamic approaches (Freud)	psychodynamic	Non psychodynamic	not psycho-dynamic	Learning: Cognitive	II	n/a
26	0	8	Teacher Characteristics Social Influence	Concerned with social perception, persuasion and personality	social	Fundamental cognitive process	cognitive process	Memory	IV	n/a
26	0	9	Communication Group Dynamics	Interpersonal communication processes	interpersonal	Individual cognitive process	individual (cognitive process)	Visual Perception	I	n/a
26	0	10	Memory Intelligence	Mainly intrapersonal processes	intrapersonal process	Mainly interpersonal	interpersonal	Social Perception	VI	n/a
26	0	11	Teacher Characteristics Group Dynamics	Traditional principles of behaviour change	principles	Analysis of interpersonal relations	analysis	Learning: Behaviourist	II	n/a
26	0	12	Communication Social Influence	Social psychology	social psychology	Not social psychology	not	Visual Perception	II	n/a

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
27	0	1	Teacher Characteristics Personality	Important in interactions	interaction	Individual/private	individual	Memory	I	n/a
27	0	2	Learning: Cognitive Intelligence	Conscious reflection	conscious	Subconscious/animalistic	subconscious	Learning: Behaviourist	V	n/a
27	0	3	Learning: Behaviourist Motivation	Automatic but subject to conscious change (sometimes!)	conscious	Automatic	automatic	Visual Perception	V	n/a
27	0	4	Learning: Cognitive Intelligence	Educational implication	educational	Less concerned with individual differences	not individual differences	Social Perception	VI	n/a
27	0	5	Group Dynamics Social Influence	Interactions	interactions	Individual	individual	Personality	I	n/a
27	0	6	Social Perception Motivation	Personal characteristic	personal	Information processing	information processing	Communication	III	n/a
27	0	7	Motivation Personality	Character	character	Intelligence/information processing	information processing	Learning: Cognitive	III	n/a
27	0	8	Teacher Characteristics Social Influence	Human interaction	Interaction	Private behaviour	private behaviour	Memory	VI	n/a
27	0	9	Communication Group Dynamics	Interpersonal communication	interpersonal	Physical reaction/private cognition	individual cognition	Visual Perception	VI	n/a
27	0	10	Memory Intelligence	Information processing	information processing	Social psychology	social psychology	Social Perception	II	n/a
27	0	11	Teacher Characteristics Group Dynamics	Public	public	Private	private	Learning: Behaviourist	VI	n/a
27	0	12	Communication Social Influence	Interpersonal communication	interpersonal	Physical reaction/private cognition	intrapersonal	Visual Perception	VI	n/a

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
28	0	1	Teacher Characteristics Personality	Interpersonal factors	interpersonal	Cognitive	cognitive	Memory	II	n/a
28	0	2	Learning: Cognitive Intelligence	Cognitive approach	cognitive	Black box approach	mechanistic	Learning: Behaviourist	II	n/a
28	0	3	Visual Perception Motivation	Physiological substrate considered	physical	No physiological substrate considered	not	Learning: Behaviourist	II	n/a
28	0	4	Learning: Cognitive Intelligence	Schooled	schooled	Implicitly learning	implicit learning	Social Perception	IV	n/a
28	0	5	Group Dynamics Social Influence	Biological influences less strong	biological	Biological influences strong	stronger biological	Personality	II	n/a
28	0	6	Social Perception Communication	Fewer innate factors	less innate	Strong innate factors	more innate	Motivation	III	n/a
28	0	7	Learning: Cognitive Motivation	Not social	not social	Social	social	Personality	IV	n/a
28	0	8	Teacher Characteristics Social Influence	Interpersonal factors	interpersonal	Not interpersonal	not	Memory	II	n/a
28	0	9	Communication Group Dynamics	Socially oriented	social	Sensory	sensory	Visual Perception	II	n/a
28	0	10	Memory Intelligence	Cognitive	cognitive	Social	social	Social Perception	II	n/a
28	0	11	Teacher Characteristics Group Dynamics	Interpersonal factors	interpersonal	No individual differences allowed	not	Learning: Behaviourist	II	n/a
28	0	12	Communication Social Influence	Socially oriented	social	Sensory	sensory	Visual Perception	II	n/a

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
29	0	1	Teacher Characteristics Personality	Ideographic	ideographic	Nomethetic	nomethetic	Memory	II	n/a
29	0	2	Learning: Behaviourist Learning: Cognitive	Dull	dull	Political	political	Intelligence	V	n/a
29	0	3	Learning: Behaviourist Motivation	Cognitive	cognitive	Sensory	sensory	Visual Perception	II	n/a
29	0	4	Social Perception Learning: Cognitive	Computational	computational	Psychometric	psychometric	Intelligence	II	n/a
29	0	5	Group Dynamics Social Influence	Interpersonal	interpersonal	Intrapersonal	intrapersonal	Personality	I	n/a
29	0	6	Motivation Communication	Interpersonal	interpersonal	Individual	individual	Social Perception	I	n/a
29	0	7	Motivation Personality	Mainstream	mainstream	Underdeveloped	underdeveloped	Learning: Cognitive	V	n/a
29	0	8	Teacher Characteristics Social Influence	Interpersonal	interpersonal	Cognitive	cognitive	Memory	I	n/a
29	0	9	Communication Group Dynamics	Social	social	Reductionist	reductionist	Visual Perception	IV	n/a
29	0	10	Social Perception Intelligence	Psychometric	psychometric	Process	process	Memory	II	n/a
29	0	11	Teacher Characteristics Group Dynamics	Applied	applied	Mechanistic	mechanistic	Learning: Behaviourist	II	n/a
29	0	12	Communication Social Influence	Social	social	Individual	individual	Visual Perception	IV	n/a

Ss no	T1/ T2	Row no.	Similarity Topic (elements)	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Difference Topic (element)	Final sort code	Same triad T1/T2
30	0	1	Teacher Characteristics Personality	How teachers present themselves to others	extrapersonal	Not always visible	intrapersonal	Memory	VI	n/a
30	0	2	Learning: Behaviourist Learning: Cognitive	Acquisition and retention of info	cognitive process	Individual differences in intelligence not necessarily linked to learning theory	individual	Intelligence	III	n/a
30	0	3	Learning: Behaviourist Motivation	Connection between external reinforcement motivation and extrinsics	extrinsics	Object perception not associated with learning or being motivated to learn	object	Visual Perception	II	n/a
30	0	4	Learning: Cognitive Intelligence	Speed of cognitive insight an indice of intelligence	measurable computational	Other two not necessary for social perception	not necessary	Social Perception	II	n/a
30	0	5	Group Dynamics Social Influence	Interaction between individuals in both - in groups	interpersonal interaction	Personality - individual differences	individual	Personality	I	n/a
30	0	6	Social Perception Communication	Perception of NVC as part of the communication process	process	Motivation the starting the other two, an outcome	outcome	Motivation	II	n/a
30	0	7	Motivation Personality	Motivation an element of personality	element	Cog learning not an element of personality	not element	Learning: Cognitive	II	n/a
30	0	8	Teacher Characteristics Social Influence	Aspects of Teacher Characteristic used in influencing groups	overt interaction	Memory processing not a overt as other two	covert	Memory	V	n/a
30	0	9	Communication Group Dynamics	Interaction between individuals	interpersonal interaction	Perception of objects not part of people comm.	cognitive process	Visual Perception	I	n/a
30	0	10	Social Perception Memory	Interpretation of social events influenced by our memory of prior ones	extrapersonal	Intelligence not thought to be related to memory or our ability to interact	intrapersonal	Intelligence	VI	n/a
30	0	11	Teacher characteristics Group Dynamics	Teacher can influence group dynamics - positive/negative	teacher interaction	Behaviourism not a major element of how a teacher delivers or how a group interacts	not	Learning: Behaviourist	VII	n/a
30	0	12	Communication Social Influence	Communication part of the process of social influence	social process	Object recognition not directly part of social influence	object recognition	Visual Perception	II	n/a

Appendix 4a)

Appendix 4a)

ID	pole	sim	Total	description
1	38	82	120	individual, personal {urge, willing, drive, need, performance, process, action}, private individual, self
2	15	7	22	learning process (general), learning mode
3	34	15	49	interpersonal {situation influence, process, integration, effect}
4	42	39	81	ability, capacity, attribute, faculty, skill, qualities, personal abilities, individual characteristic, trait, character, drive, nature (theory?), tool, instinct
5	5	26	31	nature, innate, inherent, born with, in-built, make-up
6	25	21	51	group, others {views/perceptions/meaning/development}
7	44	18	62	others/social process, social interaction, group interaction, social influence, controlled by others
8	20	20	40	external, give out, extrapersonal, extrovert
9	7	11	18	internal, take in, introvert, inward
10	2	4	6	process, one-way process, immediate process, communication process?
11	18	4	22	teacher/ing process/style/ability/skills/mode/method/characteric/presentation
12	44	32	76	cognitive process/influence/interpretation, individual cognition, information process, individual response, thought process, thinking {tool} , intrapersonal, social cognition, how brain thinks
13	53	17	70	interpersonal, personal/individual view/perception/seeing/factors
14	0	5	5	product, object, facts, entities, outcome
15	18	9	27	cognitive, cognition/theory/process, positivistic, cognitive principles, reductionist?
16	10	4	14	needed for learning, learning tool, progress
17	4	1	5	active
18	1	3	4	passive
19	2	5	7	explicit, specific, thight, schooled (explicit)
20	4	3	7	implicit, vague, (socially implicit rules?), loose, implicit learning
21	4	2	6	interaction
22	0	2	2	not interaction
23	2	3	5	experimental, metric, psychometric
24	2	3	5	complex, more involved, high order construct
25	4	0	4	conscious, conscious methods
26	1	3	4	unconscious, subconscious, automatic
27	1	0	1	overt, seen
28	0	5	5	covert, subtle, hidden (not seen), not apparent, not visible
29	10	3	13	affective - feeling, emotion, emotional behaviour, attitude, human values
30	0	1	1	theory, general principles, schools of learning
31	4	7	11	action, constructive (ie make something), participate/doing, eye contact?
32	3	4	7	behaviour (personal), [not thinking]
33	10	11	21	social, cultural, sociocultural/behaviour, societal, people and change, culturally determined
34	4	2	6	evolutionary, developmental, development
35	13	4	17	teacher/ing, skills transfer, teacher/interaction/affect/influence, teaching process?,
36	4	2	6	nurture, taught/theory?
37	2	0	2	student

Appendix 4a)

ID	pole	sim	Total	description
38	3	7	10	theory, general principles, academic, ideology
39	5	2	7	concrete - measureable, computational, structured
40	0	7	7	mechanistic, (reflex) reaction, habits, conditioning
41	1	0	1	tool [not individual]
42	0	1	1	abstract, less real
43	9	5	14	learned, cumulative, acquired, learned ability, can be taught
44	15	7	22	constructs, concepts, name, example, element, collection, learning concept, type learning
45	0	1	1	insight, observation, communication, verbal, linguistic?
46	12	4	16	changing, variable, changeable, influences cognition, unpredictable
47	2	16	18	constant, fixed, predictable, not changeable, established, controlled, stable, static
48	13	4	17	modes, methods/of learning/communicaiton/storing, types learning
49	15	11	26	environment, experience, influence, social background, social experience, social upbringing
50	4	8	12	single, narrow, idiographic, simple, alone, one-way?, primary action, low order construct
51	3	5	8	multi-type, wide, nomothetic, general, systems
52	4	3	7	knowledge, the mind
53	8	15	23	physical, biological, sensory, visual presentation/obersveration/perception/stimuli, glands, drives, object recognition
54	6	0	6	subjective
55	0	6	6	objective, determinate
56	3	10	13	misc
57	31	2	33	interdependent, interactive, linked, interrelated, has affect, related, dependent, influences, must not clash, aids?
58	0	2	2	not construct/element
59	0	1	1	not developmental
60	1	49	50	not essential, can be ignored, no great affect, not be affect, not necessary, no link, doesn't help, not related
61	0	9	9	teacher not needed, not teacher/ing/process/interaction
62	3	3	6	individual learning process/mode
63	0	1	1	two-way process
64	1	0	1	not in our control
65	1	0	1	motivation
66	1	5	6	not interaction
67	1	0	1	encourages learning
68	0	1	1	learning difficulty
69	0	4	4	not (individual) learning process (see 62)
70	0	1	1	addition to learning
71	2	1	3	not measureable/manipulable, non-metric (see 39)
72	2	3	5	judged, impression formation
73	0	1	1	not judged (see73)
74	0	1	1	not social etc. (see 33)

Appendix 4a)

ID	pole	aim	Total	description
75	0	2	2	not knowledge (see 52)
76	0	1	1	not ability etc. (see 4)
77	4	0	4	reinforcement, reward, (Pavlov's dogs?) reinforcing influence
78	2	4	6	social psychology/theory, phenomenological (see 15)
79	0	1	1	not nature/innate etc (see 5)
80	2	0	2	practice, applied (see 38)
81	0	2	2	not individual etc (see 1)
82	0	4	4	not physical, sensory etc (see 53)
83	0	4	4	not needed for learning (see 16)
84	0	1	1	not environment, experience etc (see 49)
85	0	1	1	personality (misc)
86	0	1	1	communciation (misc)
87	0	0	0	(see 78)
88	1	0	1	achievement
89	0	1	1	not achievement
90	0	2	2	not affective (see 29)
91	1	0	1	linguistic
92	1	2	3	not social/psychology (see 78)
93	1	0	1	trendy
94	0	1	1	old fashioned
95	0	1	0	commercial
96	0	1	1	academic (see 38)
97	1	0	1	soft
98	0	1	1	hard
99	1	0	1	psychodynamic
100	0	1	1	not psychodynamic (see 99)
101	1	0	1	educational implication (individual differences)
102	0	1	1	not ed imp (see 101)
103	0	3	3	not personal/individual view etc (see 13)
104	1	0	1	dull
105	0	1	1	political
106	0	0	0	
107	1	0	1	mainstream
108	0	1	1	underdeveloped
109	0	1	1	not cognitive process etc (see 12)

Appendix 4b)

Appendix 4b)

ID	pole	aim	Total	description
1	90	152	242	individual, personal {urge, willing, drive, need, performance, process, action}, private individual, self behaviour (personal), [not thinking] student,
1				ability, capacity, attribute, faculty, skill, qualities, personal abilities, individual characteristic, trait, character, drive, nature (theory?), tool, instinct, nature, innate, inherent, born with, in-built, make-up - not nature/innate etc
2	44	29	73	learning process (general), learning mode process, one-way process, immediate/ communication, process, needed for learning, learning tool/progress/ diffi, individual learning/process/mode, modes, methods/of learning/communication/storing, types learning
2				encourages learning, addition to learning - not (individual) learning process
7	69	39	128	others/social process, social interaction, group interaction, social influence, controlled by others, group, others {views/perceptions/meaning/development}
8	20	20	40	external, give out, extrapersonal, extrovert
9	7	11	18	internal, take in, introvert, inward
11	31	8	39	teacher/ing process/style/ability/skills/mode/method/characteric/presentationteacher/ing, skills transfer, teacher/interaction/affect/influence, teaching process?,
12	44	42	86	cognitive process/influence/interpretation, individual cognition, information process, individual response, thought process, thinking {tool} , intrapersonal, social cognition, how brain thinks - not cognitive process etc
12				teacher not needed, not teacher/ing/process/interaction
13	87	32	119	interpersonal, personal/individual view/perception/seeing/factors, interpersonal {situation influence, process, integration, effect}
14	1	5	6	product, object, facts, entities, outcome, tool
15	22	11	33	cognitive, cognition/theory/process, positivistic, cognitive principles, reductionist?knowledge, the mind
17	14	19	33	active, interaction, two-way processaction, constructive (ie make something), participate/doing, eye contact?action, constructive (ie make something), participate/doing, eye contact?- passive, not interaction
19	9	9	18	explicit, specific, tight, (schooled (explicit), concrete - measureable, computational, structured, hard, experimental, metric, psychometric- not measureable/manipulable, non-metric
20	6	12	18	implicit, vague, (socially implicit rules?), loose, implicit learning, covert, subtle, hidden (not seen), not apparent, not visible, unconscious, subconscious, abstract, less real, soft
24	5	8	13	complex, more involved, high order construct, multi-type, wide, nomothetic, general, systems
25	4	0	4	conscious, conscious methods, overt, seen
29	12	7	19	affective - feeling, emotion, emotional behaviour, attitude, human valuesjudged, impression formation - not judged
33	25	23	48	social, cultural, sociocultural/behaviour, societal, people and change, culturally determined, environment, experience, influence, social background, social experience, social upbringing- not social etc (see 33)
40	0	8	8	mechanistic, (reflex) reaction, habits, conditioning, automatic
43	17	10	27	learned, cumulative, acquired, learned ability, can be taught, nurture, taught/theory?, evolutionary, developmental, development - not developmental
44	18	18	36	constructs, concepts, name, example, element, collection, learning concept, type learning - not construct/element, theory, general principles, academic, ideology, schools of learning,
45	2	1	2	verbal, linguistic
46	18	4	24	changing, variable, changeable, influences cognition, unpredictable, subjective
47	2	22	24	constant, fixed, predictable, not changeable, established, controlled, stable, static, objective, determinate
50	4	8	12	single, narrow, idiographic, simple, alone, one-way?, primary action, low order construct

Appendix 4b)

ID	pole	sim	Total	description
53	8	15	23	physical, biological, sensory, visual presentation/obersveration/perception/stimuli, glands, drives, object recognition
56	3	11	14	misc, political,
57	31	2	33	interdependent, interactive, linked, interrelated, has affect, related, dependent, influences, must not clash, aids?
60	1	49	50	not essential, can be ignored, no great affect, not be affect, not necessary, no link, doesn't help, not related
64	1	0	1	not in our control
65	1	0	1	motivation
75	0	2	2	not knowledge (see 52)
76	0	1	1	not ability etc. (see 4)
77	4	0	4	reinforcement, reward, (Pavlov's dogs?) reinforcing influence
78	3	6	9	social psychology/theory, phenomenological (see 15) - not social/psychology
80	2	0	2	practice, applied (see 38)
81	0	2	2	not individual etc (see 1)
82	0	4	4	not physical, sensory etc (see 53)
83	0	4	4	not needed for learning (see 16)
84	0	1	1	not environment, experience etc (see 49)
85	0	1	1	personality (misc)
88	1	0	1	achievement
89	0	1	1	not achievement
90	0	2	2	not affective (see 29)
93	1	1	2	trendy, commercial, mainstream
94	1	1	2	old fashioned, dull
99	1	0	1	psychodynamic
100	0	1	1	not psychodynamic (see 99)
101	1	0	1	educational implication (individual differences)
102	0	1	1	not ed imp (see 101)
103	0	3	3	not personal/individual view etc (see 13)
108	0	1	1	underdeveloped

Appendix 4c)

Ss no	T1/ T2	Row no.	Similarity Pole (description of construct)	Similarity dimension of construct	Difference Pole (description of construct)	Difference dimension of construct	Sort 1 pole1 code	Sort 1 pole2 code	Sort 2 codes	Sort 3 codes	Final sort code
1	1	1	Memory and personality are qualities of persons	qualities	Teacher characteristics relate to the style used for teaching	style	1	11	1 11	11 1	VI
1	1	2	Cognitive learning needs intelligence to work	capacity	Behaviourist learning relied on memory of pos and neg reinforcement	cognitive process	4	2	1 2	2 1	II
1	1	3	If motivation on the level of pain/pleasure is invoked this might be eg of "Behaviourist" learning	emotion	V P is our name for the way the mind receive info from the eyes	name	29	44	29 14	46 14	II
1	1	4	Social perception can involve cognitive learning about one's social environment	social environment	Intelligence is a complex thing which we may have more or less of (relatively)	personal attribute	7	4	7 1	7 1	IV
1	1	5	G D and S I go together because G D are systems of S Is	systems	Personality related to singular subject	single subject	51	50	14 14	14 14	II
1	1	6	Subject "A" might project a determinate social image to Subject "B" as a form of communication	projection	Motivation is something the subject has (eg fear of heights motivates me to climb down) or can be given (eg payment for work)	attribute	13	4	1	7 1	VI
1	1	7	Pers and Motiv are attributes of individuals	individual attribute	Any type of learning is an action rather than an attribute	action	4	31	1 17	1 1	III
1	1	8	Social Inf could be an eg of a teach char a tool used in the classroom	tool	Memory considered a faculty or ability could be objectively tested/measured	measurable faculty	41	4	14 1	14 1	II
1	1	9	Communication a vehicle of interrelationships in a group	group interaction	Visual Perception is 'inside' an individual	individual	7	12	7 12	7 12	I
1	1	10	Complex faculty used in learning	faculty	Is a personal thing	personal	4	1	1	1	III
1	1	11	Made out of information about class	information	Paradigm or viewpoint in the areas of teaching, psychology etc.	theory	6	38	7 14	7 14	II
1	1	12	Social inf and Vis Percept are both subjective	subjective	Communication is determinate (it means what is means not wot U think it means)	determinate	54	55	46 47	46 46	V
1	2	1	Everyone has	group	Only teachers have	individual	6	35	7 11	7 11	I
1	2	2	Ways of explaining the same thing	single meaning	hypothetical construct with many meanings	multi-meaning hypothetical construct	50	51	14 14	14 14	II
1	2	3	1 [visual perception] may be eg of 4 [learning: behaviourist]	examples	Can be a given thing from outside individual	external entity	44	8	14 8	14 8	II
1	2	4	actions	actions	attribute	attribute	31	4	17 1	1 1	III
1	2	5	could be thought as same thing	misc	effect/externalisation	effect	56	8	56 8	56 8	VII
1	2	6	can be an act of receiving	action	Noun signifying one person's reason for action/inaction	noun	31	44	17 14	12 1	II
1	2	7	Ill defined (but universally accepted concepts)	universally accepted concepts	less accepted as real	less accepted	44	57	14 56	14 56	II
1	2	8	Special case	example	individual faculty	faculty	44	4	14 1	14 1	II
1	2	9	Special case	example	individual faculty	faculty	44	4	14 1	14 1	II
1	2	10	Hypothetical entities (concepts)	concepts	actions	actions	44	31	14 17	14 1	II
1	2	11	Descriptions (in classroom)	concepts	Paradigm	theory	44	38	14 14	14 14	II

