

TEACHERS' PERCEPTIONS OF TEACHER EDUCATORS' ACTIONS AND PRINCIPLES

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**A RESEARCH & DEVELOPMENT PROJECT
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Research and Development Project
Teachers' perceptions of teacher educators' actions and principles.

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1. Background

1.1 Introduction

The face value benefits of education to individuals make it unsurprising that it is universally held as an important need throughout history, across all cultures, by families seeking development and empowerment for future generations, and by governments for the benefit of nations. 'Ta'aleem' is an arabic word often used to translate education, it is a noun derived from the root letters a-l-m which directly links education to knowledge and hence signifies the instructing of knowledge. However 'tarbiyah' is another Arabic word also translated as education but specifically signifies notions of increase, growth, and elevation of status. With this definitions, which I assume has its equivalents in many other cultures, it almost becomes tautological to argue that education is only beneficial.

The development of mass education in the industrial era does however attract differences of opinion, especially with respect to its motives for the non-elite socio-

economic classes . The standard line views compulsory education as an equalising force that provides an avenue for all to escape boundaries of class. If there were ulterior motives in the origins of mass education, they are no longer relevant since a basic education is essential for an individuals general security in the modern world regardless of socio-economic background. Alternatively, taking a wider view of modern education as typically delivered:

'...it's designed for obedience and passivity. From childhood, a lot of it is designed to prevent people from being independent and creative. If you're independent-minded in school, you're probably going to get into trouble very early on.' (page 41, Chomsky)

Economic theory's analysis of people as commodities has created an impersonal notion of 'human capital' (G Becker, 1962). With the increase in business run school academies, and the possible resurrection of class-divisive grammar schools such fears may be more than anarchist conspiracy theory. If this is the case mass education may

be missing the 'elevation of status' connotation important when defining education as 'tarbiyah'. The teaching of 'Citizenship' is one example of a school based goal that goes beyond simple instructing of knowledge and could be interpreted by some as design for obedience and passivity. The 'Prevent' strategy to anticipate the development of extreme beliefs is another example that can certainly be argued to fall under the description 'designed for obedience', especially when the extremes it seeks to combat are ill defined and measured from a middle ground defined by authority.

The motivation behind education can no longer naively be understood as merely beneficial to the individual student. Expectation of a return on the massive investment into future human capital is unsurprising. But where this expectation rises from must be clear so that it should never obstruct the 'elevation of status' fundamental to a just society.

With regard to the work of teacher educators the politics that surrounds education has an unavoidable impact but at the same time runs the risk of being ignored. This is because the close focus on the technical details of the

teacher educator's work can cause loss of sight of the big picture.

The ultimate goals of education may be wished for by distant investors of human capital but the goals that are actually set in a classroom are most powerfully chosen and directed by individual teachers. And it is in this space that the difficulty of externally directing goals becomes apparent. Between an externally orchestrated set of principles for the classroom and what is actually delivered lies the interpretation of the classroom teacher. The individual teacher's actions will ultimately depend on their own principles and beliefs. These beliefs may vary from being closely aligned or fundamentally at odds to the expectations of authoritative stakeholders.

In this assignment I will argue that for a teacher educator to impact change in a teachers practice their must therefore be a mutual understanding of principles and beliefs regarding education and as such this research will look specifically into teachers' perceptions of the actions and principles of a teacher educator.

The need for this study can also be argued for from the professional experience I have gained as a beginning teacher educator. My first year as a science teaching coach involved training a large school department of 17 teachers who typically had very traditional ideas of teaching and learning. The expectation from the school's directors was to move teachers from a transmission style of learning to a much more student centered experience. The program I implemented was best described as naive on a number of accounts. For example I found myself often providing grounds for their resistance to change by using traditional methods of teaching in the training sessions, failing to practice what I was preaching. Further, the theme of teachers perceptions and beliefs arose in two obstacles that often occurred. First, when my teaching goals were fundamentally different to that of the teachers what I was trying to develop with them was perceived as not valuable in their classroom since they were not necessarily trying to achieve with their students what I was trying to achieve. Similarly, when the purpose of what I was attempting to do for them in my role as a teacher educator was not perceived as valuable enough to impact on their teaching skills and would leave them perplexed with the apparent waste of time and effort.

My initial response to these obstacles was to justify the goals I had chosen by rationalising the purpose behind them and providing evidence for their effectiveness. So, for example, I sought to justify the main objective of student centered teaching by linking it to constructivist learning theories which in turn demanded further justification. All the while, despite success with one group of participants, another group held firm to their original beliefs and unsurprisingly would not just give up their teaching goals for my own. These were most difficult to effect change with and highlighted for me the importance of teachers' beliefs. Currently, and most likely because of this experience, my teacher development strategy is heavily reliant on understanding the teachers own beliefs and principles in the first place to create a high degree of relevance that might otherwise be critically missing.

Creating relevance by in the first case improving understanding of teachers' perceptions of teaching and learning can be equivalently achieved by a second case where improving on the perceptions teachers have of what teacher educators actions and guiding principles are is the

objective. In the first case relevance is improved by the teacher educator responding to the state of the teacher and providing a program of action accordingly. In a sense this is akin to tailoring a program for the individual teacher or 'bringing the program to the teacher'. In the second case, relevance is improved by considering how a program is perceived by the teacher and how this perception is itself relevant to the ultimate goals of improving teaching and learning. Describing this as 'bringing the teacher to the program' should be not be understood in terms of expecting a change in the beliefs and principles of the teacher since this would bring us back to square one where teachers goals, for example, were directed by the teacher educator. Instead by researching the nature of teachers' perceptions it is hoped that they could then be exploited by being strengthened, or at least anticipated to then improve the relevance of professional development. Knowing the teacher could help direct how a teacher and teacher educator implements a development program without necessarily tailoring the program specifically.

1.2 Beliefs and perceptions

On this basis a study of teachers' beliefs about teacher educators actions and principles could similarly be studied but a focus on perceptions was chosen based on my interpretation of the meaning behind these closely related ideas.

In this research I use the term perception to indicate how an individual views and interprets an object or idea, such a perception does not exist until an object being viewed is in view or when an idea is being presented. Beliefs are related then as a mental construct made up of truths held by an individual. A particular use of such beliefs would be to interpret objects and ideas in consideration to create a perception. This view holds that perception is very much, though perhaps not entirely, dependent on the set of beliefs held by the viewer.

A perception then can be thought of as a combination of an object/idea to be considered, the presentation of the object/idea including the context in which it is presented, and the beliefs of the perceiver used to interpret the object/idea.

Using this definition the following questions surface regarding teachers' perceptions of teacher educators actions and principles:

1. What are teacher educators' actions and principles?,

This can be understood from my own experience as a teacher educator and will be collated from relevant literature on the subject

2. How are these presented to the teacher and in what context are they presented,

This is clearly dependent on the context of the research. The methodology and context of the teacher education approach being researched will be explained.

3. What are the beliefs the teacher holds and uses to formulate their perception of the actions and principles.

After measuring the teachers perception with respect to the questions - Which principles and actions are perceived as low priority?, which principles and actions are perceived in an unintended way?, and which principles and actions are more sensitive to change? It is hoped that knowledge connecting beliefs with perception could surface.

Kagan (1992) points out the difficulty in revealing and the appropriateness of judging teachers beliefs. The difference between what is actually believed and what an individual professes to believe creates an uncertainty of what can actually be understood and for this reason beliefs are hoped to come about as a conclusion of dialogue and analysis rather than direct questioning.

1.3 Context of the research

This research will take place via my current role as a Science teacher and department mentor in a secondary science department of a bilingual international school in Muscat, Oman. The department comprises 10 teachers - 3 chemistry specialists, 3 physics specialists, 2 biology specialists, and 2 part time science teachers who teach mainly key stage 3 science. The school is highly regarded in the middle east gulf region but has seen results decline in recent years attributed to becoming less selective of its students. My role as a teacher educator in this school contrasts sharply with my initial experience as a teacher educator mentioned earlier. The full time teaching staff in this department are all UK PGCE qualified with 6 having led

departments in previous schools and 5 with over 10 years teaching experience. The senior managements perception of the department is that the teachers are fundamentally strong but have missed out on educational developments that have taken place in the last decade or so due to them all being internationally based. With this view the department head has asked me to take on a mentor role to assist in the development of assessment for learning across the department.