1	2	12	Special case	example	The way one interprets sense data	cognitive process	44	12	14 12	14 12	II
2	1	1	changing	changing	constant	constant	46	47	46 47	46 46	V
2	1	2	personel abilities	personal abilities	influenced	influenced	4	49	1 33	1 33	IV
2	1	3	self identified	self	outside events	outside events	9	8	9 8	1 8	IV
2	1	4	built in ability	in-built	differing facts	differing facts	4	14	1 14	1 14	VII
2	1	5	structured	structured	alone	alone	39	50	8 14	8 14	V
2	1	6	relating to others	others	self aims	self	6	1	7 1	7 1	I
2	1	7	own goals	personal	academical	academic	13	38	1 14	1 14	II
2	1	8	alterd, changed	changeable	unchanging	unchanging	46	47	46 47	46 46	V
2	1	9	sight/perception	faculty	teachable	teachable	4	43	1 11	11 1	V
2	1	10	Private (to individual)	private individual	alter - change	changing	1	46	1 46	1 46	V
2	1	11	affecting each other	interactive	personel	personal	3	1	3 1	7 1	I
2	1	12	take in	take in	give out	give out	9	8	9 8	8 8	V
2	2	1	development	development	can be taught	taught	34	35	2 11	33 11	VI
2	2	2	Schools of learning	schools of learning	both individual + social	individual and social	38	3	14 3	14 7	II
2	2	3	Concepts of psychology	concepts	individual/personal	individual	44	1	14 1	14 1	II
2	2	4	individual	individual	Other peoples' perception	others	1	6	1 7	7 1	I
2	2	5	People's influence structure groups	groups	personal	personal	6	1	7 1	7 1	I
2	2	6	Egos influenced by (how we are seen)	how we are seen	Not in are control	not in our control	13	64	3 46	7 46	VII
2	2	7	motivation	motivation	personal	personal	65	1	1	1	III
2	2	8	personal	personal	groups	groups	1	6	1 7	7 1	I
2	2	9	inter active with others	others	personal	personal	7	1	7 1	7 1	I
2	2	10	ones self	self	How others affect/see us	others	1	6	1 7	7 1	I
2	2	11	inter active with group	group interaction	personal	personal	7	1	7 1	7 1	I
2	2	12	groups/affective	group	Singular	singular	6	50	7 14	7 1	I
3	1	1	own personality	personal	not essential	not essential	1	60	1 56	1 56	VII
3	1	2	learning mode	learning mode	not essential	not	48	60	2 56	2	II
3	1	3	learning mode	learning mode	own view	own view	48	12	2 12	2 12	II
3	1	4	Influenced by life	experience	not essential	not	49	60	33 56	33 56	IV
3	1	5	Own personality (ideas)	individual	other people's ideas	others	1	6	1 7	7 1	I
3	1	6	oral, views of others	extrapersonal	Push, drive (learning mode)	intrapersonal	6	2	7 2	7 2	VI
3	1	7	The way you think	cognitive individual	The way you are driven	individual drive	12	1	12 1	12 1	III
3	1	8	good teaching methods	teaching methods	does not relate to teaching	not	11	61	11	11	II
3	1	9	More than one point of view	group	Your own view	individual	6	1	7 1	7 1	I
3	1	10	own intelligence	individual	View on the whole	general	1	51	1 14	1 14	IV
3	1	11	group teaching ideas	group	can be achieved by self	individual	6	1	7 1	7 1	I
3	1	12	The way you think	individual thinking	More than one person's thoughts	group process	12	6	12 7	12 7	I
3	2	1	Teacher's personality would come over when teaching	extrapersonal	A good memory would help but not necessary in teaching	intrapersonal	35	61	11	11	VI

3	2	2	both learning modes	learning modes	Maybe intelligence would help (this is a difficult one)	process	48	56	2 56	2	II
3	2	3	needed in most learning areas	needed in learning	Your view of someone/something by sight	view by sight	16	12	2 12	2 12	VII
3	2	4	Learning modes -ways of thinking	cognitive process	Can be influenced by experience and other people	experience/ influence	48	49	2 33	2 7	IV
3	2	5	your own personality could be influenced by others	interpersonal interaction	others' views, could have a link	others' views	13	6	3 7	7 7	I
3	2	6	others peoples views could be passed on	others interaction	Would be self (personality)	self	7	1	7 1	7 1	I
3	2	7	both are personality based, self influenced	individual	can be influenced by others	others	1	7	1 7	7 1	I
3	2	8	Teaching methods could be influenced by social influences	teaching methods	a good memory would help but not necessary in teaching	not necessary in teaching	48	61	2 11	2 11	II
3	2	9	View of two or more, passing on ideas etc	group interaction	One's own views	individual cognition	7	12	7 12	7 12	I
3	2	10	Personality linked	individual	Influences of others	others	1	7	1 7	7 1	I
3	2	11	teacher could encourage the group dynamics	interpersonal interaction	Learning mode (self)	individual	13	62	3 2	7 2	I
3	2	12	social influence would affect the way you see things	individual cognition	communication would be linked	misc	12	56	12 56	12 56	VII
4	1	1	a teacher personality influences the teachers characteristics and the way they teach	extrapersonal	is the way we remember	intrapersonal	11	12	11 12	11 12	VI
4	1	2	is the ability to learn	ability	acknowledgement of a person behaviour	behaviour	4	31	1 17	1 1	III
4	1	3	visual contact is the first contact often we make a judgement on the way we expect the behavior	assumption	is given, not assumed, visual grounds	given, not assumption	9	8	9 8	1 8	V
4	1	4	the ability to learn or the speed at which things picked up can be measured or are intelligence	intrapersonal	Is seeing people around us and having an opinion about them	extrapersonal	4	13	1 3	7 1	VI
4	1	5	social groups affect group behaviour	social behaviour	personality is very individual and changes only as we grow and learn	individual process	7	34	7 34?	7 1	IV
4	1	6	are perception of a person can alter the way we communicate with them	interpersonal interaction	is gathered or altered from the environment	environment	13	49	3 33	7 33	IV
4	1	7	For myself learning is easier if I feel motivated either from my teacher or group from wanted to learn it	extrapersonal	Is part of 1 person that can not be changed easily or can be called upon to have a different one	intrapersonal	9	8	9 8	1 8	VI
4	1	8	Key points of the characteristics of the teacher are called upon with different social influences	extrapersonal	is an ability which we call upon to learn	ability	13	3	3 3	7 1	VI
4	1	9	within a group communication is needed to do info and to give it, people in that group act differently some more dynamic than others	group interaction	Individual. Is seeing, and taking in what is around us	individual	7	12	7 12	7 12	I
4	1	10	are intelligence grows and get better as	cognitive process	Is seeing, it does not always effect learning	seeing	34	53	2 53	12 14	III

			are memory takes in infor		ability						
4	1	11	Within a group are behaviour alters depending upon other or stronger persons in the group	group interaction	are part of a person which are needed at different time	personal	13	1	3 1	7 1	I
4	1	12	How we are perceived by others can have an effect the way we can influence others in social situation	others	Can be done without any visual contact or influence from a social group	individual	13	1	3 1	7 1	I
4	2	1	The way in which the teacher teaches can be due to their personality	extrapersonal	Is personal to the person	intrapersonal	11	1	11 1	11 1	VI
4	2	2	born with	born with	learned	learned	5	43	1 2	2 1	VI
4	2	3	motivation can encourage learning	encourages learning	visual perception can only cause learning problem if communication not there	learning difficulty	67	68	2	2	VII
4	2	4	Interlinked towards gaining new skills	learning process	Does not contribute to learning process	not	2	69	2	2	VII
4	2	5	affects with others while in group	interpersonal interaction	Born with (possibly)	born with	13	5	3 1	7 1	VI
4	2	6	Can effect each other	effect each other	personal thought	personal cognition	57	12	56 12	56 12	VII
4	2	7	motivation is an important part of learning	part of learning	personality does not always interup with it	not always	2	69	2 69	2 2	VII
4	2	8	In social influences can alter the teacher's teaching	teaching process	memory is a personal thing	personal	11	1	11 1	11 1	VI
4	2	9	Within group dynamics, communication plays an important role	interaction	visual perception can be a personal experience	personal	13	1	3 1	7 1	I
4	2	10	Intelligence is sometimes measured by the amount we remember	measured	Social perception can not be measured	not measured	39	71	8	8	II
4	2	11	the way of the teacher can influence the learning	influences learning	group dynamics may not interfere with this	not learning process	11	61	11	11	VII
4	2	12	can effect each other	interrelated	does not allway effect them	not	57	60	56 56	56 56	VII
5	1	1	Everyone personality comes across in our characteristics and this is how we are judged	judgement	To remember something wouldn't always have an affect	not	72	73	29	46 46	V
5	1	2	Both to do with brainpower	cognitive process	Behaviour depends on other outside influences, as well as personnel feelings	outside influences	9	8	9 8	8	IV
5	1	3	Motivation will affect your behavior	behaviour	Visual perception will not affect	not	32	74	1 74	1	III
5	1	4	Both to do with brainpower	cognitive process	Is outside influence	outside influence	9	8	9 8	1 8	IV
5	1	5	Social influence once within a group	group interaction	Individual personalities will help or hinder group dynamics	individual	7	3	7 3	7 7	I
5	1	6	How you see others can affect how you interact with them	extrapersonal	Your motivation is a personal thing	intrapersonal	3	1	3 1	7 1	VI
5	1	7	What sort of person you are has a direct affect on how motivated you are	intrapersonal	The ability to learn is different	ability	12	4	12 1	12 1	III
5	1	8	A persons social background can influence his character	social background	Memory is something we are born with	born with	4	5	1	1	IV

5	1	9	You would need communication skills to interact with groups of people	interpersonal	This is how you see others as they stand not how they get along - one-way process	intrapersonal	13	12	3 12	7 12	VI
5	1	10	How intelligent you are can depend on and is tested by how much you remember	cognitive process	Social perception is how you see and react to others outside work environment	interpersonal	12	3	12 3	7 12	VI
5	1	11	The way the teacher is has a direct affect upon the rest of the group	interaction	This is an ability we already have	ability	35	4	11 1	11 1	I
5	1	12	The way we see others and react depends on the things we are used to	extrapersonal	To communicate is a basic instinct	instinct	49	4	33 1	1 33	VI
5	2	1	Characteristics are directly a result of your personality	individual	Less like the other two but is still similar to them	misc	1	56	1 56	1 56	VII
5	2	2	Go hand in hand with each other, with one you get the other	interde-pendent	Instinctive	instinct	57	4	56 1	56 1	VII
5	2	3	A behaviouristic approach to learning is mainly fueled by motivation	learning process	Is only as the person alone sees a certain thing	individual cognition	2	12	2 12	2 12	VII
5	2	4	Depending on how intelligent you are will depend on how much you will learn cognitively	cognitive process	Is due to the way in which you lived your life prior to that minate	experience	12	49	12 33	12 33	VI
5	2	5	Both group things and are about people with people	group interaction	Affects all aspects of your life	individual	7	1	7 1	7 1	I
5	2	6	How you see others will alter the way you communicate with others	interpersonal	Can alter from hour to hour it will depend on all sort of outside problems eg diet - sleep etc	changeable	3	46	3	7 46	VII
5	2	7	How motivated you are will be greatly affected on your and your peers personalities	extrapersonal	How brain thinks only	cognitive process	3	12	3	7 12	VI
5	2	8	The character of the teacher can greatly affect a person's memory for the good or bad	intrapersonal	Is an "outside the classroom" concept and only comes into classroom in (eg) group dynamics	outside influence	11	8	11 8	11 8	IV
5	2	9	Communication is essential to group dynamics. Without it there is not interaction	group interaction	Is personal, the way one person sees something. It is not a group thing	individual	7	1	7 1	7 1	I
5	2	10	How much you remember is a measure of intelligence - how you will do in a test	intrapersonal	How a group sees another being will not affect their memory or intelligence	extrapersonal	39	1	8 1	7 1	VI
5	2	11	Teacher characteristics will directly affect the learning of their students	teacher affect	Is an interaction of students personalities and social behaviour	group interaction	35	7	11 7	11 7	I
5	2	12	How you get along with another being is greatly affected by how you are influenced	extrapersonal	Is "personal sight" how one person sees something and interprets it	individual cognition	3	12	3 12	7 12	VI
6	1	1	must not clash	must not clash	not applicable	misc	57	60	56	56	VII
6	1	2	Interactive. Match	interactive	not required	misc	57	60	56 56	56 56	VII
6	1	3	Pavlov's dogs eg	misc	sight not needed in Pavlov's experiment on the healing properties of saliva	not needed	56	60	56	56	VII
6	1	4	Cannot learn without thinking	individual learning/thinking	no link	misc	12	60	12 56	12 56	VII

6	1	5	Required for integration	integration	a debatable matter that this is the odd man out	misc	3	56	3 56	7	I
6	1	6	One is no good without other	interdependent	no link	no link	57	60	56 56	56 56	VII
6	1	7	Reinforcement	reinforce-ment	is this required?	required?	77	60	77 56	2	VII
6	1	8	Peer group pressure	group	not required	not required	6	56	7 56	7	I
6	1	9	1 & 8 reinforce eachother	interrelated	One can learn alone	individual learning	57	12	56 12	56 12	VII
6	1	10	Go together (link)	linked	no link	no link	57	60	56 56	56 56	VII
6	1	11	A feeling of belonging	emotion	not required	not	29	60	29 56	46 56	V
6	1	12	Reinforcement	reinforcement	not required	misc	77	60	77 56	2	VII
6	2	1	Self	self	teacher may not be required	teacher not needed	1	61	1 11	11 1	VII
6	2	2	Forms of learning	forms of learning	Not always required	not	2	60	2 56	2	II
6	2	3	Must be motivated to learn	needed for learning	not always required	not	16	60	2 56	2	VII
6	2	4	Linked together	link	not applicable	no link	57	60	56 56	56 56	VII
6	2	5	Social influence can affect group dynamics	interaction	not always required	not	7	22	7 18	7	I
6	2	6	Both needed to learn	needed for learning	Not applicable	not	16	60	2 56	2	VII
6	2	7	Feelings involved	subjective	one is or is not	objective	54	55	46 47	46 46	V
6	2	8	Retention of knowledge	cognitive	may not be applicable	misc	15	60	12 56	12 56	III
6	2	9	Both methods of communication	methods	social	social	48	33	2 33	2 33	II
6	2	10	Both required	required	may not be required	not	16	60	2 56	2	VII
6	2	11	Required elements for learning	elements needed for learning	Can learn alone	individual	16	1	2 1	2 1	VII
6	2	12	Retention and feedback	process	may not be applicable	misc	15	60	12 56	12 56	VII
7	1	1	Public	public	Private	private	8	9	8 9	8 8	VI
7	1	2	External influence	external influence	Personal	personal	8	1	8 1	1 8	IV
7	1	3	Individual	individual	Group activity. Theory - observed responses	group interaction/theory	1	7	1 7	7 1	I
7	1	4	Inherent to an extent	inherent	Non-inherent	non-inherent*	5	79	1	1	III
7	1	5	Human values	human values	Ideology/conditioning	ideology/conditioning	29	38	29 14	46 14	V
7	1	6	Group	group	Personal	personal	6	1	7 1	7 1	I
7	1	7	Personal and changeable	changeable	Progressive. Process/ongoing learning	progressive	3	2	3 2	7 2	V
7	1	8	Role/preconceptions/public behaviour	public behaviour	Individual experience	individual experience	33	1	33 1	1 33	VI
7	1	9	Inter-active	active	Passive	passive	17	18	17 18	8 8	V
7	1	10	Experience	Experience	Inherent	inherent	49	18	33 1	1 33	IV
7	1	11	Practice	practice	Theory	theory	80	38	17 14	14 8	II
7	1	12	Passive	passive	Active	active	18	17	18 17	8	V
7	2	1	Internal interaction	internal	External, role/observable	external	9	8	9 8	1 8	VI

7	2	2	Cumulative	cumulative	inherent to a marked degree	inherent	43	5	2 1	2 1	IV
7	2	3	Variable	variable	predictable	predictable	46	47	46 47	46 46	V
7	2	4	Individual	individual	Culture/ideology	cultural	1	33	1 33	1 33	IV
7	2	5	Extrovert	extrovert	introvert	introvert	8	9	8 9	8 8	VI
7	2	6	Group influence	group	self/personal	personal	6	1	7 1	7 1	I
7	2	7	Human/subjectivity	subjective	theory/objectivity	objective	54	55	46 47	46 46	V
7	2	8	Role/expectations	extrapersonal	retrospective/personal	intrapersonal	7	1	7 1	7 1	VI
7	2	9	Social interaction	interaction	individual	individual	7	1	7 1	7 1	I
7	2	10	Personal/natural	personal	Cultural/ideology	cultural	1	33	1 33	1 33	IV
7	2	11	Human/unpredictable	unpredictable	conditioning/mechanistic	mechanistic	46	40	46 2	46 2	V
7	2	12	Group reality	group	individual reality	individual	6	1	7 1	7 1	I
8	1	1	Must be linked	linked	not linked	not linked	57	60	56 56	56 56	VII
8	1	2	Listen and learn	cognitive process	intelligence doesn't mean knowledge	not knowledge	2	75	2 12	2 12	VII
8	1	3	Take in what you see	cognitive process	doesn't help motivation	doesn't help motivation	12	60	12 56	12 56	III
8	1	4	Perception leads to learning	learning process	intelligence in inbuilt	in-built	2	5	2 1	2 1	VI
8	1	5	Personality can help group to interact	interaction	More involved	more involved	7	24	7 14	7 14	IV
8	1	6	Difficult to motivate without communication	interrelated	you can be good at this but without others it's not much good	misc	60	7	56 7	56 7	VII
8	1	7	Your personality helps you motivate	interpersonal	knowledge alone won't help	not	13	52	3 12	7 12	VI
8	1	8	Memory can help form characteristics	influence	no connection	misc	12	60	12 56	12 56	VII
8	1	9	If you take things in around you then you communicate better	individual	how group interacts doesn't necessarily affect other two	group interaction	12	7	12 7	12 7	I
8	1	10	A good memory will make you appear intelligent	interpersonal interaction	doesn't help	not	3	60	3 56	7 1	VI
8	1	11	You learn from listening to and watching other people	individual cognition	how group interacts doesn't necessarily affect other two	group	12	7	12 7	12 7	I
8	1	12	Can be one to one	interpersonal	more people involved	group	13	6	3 7	7 7	I
8	2	1	Good personality one of main characteristics	teacher	Linked but not so strongly	linked less strongly (to teaching)	11	60	11 56	11 56	VII
8	2	2	Ability to "teach" oneself	ability	Student will be taught	taught	4	35	1 11	11 1	IV
8	2	3	Need to motivate to teach	needed in teaching	Linked but not so closely	partly linked	16	60	2 56	2	VII
8	2	4	Self-taught	cognitive process	Not to do with knowledge	not knowledge	12	75	12 12	12 12	II
8	2	5	Personality fashioned over long period	nuture	Need not affect others	misc	36	6	2 7	2 7	VII
8	2	6	Closely linked	linked	Not necessarily verbal	not verbal	57	60	56 56	56 56	VII
8	2	7	Good teacher characteristics	good characte-istics	More self-acquired	self-acquired	35	1	11 1	11 1	IV
8	2	8	Characteristics influence students	influence students	Not directly linked	not	11	60	11 56	11 56	VII
8	2	9	Group interaction	group interaction	Individual	individual	6	1	7 1	7 1	I
8	2	10	One helps the other	interrelated	Not an individual thing	not individual	57	81	56 1	56 1	VII
8	2	11	Teacher will need to teach	teacher	Group work	group work	35	7	11 7	11 7	VII
8	2	12	Closely linked	misc	Doesn't help other two	misc	57	60	56 56	56 56	VII