1.4 The knowledge base of teachers

Any study into the perceptions' of teachers of any sort must first understand the knowledge base of teachers. In the analysis of perceptions it is necessary to foreground findings in the light of the professional knowledge base of teachers. Shulman argues

'Sound reasoning requires both a process of thinking about what they are doing and an adequate base of facts, principles, and experiences from which to reason. Teachers must learn to use their knowledge base to provide the grounds for choices and actions. Therefore, teacher

education must work with the beliefs that guide teacher actions, with the principles and evidence that underlie the choices teachers make.' (Shulman 1987, pg 13)

In his key work in the development of a teaching knowledge base Shulman demands that the knowledge base of teachers is used for choices and actions. The possibility of the existence of such cognitive dissonance is a challenge. Why would teachers not use their knowledge base to direct their choices in the first place? The fact that this does not happen suggests something more complex occurs in the decision making process behind teachers actions. Decisions are grounded in more than facts; 'principles and experiences' are also highlighted as sources of reason and so Shulman concludes teachers' beliefs are critically important to the work of teacher educators in order to get teachers to make the right choices. The purpose of understanding teachers' knowledge base in this study is not to make it a grounds for their decision making but instead to understand their perceptions in light of their knowledge base. The warning is here, however, that just as teachers may not use their knowledge base to inform their actions they similarly may not use it to inform their perception.

Shulman suggests 7 fundamental categories of the knowledge base: content knowledge, general pedagogical knowledge

- content knowledge;

- general pedagogical knowledge, with special reference to those broad principles and strategies of classroom management and organization that appear to transcend subject matter;

- curriculum knowledge, with particular grasp of the materials and programs that serve as "tools of the trade" for teachers;

- pedagogical content knowledge, that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding;

- knowledge of learners and their characteristics; - knowledge of learners and their characteristics;

- knowledge of educational contexts, ranging from the workings of the group or classroom, the governance and financing of school districts, to the character of communities and cultures;

– knowledge of educational ends, purposes, and values, and their philosophical and historical grounds.’ (Shulman 1987, pg8)

Pedagogical content knowledge (PCK) is then picked out as of special interest since it is the area that distinguishes the skilled teacher from the content specialist. It is the knowledge that allows a teacher to transform the content knowledge into a learning experience for students. Since identification of this distinctive form of teacher knowledge an abundance of research into PCK has established its importance in understanding the knowledge base of teachers.

Lee and Luft (2008) emphasised the distinctive nature of PCK and their research led them to resolve PCK into 7 distinctive categories specifically for science teachers: Knowledge of science, knowledge of goals, knowledge of students, knowledge of curriculum organisation, knowledge of teaching, knowledge of assessment, and knowledge of resources.

Rowland et al (2005) devised a knowledge base that according to their research provided a framework that

balanced PCK with subject matter knowledge. The 'Knowledge Quartet' comprises:

- Foundation. The knowledge of the subject itself, established factors significant in the teaching of the subject, and knowledge of the purposes of teaching the subject.

- Transformation. The knowledge that enables a teacher to transform and present their own meanings of subject matter into a form that enables students to learn.

- Connection. The knowledge that enables the teacher to draw connections across the whole subject to unify it and create coherence.

- Contingency. The knowledge of that allows the teacher to react in the moment to facilitate learning in unanticipated and so unplanned teaching situations.

1.5 Analysing the teacher development process

The growing body of research literature around teacher education is testimony to the complexities surrounding the process and the recognition of the subtleties of the field. Clarke and Hollingsworth (2002) encapsulates this

progression in their presentation of the 'interconnected model of professional growth'. The paper describes an evolution of attempts to model professional growth of teachers that culminates in their model. The journey begins with a model based implicitly on a transmission mode of teacher professional development. The process begins with efforts to change in service teachers knowledge and beliefs leading to change in teachers' classroom practice and finally change in student outcomes. This model echoes precisely my own early efforts of delivering teacher professional development which required a change in teachers beliefs in the first place as discussed earlier. A 'trust me, it will work in the end' approach.