9	1	1	Interactive attributes requiring more people	group interaction	Individual ability or tool	individual ability	7	4	7 1	7 1	I
9	1	2	Requiring or producing - conceptualisation	conceptual	Reflex reactions requiring little thought	reactions	44	40	14 2	14 2	II
9	1	3	Depending on several factors	multi-factorial	Primary reaction	primary reaction	51	50	14 14	14 14	II
9	1	4	Interdependent natural ability. Nature	ability	Nurture	nurture	4	36	1 2	33 1	IV
9	1	5	Pressure on individual by several others	group interaction	An individual response	individual	1	1	3 1	7 1	I
9	1	6	Social perception shapes motivation	interpersonal process	Physically-based skill -secondarily dependent on social and motivational factors	skill	3	4	3 1	7 1	VI
9	1	7	Inter-related and interdependent	inter-dependent	Related to raw intelligence - innate ability	innate ability	56	4	56 1	56 1	VII
9	1	8	Influences from other people	others	Linked to raw intellectual capacity of individual	individual capacity	3	4	3 1	7 1	I
9	1	9	Group participation demands	group interaction	Visual perception can be successful - solitarily	individual	7	1	7 1	7 1	I
9	1	10	Physical/mental abilities ie natural aptitude	natural ability	Accident of birth - position in pecking order etc	environment	4	49	1 33	1 33	IV
9	1	11	Interactive with others	others interaction	Individual, personal	individual	7	1	7 1	7 1	I
9	1	12	Physically learned or based	physical	Abstract	abstract	53	42	53 9	14 8	V
9	2	1	Great interaction here - interdependent to a large extent	interaction	Memory plays only a small part in shaping relationships especially new ones	limited interaction	7	66	7	7 18	I
9	2	2	These overlap and are to do with learning from what is around and in one's close environment	environment	This is an ability to develop and retain what is learnt and is not a learning process	ability	2	4	2 1	2 1	IV
9	2	3	These two learning processes will continue almost involuntarily to a degree	learning processes	This alone cannot be a learning situation - merely salt and pepper to the process	addition to learning	2	70	2	2	II
9	2	4	Experience of surroundings teaches. A different environment teaches differently	environment	Basically unchanged by environment, except in extreme cases of malnutrition, isolation etc	nature	49	47	33 47	33 46	IV
9	2	5	These 2 are influences on personality and 11 is a specialised form of 12	external	This is the individual's response	individual response	8	9	8 9	1 8	IV
9	2	6	These are interdependent in a social situation	interaction	Motivation is not very important to social interaction	not	7	66	7	7 18	I
9	2	7	Motivation and personality give the impetus to learn but not learning situations	attitude	This is a process not an attitude to learning	process	29	2	29 2	46 2	V
9	2	8	These are influences of others upon an individual	others	This has little to do with others - mere the individual ability	individual	3	4	3 1	7 1	I
9	2	9	1 & 8 are processes of gathering information	information processing	These may be influenced by 1 & 8	misc	15	56	12 56	12 56	V
9	2	10	Although can be marginally improved they are genetically limited	innate	The environment shapes one's social perception and that perception can be changed by a change in the environment - for better or worse	environment	5	49	1 33	1 33	IV
9	2	11	These two are part of the same process. Students experiences are managed by	teacher process	Groups are not necessary to behaviourist learning nor a teacher's characteristics	group	11	6	11 7	11 7	VII

			the teacher								
9	2	12	Both involve interaction with others, both will be modified by personality and situation	others	This is a solitary activity. No processing or use of information necessary	individual	7	1	7 1	7 1	I
10	1	1	A persons personality may well influence the way in which they teach	extrapersonal	Tool needed in learning	tool	11	16	11 2	11 2	VI
10	1	2	How we think often affects our behavior	cognitive process	It is not necessary to be intelligent to learn or improve	not	12	83	12 2	12 2	III
10	1	3	linked	linked	our view of a situation	personal	57	13	56 3	56 1	VII
10	1	4	Broaden knowledge, will to succeed	cognitive process	Does not affect our view of others	extrapersonal	12	13	12 3	7 12	VI
10	1	5	Upbringing may affect personality	upbringing	May not effect behaviour within a group	group interacture	36	7	2 7	33 7	IV
10	1	6	Our view of people is often influenced by talking to them	extrarersonal	Motivation is not often apparent from first meeting	not apparent	13	28	3 9	7 8	VI
10	1	7	The need to succeed drives us to achieve	individual drive	not affected by our make-up	not	4	76	1	1	III
10	1	8	Memory re-call may be necessary for successful teaching	ability for teaching	Would not necessarily affect the other topics	not	4	56	1 56	11 56	VII
10	1	9	Observing individuals within a group	group	Visual observations - no need to communicate	observations	13	53	3 53	7 14	I
10	1	10	These two are often grouped together	misc	Group view of someone may not indicate intelligence	group	57	6	56 7	56 7	VII
10	1	11	How much do I draw from teachers delivery	individual	Group behaviour	group behaviour	1	7	1 7	7 1	I
10	1	12	The way we view others may be influenced by our social background	perspective	We are able to judge people without communication observation	judgement	13	72	3 46	7 29	V
10	2	1	One's personality may well influence certain characteristics displayed in teaching	extrapersonal	It does not always deemed necessary to have a good memory	intrapersonal	11	60	11 56	11 56	VI
10	2	2	How we behave is influenced by our thinking	cognitive influence	Not necessarily linked	not	12	6	12 56	12 56	III
10	2	3	If people are motivated to get on they will behave in a more determined fashion	(affective) behaviour	How we see others does not affect our ability to succeed	ability to succeed	29	4	29 1	46 1	III
10	2	4	Thinking and intelligence may be linked	linked	Our own views	own views	57	13	56 3	56 1	VII
10	2	5	Our personality may be influenced by our social background	social background	This would not affect group work	group	36	6	2 7	33 7	IV
10	2	6	These rely on one another	interdependent	Would not affect our communicating skills	not affect communication	57	60	56 56	56 56	VII
10	2	7	Motivation and the need or will to succeed often found in ones' personality or make-up	inherent	Our thoughts may not affect	cognition	4	12	1 12	12 1	III
10	2	8	These two may be linked, or certain characteristics may stem from one's social upbringing	social upbringing	Memory does not necessarily influence	not	49	84	33	33	IV

10	2	9	It would be hard to enter into group dynamics without communication	group interaction	How we see others would not affect our communicating with them - or should not	individual	7	3	7 3	7 7	I
10	2	10	How we view others around us may be affected by our intelligence	extrapersonal	It is not necessary to have a good memory to be intelligent - not always go together	intrapersonal	13	1	3 1	7 1	VI
10	2	11	Working on one's own	individual	Working in a group	group	1	6	1 7	7 1	I
10	2	12	How we see others would be influenced by our upbringing	individual upbringing	No link to others	misc	49	60	33 56	33 56	IV
11	1	1	Personality's derived partly from personal characteristics	personal	Memory of things does not necessarily affect your personality. Tool	individual tool	1	4	1	1	III
11	1	2	Behaviourist learning need intelligence to decide whether to copy group influence or rebel against it. Tool.	tool	Cognitive learning does not need intelligence required to make decision. One way.	one way	4	50	1 14	1 14	II
11	1	3	How you see things affects Behaviourist learning because you have to see to copy. Influence	extrapersonal	Motivation is a personal characteristic	intrapersonal	13	4	3 1	2 1	VI
11	1	4	How you see people needs intelligence to decide how you see them. Tool	tool	Cognitive learning is not necessary to decide how you see people. One way	one way	12	50	12 14	12 14	III
11	1	5	Group dynamics is the interaction of individual personalities. Two way	interaction	Social influence has little to do with group dynamics it is more a one-way thing.	one-way	7	10	7 2	7 2	I
11	1	6	Social perception is how you see people. They use communication to let you see this	extrapersonal	Motivation is a personal thing	intrapersonal	13	1	3 1	7 1	VI
11	1	7	Motivation and personality are both personal characteristics	personal	Cognitive learning is something you can do even if you don't particularly want to. Not personal	capacity	1	4	1	1	III
11	1	8	Teacher characteristics and social influence both communicate themselves to students. Not personal	interaction	Memory is a personal thing	personal	7	1	7 1	7 1	I
11	1	9	Visual perception is how you see things, this communicated to you by means of sight etc. One way	individual	Group dynamics is personal interaction between people. Two way	interpersonal interaction	12	3	12 3	7 12	I
11	1	10	How you see people is affected by memory of how you have seen other people. Acquired	acquired	Intelligence is something you are born with.	born with	43	5	2 1	2 1	IV
11	1	11	Group dynamics is social interaction behaviourist learning is learned from this. Two-way	interaction	Teacher characteristics are individual	individual	7	1	7 1	7 1	I
11	1	12	How you see things is communicated by what you are seeing. One way	individual	Social influence may affect others not necessarily you	others	12	6	12 7	12 7	I
11	2	1	Influence of people and the individual	interaction	remembering things learned	cognitive process	13	4	3 1	7 1	I
11	2	2	non-habitual, needs thought	cognitive	habits	habits	15	40	12 2	12 2	II
11	2	3	you act as you see	action	Individual driving force	individual	31	1	17 1	1 1	III
11	2	4	ability to choose based on experience	experience/ability	How you see people	personal view	49	13	33 3	33 7	III
11	2	5	to do with groups	groups	individual	individual	7	1	7 1	7 1	I

11	2	6	To do with yourself and other people	extrapersonal	individual driving force	intrapersonal	13	1	3 1	7 1	VI
11	2	7	individual	individual	learned as a result of past experience	experience	6	49	1 33	1 33	IV
11	2	8	influence the individual	individual	remembrance of past experience	experience	1	49	1 33	1 33	IV
11	2	9	To do with yourself and other people	extrapersonal	How you see things	intrapersonal	3	13	3 3	7 1	VI
11	2	10	how you see or remember something external	external	individual	individual	8	1	8 1	1 8	VI
11	2	11	influence of other people	others	influence of one individual	individual	7	3	7 3	7 7	I
11	2	12	to do with other people	others	how you see things	individual cognition	6	12	7 12	7 12	I
12	1	1	Personality affects the way you teach	extrapersonal	Memory does not	not	11	60	11 56	11 56	VI
12	1	2	Intelligence determines how well you learn and understand	cognitive process	Behaviour is more about personality	personality	12	85	12 1	12 1	III
12	1	3	Motivation will effect how you learn	intrapersonal	Visual perception is learning and feeling by things you see	extrapersonal	62	13	2 3	2 1	VI
12	1	4	Intelligence determined how well you learn and understand	individual cognition	Social perception is how you look and feel about other people	extrapersonal	4	29	1 29	1 7	VI
12	1	5	Your personality effects how you intermingle with people	interaction	Social influence is more the way you appear to people with the way you look etc	individual	13	72	3 46	7 29	I
12	1	6	How you communicate affects how people think of you	interaction	Motivation is more your willing to do something	individual	3	1	3 1	7 1	I
12	1	7	Motivation and personality is how and what you do affects the type of person you are	active characteritics	This is taking in information	cognitive process	1	12	1 12	12 1	III
12	1	8	Memory is a good teaching characteristic	(teaching) characteristic	Social influence shouldn't affect	not affect	11	60	11 56	11 56	VII
12	1	9	If you communicate well, you will participate better with group dynamics	extrapersonal	This is judging and feeling just by looking	intrapersonal	13	72	3 46	7 29	VI
12	1	10	The better memory you have, the more intelligent you are	cognitive process	This is how you look at other people	extrapersonal	4	13	1 3	1 7	VI
12	1	11	How you intermingle with people affects how you teach. How you act	teacher interaction (teaching) behaviour	This does not affect the way you teach	not	13	61	3 11	11	VII
12	1	12	People look at you and decide what social class you are so this decides how much you influence them	impression formation	Communication decides on the person you really are, rather than the way you look	actual	72	1	29 1	7 1	V
12	2	1	Your personality initiates how you teach	extrapersonal	This is your ability to retain information	ability	13	4	3 1	11 1	III
12	2	2	These are both methods in which you learn	methods of learning	This is how knowledgeable you are	knowledge	48	52	2 12	2 12	II
12	2	3	You need motivation to learn	individual	This doesn't affect your motivation to learn	does not affect learning	16	83	2	2	VII
12	2	4	Intelligence enables the ability to learn	ability	This is how you view other people	extrapersonal	4	13	1 3	7 1	VI
12	2	5	Your personality depends on how you work in a group	individual/ group interaction	This is the effect you have on people	affect on others	7	3	7 3	7 7	I
12	2	6	How you communicate depends on how	cognitive process	This is how much 'urge' you have to do	drive	3	1	3 1	7 1	VI

			you feel about the people you are with		something						
12	2	7	Motivation depends on your personality	individual	This is a certain way of learning	learning process	1	2	1 2	2 1	II
12	2	8	You need memory to be a good teacher	cognitive process	This is the effect you have on people	extrapersonal	12	3	12 3	7 12	VI
12	2	9	How you communicate iniates how you work in a group	interaction	This is your impression gathered by what you see	individual	3	13	3 3	7 1	I
12	2	10	How good your memory is affects your intelligence	cognitive process	This is how you view other people	extrapersonal	12	13	12 3	7 12	VI
12	2	11	How you behave towards a group affects the way you teach	extrapersonal	This is how you are able to learn	ability	11	4	11 1	11 1	VI
12	2	12	You might judge what standard a person is by what they look like	individual view	This is the ability to express yourself	ability	13	4	3 1	29 1	III
13	1	1	Personality is closely linked with teacher characteristics	closely linked	Memory is a 'tool' needed in learning	learning tool	57	16	56 2	56 2	VII
13	1	2	Methods of learning	methods of learning	Part of the students make-up	make-up	48	5	2 1	2 1	II
13	1	3	Behaviourist learning can affect motivation	has affect	Visual perception is how you see concepts	how you see concepts	57	13	56 3?	56 1	III
13	1	4	Learning through understanding can depend on intelligence	cognitive process	Social perception is instinctive and can be biased	instinctive	12	4	12 1	12 1	III
13	1	5	Your personality can alter group dynamics	interpersonal interaction	Social influence can be ignored	not	13	60	3 56	7	VII
13	1	6	Motivation is often what drives communication	extrapersonal	Social perception is inward and does not need communication	intrapersonal	3	9	3 9	7 8	VI
13	1	7	Personality can affect motivation	affect	Method of learning	method of learning	57	48	56 2	56 2	II
13	1	8	Social influences can affect a teachers personality	extrapersonal	Memory is a 'tool' needed in learning	tool	13	16	3 2	11 2	VI
13	1	9	Visual perception is a form of communication	form of communication	Group dynamics is about the way people interact	people interaction	57	48	56 2	56 2	VII
13	1	10	Social perception is often formed by memories	cognitive process	Intelligence is part of a students make-up	inherent	12	5	12 1	12 1	III
13	1	11	Behaviourist learning can affect group dynamics	interpersonal interaction	The teachers characteristics should not affect group dynamics	teacher	13	35	3 11	7 11	VII
13	1	12	Visual perception is a form of communication	communication mode	Social influence is absorbed from our surroundings	environment	48	49	2 33	2 33	IV
13	2	1	Teacher characteristics are related to personality	related	Memory has nothing to do with communication or teacher characteristics [not related]	not related	57	60	56 56	56 56	VII
13	2	2	relate to methods of learning	methods of learning	Is innate (although can be altered by training)	innate	48	5	2 1	2 1	II
13	2	3	Stimulus-response can produce motivation	external	Visual perception is to do with what the brain sees	internal	8	9	8 9	1 8	VI
13	2	4	Learning from perception is part of cognitive learning	learning process	Intelligence does not necessarily help cognitive learning or social perception	not	2	69	2	2	VII

13	2	5	The personalities in a group directly affect the dynamics of the group	individual influence on group	Social influence does not have a great affect on personality or group dynamics	no great affect	13	60	3 56	7	I
13	2	6	Communication can increase or decrease motivation	affects	Social perception does not affect motivation	does not affect	57	60	56 56	56 56	VII
13	2	7	Experiential learning can aid motivation	experiential learning affects motivation	Personality does not necessarily affect motivation	not	57	60	56 56	56 56	VII
13	2	8	Teacher characteristics can be affected by social influence	interaction	Method of storing information	method	13	48	3 2	7 2	II
13	2	9	Without communication group dynamics collapse	group	Visual perception has nothing to do with group dynamics	not group	7	66	7	7 18	I
13	2	10	If you are treated as intelligent learning can increase	learning process	Method of storing information	cognitive process	13	48	3 2	2 12	II
13	2	11	Teacher characteristics can affect group learning	interpersonal interaction	Behaviourist learning does not affect teacher characteristics or group dynamics	not	13	60	3 56	7	VII
13	2	12	Social influence can affect way communicate	interaction	Visual perception is nothing to do with communication	not	7	66	7	7 18	I
14	1	1	(Characteristics) dependent on personality	dependent	Memory collection of past events can be drawn on but will not alter personality or characteristics	collection past events	57	44	56 14	56 14	III
14	1	2	Someone with a learning disability will still be able to learn but in a different way than a intelgent person	ability to learn	Sometimes intelgence needs to be present to learn	needed to learn	4	16	1 2	2 1	VII
14	1	3	We learn every time we see and perceive what we have seen	intrapersonal	We do not need to be motivated to see and perceive what we are learning	intrapersonal	62	69	2	2	VI
14	1	4	We need the inteligence to be able to perceive socially or individual. Before we can learn	necessary for learning	To learn we first need the intelgence	learning capacity	16	4	2 1	2 1	VII
14	1	5	When many personalities are jelled together within a group setting they will bring out the best or worst in each individual	interpersonal interaction	Social influence will not affect a persons personality	individual	13	1	3 1	7 1	I
14	1	6	Social perception is influenced by communication	affects	Motivation does not need to be present	does not	57	60	56 56	56 56	VII
14	1	7	The need to learn stems from motivation dependent or not on personality	intrapersonal	Personality - something that grows through life whether motivated or learning	developmental	16	34	2 34	2 33	III
14	1	8	Memory contributes to teacher characteristics to teach can reflect on past events	intrapersonal	Social influence needs no contribution to memory or characteristics	not	60	60	56	56	VII
14	1	9	Group dynamics needs visual perception	misc	Communication	communication	57	86	56 2	56 2	VII
14	1	10	To perceive in any way we need even the slightest intelgence	cognitive process	Memorys are to reflect and be drawn on	entity	12	14	12 14	12 14	III
14	1	11	Teachers characteristics will influence group dynamics	influence	The behaviourist will not be affected by the other 2	misc	13	60	3 56	7	VII
14	1	12	Social influence will affect our perception	extrapersonal	Communication needs not to be present	not	13	60	3 56	7	VII