Clarke and Hollingsworth then show Guskey's model which reordered the process. Teachers, without necessitating a change in knowledge or beliefs, would first implement a change in classroom practice, realise a subsequent change in student learning outcomes, and hence change their own beliefs and knowledge at the end of the process. A 'proof is in the pudding' approach.

The interconnected model they introduce does not exclude the possibility of either of the above models working but claims instead to be complete by allowing for multiple routes to teacher change.

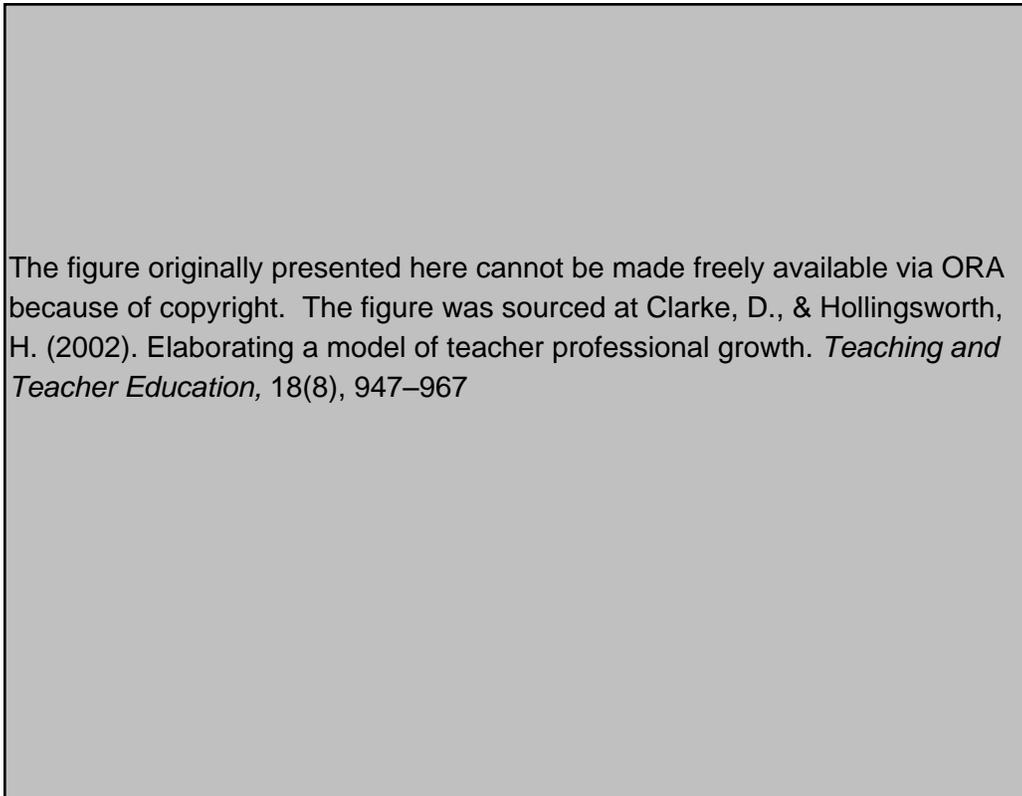


Fig 1. The Interconnected Model (Clarke and Hollingsworth 2002)

In summary there are 4 domains outlined by the model. The personal domain, domain of practice, and domain of consequence make up the 'teacher's professional world of practice' (Clarke and Hollingsworth 2002, pg 951) and hence can be reflected upon by the teacher. The external domain is where the teacher educator's role lies as well as any