14	2	1	Teacher characteristics depend on own personality	depend on	Memory differs because although you can draw on past experiences for teaching personality helps develop t/characteristics	experience	57	49	56 33	56 33	VII
14	2	2	To learn even the simplest of task we need basic intelligence	ability	Learning Behaviourist. Will learn from visual perception (how they perceive things)	cognitive process	4	12	1 12	12 1	III
14	2	3	Behaviourist will first learn from visual perception and act to how they perceive situations	extrapersonal	We do not need to be motivated to behave, or perceive	intrapersonal	13	103	3	2	VI
14	2	4	To learn we need basic intelligence and need to be motivated	cognitive process	Social perception - does not depend on inteligence or learning	not	12	69	12 69	12 2	III
14	2	5	Students personality depends on whether they will gel together as a group	individual affect on group	Social influence differs	misc	3	56	3 56	7 1	I
14	2	6	As well as personality the teacher can draw on good and bad memorys to assist them	used in teaching	Motivation not needed to communicate	not needed	35	61	11	11	VII
14	2	7	Need to be motivated to learn	need motivation to learn	Personality differs. Personality is not present when we are motivated to learn at the beginning	not necessary in learning	16	83	2	2	VII
14	2	8	Teacher can draw on past memorys to help project himself to the students	extrapersonal	Social influence differs becose we can choose wether or not to listen or memorize influences	intrapersonal	35	13	11 3	11 12	VII
14	2	9	If the teacher has good characteristics this will motivate the students and encourage good group work	extrapersonal	Visual perception differs	misc	13	56	3 56	7	VII
14	2	10	Social perception will be influenced by past memorys	intrapersonal	Social perception. Intelligence is how others perceive what we project not intelgence	extrapersonal	12	6	12 7	12 7	VI
14	2	11	Group work can influence a learning behaviourist	misc	Teacher characteristics can be good or bad a behaviourist will continue as normal unless they have more influence	teacher immaterial	3	40	3 2	7 2	VII
14	2	12	Social influences often change our own perception of things	Interpersonal perception	Communication differs. Social influence affects visual perception communication does not affect	not	3	60	3 56	7 1	VII
15	1	1	Personality promotes own characteristics in teaching (variable)	variable	Memory is a fixed subject not variable	fixed	46	47	46 47	46 46	V
15	1	2	Intellegence + cognitive reflect on ability	ability	The way you behave is not an ability	behaviour	4	32	1	1	III
15	1	3	How quick/slow motivation will reflect on what response/ behaviour you have to a situation	extrapersonal	How I see something is not relevent to the other two	intrapersonal	32	13	1 3	1 1	VI
15	1	4	Learning abilities responding to each other	abilities	This is not used in the same text	not	4	60	1 56	1 56	VII
15	1	5	Personality represents the strength or influence socially to an individual	interaction	This is a group meaning not an individual	group	3	6	3 7	7 7	I
15	1	6	How you see others is how you will respond + communicate with them changeable in situations	extrapersonal	Motivation is a persons own way	intrapersonal	3	12	3 12	7 12	VI

15	1	7	Strong personality encourage quick motivation	intrapersonal	The ability of a person is not encouraged by anything else	ability	12	4	12 1	12 1	III
15	1	8	Actions reflecting on each other	reflexive actions	Fixed process	fixed	46	47	46 47	46 46	V
15	1	9	Group meanings	group	Individual meanings	individual	6	1	7 1	7 1	I
15	1	10	Being able to know, store and use information to you own advantage	intrapersonal	How I see others is not relevent to this text	extrapersonal	12	13	12 3	7 12	VI
15	1	11	Different backgrounds will allow different behavior to occur	background	Individual Teaching Ability	individual ability	33	11	33 11	33 11	IV
15	1	12	How you communicate with others will reflect how you influence them (personal communication)	interpersonal interaction	This is not a group analysis (group communication)	not	13	66	7	7	I
15	2	1	Individual student characteristics	student character-istics	Teachers influence towards students	Teachers' influence on students	4	5	1	1	VII
15	2	2	Two concepts of learning	concepts	The way we are individually abilited	ability	44	4	14 1	14 1	II
15	2	3	Behaviourism + motivation are the way we behave and how quick	personal behaviour	What we see and how we see	individual cognition	32	12	1 12	12 1	III
15	2	4	The mind	mind	Visual, what we see	visual	52	53	12 53	12 14	II
15	2	5	Personality influences the group	affective	Something we can not change	not changeable	3	47	3 47	7 46	V
15	2	6	External influencers	external influence	Ones individual way	individual	8	1	8 1	1 8	IV
15	2	7	One's own personality generaly reflect own motivation	personal attribute	Learning concept	learning concept	1	44	1 14	1 14	II
15	2	8	How the teacher comes over is the way it is socially influenced	social process	ones own ability	individual ability	11	4	11 1	11 1	IV
15	2	9	You need to be able to communicate to be involved in a group	group interaction	Individually what one sees	individual	7	13	7 3	7 1	I
15	2	10	One's individual ability	individual ability	External influence	external influence	4	8	1 8	1 8	IV
15	2	11	Teacher reinforces the behaviourists learning	teacher influence	Group members influence the rest of the group	group interaction	35	7	11 7	11 7	VII
15	2	12	Groups	group	Individual	individual	6	1	7 1	7 1	I
16	1	1	Contributes to atmosphere	atmosphere	Inner feeling	Internal	8	9	8 9	1 8	IV
16	1	2	To do with understanding	understanding	Not to do with understanding	not understanding	15	87	12	12	V
16	1	3	Encouraging influence	influence	Personal	personal	77	1	77 1	2 1	IV
16	1	4	To do with achievement	achievement	Not to do with achievement	not achievement	88	89	88	56 56	V
16	1	5	Group influence	group	Personal	personal	6	1	7 1	7 1	I
16	1	6	Skill	skill	Understanding	cognitive process	4	15	1 12	12 1	III
16	1	7	To do with feelings	affective	Not to do with feelings	non affective	29	90	46 46	46	V
16	1	8	Influencing factors, outside	outside factors	Inner	inner	8	9	8 9	1 8	IV
16	1	9	Personal	personal	Outside influence	outside influence	1	8	1 8	1 8	IV
16	1	10	Personal	personal	Surroundings	environment	1	8	1 8	1 8	IV

16	1	11	One influences the other	influence	Does not influence	not	57	60	56 56	56 56	VII
16	1	12	Visual presentation	visual	Non visual	not visual	53	82	53	14	II
16	2	1	Attitude	attitude	In built abilities	in-built abilities	29	4	29 1	46 1	V
16	2	2	Learning	learning	Individual ability	ability	2	4	2 1	2 1	IV
16	2	3	Both connected with reward	reward	seeing	seeing	77	53	77 53	2 14	VII
16	2	4	Knowledge	knowledge	Visual	visual	52	53	12 53	12 14	II
16	2	5	Influencing factors	influencing factors	Characteristics	characteristics	8	9	8 9	1 8	IV
16	2	6	One can influence the other, outside	outside influence	Is in build and can be encouraged	in-built	8	5	8 1	1 8	IV
16	2	7	Characteristics	characte-istics	Knowledge	knowledge	4	52	1 12	12 1	III
16	2	8	Both outside influencing factors	outside influence	A skill that can be developed	skill develop	8	4	8 1	1 8	IV
16	2	9	Influence through communication	influence	Understanding of visual	cognitive process	7	12	7 12	7 12	IV
16	2	10	A skill that is developed	skill develop	Outside influence	outside influence	4	8	1 8	1 8	IV
16	2	11	Personality of individuals	individual	Learning with rewards	learning process	3	2	1 2	2 1	IV
16	2	12	Outside influences that can be seen	external	Verbal	verbal	8	45	8 45	8 14	VII
17	1	1	Personal (seen)	explicit	(Not seen)	implicit	1	28	1 9	1 8	VI
17	1	2	Mental	mental	Physical	physical	15	53	12 53	12 14	II
17	1	3	Demonstrated by actions	actions	Thought controlled	cognition	31	15	17 12	1 12	III
17	1	4	Ability	ability	Influenced by society	society infuence	4	8	1 8	1 33	IV
17	1	5	Genetic/born with no control over	born with	Controlled by other people	external control	4	7	1 7	7 1	IV
17	1	6	Dependant on external factors	external factors	Personal	personal	8	1	8 1	1 8	IV
17	1	7	Established	established	Can be taught/trained	trained	46	43	46 2	46 2	V
17	1	8	Established	established	Variable	variable	46	43	46 2	46 2	V
17	1	9	Involve interaction with other people/objects	interaction	Does not involve interaction established traits	not interaction	3	4	3 1	7 1	I
17	1	10	Controlled	controlled	Variable according to surroundings	variable	47	46	47 46	46 47	V
17	1	11	Concerned with student	learner	Concerned with teacher	teacher	37	11	1 11	11 1	VII
17	1	12	Sub-conscious	sub-conscious	Visible/physical	physical	26	53	9 53	8 14	V
17	2	1	Personal	personal	Influencing factor	influencing factor	1	49	1 33	1 33	IV
17	2	2	Thinking/mind	cognition	Doing/participate	action	15	31	12 17	12 1	III
17	2	3	Learning	learning	Seeing	seeing	2	53	2 53	2 14	VII
17	2	4	Mind	cognitive	Group	group	52	6	12 7	12 7	I
17	2	5	Personal	personal	Group	group	1	6	1 7	7 1	I
17	2	6	Influence	external	Inbuilt/personal	In-built/personal	8	5	8 1	1 8	IV
17	2	7	Inborn/personal	in-born	External	external	4	8	1 8	1 8	IV
17	2	8	Influence	influence	Inborn	inborn	49	5	33 1	1 33	IV
17	2	9	All take part and contribute/Discuss	group interaction	Own perception. Own personal view	personal view	7	13	7 3	7 1	I
17	2	10	Inborn/personal	inborn	External factors	external factors	4	8	1 8	1 8	IV
17	2	11	Student	student	Teacher	teacher	37	11	1 11	11 1	VII
17	2	12	Affected by external factors	external factors	Inborn	inborn	8	5	8 1	1 8	IV
18	1	1	Born with personality which can be	extrapersonal	Born with memory - does'nt affect	intrapersonal	13	5	3 1	11 1	VI

			transfered to teaching characteristics		personality or teaching characteristics						
18	1	2	Learn other 2	learned	Born with intelligence	born with	43	5	2 1	2 1	IV
18	1	3	Developed from what's been learnt	developed	How much motivation is dependent on you. Born	born with	43	5	2 1	2 1	IV
18	1	4	Depending on how intelligence we are may affect how much we learn	cognitive process	Social Perception everyone can have	general process	12	51	12 14	12 14	IV
18	1	5	Learnt - developed from others	developed	Born with personality	born with	43	5	2 1	2 1	IV
18	1	6	Communication and social perception will affect each other (personal views etc.)	interpersonal interaction	Motivation won't affect this	not	3	22	3 18	7	I
18	1	7	Born with personality and motivation. To do something	born with	Cognative Learning is external to personality	external	5	8	1 8	1 8	IV
18	1	8	Social influence may affect your memory	affect cognition	These won't change because of the other two	constant	3	47	3 47	7 46	V
18	1	9	The way group acts and the way you communicate may change depending on situation	changeable	Visual perception of something will stay the same	constant	46	47	46 47	46 46	V
18	1	10	Social perception what you learn from others to for perception. Memory what remembered. Developed	developed	Born with intelligence (certain amount)	born with	13	5	3 1	7 1	IV
18	1	11	Teacher characteristics and way taught to teach is learnt and you develop yourself	individual	What group develops overall	group	2	6	2 7	2 7	I
18	1	12	This will be affected and may change the way we think	changeable	The way we communicate will not change because of these	not changeable	46	47	46 47	46 46	V
18	2	1	Teaching characteristics will depend on personality	depend on trait	Born with memory	born with	4	5	1	1	III
18	2	2	Both affected by how much we learn	affected by learning	anyone/thing can learn	all can learn	2	62	2 2	2 2	IV
18	2	3	Affected by what's learnt	learned	In-built characteristic	in-built	43	5	2 1	2 1	IV
18	2	4	Affected by others	influenced	In-built characteristic	in-built	7	5	7 1	7 1	IV
18	2	5	Influence of others	influenced	Personality in-built	in-built	7	5	7 1	7 1	IV
18	2	6	Developed/learnt from others	developed	In built characteristic	in-built	43	5	2 1	2 1	IV
18	2	7	In built characteristic	in-built	Learn't	learned	4	43	1 2	2 1	IV
18	2	8	Social influence may affect our memory	affect cognition	Once developed will remain same	constant	12	47	12 47	12 46	V
18	2	9	Affects what we think	affects thinking	Will communicate no matter	constant	12	47	12 47	12 46	V
18	2	10	In-built character	in-built	Way people affect	people influence	4	7	1 7	7 1	IV
18	2	11	Learn't	learned	Affected by others socially	social interaction	43	7	2 7	2 7	IV
18	2	12	Affected by others	others' influence	In-built characteristic	in-built	7	5	7 1	7 1	IV
19	1	1	How we can transfer skills to others	extrapersonal	Past memories may influence us. What we want to remember ourselves	intrapersonal	35	1	11 1	11 1	VI
19	1	2	How we think can affect the way we want to learn	affects learning	Level of ability and learning	level of ability and learning	12	4	12 1	12 1	III

19	1	3	Appealing visual aids affects learning	learning process	Controlled by ourselves and influenced by society	individual + society	2	3	2 3	2 7	IV
19	1	4	Demonstrate ability to learn logically	ability	Behavioural	behaviour	4	32	1	1	III
19	1	5	Introvert/extrovert, affects behaviour within a group	individual	Affects us within society as a whole	societal	13	33	3 33	7 33	IV
19	1	6	Necessary to progress and transfer skills	progress	Behavioural	behavioural	9	32	2 1	2 1	III
19	1	7	Type of person we are affects how we progress	individual	Learning process	learning process	1	2	1 2	2 1	IV
19	1	8	Previous memory's may influence type of teaching	intrapersonal	Behavioural	behavioural	11	32	11 1	11 1	VII
19	1	9	Transfer skills within a group	group	How we see things	intrapersonal	7	1	7 1	7 1	I
19	1	10	Learning process and how we perceive learning	learning process	How we interact with and see others	interpersonal interaction	2	3	2 3	2 7	VI
19	1	11	Teaching skills. Affects reaction to learning	teaching skills	Within a group	group	11	6	11 7	11 7	I
19	1	12	How we perceive and are changed by surroundings	influence of surroundings	How we express ourselves	individual expressionl	13	12	3 12	7	IV
19	2	1	Intelligence process	intelligence process	Thought process	thought process	15	12	12	12	III
19	2	2	Thought process	thought process	Conditioning	conditioning	12	40	12 2	12 2	II
19	2	3	Learning concept	learning concept	Eye contact	eye contact	44	31	14 17	14 2	II
19	2	4	Thought process	thought process	This looks at society	society	12	33	12 33	12 33	IV
19	2	5	People and change	people and change	Interaction	interaction	33	21	33 17	33 7	IV
19	2	6	Influence	influence	Interaction	interaction	49	21	33 17	33 7	IV
19	2	7	Thought process	thought process	Attitude	attitude	12	29	12 29	12 46	III
19	2	8	Interactive	interactive	Thinking	thinking	21	12	17 12	7 12	I
19	2	9	Skills	skills	How we see things (insight)	insight	4	12	1 12	12 1	III
19	2	10	Both thought processes	cognitive process	View of society	societal	15	33	12 33	12 33	IV
19	2	11	Teacher-centred	teacher	Concept	concept	35	44	11 14	11 14	II
19	2	12	Both view by one person	individual	Interactive - between others	others	12	7	12 7	12 7	I
20	1	1	Changeable	changeable	Memory can't	not changeable	46	47	46 47	46 46	V
20	1	2	Both types of learning	types of learning	Don't need intelligence to learn	not needed to learn	48	83	2	2	II
20	1	3	Both connect with observation	observation	Not connected by observation	not observation	53	82	53	14	II
20	1	4	Thought processes	thought process	Action rather than thought processes	action	12	31	12 17	12 1	III
20	1	5	Group	group	Singular	singular	6	1	7 1	7 1	I
20	1	6	Active	active	Passive	passive	17	18	17 18	8	V
20	1	7	Dependant on person	personal	Constructive ie make something	constructive	1	31	1 17	1 1	III
20	1	8	These can change	changeable	Memory can't	not changeable	46	47	46 47	46 46	V
20	1	9	Group	group	Singular	singular	6	1	7 1	7 1	I
20	1	10	Need memory to retain knowledge	cognition	Social perception not really connected	not	12	87	12	12	VII
20	1	11	Individual ??	individual	Group	group	8	6	1 7	7 1	I
20	1	12	Type of communication	type	Don't need to communicate	not needed to	44	61	14 56	14	II

				communication		communicate						
20	2	1	Personality	personality	Ability	ability	85	4	1	1	III
20	2	2	Concepts	concepts	Not a concept	not a concept	44	58	14 14	14 14	II
20	2	3	Visual stimuli	stimuli	Learning concept	learning concept	53	44	53 14	14 14	II
20	2	4	Knowledge	knowledge	Perception	perception	52	53	12 53	12 12	II
20	2	5	The group/society	group/ society	Self	self	6	1	7 1	7 1	IV
20	2	6	To be accepted	interpersonal interaction	Self	self	13	1	3 1	7 1	IV
20	2	7	Attitude	attitude	Theory	theory	29	38	29 14	46 14	II
20	2	8	People	group	Personality as opposed to ability	individual	6	1	7 1	7 1	I
20	2	9	Eye contact	eye contact	Not eye contact	no eye contact	53	82	53	7	II
20	2	10	Ability	ability	Attitude	attitude	4	29	1 29	1 46	III
20	2	11	Influence	influence	Learning concept	learning concept	49	44	33 14	7 14	II
20	2	12	One way	individual	Two way	interaction	10	63	2 17	2 7	I
21	1	1	subjective	subjective	objective	objective	54	55	46 47	46 46	V
21	1	2	how people learn (process)	process	what they learn with (product)	product	2	14	2 14	2 14	II
21	1	3	active processes	active	passive processes	passive	17	18	17 18	8	V
21	1	4	mental processes	mental process	social processes	social process	15	7	12 7	12 7	IV
21	1	5	influence of other people	others	the individual more	individual	7	1	7 1	7 1	I
21	1	6	more overt signals	overt	subtle sources	subtle	27	28	8 9	8 8	V
21	1	7	emotional	affective	Not involving feelings	not affective	29	90	46 46	46	V
21	1	8	Phenomenological	phenomenological	Cognitive (positivistic)	positivistic (cognitive)	15	78	12 33	14 14	II
21	1	9	Interaction between people	group interaction	Not interpersonal - one way	one way	7	10	7 2	7 2	I
21	1	10	Cognitive psychology	cognitive psychology	Social psychology	social psychology	15	78	12 33	14 14	II
21	1	11	'nurturist' argument	nurture theory	'nativist' argument	nature theory	14	14	14	14	II
21	1	12	group	group	individual	individual	1	7	1 7	7 1	I
21	2	1	Effected by social (classroom) context	social context	Emphasis on cognitive	cognitive	7	15	7 12	7 12	IV
21	2	2	Learning theories (academic) explicit	explicit theories/academic	Controversial - not explicit, undertones of value judgements	implicit	38	20	14 8	14 8	II
21	2	3	To do with the subjective (personal)	subjective	Cognitive - impersonal (scientific)	cognitive	54	55	46 47	46 14	V
21	2	4	Linked by theory of maturation adaptation/developmental (Piaget)	developmental theory	Not linked to develop. theory	not	34	59	2 59	14	II
21	2	5	Social psychology - groups (macro)	macro	Individual (micro)	individual	6	1	7 1	7 1	IV
21	2	6	Constructivist (individual making sense) dynamic within person	constructivist	Social psy. theory (dynamics - outside person)	social psychology	1	8	1 8	1 8	II
21	2	7	Subjective person (emotional)	subjective	Thinking person (impassive)	objective	54	55	46 47	46 46	V
21	2	8	Applied. Interaction (in classroom) involving external influence of others	external interaction	Mechanics of individual (in classroom). Internal.	internal individual	7	1	7 1	7 1	I
21	2	9	Related to social interaction (group)	group interaction	Physical emphasis (individual)	individual	7	1	7 1	7 1	I
21	2	10	Cognitive theories	cognitive theory	More emphasis on (social) experience and expectation	social	15	33	12 33	14 33	II

21	2	11	Dynamic - interpersonal relationships (larger grps). Influenced by more complex context. Applied.	societal (macro)	1 to 1 - more passive - objective theory. (Simpler, individual).	individual (micro)	3	1	3 1	7 1	IV
21	2	12	Question of interpretation of previous social experience.	social experience	To do with interpretation of individual experience (cognitive)	individual experience	49	12	33 12	33 12	IV
22	0	1	Individual characteristics that have an influence on interpersonal processes	interpersonal processes	Cognitive principles underpinning an individual's capacity and performance	cognitive principles	3	15	3 12	7 1	II
22	0	2	Individual and concerned with performance	individual performance	Individual, but more concerned with low level processes which less depends on intelligence	individual basic process	12	1	12 1	12 1	III
22	0	3	Individual: both concerned with knowing (although a lot of 'behaviourist' learning requires little effort)	cognitive individual	Individual but doesn't require effort (and so minimal involvement of motivation).	basic individual	12	4	12 1	12 1	III
22	0	4	Individual	individual	Group/interpersonal	group/ interpersonal	1	7	1 7	7 1	I
22	0	5	Interpersonal processes	Interpersonal processes	Individual characteristics	individual	3	4	3 1	7 1	I
22	0	6	Interpersonal	interpersonal	Individual (tho' can be influenced by others)	individual	3	1	3 1	7 1	I
22	0	7	Goal-setting: based on characteristics of the learning (individual)	individual goal setting	General principles that don't change with characteristics of the learner	general principles	1	30	2 14	1 14	II
22	0	8	Interpersonal: teacher characteristics influence what is learned and how	interpersonal	Individual - particularly relevant for the learner	individual	35	1	11 1	11 1	I
22	0	9	Social/inter-personal	social	Individual	individual	7	1	7 1	7 1	IV
22	0	10	Characteristics of individuals that contribute to learning	individual characteristics	Interpersonal processes	interpersonal process	4	3	1 3	7 1	I
22	0	11	Interpersonal processes	interpersonal processes	Individual processes and actions (may be automatic)	individual	13	1	3 1	7 1	I
22	0	12	Interpersonal	interpersonal	Individual	individual	13	1	3 1	7 1	I
23	0	1	External. Teaching skills need to interact on many	external	Internal. Others can be immmediate M. incremental	internal	8	9	8 9	7 1	IV
23	0	2	Methods used for learning various skills. Both can be used in learning process.	learning methods	Often culturally determined and measured. Of teaching. Learning may equate more with - method	culturally determined and measured	48	35	2 11	2 11	II
23	0	3	Beh. methods used for vis. task training in amnesics	methods	Individual level - Neuropsych. method	neuropsychological method	48	1	2 1	2 1	II
23	0	4	Training IQ \= cog. additive factors	cognitive factors	Not necessarily influenced by IQ or Cog. power	not	15	60	12 56	12	II
23	0	5	Group D greatly influenced by SI	influenced	Can remain stable despite other 2	stable	49	47	33 47	7 46	V
23	0	6	Social perceptions influences M	influence	Skill can be independent from others	skill	49	4	33 1	1 7	IV
23	0	7	May be interactive and visible. Enhance learning.	interactive external	Invisible - inferred by beh.	internal	8	9	8 9	8 8 ?	VI
23	0	8	Social perceptions. '- and +' T characteristics may influence	influence	Important but not a much as other 2	misc	49	56	33 56	7	VII
23	0	9	Human and A communication often perceive visually	individual	Not at the individual level	not individual	53	81	53 1	14 1	III