other sources of information and stimulus. The model shows how through reflection from one domain can cause change in another domain. By reflecting on some change in professional experimentation, for example, the teacher may change their state of knowledge, beliefs and attitudes. Enactment on the other hand does not refer to the implementation of a practice (which would actually lie exclusively in the domain of practice) but instead to the process of change from one domain causing a change in other domains. With respect to this research project a change in a teachers personal domain, for example a change in beliefs, might then cause a change an enactment upon the external domain in the form of a change in perception. The naive implicit model first stated then follows the 'change sequence' external domain-reflection-personal domain-enactment-domain of practice-reflection-domain of consequence, still a possibility but was found to be difficult in my first attempt two years ago. Guskey's model follows the sequence external domain-enactment-domain of practice-reflection-domain of consequence-reflection-personal domain. The interconnected model then allows us to compare the two models and to suggest why Guskey's model is more appropriate. The naive model depends on a change in beliefs through reflecting on only the external stimulus

provided to then enact on experimentation. Guskey's model allows change to occur in beliefs from reflection on any of the other 3 domains, and at least after the domain of consequence is reflected on. In light of political awareness of the motives behind mass education it is unsurprising, and also witnessed in my own practice, that teachers may not be willing to reflect on only the external domain.

1.6 Challenges to teacher change

In much of the literature (list here) common themes about the difficulty of teacher development, or the transfer from teacher education to practice, are identified. The vast majority of the literature is mainly concerned with initial teacher training or beginning teachers and so a consideration of how these challenges relate to the experienced teachers of this research context is needed.

According to Korthagen and Kessels (1999) the three major causes of the transfer problem are described as follows:

1. Prior knowledge and preconceptions

This is caused from teachers' experience as learners themselves. Beginning teachers use this to guide their teaching so that the false assumption that the way they learned is the most appropriate way to teach is problematic when faced with the multitude of students who in fact learn in a variety of different ways. In the case of experienced teachers prior knowledge should include their established experience as teachers. In the department under study teachers with over 10 years of experience have been teaching for a comparable amount of time that they have studied. The assumption that this teaching experience might mitigate against their own unique learning experience is in fact questionable. Korthagen and Kessels (1999, pg 5) cite Huibregtse, Korthagen, and Wubbels (1994) who showed that 'even with experienced teachers there is a strong relationship between their preferred way of teaching and the way they themselves are used to

learning: They have a limited view of the learning styles of their students and tend to project their own way of learning onto the learning of their students.'

2. The feed-forward problem

This occurs because new teachers have not encountered sufficient obstacles in the classroom and so cannot integrate their teacher education prior to experiencing them concretely. This leads to a lack of relevance when they first learn about teaching and will often ask or at least wonder why they are learning a particular point. However when the point becomes relevant in the face of a concrete classroom situation the complaint is reversed and the protest becomes why didn't we learn about this?! For experienced teachers this should not occur in this form since the teachers have the concrete classroom experiences to relate with. It could however take on a different form in this research context. The stated aim for development of these teachers is to bridge a gap created by being away from recent developments due to international teaching. Distinct ideas that are novel to the teacher are to be transferred, and in

this case perhaps a mirrored problem - feed-backward problem could relate to the concrete experiences they hold in combination with any self developed solutions that may be contrary to what the teacher education offers. Instead of not finding relevance for a solution to a problem not faced by an inexperienced teacher we may have experienced teachers who cannot find relevance to a solution for a problem they have already 'solved'.

3. Nature of relevant learning

'Teachers need quick and concrete answers to situations in which they have little time to think. This type of action-guiding knowledge is rather different from the more abstract, systematized and general expert-knowledge that teacher educators often present to student teachers (Korthagen & Lagerwerf, 1996; Tom, 1997).'

The statement is an echo of the contingent knowledge base from the knowledge quartet described earlier. The advantages and disadvantages for experienced teachers again lies in the systems they have already developed

to solve the immediate demands of the school context in which they operate. In this domain transfer from teacher education may be needed if there is misalignment between the expectations of the teacher, of the school, and of the academic research. How can these three sources of authority become aligned and coherent?

1.7 The knowledge base of teacher educators

With recognition of the complexity of teaching there is a consequent recognition of the need for a theoretical basis of teacher education. In response to this recognition there are a number of proposed knowledge bases proposed for professional teacher educators. Adopting a knowledge base for use in this research is also important as it can help to categorise which aspect of the teacher educators knowledge is being perceived.