23	0	10	Again 2 can be interactive and additive	interactive	Often culturally determined	cultural	57	33	56 33	56 33	IV
23	0	11	Deliberate and conscious methods employed to 'train'	conscious methods	Socially implicit rules as (10) above	social rules	25	20	8 9	14 33	V
23	0	12	Soc. Influence could ' + or -'ive effects on C	influence	Can be dealt with as an immediate process	immediate process	49	10	33 2	7 2	VII
24	0	1	Wide amount of elements involved	wide elements	Single element	single element	51	50	14 14	14 14	II
24	0	2	Creating/learning new things	learned	Born with faculties	born with	43	5	2 1	2 1	IV
24	0	3	1 approach to it eg cognitive	Single approach	Many approaches to explaining it, cogitive, emotion, Freudian	Many approaches [theories]	50	51	14 14	14 14	II
24	0	4	Based on looser ideas	loose ideas	Based on structured/rigorous ideas	structured ideas	20	19	9 8	14	II
24	0	5	Many people	group	1 person	individual	6	1	7 1	7 1	I
24	0	6	Frequently word related. A lot of linguistic importance.	linguistic	Linguistics not important - glands/drives etc are	glands/drive	91	53	45 53	14 14	II
24	0	7	Wide sources	wide source	Narrow source	narrow source	51	50	14 14	14 14	II
24	0	8	Personality related	trait	Computational - cognitive, mechanical	computational/ cognitive/mecha nical	4	39	1 8	1 8	II
24	0	9	Social	social	Computational	computational	33	39	33 8	33 8	II
24	0	10	Vague category to be taught about	vague category	Specific clear idea	specific idea	20	19	9 8	8 8 ?	II
24	0	11	Complex, many factors to be aware off	complex factors	Simple - few factors to be manipulated. to study	simple factors	24	50	14 14	14 14	II
24	0	12	Concerned with language/meaning (explicit)	language/meaning explicit	Concerned with abstract manipulation (implicit)	abstract (implicit)	19	20	8	8 8 ?	II
25	0	1	Not manipulable	not manipulable	Experimental	experimental	71	23	8	8 14	II
25	0	2	Trendy	trendy	Old fashioned	old fashioned	93	94	93 94	14 14	V
25	0	3	Conscious	conscious	Unconscious	unconscious	25	26	8 9	8 8	V
25	0	4	Evolutionary basis	evolutionary	Cultural basis	cultural	34	33	2 33	33 33	IV
25	0	5	Non-metric	non-metric	Metric	metric	71	23	8	14	II
25	0	6	Interactional	interaction	Individual	individual	21	1	17 1	7 1	I
25	0	7	Commercial	commercial	Academic	academic	95	96	93 14	14	II
25	0	8	Social	social	Cognitive	cognitive	33	15	33 12	33 12	IV
25	0	9	Soft	soft	Hard	hard	97	98	9 8	8 14	V
25	0	10	Stable	stable	Variable	variable	47	46	47 46	46 47	V
25	0	11	Interative/dynamic	interaction	Static	static	21	47	17 47	7 46	V
25	0	12	Loose	loose	Tight	tight	20	19	9 8	8 8	V
26	0	1	Attributes of person	attribute	Processes within and between people	interpersonal process	4	3	1 3	7 1	I
26	0	2	Lower order constructs	low order constructs	Higher order constructs	higher order constructs	50	24	14 14	14 14	II
26	0	3	Important elements in Behaviourism (eg Hull)	elements	Not important topics in behaviourism	not important topic	44	57	14 56	14 56	II
26	0	4	Mainly intrapersonal	intrapersonal	Mainly extrapersonal	extrapersonal	12	8	12 8	12 8	VI
26	0	5	Social psychology	social psychology	Not social psychology	not	78	92	33	14	II

26	0	6	Involves more than one person (logically)	group	Can be thought of at individual level	individual	6	1	7 1	7 1	I
26	0	7	Psychodynamic approaches (Freud)	psychodynamic	Non psychodynamic	not psycho-dynamic	99	100	99	14	II
26	0	8	Concerned with social perception, persuasion and personality	social	Fundamental cognitive process	cognitive process	33	15	33 12	33 12	IV
26	0	9	Interpersonal communication processes	interpersonal	Individual cognitive process	individual (cognitive process)	3	12	3 12	7 12	I
26	0	10	Mainly intrapersonal processes	intrapersonal process	Mainly interpersonal	interpersonal	12	3	12 3	7 12	VI
26	0	11	Traditional principles of behaviour change	principles	Analysis of interpersonal relations	analysis	38	3	14 3	14 7	II
26	0	12	Social psychology	social psychology	Not social psychology	not	78	92	33	14	II
27	0	1	Important in interactions	interaction	Individual/private	individual	21	1	17 1	7 1	I
27	0	2	Conscious reflection	conscious	Subconscious/animalistic	subconscious	25	26	8 9	8 8	V
27	0	3	Automatic but suject to conscious change (sometimes!)	conscious	Automatic	automatic	25	26	8 9	8 8	V
27	0	4	Educational implication	educational	Less concerned with individual differences	not individual differences	101	102	2	2	VI
27	0	5	Interactions	interactions	Individual	individual	21	1	17 1	7 1	I
27	0	6	Personal characteristic	personal	Information processing	information processing	1	12	1 12	12 1	III
27	0	7	Character	character	Intelligence/information processing	information processing	4	12	1 12	12 1	III
27	0	8	Human interaction	interaction	Private behaviour	private behaviour	7	1	7 1	7 1	VI
27	0	9	Interpersonal communication	interpersonal	Physical reaction/private cognition	individual cognition	3	12	3 12	7 12	VI
27	0	10	Information processing	information processing	Social psychology	social psychology	12	38	12 14	12 14	II
27	0	11	Public	public	Private	private	8	9	8 9	8 8	VI
27	0	12	Interpersonal communication	interpersonal	Physical reaction/private cognition	intrapersonal	3	12	3 12	7 12	VI
28	0	1	Interpersonal factors	interpersonal	Cognitive	cognitive	3	15	3 12	7 12	II
28	0	2	Cognitive approach	cognitive	Black box approach	mechanistic	15	40	12 2	14 14	II
28	0	3	Physiological substrate considered	physical	No physiological substrate considered	not	53	82	53	14	II
28	0	4	Schooled	schooled	Implicitly learning	implicit learning	20	19	9 8	8 8	IV
28	0	5	Biological influences less strong	biological	Biological influences strong	stronger biological	53	53	53	14 14	II
28	0	6	Fewer innate factors	less innate	Strong innate factors	more innate	5	5	1	1	III
28	0	7	Not social	not social	Social	social	92	33	33 33	33 33	IV
28	0	8	Interpersonal factors	interpersonal	Not interpersonal	not	13	103	3	7	II
28	0	9	Socially oriented	social	Sensory	sensory	33	53	33 53	33 14	II
28	0	10	Cognitive	cognitive	Social	social	15	33	12 33	14 33	II

28	0	11	Interpersonal factors	interpersonal	No individual differences allowed	not	13	103	3	7	II
28	0	12	Socially oriented	social	Sensory	sensory	33	53	33 53	33 14	II
29	0	1	Ideographic	ideographic	Nomethetic	nomethetic	50	51	14 14	14 14	II
29	0	2	Dull	dull	Political	political	104	105	94 56	14 14	V
29	0	3	Cognitive	cognitive	Sensory	sensory	15	53	12 53	14 14	II
29	0	4	Computational	computational	Psychometric	psychometric	39	23	8	8 14	II
29	0	5	Interpersonal	interpersonal	Intrapersonal	intrapersonal	13	12	3 12	7 1	I
29	0	6	Interpersonal	interpersonal	Individual	individual	3	1	3 1	7 1	I
29	0	7	Mainstream	mainstream	Underdeveloped	underdeveloped	107	108	93 2	14 33	V
29	0	8	Interpersonal	interpersonal	Cognitive	cognitive	13	15	3 12	7 12	I
29	0	9	Social	social	Reductionist	reductionist	33	15	33 12	33 14	IV
29	0	10	Psychometric	psychometric	Process	process	23	10	23 2	14 2	II
29	0	11	Applied	applied	Mechanistic	mechanistic	80	40	17 2	8 2	II
29	0	12	Social	social	Individual	individual	33	1	33 1	1 33	IV
30	0	1	How teachers present themselves to others	extrapersonal	Not always visible	intrapersonal	11	28	11 9	11 8	VI
30	0	2	Acquisition and retention of info	cognitive process	Individual differences in intelligence not necessarily linked to learning theory	individual	15	1	12 1	12 1	III
30	0	3	Connection between external reinforcement motivation and extrinsics	extrinsics	Object perception not associated with learning or being motivated to learn	object	8	14	8 14	2 14	II
30	0	4	Speed of cognitive insight an indice of intelligence	measureable computational	Other two not necessary for social perception	not necessary	39	60	8 56	8 56	II
30	0	5	Interaction between individuals in both - in groups	interpersonal interaction	Personality - individual differences	individual	13	1	3 1	7 1	I
30	0	6	Perception of NVC as part of the communication process	process	Motivation the starting the other two, an outcome	outcome	2	14	2 14	2 14	II
30	0	7	Motivation an element of personality	element	Cog learning not an element of personality	not element	44	58	14 14	14 14	II
30	0	8	Aspects of Teacher Characteristic used in influencing groups	overt interaction	Memory processing not a overt as other two	covert	35	28	11 9	11 8	V
30	0	9	Interaction between individuals	interpersonal interaction	Perception of objects not part of people comm.	cognitive process	13	12	3 12	7 12	I
30	0	10	Interpretation of social events influenced by our memory of prior ones	extrapersonal	Intelligence not thought to be related to memory or our ability to interact	intrapersonal	12	109	12	12	VI
30	0	11	Teacher can influence group dynamics - positive/negative	teacher interaction	Behaviourism not a major element of how a teacher delivers or how a group interacts	not	35	61	11	11	VII
30	0	12	Communication part of the process of social influence	social process	Object recognition not directly part of social influence	object recognition	7	53	7 53	7 12	II

Appendix 5a)

Ss no.	T1/ T2	Row no.	Similarity Pole (Description of construct)	Difference Pole (Description of construct)	Rater 1	Rater 2	Dimension of Theme
1	1	9	Communication a vehicle of interrelationships in a group	Visual Perception is 'inside' an individual	I	I	group/ individual
1	2	1	Everyone has	Only teachers have	I	I	group/ individual
2	1	6	relating to others	self aims	I	I	others/self
2	1	11	affecting each other	personel	I	I	interactive/ personal
2	2	4	Individual	Other peoples' perception	I	I	individual/ others
2	2	5	People's influence structure groups	personal	I	I	groups/personal
2	2	8	personal	groups	I	I	personal/ groups
2	2	9	Inter active with others	personal	I	I	others /personal
2	2	10	ones self	How others affect/see us	I	I	self/others
2	2	11	inter active with group	personal	I	I	group/ personal
2	2	12	groups/affective	Singular	I	I	group/individual
3	1	5	Own personality (ideas)	other people's ideas	I	II	individual/ others
3	1	9	More than one point of view	Your own view	I	I	group/ individual
3	1	11	group teaching ideas	can be achieved by self	I	I	group/ individual
3	1	12	The way you think	More than one person's thoughts	I	I	individual thinking/group process
3	2	5	your own personality could be influenced by others	others' views, could have a link	I	I	interpersonal interaction/others
3	2	6	others peoples views could be passed on	Would be self (personality)	I	I	others/ self
3	2	7	both are personality based, self influenced	can be influenced by others	I	I	individual/ others
3	2	9	View of two or more, passing on ideas etc	One's own views	I	I	group/ individual
3	2	10	Personality linked	Influences of others	I	I	individual/others
3	2	11	teacher could encourage the group dynamics	Learning mode (self)	I	VII	interpersonal interaction/ individual
4	1	9	within a group communication is needed to do info and to give it, people in that group act differently some more dynamic than others	Individual. Is seeing, and taking in what is around us	I	I	group interaction/individual
4	1	11	Within a group are behaviour alters depending upon other or stronger persons in the group	are part of a person which are needed at different time	I	I	group interaction/personal
4	1	12	How we are perceived by others can have an effect the way we can influence others in social situation	Can be done without any visual contact or influence from a social group	I	I	others/individual
4	2	9	Within group dynamics, communication plays an important role	visual perception can be a personal experience	I	I	interaction/personal
5	1	5	Social influence once within a group	Individual personalities will help or hinder group dynamics	I	I	group interaction/ individual
5	1	11	The way the teacher is has a direct affect upon the rest of the group	This is an ability we already have	I	III	interaction/ability
5	2	5	Both group things and are about people with people	affects all aspects of your life	I	I	group interaction/ individual
5	2	9	Communication is essential to group dynamics. Without it there is not interaction	Is personal, the way one person sees something. It is not a group thing	I	I	group interaction/ individual
5	2	11	Teacher characteristics will directly affect the learning of their students	Is an interaction of students personalities and social behaviour	I	VII	teacher affect /group interaction
6	1	5	Required for integration	a debatable matter that this is the odd man out	I	VII	integration/misc
6	1	8	Peer group pressure	not required	I	VII	group interaction/not
6	2	5	Social influence can affect group dynamics	not always required	I	I	interaction/not
7	1	3	Individual	Group activity. Theory - observed responses	I	I	individual/group
7	1	6	Group	Personal	I	I	group/personal

Appendix 5a)

7	2	6	Group influence	self/personal	I	I	group/personal
7	2	9	Social interaction	individual	I	I	interaction/individual
7	2	12	Group reality	individual reality	I	I	group/individual
8	1	9	If you take things in around you then you communicate better	how group interacts doesn't necessarily affect other two	I	I	individual/ group interaction
8	1	11	You learn from listening to and watching other people	how group interacts doesn't necessarily affect other two	I	I	individual cognition/group interaction
8	1	12	Can be one to one	more people involved	I	I	interpersonal/ group
8	2	9	Group interaction	individual	I	I	group/ individual
9	1	1	Interactive attributes requiring more people	individual ability or tool	I	I	group interaction/ individual
9	1	5	Pressure on individual by several others	An individual response	I	I	group interaction/ individual
9	1	8	Influences from other people	Linked to raw intellectual capacity of individual	I	I	others/individual
9	1	9	Group participation demands	Visual perception can be successful - solitarily	I	I	group interaction/individual
9	1	11	Interactive with others	Individual, personal	I	I	others interaction/individual
9	2	1	Great interaction here - interdependent to a large extent	Memory plays only a small part in shaping relationships especially new ones	I	I	interaction/ limited interaction
9	2	6	These are interdependent in a social situation	Motivation is not very important to social interaction	I	I	interaction/not
9	2	8	These are influences of others upon an individual	This has little to do with others - mere the individual ability	I	I	others/ individual
9	2	12	Both involve interaction with others, both will be modified by personality and situation	This is a solitary activity. No processing or use of information necessary	I	I	others/ individual
10	1	9	Observing individuals within a group	Visual observations - no need to communicate	I	VII	group/observation
10	1	11	How much do I draw from teachers delivery	Group behaviour	I	I	individual/group behaviour
10	2	9	It would be hard to enter into group dynamics without communication	How we see others would not affect our communicating with them - or should not	I	I	group interaction/ individual
10	2	11	Working on one's own	Working in a group	I	I	individual/ group
11	1	5	Group dynamics is the interaction of individual personalities. Two way	Social influence has little to do with group dynamics It is more a one-way thing.	I	I	interaction/ one-way process
11	1	8	Teacher characteristics and social influence both communicate themselves to students. Not personal	Memory is a personal thing	I	I	interaction/personal
11	1	9	Visual perception is how you see things, this communicated to you by means of sight etc. One way	Group dynamics is personal interaction between people. Two way	I	I	individual/interaction
11	1	11	Group dynamics is social interaction behaviourist learning is learned from this. Two-way	Teacher characteristics are individual	I	I	interaction/individual
11	1	12	How you see things is communicated by what you are seeing. One way	Social influence may affect others not necessarily you	I	I	individual/ others
11	2	1	Influence of people and the individual	remembering things learned	I	III	interaction/cognitive process
11	2	5	to do with groups	individual	I	I	groups/ individual
11	2	11	influence of other people	influence of one individual	I	I	others/ individual
11	2	12	to do with other people	how you see things	I	I	others/ individual
12	1	5	Your personality effects how you intermingle with people	Social influence is more the way you appear to people with the way you look etc	I	I	interaction/individual
12	1	6	How you communicate affects how people think of you	Motivation is more your willing to do something	I	VI	interaction/ individual
12	2	5	Your personality depends on how you work in a group	This is the effect you have on people	I	I	interpersonal interaction

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12	2	9	How you communicate inlates how you work in a group	This is your impression gathered by what you see	I	VI	interaction/ individual
13	2	5	The personalities in a group directly affect the dynamics of the group	Social influence does not have a great affect on personality or group dynamics	I	I	interaction
13	2	9	Without communication group dynamics collapse	Visual perception has nothing to do with group dynamics	I	VII	group interaction/not
13	2	12	Social influence can affect way communicate	Visual perception is nothing to do with communication	I	VII	interaction/ not interaction
14	1	5	When many personalities are jelled together within a group setting they will bring out the best or worst in each individual	Social influence will not affect a persons personality	I	I	interpersonal interaction/ individual
14	2	5	Students personality depends on whether they will gel together as a group	Social influence differs	I	VII	group/misc
15	1	5	Personality represents the strength or influence socially to an individual	This is a group meaning not an individual	I	I	interaction/ group
15	1	9	Group meanings	Individual meanings	I	I	group/ individual
15	1	12	How you communicate with others will reflect how you influence them (personal communication)	This is not a group analysis (group communication)	I	I	interaction/ not
15	2	9	You need to be able to communicate to be involved in a group	Individually what one sees	I	I	group interaction/ individual
15	2	12	Groups	Individual	I	I	group/ individual
16	1	5	Group influence	Personal	I	I	group/ individual
17	1	9	Involve interaction with other people/objects	Does not involve interaction established traits	I	I	interaction/not interaction
17	2	4	Mind	Group	I	I	cognitive /group
17	2	5	Personal	Group	I	I	personal/group
17	2	9	All take part and contribute/Discuss	Own perception. Own personal view	I	I	group interaction/ personal
18	1	6	Communication and social perception will affect each other (personal views etc.)	Motivation won't affect this	I	VII	interpersonal interaction/not
18	1	11	Teacher characteristics and way taught to teach is learnt and you develop yourself	What group develops overall	I	I	individual/group
19	1	9	Transfer skills within a group	How we see things	I	I	group interaction/intraperson al
19	1	11	Teaching skills. Affects reaction to learning	Within a group	I	VII	teaching skills/group
19	2	8	Interactive	Thinking	I	VI	interaction/thinking
19	2	12	Both view by one person	Interactive - between others	I	I	individual/others
20	1	5	Group	Singular	I	I	group/ individual
20	1	9	Group	Singular	I	I	group/individual
20	1	11	Individual ??	Group	I	I	individual/group
20	2	8	People	Personality as opposed to ability	I	I	group/individual
20	2	12	One way	Two way	I	I	individual/interaction
21	1	5	To do with influence of other people	Involves the individual more	I	I	others/individual
21	1	9	Interaction between people	Not interpersonal - one way	I	I	group interaction/one way
21	1	12	To do with classroom management (group)	To do with individual	I	I	group/individual
21	2	8	Applied. Interaction (in classroom) involving external influence of others	Mechanics of individual (in classroom). Internal.	I	I	group interaction/individual
21	2	9	Related to social interaction (group)	Physical emphasis (individual)	I	I	group interaction/ individual
22	0	4	Individual	Group/interpersonal	I	I	individual/group interaction
22	0	5	Interpersonal processes	Individual characteristics	I	I	interpersonal/

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							Individual
22	0	6	Interpersonal	Individual (tho' can be influenced by others)	I	I	Interpersonal/ Individual
22	0	8	Interpersonal: teacher characteristics influence what is learned and how	Individual - particularly relevant for the learner	I	I	Interpersonal/individua l
22	0	10	Characteristics of individuals that contribute to learning	Interpersonal processes	I	I	Individual / Interpersonal
22	0	11	Interpersonal processes	Individual processes and actions (may be automatic)	I	I	Interpersonal/individua l
22	0	12	Interpersonal	Individual	I	I	Interpersonal/individua l
24	0	5	Many people	1 person	I	I	group/ individual
25	0	6	Interactional	Individual	I	I	Interaction/individual
26	0	1	Attributes of person	Processes within and between people	I	I	Individual/ groups
26	0	6	Involves more than one person (logically)	Can be thought of at individual level	I	I	group/individual
26	0	9	Interpersonal communication processes	Individual cognitive process	I	I	Interpersonal/individua l
27	0	1	Important in interactions	Individual/private	I	VI	Interaction/individual
27	0	5	Interactions	Individual	I	I	Interactions/individual
29	0	5	Interpersonal	Intrapersonal	I	I	Interpersonal/intrapers onal
29	0	6	Interpersonal	Individual	I	I	Interpersonal/individua l
29	0	8	Interpersonal	Cognitive	I	VII	Interpersonal/cognitive
30	0	5	Interaction between individuals in both - in groups	Personality - individual differences	I	I	groups interaction/individual
30	0	9	Interaction between individuals	Perception of objects not part of people comm.	I	VI	Interaction/cognitive process
1	1	2	Cognitive learning needs intelligence to work	Behaviourist learning relied on memory of pos and neg reinforcement	II	III	capacity/cognitive process
1	1	3	If motivation on the level of pain/pleasure is invoked this might be eg of "Behaviourist" learning	V P is our name for the way the mind receive info from the eyes	II	II	emotion/name
1	1	5	G D and S I go together because G D are systems of S Is	Personality related to singular subject	II	II	systems/single subject
1	1	8	Social Inf could be an eg of a teach char a tool used in the classroom	Memory considered a faculty or ability could be objectively tested/measured	II	V	tool/faculty(measurabl e)
1	1	11	Made out of information about class	Paradigm or viewpoint in the areas of teaching, psychology etc.	II	II	information/theory
1	2	2	Ways of explaining the same thing	hypothetical construct with many meanings	II	II	single/multi-meaning constructs
1	2	3	1 [visual perception] may be eg of 4 [learning: behaviourist]	Can be a given thing from outside individual	II	II	example/external entity
1	2	6	can be an act of receiving	Noun signifying one person's reason for action/inaction	II	II	act/noun
1	2	7	Ill defined (but universally accepted concepts)	less accepted as real	II	II	concepts/ less accepted
1	2	8	Special case	individual faculty	II	II	example/faculty
1	2	9	Special case	individual faculty	II	II	example/faculty
1	2	10	Hypothetical entities (concepts)	actions	II	II	concepts/actions
1	2	11	Descriptions (in classroom)	Paradigm	II	II	concepts/ theory
1	2	12	Special case	The way one interprets sense data	II	VII	example/cognitive process
2	1	7	own goals	academical	II	II	goals/academic
2	2	2	Schools of learning	both individual + social	II	II	theory/individual and social
2	2	3	Concepts of psychology	individual/personal	II	II	concepts/individual
3	1	2	learning mode	not essential	II	II	learning mode/ not
3	1	3	learning mode	own view	II	II	learning mode/ individual cognition

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3	1	8	good teaching methods	does not relate to teaching	II	II	teaching method/ not
3	2	2	both learning modes	Maybe intelligence would help (this is a difficult one)	II	II	learning modes/process
3	2	8	Teaching methods could be influenced by social influences	a good memory would help but not necessary in teaching	II	VII	teaching methods/ not necessary in teaching
4	2	10	Intelligence is sometimes measured by the amount we remember	Social perception can not be measured	II	V	measured/not measured
6	2	2	Forms of learning	Not always required	II	II	forms of learning/not
6	2	9	Both methods of communication	social	II	II	methods/social
7	1	11	Practice	Theory	II	II	practice/ theory
8	2	4	Self-taught	Not to do with knowledge	II	III	cognitive process/not knowledge
9	1	2	Requiring or producing - conceptuallsation	Reflex reactions requiring little thought	II	II	conceptual/reactions
9	1	3	Depending on several factors	Primary reaction	II	II	multi-factorial/ primary reaction
9	2	3	These two learning processes will continue almost involuntarily to a degree	This alone cannot be a learning situation - merely salt and pepper to the process	II	VII	learning processes/additionals
11	1	2	Behaviourist learning need intelligence to decide whether to copy group influence or rebel against it. Tool.	Cognitive learning does not need intelligence required to make decision. One way.	II	VII	tool/one way
11	2	2	non-habitual, needs thought	habits	II	II	cognitive/habits
12	2	2	These are both methods in which you learn	This is how knowledgeable you are	II	II	learning methods/ knowledge
12	2	7	Motivation depends on your personality	This is a certain way of learning	II	III	individual/ learning process
13	1	2	Methods of learning	Part of the students make-up	II	II	methods of learning/make-up
13	1	7	Personality can affect motivation	Method of learning	II	VII	affect/method of learning
13	2	2	relate to methods of learning	Is innate (although can be altered by training)	II	VII	learning methods/innate
13	2	8	Teacher characteristics can be affected by social influence	Method of storing information	II	VII	interaction/ method
13	2	10	If you are treated as intelligent learning can increase	Method of storing information	II	II	learning process/ cognitive process
15	2	2	Two concepts of learning	The way we are individually abilited	II	II	concept/ability
15	2	4	The mind	Visual, what we see	II	II	mind/visual
15	2	7	One's own personality generaly reflect own motivation	Learning concept	II	VII	personal attribute/ learning concept
16	1	12	Visual presentation	Non visual	II	II	visual/ not
16	2	4	Knowledge	Visual	II	II	knowledge/visual
17	1	2	Mental	Physical	II	II	mental/physical
19	2	2	Thought process	Conditioning	II	IV	thought process/conditioning
19	2	3	Learning concept	Eye contact	II	II	learning concept/eye contact
19	2	11	Teacher-centred	Concept	II	II	teacher/ concept
20	1	2	Both types of learning	Don't need intelligence to learn	II	VII	types of learning/not
20	1	3	Both connect with observation	Not connected by observation	II	II	observation/not
20	1	12	Type of communication	Don't need to communicate	II	II	type communication/not
20	2	2	Concepts	Not a concept	II	II	concepts/not concept
20	2	3	Visual stimuli	Learning concept	II	II	stimuli/learning concept
20	2	4	Knowledge	Perception	II	II	knowledge/perception
20	2	7	Attitude	Theory	II	V	attitude/theory
20	2	9	Eye contact	Not eye contact	II	II	eye contact/ not
20	2	11	Influence	Learning concept	II	II	influence/ learning concept
21	1	2	To do with how people learn (process)	To do with what they learn with (product)	II	II	process/product
21	1	8	Phenomenological	Cognitive (positivistic)	II	II	positivistic/phenomeno

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							logical
21	1	10	Related to cognitive psychology	Related more to social psychology	II	II	cognitive psychology/social psychology
21	1	11	Could be used in 'nurturist' argument	Could be used in 'nativist' argument	II	II	nurture theory/nature theory
21	2	2	Learning theories (academic) explicit	Controversial - not explicit, undertones of value judgements	II	V	explicit theories/controversial (implicit)
21	2	4	Linked by theory of maturation adaptation/developmental (Piaget)	Not linked to develop. theory	II	II	developmental theory/not
21	2	6	Constructivist (individual making sense) dynamic within person	Social psy. theory (dynamics - outside person)	II	II	constructivist/social psychology
21	2	10	Cognitive theories	More emphasis on (social) experience and expectation	II	II	cognitive theories/social
22	0	1	Individual characteristics that have an influence on interpersonal processes	Cognitive principles underpinning an individual's capacity and performance	II	II	interpersonal process/ cognitive principles
22	0	7	Goal-setting: based on characteristics of the learning (individual)	General principles that don't change with characteristics of the learner	II	II	individual goal setting/ general principles
23	0	2	Methods used for learning various skills. Both can be used in learning process.	Often culturally determined and measured. Of teaching. Learning may equate more with - method	II	VII	learning methods/culturally determined and measured
23	0	3	Beh. methods used for vis. task training in amnesics	Individual level - Neuropsych. method	II	II	methods/individual neuropsychological method
23	0	4	Training IQ \= cog. additive factors	Not necessarily influenced by IQ or Cog. power	II	II	cognitive factors/not
24	0	1	Wide amount of elements involved	Single element	II	II	wide elements/single element
24	0	3	1 approach to it eg cognitive	Many approaches to explaining it, cogitive, emotion, Freudian	II	II	single approach/many approaches
24	0	4	Based on looser ideas	Based on structured/rigorous ideas	II	V	loose ideas/structured ideas
24	0	6	Frequently word related. A lot of lingulstic importance.	Linguistics not important - glands/drives etc are	II	II	linguistic/glands/drive
24	0	7	Wide sources	Narrow source	II	V	wide source/narrow source
24	0	8	Personality related	Computational - cognitive, mechanical	II	II	trait/computational, cognitive
24	0	9	Social	Computational	II	II	social/computational
24	0	10	Vague category to be taught about	Specific clear idea	II	V	vague category/specific idea
24	0	11	Complex, many factors to be aware off	Simple - few factors to be manipulated. to study	II	II	complex factors/ simple factors
24	0	12	Concerned with language/meaning (explicit)	Concerned with abstract manipulation (implicit)	II	II	explicit concept/abstract concept
25	0	1	Not manipulable	Experimental	II	V	not manipulable/experimental
25	0	5	Non-metric	Metric	II	II	non-metric/metric
25	0	7	Commercial	Academic	II	II	commercial/academic
26	0	2	Lower order constructs	Higher order constructs	II	II	low order constructs/high order constructs
26	0	3	Important elements in Behaviourism (eg Hull)	Not important topics in behaviourism	II	II	elements/not topics
26	0	5	Social psychology	Not social psychology	II	II	social psychology/not
26	0	7	Psychodynamic approaches (Freud)	Non psychodynamic	II	II	psychodynamic/not psychodynamic
26	0	11	Traditional principles of behaviour change	Analysis of interpersonal relations	II	II	principles/analysis
26	0	12	Social psychology	Not social psychology	II	II	social psychology/not

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27	0	10	Information processing	Social psychology	II	II	cognitive/social psychology
28	0	1	Interpersonal factors	Cognitive	II	II	interpersonal factors/cognitive
28	0	2	Cognitive approach	Black box approach	II	II	cognitive/mechanistic
28	0	3	Physiological substrate considered	No physiological substrate considered	II	II	physical/not
28	0	5	Biological influences less strong	Biological influences strong	II	II	biological
28	0	8	Interpersonal factors	Not interpersonal	II	I	interpersonal factors/not
28	0	9	Socially oriented	Sensory	II	II	social/sensory
28	0	10	Cognitive	Social	II	II	cognitive/social
28	0	11	Interpersonal factors	No individual differences allowed	II	II	interpersonal factors/no individual differences
28	0	12	Socially oriented	Sensory	II	II	social/sensory
29	0	1	Ideographic	Nomethetic	II	II	ideographic/nomethetic
29	0	3	Cognitive	Sensory	II	II	cognitive/sensory
29	0	4	Computational	Psychometric	II	II	computational/psychometric
29	0	10	Psychometric	Process	II	II	psychometric/process
29	0	11	Applied	Mechanistic	II	II	applied/mechanistic
30	0	3	Connection between external reinforcement motivation and extrinsics	Object perception not associated with learning or being motivated to learn	II	II	extrinsics/object perception
30	0	4	Speed of cognitive insight an indice of intelligence	Other two not necessary for social perception	II	VII	measurable cognition/not necessary
30	0	6	Perception of NVC as part of the communication process	Motivation the starting the other two, an outcome	II	II	process/outcome
30	0	7	Motivation an element of personality	Cog learning not an element of personality	II	II	element/not element
30	0	12	Communication part of the process of social influence	Object recognition not directly part of social influence	II	II	social process/object recognition
1	1	7	Pers and Motiv are attributes of individuals	Any type of learning is an action rather than an attribute	III	VI	individual attribute/action
1	1	10	Complex faculty used in learning	Is a personal thing	III	III	faculty/personal
1	2	4	actions	attribute	III	III	actions/attribute
2	2	7	motivation	personal	III	III	motivation/personal
3	1	7	The way you think	The way you are driven	III	III	cognitive individual/ individual drive
4	1	2	Is the ability to learn	acknowledgement of a person behaviour	III	III	ability/behaviour
4	1	10	are intelligence grows and get better as are memory takes in infor	Is seeing, it does not always effect learning ability	III	III	cognitive process/seeing
5	1	3	Motivation will affect your behavior	Visual perception will not affect	III	VII	behaviour/ not
5	1	7	What sort of person you are has a direct affect on how motivated you are	The ability to learn is different	III	III	intrapersonal/ability
6	2	8	Retention of knowledge	may not be applicable	III	VII	cognitive process not
7	1	4	Inherent to an extent	Non-inherent	III	III	inherent/non-inherent
8	1	3	Take in what you see	doesn't help motivation	III	III	cognitive process/not
10	1	2	How we think often affects our behavior	It is not necessary to be intelligent to learn or improve	III	III	individual cognitive process
10	1	7	The need to succeed drives us to achieve	not affected by our make-up	III	III	individual drive/ not
10	2	2	How we behave is influenced by our thinking	Not necessarily linked	III	VI	individual cognitive/not
10	2	3	If people are motivated to get on they will behave in a more determined fashion	How we see others does not affect our ability to succeed	III	I	(affective) behaviour/ ability
10	2	7	Motivation and the need or will to succeed often found in ones' personality or make-up	Our thoughts may not affect	III	III	inherent/individual cognition

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11	1	1	Personality's derived partly from personal characteristics	Memory of things does not necessarily affect your personality. Tool	III	II	personal/ individual tool
11	1	4	How you see people needs intelligence to decide how you see them. Tool	Cognitive learning is not necessary to decide how you see people. One way	III	II	cognitive tool/ one way
11	1	7	Motivation and personality are both personal characteristics	Cognitive learning is something you can do even if you don't particularly want to. Not personal	III	III	personal/capacity
11	2	3	you act as you see	Individual driving force	III	VI	action/ individual
11	2	4	ability to choose based on experience	How you see people	III	VI	learned ability/ interpersonal view
12	1	2	Intelligence determines how well you learn and understand	Behaviour is more about personality	III	III	cognitive process/personality
12	1	7	Motivation and personality is how and what you do, affects the type of person you are	This is taking in information	III	III	active characteristics /cognitive process
12	2	1	Your personality initiates how you teach	This is your ability to retain information	III	VI	extrapersonal/ability
12	2	12	You might judge what standard a person is by what they look like	This is the ability to express yourself	III	III	individual view/ability
13	1	3	Behaviourist learning can affect motivation	Visual perception is how you see concepts	III	VII	has affect/concepts
13	1	4	Learning through understanding can depend on intelligence	Social perception is instinctive and can be biased	III	III	cognitive process/ instinct
13	1	10	Social perception is often formed by memories	Intelligence is part of a students make-up	III	III	cognitive process/ inherent
14	1	1	(Characteristics) dependent on personality	Memory collection of past events can be drawn on but will not alter personality or characteristics	III	IV	dependent/ collection past events
14	1	7	The need to learn stems from motivation dependent or not on personality	Personality - something that grows through life whether motivated or learning	III	IV	intrapersonal/ developmental
14	1	10	To perceive in any way we need even the slightest intelgence	Memorys are to reflect and be drawn on	III	II	cognitive process/entity
14	2	2	To learn even the simplest of task we need basic intelligence	Learning Behaviourist. Will learn from visual perception (how they perceive things)	III	III	ability/ cognitive process
14	2	4	To learn we need basic intelligence and need to be motivated	Social perception - does not depend on inteligence or learning	III	III	cognitive process/not
15	1	2	Intellegence + cognitive reflect on ability	The way you behave is not an ability	III	III	ability/ behaviour
15	1	7	Strong personality encourage quick motivation	The ability of a person is not encouraged by anything else	III	III	intrapersonal/ ability
15	2	3	Behaviourism + motivation are the way we behave and how quick	What we see and how we see	III	III	personal behaviour/individual cognition
16	1	6	Skill	Understanding	III	III	skill/cognitive process
16	2	7	Characteristics	Knowledge	III	III	characteristics/ knowledge
17	1	3	Demonstrated by actions	Thought controlled	III	III	action/cognition
17	2	2	Thinking/mind	Doing/participate	III	III	cognition/action
18	2	1	Teaching characteristics will depend on personality	Born with memory	III	III	trait/ born with
19	1	2	How we think can affect the way we want to learn	Level of ability and learning	III	III	cognitive process/ability
19	1	4	Demonstrate ability to learn logically	Behavioural	III	VI	ability/behaviour
19	1	6	Necessary to progress and transfer skills	Behavioural	III	VI	progress/behavioural
19	2	1	Intelligence process	Thought process	III	III	cognitive/thought process
19	2	7	Thought process	Attitude	III	III	thought process/attitude
19	2	9	Skills	How we see things (insight)	III	III	skills/insight