Goodwin and Kosnik (2013, pg 338) offer five knowledge domains:

- '(1) personal knowledge/autobiography and philosophy of teaching;
- (2) contextual knowledge/understanding learners, schools, and society;
- (3) pedagogical knowledge/content, theories, teaching methods, and curriculum development;
- (4) sociological knowledge/diversity, cultural relevance, and social justice; and
- (5) social knowledge/cooperative, democratic group process, and conflict resolution. '

These are not described in terms of a theoretical basis but instead Goodwin and Kosnik propose that they are 'big ideas that conceptualize learning about teaching as deep and broad, context specific as well as integrated...'. The first four domains have their equivalents in the knowledge base of teachers (knowledge of goals, knowledge of curriculum, and so their appearance here is a reflection of the teacher educator as teacher and the teacher as student. The social knowledge domain is described with such breadth that it could easily be interpreted as an avenue for social engineering that is sure to set alarm bells ringing for those with the most sceptical views of mass education mentioned earlier -

'Undoubtedly, teaching is a political act.' (Goodwin and Kosnik 2013, pg 343)

Loughran (2006) instead focus on providing a set of principles of practice. Again this does not represent a basis for a technical theory but focuses on the nature of principles, that is a set of ideals from which to derive actions of practice. At the heart of Loughran's principles is the fact that teaching is a relationship and the principles that follow from this core principle - sensitivity, the ability to build trust, being honest, and valuing independence could easily apply to any relationship professional or not.

Sensitivity.

Loughran (2006 pg 87) interprets sensitivity in light of Nicol's (1997) work in differentiating listening *to* and listening *for*

'Listening for is what she describes as listening for responses, clues and ideas that help her to determine

whether or not her desired teaching goals are being realized. Listening to is about paying careful attention to her students' experiences, needs and concerns.'

Listening to is of even greater importance in this research context since the experiences, needs, and concerns will be of a far more informed nature with experienced teachers than with the usual context of beginning teachers.

Building trust.

When reflecting on my first experience in teacher education (as mentioned in the introduction) the key difference between the teachers who were willing to adopt my approach, suspend their disbelief, or even adopt new beliefs based on the stimulus I provided and the teachers who were not was the level of trust they needed to make the transfer happen. The sequence 'external domain-reflection-personal domain-enactment-domain of practice-reflection-domain of consequence' that was being followed immediately broke down as the teachers did not have the trust to reflect and affect change from the stimulus I provided. Even with the Guskey model which begins 'external domain-enactment-domain of practice...' would be difficult to start

if teachers did not have the trust to enact upon something based on my stimulus, perhaps even more so if their beliefs were asked to be suspended until after the domain of consequence. For any change in the external domain to create change in any of the teacher centred domains, by enactment or reflection, a threshold of trust must be met. Beyond the analysis afforded by the interconnected model Loughran explains

'Learners need to know that they can trust that the teaching and learning environment is a safe place in which they can raise and pursue issues, concerns and the development of understanding.' (Loughran 2006 pg 88)

Being honest.

Perhaps an obvious principle for most social based activity but Loughran digs deeper. Losing face and being honest with oneself in front of learners is also called for. Exposing vulnerabilities as an act of honesty models for teachers an act which is inherently important due to the nature of teaching. For teachers to develop they must feel comfortable exposing their own vulnerabilities and

also be comfortable having their weaknesses pointed out to them.

Valuing independence.

Valuing independence is regarded as an important principle that allows teachers to develop on their own accord. Loughran points out that at the opposite end of the spectrum results in an empty process of absorbing facts devoid of real meaning to the teacher. Teacher educators need '...to withhold judgement, to be conscious of one's own wait-time and to want to hear from others is a key to building relationships that enhance a diversity of learning outcomes.' (Loughran, 1997, p60)

Beyond the relationship principles Loughran also includes purpose, engagement and challenge, encouraging metacognition, use of modelling, reflection, and risk taking as core principles of action for a teacher educator. The overlap across the principles is evident in many cases so that the principle of modelling as an example will usually pair with honesty unless of course the teacher educator modelled a practice they would not use or conversely expected teachers to 'Do as I say, not as I do'.