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20	1	4	Thought processes	Action rather than thought processes	III	VI	cognitive process/action
20	1	7	Dependant on person	Constructive ie make something	III	VI	personal/constructive
20	2	1	Personality	Ability	III	III	personal/ability
20	2	10	Ability	Attitude	III	III	ability/attitude
22	0	2	Individual and concerned with performance	Individual, but more concerned with low level processes which less depends on intelligence	III	III	individual performance/basic individual
22	0	3	Individual: both concerned with knowing (although a lot of 'behaviourist' learning requires little effort)	Individual but doesn't require effort (and so minimal involvement of motivation).	III	III	cognitive individual/ basic individual
23	0	9	Human and A communication often perceive visually	Not at the individual level	III	III	cognitive process/not individual
27	0	6	Personal characteristic	Information processing	III	III	personal/information processing
27	0	7	Character	Intelligence/information processing	III	III	character/information process
28	0	6	Fewer innate factors	Strong innate factors	III	II	innate factors
30	0	2	Acquisition and retention of info	Individual differences in intelligence not necessarily linked to learning theory	III	III	cognitive process/individual
1	1	4	Social perception can involve cognitive learning about one's social environment	Intelligence is a complex thing which we may have more or less of (relatively)	IV	IV	social environment/ personal attribute
2	1	2	personel abilities	influenced	IV	IV	personal abilities/influence
2	1	3	self identified	outside events	IV	IV	intrapersonal/outside events
3	1	4	Influenced by life	not essential	IV	IV	experience/ not
3	1	10	own intelligence	View on the whole	IV	IV	individual/general view
3	2	4	Learning modes -ways of thinking	Can be influenced by experience and other people	IV	IV	cognitive process/experience influence
4	1	5	social groups affect group behaviour	personality is very individual and changes only as we grow and learn	IV	IV	social behaviour/ individual process
4	1	6	are perception of a person can alter the way we communicate with them	is gathered or altered from the environment	IV	IV	interpersonal interaction/ environment
5	1	2	Both to do with brainpower	Behaviour depends on other outside influences, as well as personnel feelings	IV	IV	cognitive process/outside influences
5	1	4	Both to do with brainpower	Is outside influence	IV	IV	cognitive process/outside influence
5	1	8	A persons social background can influence his character	Memory is something we are born with	IV	IV	social background/ born with
5	2	8	The character of the teacher can greatly affect a person's memory for the good or bad	Is an "outside the classroom" concept and only comes into classroom in (eg) group dynamics	IV	IV	intrapersonal/outside influence
7	1	2	External influence	Personal	IV	IV	external influence/personal
7	1	10	Experience	Inherent	IV	IV	experience/inherent
7	2	2	Cumulative	Inherent to a marked degree	IV	IV	cumulative/inherent
7	2	4	Individual	Cultura/ideology	IV	IV	individual/cultural
7	2	10	Personal/natural	Cultural/ideology	IV	IV	personal/cultural
8	1	5	Personality can help group to interact	More involved	IV	VI	group interaction/ more involved
8	2	2	Ability to "teach" oneself	Student will be taught	IV	VII	ability/taught process
8	2	7	Good teacher characteristics	More self-acquired	IV	VII	characteristics/self-acquired
9	1	4	Interdependent natural ability. Nature	Nurture	IV	IV	ability/nurture
9	1	10	Physical/mental abilities ie natural aptitude	Accident of birth - position in pecking order etc	IV	IV	natural ability/environment
9	2	2	These overlap and are to do	This is an ability to develop and	IV	IV	environment/ability

			with learning from what is around and in one's close environment	retain what is learnt and is not a learning process			
9	2	4	Experience of surroundings teaches. A different environment teaches differently	Basically unchanged by environment, except in extreme cases of malnutrition, isolation etc	IV	IV	environment/nature
9	2	5	These 2 are influences on personality and 11 is a specialised form of 12	This is the individual's response	IV	VI	external/ individual response
9	2	10	Although can be marginally improved they are genetically limited	The environment shapes one's social perception and that perception can be changed by a change in the environment - for better or worse	IV	IV	innate/ environment
10	1	5	Upbringing may affect personality	May not effect behaviour within a group	IV	IV	upbringing/group interaction
10	2	5	Our personality may be influenced by our social background	This would not affect group work	IV	IV	social background/group
10	2	8	These two may be linked, or certain characteristics may stem from one's social upbringing	Memory does not necessarily influence	IV	IV	social upbringing/not
10	2	12	How we see others would be influenced by our upbringing	No link to others	IV	IV	individual upbringing
11	1	10	How you see people is affected by memory of how you have seen other people. Acquired	Intelligence is something you are born with.	IV	VI	acquired/born with
11	2	7	individual	learned as a result of past experience	IV	IV	individual/experience
11	2	8	influence the individual	remembrance of past experience	IV	IV	individual influence/ experience
13	1	12	Visual perception is a form of communication	Social influence is absorbed from our surroundings	IV	VII	communication mode/environment
15	1	11	Different backgrounds will allow different behavior to occur	Individual Teaching Ability	IV	IV	background/ individual ability
15	2	6	External influencers	Ones individual way	IV	IV	external influence/individual
15	2	8	How the teacher comes over is the way it is socially influenced	ones own ability	IV	VI	social process/ individual ability
15	2	10	One's individual ability	External influence	IV	IV	individual ability/external
16	1	1	Contributes to atmosphere	Inner feeling	IV	IV	atmosphere/ internal
16	1	3	Encouraging influence	Personal	IV	IV	influence/ personal
16	1	8	Influencing factors, outside	Inner	IV	IV	outside factors/ inner
16	1	9	Personal	Outside influence	IV	IV	personal/outside influence
16	1	10	Personal	Surroundings	IV	IV	personal/environment
16	2	2	Learning	Individual ability	IV	III	learning/ individual ability
16	2	5	Influencing factors	Characteristics	IV	IV	influencing factors/ internal
16	2	6	One can influence the other, outside	Is in build and can be encouraged	IV	IV	outside influence/ in-built
16	2	8	Both outside influencing factors	A skill that can be developed	IV	IV	outside factors/develop
16	2	9	Influence through communication	Understanding of visual	IV	IV	influence/cognitive process
16	2	10	A skill that is developed	Outside influence	IV	IV	skill develop/outside influence
16	2	11	Personality of individuals	Learning with rewards	IV	VII	individual/learning process
17	1	4	Ability	Influenced by society	IV	IV	ability/society influence
17	1	5	Genetic/born with no control over	Controlled by other people	IV	IV	born with/external control
17	1	6	Dependant on external factors	Personal	IV	IV	external factors/ personal

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17	2	1	Personal	Influencing factor	IV	IV	personal/influencing factor
17	2	6	Influence	Inbuilt/personal	IV	IV	external/in-built
17	2	7	Inborn/personal	External	IV	IV	in born/external
17	2	8	Influence	Inborn	IV	IV	influence/ inborn
17	2	10	Inborn/personal	External factors	IV	IV	inborn/ external factors
17	2	12	Affected by external factors	Inborn	IV	IV	external factors/ inborn
18	1	2	Learn other 2	Born with intelligence	IV	IV	learned/born with
18	1	3	Developed from what's been learnt	How much motivation is dependent on you. Born	IV	IV	developed/born with
18	1	4	Depending on how intelligence we are may affect how much we learn	Social Perception everyone can have	IV	IV	cognitive/general process
18	1	5	Learnt - developed from others	Born with personality	IV	IV	developed/born with
18	1	7	Born with personality and motivation. To do something	Cognative Learning is external to personality	IV	IV	born with/external
18	1	10	Social perception what you learn from others to for perception. Memory what remembered. Developed	Born with intelligence (certain amount)	IV	IV	developed/ born with
18	2	2	Both affected by how much we learn	anyone/thing can learn	IV	VII	learning/general process
18	2	3	Affected by what's learnt	In-built characteristic	IV	IV	learned/ in-built
18	2	4	Affected by others	In-built characteristic	IV	IV	influenced/in-built
18	2	5	Influence of others	Personality in-built	IV	IV	influenced/in-built
18	2	6	Developed/learnt from others	In built characteristic	IV	IV	developed/in-built
18	2	7	In built characteristic	Learn't	IV	IV	in-built/ learned
18	2	10	In-built character	Way people affect	IV	IV	in-built/people influence
18	2	11	Learn't	Affected by others socially	IV	IV	learned/social interaction
18	2	12	Affected by others	In-built characteristic	IV	IV	others' influence/ in-built
19	1	3	Appealing visual aids affects learning	Controlled by ourselves and influenced by society	IV	IV	learning process/ individual and society
19	1	5	Introvert/extrovert, affects behaviour within a group	Affects us within society as a whole	IV	IV	individual/societal
19	1	7	Type of person we are affects how we progress	Learning process	IV	IV	individual/ learning process
19	1	12	How we perceive and are changed by surroundings	How we express ourselves	IV	IV	influence of surroundings/ individual expression
19	2	4	Thought process	This looks at society	IV	IV	cognitive process/ societal
19	2	5	People and change	Interaction	IV	IV	societal/interaction
19	2	6	Influence	Interaction	IV	IV	influence/interaction
19	2	10	Both thought processes	View of society	IV	IV	cognitive process/societal
20	2	5	The group/society	Self	IV	IV	societal/individual
20	2	6	To be accepted	Self	IV	I	interpersonal interaction/ individual
21	1	4	To do with mental processes	To do with social processes	IV	IV	mental process/social process
21	2	1	Effected by social (classroom) context	Emphasis on cognitive	IV	II	social context/cognitive
21	2	5	Social psychology - groups (macro)	Individual (micro)	IV	IV	societal/individual
21	2	11	Dynamic - interpersonal relationships (larger grps). Influenced by more complex context. Applied.	1 to 1 - more passive - objective theory. (Simpler, individual).	IV	IV	societal macro/individual micro
21	2	12	Question of interpretation of previous social experience.	To do with interpretation of individual experience (cognitive)	IV	IV	social experience/individual experience

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22	0	9	Social/inter-personal	Individual	IV	IV	social/individual
23	0	1	External. Teaching skills need to interact on many	Internal. Others can be immediate M. incremental	IV	VI	external/ internal
23	0	6	Social perceptions influences M	Skill can be independent from others	IV	VII	influence/skill
23	0	10	Again 2 can be interactive and additive	Often culturally determined	IV	IV	interactive/culturally determined
24	0	2	Creating/learning new things	Born with faculties	IV	IV	learned/born with
25	0	4	Evolutionary basis	Cultural basis	IV	II	evolutionary/cultural
25	0	8	Social	Cognitive	IV	II	social/cognitive
26	0	8	Concerned with social perception, persuasion and personality	Fundamental cognitive process	IV	II	social/cognitive
28	0	4	Schooled	Implicitly learning	IV	V	schooled/implicit learning
28	0	7	Not social	Social	IV	II	not social/ social
29	0	9	Social	Reductionist	IV	II	social/reductionist
29	0	12	Social	Individual	IV	IV	social/individual
1	1	12	Social inf and Vis Percept are both subjective	Communication is determinate (it means what is means not wot U think it means)	V	V	subjective/determinate
2	1	1	changing	constant	V	V	changing/constant
2	1	5	structured	alone	V	II	structured/ alone
2	1	8	alterd, changed	unchanging	V	V	changing/unchanging
2	1	9	sight/perception	teachable	V	VII	faculty/ teachable
2	1	10	Private (to individual)	alter - change	V	V	private individual/ changing
2	1	12	take in	give out	V	V	take in/give out
4	1	3	visual contact is the first contact often we make a judgement on the way we expect the behavior	is given, not assumed, visual grounds	V	V	assumption/given
5	1	1	Everyone personality comes across in our characteristics and this is how we are judged	To remember something wouldn't always have an affect	V	V	judgement/ not
6	1	11	A feeling of belonging	not required	V	V	emotion/not
6	2	7	Feelings involved	one is or is not	V	V	subjective/objective
7	1	5	Human values	Ideology/conditioning	V	II	human values/ ideology
7	1	7	Personal and changeable	Progressive. Process/ongoing learning	V	V	changeable/progressiv e
7	1	9	Inter-active	Passive	V	V	active/passive
7	1	12	Passive	Active	V	V	passive/active
7	2	3	Variable	predictable	V	V	variable/predicable
7	2	7	Human/subjectivity	theory/objectivity	V	V	subjective/objective
7	2	11	Human/unpredictable	conditioning/mechanistic	V	V	unpredictable/mechani stic
9	1	12	Physically learned or based	Abstract	V	V	physical/ abstract
9	2	7	Motivation and personality give the impetus to learn but not learning situations	This is a process not an attitude to learning	V	V	attitude/process
9	2	9	1 & 8 are processes of gathering information	These may be influenced by 1 & 8	V	II	information process/influenced
10	1	12	The way we view others may be influenced by our social background	We are able to judge people without communication observation	V	V	perspective/ judgement
12	1	12	People look at you and decide what social class you are so this decides how much you influence them	Communication decides on the person you really are, rather than the way you look	V	V	impression formation/actual
15	1	1	Personality promotes own characteristics in teaching (variable)	Memory is a fixed subject not variable	V	V	variable/ fixed
15	1	8	Actions reflecting on each other	Fixed process	V	V	reflexive actions/fixed
15	2	5	Personality influences the group	Something we can not change	V	V	affective/ not changeable
16	1	2	To do with understanding	Not to do with understanding	V	V	understanding/not
16	1	4	To do with achievement	Not to do with achievement	V	V	achievement/not

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							achievement
16	1	7	To do with feelings	Not to do with feelings	V	V	affective/non affective
16	2	1	Attitude	In built abilities	V	III	attitude/ in-built ability
17	1	7	Established	Can be taught/trained	V	V	established/ trained
17	1	8	Established	Variable	V	V	established/ variable
17	1	10	Controlled	Variable according to surroundings	V	V	controlled/ variable
17	1	12	Sub-conscious	Visible/physical	V	V	sub-conscious/ physical
18	1	8	Social influence may affect your memory	These won't change because of the other two	V	V	affect cognition/constant
18	1	9	The way group acts and the way you communicate may change depending on situation	Visual perception of something will stay the same	V	V	changeable/constant
18	1	12	This will be affected and may change the way we think	The way we communicate will not change because of these	V	V	changeable/not changeable
18	2	8	Social influence may affect our memory	Once developed will remain same	V	V	affect cognition/constant
18	2	9	Affects what we think	Will communicate no matter	V	V	affects thinking/constant
20	1	1	Changeable	Memory can't	V	V	changeable/constant
20	1	6	Active	Passive	V	V	active/passive
20	1	8	These can change	Memory can't	V	V	changeable/not changeable
21	1	1	Involves the 'subjective person'	Cognitive - more 'objective person'	V	V	subjective/objective
21	1	3	Involves active process	Involves passive processes	V	V	active/passive
21	1	6	Involves more overt signals/interpretation	involves more "subtle sources" of influence/interpretation	V	V	overt/subtle
21	1	7	Can affect wanting to learn (emotional)	Not involving feelings	V	V	affective/not affective
21	2	3	To do with the subjective (personal)	Cognitive - impersonal (scientific)	V	V	subjective/cognitive
21	2	7	Subjective person (emotional)	Thinking person (impassive)	V	V	subjective/objective
23	0	5	Group D greatly influenced by SI	Can remain stable despite other 2	V	V	influence/stable
23	0	11	Deliberate and conscious methods employed to 'train'	Socially implicit rules as (10) above	V	V	conscious methods/social rules
25	0	2	Trendy	Old fashioned	V	V	trendy/old fashioned
25	0	3	Conscious	Unconscious	V	V	conscious/unconscious
25	0	9	Soft	Hard	V	V	soft/hard
25	0	10	Stable	Variable	V	V	stable/variable
25	0	11	Integrative/dynamic	Static	V	V	dynamic/static
25	0	12	Loose	Tight	V	V	loose/tight
27	0	2	Conscious reflection	Subconscious/animalistic	V	V	conscious/subconscious
27	0	3	Automatic but subject to conscious change (sometimes!)	Automatic	V	V	conscious/automatic
29	0	2	Dull	Political	V	V	dull/ political
29	0	7	Mainstream	Underdeveloped	V	V	mainstream/underdeveloped
30	0	8	Aspects of Teacher Characteristic used in influencing groups	Memory processing not a overt as other two	V	V	overt interaction/less overt
1	1	1	Memory and personality are qualities of persons	Teacher characteristics relate to the style used for teaching	VI	VI	qualities/style
1	1	6	Subject "A" might project a determinate social image to Subject "B" as a form of communication	Motivation is something the subject has (eg fear of heights motivates me to climb down) or can be given (eg payment for work)	VI	VI	projection/attribute
2	2	1	development	can be taught	VI	IV	development/ taught
3	1	6	oral, views of others	Push, drive (learning mode)	VI	VI	extrapersonal/intrapersonal
3	2	1	Teacher's personality would come over when teaching	A good memory would help but not necessary in teaching	VI	VI	extrapersonal/intrapersonal
4	1	1	a teacher personality influences the teachers characteristics and	is the way we remember	VI	VI	extrapersonal/intrapersonal

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			the way they teach				
4	1	4	the ability to learn or the speed at which things picked up can be measured or are intelligence	Is seeing people around us and having an opinion about them	VI	VI	intrapersonal/extraper sonal
4	1	7	For myself learning is easier if I feel motivated either from my teacher or group from wanted to learn it	Is part of 1 person that can not be changed easily or can be called upon to have a different one	VI	VI	extrapersonal/ intrapersonal
4	1	8	Key points of the characteristics of the teacher are called upon with different social influences	Is an ability which we call upon to learn	VI	VI	extrapersonal/ ability
4	2	1	The way in which the teacher teaches can be due to their personality	Is personal to the person	VI	VI	extrapersonal/intraper sonal
4	2	2	born with	learned	VI	VI	born with/learned
4	2	5	affects with others while in group	Born with (possibly)	VI	VI	interpersonal interaction/born with
4	2	8	In social influences can alter the teacher's teaching	memory is a personal thing	VI	VII	teaching process/ personal
5	1	6	How you see others can affect how you interact with them	Your motivation is a personal thing	VI	VI	extrapersonal/intraper sonal
5	1	9	You would need communication skills to interact with groups of people	This is how you see others as they stand not how they get along - one-way process	VI	VI	interpersonal/cognitive process
5	1	10	How intelligent you are can depend on and is tested by how much you remember	Social perception is how you see and react to others outside work environment	VI	VI	cognitive process/extrapersonal
5	1	12	The way we see others and react depends on the things we are used to	To communicate is a basic instinct	VI	VI	extrapersonal/ instinct
5	2	4	Depending on how intelligent you are will depend on how much you will learn cognitively	Is due to the way in which you lived your life prior to that minate	VI	VI	cognitive process/experience
5	2	7	How motivated you are will be greatly affected on your and your peers personalities	How brain thinks only	VI	III	extrapersonal/ cognitive process
5	2	10	How much you remember is a measure of intelligence - how you will do in a test	How a group sees another being will not affect their memory or intelligence	VI	VI	intrapersonal/extraper sonal
5	2	12	How you get along with another being is greatly affected by how you are influenced	Is "personal sight" how one person sees something and interprets it	VI	VI	extrapersonal/ individual cognition
7	1	1	Public	Private	VI	VI	public/private
7	1	8	Role/preconceptions/public behaviour	Individual experience	VI	VI	public behaviour/individual experience
7	2	1	Internal interaction	External, role/observable	VI	VI	internal/external
7	2	5	Extrovert	introvert	VI	VI	extrovert/introvert
7	2	8	Role/expectations	retrospective/personal	VI	VI	extrapersonal/intraper sonal
8	1	4	Perception leads to learning	intelligence in inbuilt	VI	III	cognitive process/ In built
8	1	7	Your personality helps you motivate	knowledge alone won't help	VI	VII	interpersonal/knowled ge
8	1	10	A good memory will make you appear intelligent	doesn't help	VI	VII	interpersonal interaction/ not
9	1	6	Social perception shapes motivation	Physically-based skill -secondarily dependent on social and motivational factors	VI	VII	process/ physical skill
10	1	1	A persons personality may well influence the way in which they teach	Tool needed in learning	VI	VII	extrapersonal/tool
10	1	4	Broaden knowledge, will to succeed	Does not affect our view of others	VI	VI	cognitive process/ extrapersonal
10	1	6	Our view of people is often influenced by talking to them	Motivation is not often apparent from first meeting	VI	VI	extrapersonal/ not apparent
10	2	1	One's personality may well influence certain characteristics	It does not always deemed necessary to have a good memory	VI	VI	extrapersonal/intraper sonal

			displayed in teaching				
10	2	10	How we view others around us may be affected by our intelligence	It is not necessary to have a good memory to be intelligent - not always go together	VI	VI	extrapersonal/ intrapersonal
11	1	3	How you see things affects Behaviourist learning because you have to see to copy. Influence	Motivation is a personal characteristic	VI	VI	extrapersonal/ intrapersonal
11	1	6	Social perception is how you see people. They use communication to let you see this	Motivation is a personal thing	VI	VI	extrapersonal/intraper sonal
11	2	6	To do with yourself and other people	Individual driving force	VI	VI	extrapersonal/intraper sonal
11	2	9	To do with yourself and other people	How you see things	VI	VI	extrapersonal/intraper sonal
11	2	10	how you see or remember something external	Individual	VI	VI	external/individual
12	1	1	Personality affects the way you teach	Memory does not	VI	VI	extrapersonal/not
12	1	3	Motivation will effect how you learn	Visual perception is learning and feeling by things you see	VI	VI	intrapersonal/extraper sonal
12	1	4	Intelligence determined how well you learn and understand	Social perception is how you look and feel about other people	VI	VI	individual cognition/extrapersona l
12	1	9	If you communicate well, you will participate better with group dynamics	This is judging and feeling just by looking	VI	VI	extrapersonal/intraper sonal
12	1	10	The better memory you have, the more intelligent you are	This is how you look at other people	VI	VI	cognitive process/extrapersonal
12	2	4	Intelligence enables the ability to learn	This is how you view other people	VI	VI	ability/extrapersonal
12	2	6	How you communicate depends on how you feel about the people you are with	This is how much 'urge' you have to do something	VI	III	cognitive process/drive
12	2	8	You need memory to be a good teacher	This is the effect you have on people	VI	VI	cognitive process/extrapersonal
12	2	10	How good your memory is affects your intelligence	This is how you view other people	VI	VI	cognitive process/ extrapersonal
12	2	11	How you behave towards a group affects the way you teach	This is how you are able to learn	VI	II	extrapersonal/ability
13	1	6	Motivation is often what drives communication	Social perception is inward and does not need communication	VI	VI	extrapersonal/intraper sonal
13	1	8	Social influences can affect a teachers personality	Memory is a 'tool' needed in learning	VI	III	extrapersonal/tool
13	2	3	Stimulus-response can produce motivation	Visual perception is to do with what the brain sees	VI	VI	external/ internal
14	1	3	We learn every time we see and perceive what we have seen	We do not need to be motivated to see and perceive what we are learning	VI	VI	intrapersonal process
14	2	3	Behaviourist will first learn from visual perception and act to how they perceive situations	We do not need to be motivated to behave, or perceive	VI	VI	extrapersonal/ intrapersonal
14	2	10	Social perception will be influenced by past memorys	Social perception. Intelligence is how others perceive what we project not intelgence	VI	VI	intrapersonal/ extrapersonal
15	1	3	How quick/slow motivation will reflect on what response/ behaviour you have to a situation	How I see something is not relevent to the other two	VI	VI	extrapersonal/intraper sonal
15	1	6	How you see others is how you will respond + communicate with them changeable in situations	Motivation is a persons own way	VI	VI	extrapersonal/ intrapersonal
15	1	10	Being able to know, store and use information to you own advantage	How I see others is not relevent to this text	VI	VI	intrapersonal/extraper sonal
17	1	1	Personal (seen)	(Not seen)	VI	VI	explicit/ implicit
18	1	1	Born with personality which can	Born with memory - does'nt affect	VI	VI	extrapersonal/intraper

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			be transfered to teaching characteristics	personality or teaching characteristics			sonal
19	1	1	How we can transfer skills to others	Past memories may influence us. What we want to remember ourselves	VI	VI	extrapersonal/intraper sonal
19	1	10	Learning process and how we perceive learning	How we interact with and see others	VI	VI	intrapersonal/extraper sonal
23	0	7	May be interactive and visible. Enhance learning.	Invisible - inferred by beh.	VI	VI	external/ internal
26	0	4	Mainly intrapersonal	Mainly extrapersonal	VI	VI	intrapersonal/ extrapersonal
26	0	10	Mainly intrapersonal processes	Mainly interpersonal	VI	VI	intrapersonal/interpers onal
27	0	4	Educational implication	Less concerned with individual differences	VI	VII	educational implications/not individual differences
27	0	8	Human interaction	Private behaviour	VI	VI	interpersonal/private
27	0	9	Interpersonal communication	Physical reaction/private cognition	VI	VI	interpersonal/private
27	0	11	Public	Private	VI	VI	public/private
27	0	12	Interpersonal communication	Physical reaction/private cognition	VI	VI	interpersonal/intrapers onal
30	0	1	How teachers present themselves to others	Not always visible	VI	VI	extrapersonal/intraper sonal
30	0	10	Interpretation of social events influenced by our memory of prior ones	Intelligence not thought to be related to memory or our ability to interact	VI	VI	extrapersonal/intraper sonal
1	2	5	could be thought as same thing	effect/externalisation	VII	VII	misc/external
2	1	4	built in ability	differing facts	VII	II	in-built ability/facts
2	2	6	Egos influenced by (how we are seen)	Not in are control	VII	VII	interpersonal/ not in our control
3	1	1	own personality	not essential	VII	VII	individual/not essential
3	2	3	needed in most learning areas	Your view of someone/something by sight	VII	VII	needed in learning/ individual cognition
3	2	12	social influence would affect the way you see things	communication would be linked	VII	VII	individual cognition/ misc
4	2	3	motivation can encourage learning	visual perception can only cause learning problem if communication not there	VII	VII	encourages learning/ learning difficulty
4	2	4	Interlinked towards gaining new skills	Does not contribute to learning process	VII	VII	learning process/ not
4	2	6	Can effect each other	personal thought	VII	VII	interdependent/ personal cognition
4	2	7	motivation is an important part of learning	personality does not always interup with it	VII	VII	learning process/ not
4	2	11	the way of the teacher can influence the learning	group dynamics may not interfere with this	VII	VII	influences learning/not learning process
4	2	12	can effect each other	does not allway effect them	VII	VII	interrelated/ not
5	2	1	Characteristics are directly a result of your personality	Less like the other two but is still similar to them	VII	VII	individual/ misc
5	2	2	Go hand in hand with each other, with one you get the other	Instinctive	VII	VII	interdependent/ instinct
5	2	3	A behaviouristic approach to learning is mainly fueled by motivation	Is only as the person alone sees a certain thing	VII	VII	learning process/ individual cognition
5	2	6	How you see others will alter the way you communicate with others	Can alter from hour to hour it will depend on all sort of outside problems eg diet - sleep etc	VII	VII	interpersonal/changea ble
6	1	1	must not clash	not applicable	VII	VII	must not clash/misc
6	1	2	Interactive. Match	not required	VII	VII	interactive/not required
6	1	3	Pavlov's dogs eg	sight not needed in Pavlov's experiment on the healing properties of saliva	VII	VII	misc/not needed
6	1	4	Cannot learn without thinking	no link	VII	VII	individual cognition/misc
6	1	6	One is no good without other	no link	VII	VII	interdependent/no link

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6	1	7	Reinforcement	is this required?	VII	VII	reinforcement/not
6	1	9	1 & 8 reinforce eachother	One can learn alone	VII	VII	interrelated/ individual cognition
6	1	10	Go together (link)	no link	VII	VII	linked/ no link
6	1	12	Reinforcement	not required	VII	VII	reinforcement/ not required
6	2	1	Self	teacher may not be required	VII	VII	self/ teacher not needed
6	2	3	Must be motivated to learn	not always required	VII	VII	needed for learning/not
6	2	4	Linked together	not applicable	VII	VII	linked/ no link
6	2	6	Both needed to learn	Not applicable	VII	VII	needed for learning/ not
6	2	10	Both required	may not be required	VII	VII	misc
6	2	11	Required elements for learning	Can learn alone	VII	VII	needed for learning/individual
6	2	12	Retention and feedback	may not be applicable	VII	VII	process/misc
8	1	1	Must be linked	not linked	VII	VII	linked/ not linked
8	1	2	Listen and learn	intelligence doesn't mean knowledge	VII	III	cognitive process/not knowledge
8	1	6	Difficult to motivate without communication	you can be good at this but without others it's not much good	VII	VII	interaction/misc
8	1	8	Memory can help form characteristics	no connection	VII	VII	influence/misc
8	2	1	Good personality one of main characteristics	Linked but not so strongly	VII	VII	teacher characteristics/ not
8	2	3	Need to motivate to teach	Linked but not so closely	VII	VII	needed in teaching/ less
8	2	5	Personality fashioned over long period	Need not affect others	VII	VII	learned/misc
8	2	6	Closely linked	Not necessarily verbal	VII	VII	linked/not
8	2	8	Characteristics influence students	Not directly linked	VII	VII	teacher influence/not linked
8	2	10	One helps the other	Not an individual thing	VII	VII	interrelated/ not individual
8	2	11	Teacher will need to teach	Group work	VII	VII	teacher/group work
8	2	12	Closely linked	Doesn't help other two	VII	VII	misc
9	1	7	Inter-related and interdependent	Related to raw intelligence - innate ability	VII	VII	misc/innate ability
9	2	11	These two are part of the same process. Students experiences are managed by the teacher	Groups are not necessary to behaviourist learning nor a teacher's characteristics	VII	VII	teacher process/group
10	1	3	linked	our view of a situation	VII	VII	linked/personal view
10	1	8	Memory re-call may be necessary for successful teaching	Would not necessarily affect the other topics	VII	VII	ability for teaching/misc
10	1	10	These two are often grouped together	Group view of someone may not indicate intelligence	VII	VII	misc/group view
10	2	4	Thinking and intelligence may be linked	Our own views	VII	III	linked/ personal view
10	2	6	These rely on one another	Would not affect our communicating skills	VII	VII	interdependent/ not
12	1	8	Memory is a good teaching characteristic	Social influence shouldn't affect	VII	VII	(teaching) characteristic/not affect
12	1	11	How you intermingle with people affects how you teach. How you act	This does not affect the way you teach	VII	VII	teacher interaction/not
12	2	3	You need motivation to learn	This doesn't affect your motivation to learn	VII	VII	needed to learn/not needed to learn
13	1	1	Personality is closely linked with teacher characteristics	Memory is a 'tool' needed in learning	VII	VII	linked/ learning tool
13	1	5	Your personality can alter group dynamics	Social influence can be ignored	VII	I	interpersonal interaction/ not
13	1	9	Visual perception is a form of communication	Group dynamics is about the way people interact	VII	VII	form of communication/interaction

Appendix 5a)

13	1	11	Behaviourist learning can affect group dynamics	The teachers characteristics should not affect group dynamics	VII	VII	interpersonal interaction/teacher
13	2	1	Teacher characteristics are related to personality	Memory has nothing to do with communication or teacher characteristics [not related]	VII	VII	related/not related
13	2	4	Learning from perception is part of cognitive learning	Intelligence does not necessarily help cognitive learning or social perception	VII	VII	learning process/misc
13	2	6	Communication can increase or decrease motivation	Social perception does not affect motivation	VII	VII	has affect/ does not
13	2	7	Experiential learning can aid motivation	Personality does not necessarily affect motivation	VII	VII	experiential learning/not
13	2	11	Teacher characteristics can affect group learning	Behaviourist learning does not affect teacher characteristics or group dynamics	VII	I	group learning/misc
14	1	2	Someone with a learning disability will still be able to learn but in a different way than a intelgent person	Sometimes intelgence needs to be present to learn	VII	III	learning ability/ needed to learn
14	1	4	We need the inteligence to be able to perceive socially or individual. Before we can learn	To learn we first need the intelgence	VII	VII	needed to learn/ learning capacity
14	1	6	Social perception is influenced by communication	Motivation does not need to be present	VII	VII	affects/ not
14	1	8	Memory contributes to teacher characteristics to teach can reflect on past events	Social influence needs no contribution to memory or characteristics	VII	VII	intrapersonal/misc
14	1	9	Group dynamics needs visual perception	Communication	VII	VII	misc/communication
14	1	11	Teachers characteristics will influence group dynamics	The behaviourist will not be affected by the other 2	VII	VII	influence/misc
14	1	12	Social influence will affect our perception	Communication needs not to be present	VII	VI	extrapersonal/ not
14	2	1	Teacher characteristics depend on own personality	Memory differs because although you can draw on past experiences for teaching personality helps develop t/characteristics	VII	IV	depend on/ experience
14	2	6	As well as personality the teacher can draw on good and bad memorys to assist them	Motivation not needed to communicate	VII	VII	used in teaching/misc
14	2	7	Need to be motivated to learn	Personality differs. Personality is not present when we are motivated to learn at the beginning	VII	VII	needed for learning/ not needed for learning
14	2	8	Teacher can draw on past memorys to help project himself to the students	Social influence differs becose we can choose wether or not to listen or memorize influences	VII	VI	extrapersonal/intraper sonal
14	2	9	If the teacher has good characteristics this will motivate the students and encourage good group work	Visual perception differs	VII	VII	extrapersonal/misc
14	2	11	Group work can influence a learning behaviourist	Teacher characteristics can be good or bad a behaviourist will continue as normal unless they have more influence	VII	VII	misc/teacher immaterial
14	2	12	Social influences often change our own perception of things	Communication differs. Social influence affects visual perception communication does not affect	VII	VI	interpersonal interaction/ not
15	1	4	Learning abilities responding to each other	This is not used in the same text	VII	VII	ability/not same text
15	2	1	Individual student characteristics	Teachers influence towards students	VII	VII	student characteristics / teacher influence
15	2	11	Teacher reinforces the behaviourists learning	Group members influence the rest of the group	VII	VII	teacher influence/ group interaction
16	1	11	One influences the other	Does not influence	VII	VII	influence eachother/ does not
16	2	3	Both connected with reward	Seeing	VII	II	reward/ seeing
16	2	12	Outside influences that can be seen	Verbal	VII	IV	external/verbal

Appendix 5a)

17	1	11	Concerned with student	Concerned with teacher	VII	II	student/teacher
17	2	3	Learning	Seeing	VII	II	learning/ seeing
17	2	11	Student	Teacher	VII	II	student/ teacher
19	1	8	Previous memory's may influence type of teaching	Behavioural	VII	VI	intrapersonal/behaviou ral
20	1	10	Need memory to retain knowledge	Social perception not really connected	VII	VII	cognitive process/not connected
23	0	8	Social perceptions. '- and +' T characteristics may influence	Important but not a much as other 2	VII	VII	influence/misc
23	0	12	Soc. Influence could ' + or -'ive effects on C	Can be dealt with as an immediate process	VII	VII	influence/immediate process
30	0	11	Teacher can influence group dynamics - positive/negative	Behaviourism not a major element of how a teacher delivers or how a group interacts	VII	VII	teacher interaction/not

Inter-rater Reliability Index

Encodings of two judgements on the main construct categories (Themes) for inter-rater reliability measurement

Rater 1 Codings	Rater 2 Codings								
	Theme I	Theme II	Theme III	Theme IV	Theme V	Theme VI	Theme VII	Totals Rater 1	Marginal Probability
Theme I	99	1	1	1	0	0	2	104	0.17
Theme II	1	85	4	6	3	1	5	105	0.17
Theme III	2	3	40	1	1	4	3	54	0.09
Theme IV	0	1	2	81	0	1	2	87	0.14
Theme V	0	8	0	1	56	0	0	65	0.11
Theme VI	5	0	9	5	0	61	4	84	0.14
Theme VII	11	11	3	6	1	6	75	113	0.18
Totals Rater 2	118	109	59	101	61	73	91	612	
Marginal probability	0.19	0.18	0.1	0.17	0.1	0.12	0.15		

Simple % of Agreement score = 81.2%. Level of Agreement based on Perreault-Leigh's I_r Index = 0.88.

$$I_r = \{[(\Sigma f_{(i,i)}/N) - (1/k)] \cdot [k/(k-1)]\}^{0.5}$$

Appendix 6

NOVICES' INTROSPECTIVE REPORTS

Subject Number T1/T2

S1.T1
Comment: *I would have preferred to write a paragraph or so on each topic*

S1.T2
Comment: *This was something of a task; meaning that it seemed difficult to answer from intuition. This time it was easier, but whether this was because the first attempt was like practice, or whether it was the effect of the intervening period of study and thought.*

S3.T2
Comment: *I found this as difficult to do as the first one. Some of my views change as I have read up and understood the psychology terms. I did find that I thought a lot of the O [ellipse] linked and find it difficult to pick the one that did not, changing my mind all the time.*

S4.T2
Comment: *Can be difficult to make clear differences between each of them as when linked together. I found it hard to think about why a paired the titles up. But it was easier this time round.*

S5.T2
Comment: *This exercise is very taxing on my brain because some things are very similar but also very difficult and vice versa, and you have to direct it and analise it closely. I did enjoy doing it but I feel I don't know enough to come to any definate conclusions.*

S6.T2
Comment: *I still felt totaly confused with this exercise.*

I felt that a lot of the 3 circled points were related and felt difficulty in separating one item from the other two. A lot of the points raised, (marked X) I felt were non applicable to either column.

S7.T1
Comment: *I found this exercise very difficult, but feel that it is the need to make clear distinctions between the categories which causes problems.*

This is not an inherent characteristic and seems to have been learned.
Having been taught to question everything and develop arguments, it now seems I am incapable to clarity. One or two word answers leave me disagreeing with my own comments.

Binary vision would be useful, but I have been deconstructing categories for some time and find that there are only grey areas.
Too much reading against the grain, perhaps. Sorry.

S7.T2
Comment: *Once again, I found this extremely stressful - something to do with the boxes.*
I tend to disagree with my own answers and feel that I need from time to think - it is also very difficult to think amidst low-level noise.

I hope I never need to complete this type of form again.
During psychology lessons we have been presented with arguments and ideas - many new areas have been opened up and there has been a great deal to think about.

Unfortunately, this grid forces bi-polar thinking upon us and therefore seems at odds with what we have been learning about learning.

I have not 'made up my mind' about any of these new concepts.

S8.T2
Comment: *Although I don't fully understand the meaning of some of the topics I felt it was easier to fill in this time, it certainly took less time.*

S9.T2
Comment: *I felt a need for a third category eg +ve and neutral / + N/A as sometimes the last option did not seem to have characteristics of either side and it was like putting a lime with an apple or a banana.*

S11.T2
Comment: *The last part, - completing the remaining boxes is very difficult, since many of the columns do not equate with the comments expressed. It is also difficult at times to find a suitable comment which links the two ticks (part 2) although you know that there is a definite connection.*

S12.T2
Comment: *I didn't find this one as hard as the first one.*
I wasn't sure if I 'waffled' too much on my explanations to each one, but I find it quite hard to summarize more than I have.

I found I was defining a lot.
If becomes easier to understand and compare that way.
I am very curious to what it all means!!

S13.T2
Comment: *the more I thought about it the more I wanted to change it*

S14.T2
Comment: *Although this is our second attempt as this piece of work I still felt confused, mainly when filling in each section it is very hard not to contridict yourself. I also found it hard to explain the differences on paper. (thinking them is one thing but to write them down is harder).*

S16.T1
Comment: *The hardest thing I've done in year's.*
I felt I was working 'blind'.

S17.T1
Comment: *When carrying out this exercise the two sets of words established/variable and controlled/controllable influenced kept coming to mind.*

S18.T1
Comment: *There are some groups that can be linked twice, hard to decide which can be used.*

S20.T1
Comment: *now know I've got no. 2 wrong*

S20.T2
Comment: *If a thought arises it was strong initially and at first I thought it was correct for a particular line but it wasn't. It was then very hard to disregard it.*

EXPERTS' INTROSPECTIVE REPORTS

Subject Number

S21.T1

Comment: *Had difficulty in going back and filling in gaps - N/A would have been useful or perhaps broader rating scale.*

S21.T2

Comment: *Communication and teacher characteristics: ambivalent sometimes (as taught) e.gs of others in relation to groups: individual. - aware of perceiving of in mechanistic rather than personal e.g. NVC*

S22

Comment: *[Row 4, Construct No. 7] v. difficult this one. Since personality partly determines motivation and motivation strongly determines the learning embarked on.*
[Row 7, Construct No. 6] ditto but for different reasons [stopped doing this, but others difficult too!!]

My underlying construct was individual processes vs interpersonal processes, but the element 'personality' was difficult to fit neatly into this scheme since it seems to have both an individual and an interpersonal element. How it got categorised in the grid depended on what it was compared with.

Row 8 [Construct No. 3] was also difficult to do because all 3 were 'individual' elements.

S24

Comment: *Over all differences, categories used were social/non-social, cognitive/non-cognitive*

S26

Comment: *[Row 5, Construct No. 7] I found this very hard - most of the time I thought of Social Learning Approaches (e.g. Bandura) that link all three.*

[Row 10, Construct No. 2] All 3 are not really distinguishable historically where intelligence has been described as ability to learn.

S28

Comment: *I found this impossibly difficult to do. Having generated my constructs I found myself forced to make seemingly meaningless judgements about how these applied to other topics. In many cases they simply seemed irrelevant.*

S30

Comment: *I found it an extremely difficult exercise to complete. Rep Grids I've completed in the past concerning personality and the like lend themselves to summarising constructs. Here, I found it almost impossible to construe a relationship using cone concept - I may have beenlooking too deeply or superficially!?*

In some instances all three topics could be considered similar or perhaps it was just me being aware of similarities.

I found the similarities aspect between 2 topics reasonably OK. My main problem was in distinguishing a difference.

Appendix 8

Table showing mean number of times each novice selected each Theme T1 and T2

Novices	Theme I	Theme II	Theme III	Theme IV	Theme V	Theme VI	Theme VII
T1	2.30	1.00	1.55	1.85	1.45	1.85	1.85
T2	2.40	1.85	1.05	2.35	0.50	1.30	2.55

Table showing mean number of times each novice at T1 and each expert selected each Theme (I - VII)

	Theme I	Theme II	Theme III	Theme IV	Theme V	Theme VI	Theme VII
Novices	2.30	1.00	1.55	1.85	1.45	1.85	1.85
Experts	2.20	4.80	0.70	1.30	1.70	0.90	0.40

Table showing mean number of times each novice at T2 and each expert selected each Theme (I - VII)

	Theme I	Theme II	Theme III	Theme IV	Theme V	Theme VI	Theme VII
Novices	2.40	1.85	1.05	2.35	0.50	1.30	2.55
Experts	2.20	4.80	0.70	1.30	1.70	0.90	0.40

Number of different Themes classified for novices T1 and T2 showing binomial distribution

Novice number	Total number of Themes classified for novices T1 [N=7]	Total number of Themes classified for novices T2 [N=7]	Total number of Themes classified for novices T1/T2 [N=14]	Sign of d [+/-]
S1	6	4	10	-
S2	5	5	10	
S3	6	5	11	-
S4	5	4	9	-
S5	5	4	9	-
S6	3	5	8	+
S7	6	4	10	-
S8	5	4	9	-
S9	6	5	11	-
S10	6	5	11	-
S11	5	5	10	
S12	5	5	10	
S13	5	4	9	-
S14	4	4	8	
S15	6	6	12	
S16	6	5	11	-
S17	7	4	11	-
S18	4	3	7	-
S19	5	4	9	-
S20	5	4	9	-
	105	89	194	-14
Mean	**5.25**	**4.45**		

Number of different Themes classified for experts

Expert Number	Total number of expert Themes T1 [N=7]
S21	*4*
S22	*4*
S23	*6*
S24	*3*
S25	*4*
S26	*3*
S27	*7*
S28	*3*
S29	*3*
S30	*6*
Total	43
Mean	**4.3**