1.8 Realistic Teacher education

8 Months into my first year in teacher education, having concretely experienced classic challenges of the transfer problem flavour, the 'Realistic teacher education' model was introduced to me. Korthagen and Kessels (1999) provide a model of teacher development that seems to turn teacher development on its head. The model is borne out of a realisation that, at the heart of prior models of teacher education, development programmes initiate the transfer problem by selecting learning goals without consideration of the individual teacher. Indeed the two change sequences already considered (traditional implicit and Guskey) begin in the external domain. Korthagen and Kessels (1999, page 6) suggests starting in the personal domain and by doing so side stepping the transfer problem in the first place -

'This means that the traditional approach, in which teacher educators make an a priori choice about the theory that should be transferred to student teachers, represents a very dominant line of thought. The fundamental conception inherent in this line of thought is that there is a gap to

be bridged. One often forgets that it was the a priori choice that created this gap in the first place.'

To illuminate exactly how they intend on starting in the personal domain Korthagen and Kessels differentiate between two perspectives of theory, theory with a big 'T' which is based on episteme or generalisable knowledge of use to a wide variety of situations, and theory with a small 't' which is based on phronesis or knowledge that is used in a specific situation. Phronesis then can be thought of as the knowledge found in the contingent domain of the knowledge quartet and episteme in the foundation domain.

The role of the teacher educator is then to transfer the phronesis type of knowledge the specifics of which becomes apparent after understanding the already formed 'gestalts' of the teacher.

Briefly, gestaltism is a psychological theory of mind that seeks to explain how we combine multiple sources of information to make a meaningful perception which does not necessarily reflect the individual parts. For Korthagen

this is especially important for the teacher who, confronted in any given classroom situation with a variety of information, must form a perception and act accordingly.

'In a gestalt as we conceive it, the person's needs, values, meanings, thoughts, feelings and actions are all united into one inseparable whole.' (Korthagen 1993, pg 320)

Since the gestalt is then a basis for action a teacher can be expected to transfer theory with a big T in the contingent moment only if it is already part of the teachers Gestalt. And so once a teacher educator understands a teacher's gestalt, by way of single steps of phronesis development, the gestalt can grow.

Korthagen and Kessels suggest using their proposed 'ALACT' sequence action, looking back on action, awareness of essential aspects, creating alternative methods of action, trial cyclically as a form of action research specific to the realistic model. At each stage of the cycle Korthagen and Kessels suggest the teacher educator skills needed to facilitate the process.

1.9 Professional Development Context

The research involves four teachers from the science department, two physics specialists and 2 chemistry specialists. The research ran parallel to an action research based collaborative development programme with the initial objective of developing assessment for learning strategies in their science lessons. The teachers all volunteered to take part in the research. A CUREC application was made to ensure ethical compliance throughout the whole process. My role within this project was to act as a mentor and participant in the programme. At an initial meeting with the whole department interest was voiced by all teachers to take part in the research but after consideration of work loads four of the eight were finally selected.

In an attempt to align the development with the principles of the realistic teacher education model an action research model of development was chosen. The phases for use in the development programme are described below.

Preparation phase - Introduction to the development programme, exploration of teachers ideas with respect to the structure of the programme, exploration of the teachers already established ideas regarding assessment for learning.

Phase 1 - Initial experimentation, teachers selected an assessment for learning strategy from a list of activities I compiled based on the teachers own ideas and from external resources and then used the activity in at least one of their classes

Phase 2 - Teachers performed both individual and collaborative SWOT analysis to identify features of the different activities and strategies used. They then decided how to implement Afl in a second experimentation by either refining how or which activity they used. The experience would help direct research teachers felt appropriate in conclusion from the analysis.

Phase 3 - After the second experiment teachers repeated the SWOT analysis but also evaluated their initial phase 2 analysis in light of the new experience. A final experiment was designed to carry out and evaluate in a similar fashion.

Evaluation phase - Final reflections were collected from the teachers to evaluate their use of Afl and their

use of the action-research method as a means for self development.

The process seems at odds with my claim that the realistic model begins in the personal domain. 'Assessment for learning' was selected by the department coordinator as a specific need for development. To counter this immediate stimulus from the external domain it was taken out of the change sequence of the training and viewed instead as a management directive that foregrounded the programme. The preparation phase was designed to minimise the notion that Afl was being plugged upon their practice but was instead used to explore how the teachers in each of their own classroom practice might need, use, or refine already existing practices. There was no explicit expectation that anything introduced should be applied directly to their practice but instead the teachers were to explore how they could self direct a refinement of their practice. Loughran's (2006) 'valuing independence' principle was clearly at play here, indeed one teacher commented on how democratic the whole process seemed to him.

The use of action-research in this fashion naturally lends itself to the realistic model in a number of ways. In the first phase the teacher educator by way of discussion and observation has a chance to study the teachers' current gestalts in a context that will almost repeat itself in the second and third phases. This gives rise to the possibility that the teacher educator might observe any change in pronesis and consequent gestalt change. For the teacher post action discussion and analysis gives multiple opportunities to reflect on the domain of practice, the personal domain, and the domain of consequence. Instead of reflecting on the external domain (which as discussed can be difficult with an insufficient build up of trust) teachers were given opportunity to enact upon the external domain by seeking stimuli from each other and external sources and then reflecting upon any findings and this only after a close consideration of their own needs in the personal domain.

The programmes design expected the following change sequence-

Preparation phase: Personal domain-enactment-external domain-

Consideration of their needs and how they might use Afl was firmly set in the personal domain. For experienced teachers they themselves spearheaded an personal understanding of what Afl is linking their definitions to their own teaching goals, knowledge of student, context, and curriculum. From this understanding they then looked at possible ways of implementing Afl from an external resource ,reference to a text for example.

Phase 1: -enactment-domain of practice

Then from the initial findings they planned to implement an activity in the classroom

Phase 2: -reflection-domain of consequence-enactment-domain of practice or -reflection-domain of consequence-enactment-external domain-enactment-domain of practice.

In the first sequence after a change in an understanding of the consequence of using Afl the teacher immediately refines what they intend to do in the second experiment thus finishing in the domain of consequence without further external input. Of greater benefit to the whole department is the second intended sequence whereby

the change in the domain of consequence enacts upon the external domain seeking solutions from each other or even external to the department. In Clarke and Hollingworth's (2002) original interconnected model they suggest that the external domain can only be enacted upon from the personal domain. I would argue it is possible to enact between the two domains when an individual understands a consequence, does not necessarily know why this consequence occurs and looks externally to explain why it has happened.

Phase 3: external domain-reflection-personal domain, domain of practice-reflection-personal domain, and domain of consequence-reflection-personal domain

In fact these three possible ways to end the change sequences could occur at any point in the whole process. Reflection can occur at any moment and was not intended to be a directed action for the teachers to perform. The great strength, in my view apparent from this analysis, lies in the multiple and continual opportunities for the teacher to reflect from any domain and create change in their personal domains. In fact, while I claim reflection was not directly called for, at every opportunity teachers were encouraged to reflect by considering their ideas and sharing their

concerns and intuitions with the mentor or with the group. Loughran's (2006) principle of 'sensitivity' was very much in play here particularly the listening to aspect of the principle.

1.10 Assessment for learning

The primary external resource used for the provision of expert knowledge was found in Dylan Wiliam's 'Embedded Formative Assessment' (2011) The book was used to provide ideas for activities usable directly in each teachers class. The book is divided into 5 chapters each covering a specific strategy Wiliam advocates as important for the successful implementation. In keeping with the delay of entering the external domain in the development programmes change sequence the intention was to use the book as a confirmation of the teachers own ideas or as an honest confrontation of a different view arrived at by the teachers. Discussion would then take the form of why there were substantial differences if any.

Of more relevance to this research is Wiliams follow up book 'Sustaining Formative Assessment with Teacher

Learning Communities' (2012). In this book Dylan espouses a teacher education philosophy in alignment with Loughrans (2006) principles of teacher education and can be 'brought to work' with the realistic teacher education model. The key component William requests are:

choice - inherent in the gestaltism of the realistic model and part of the 'independence' principle;

flexibility - allowing teachers to choose which techniques to develop

use of small steps - echoed by the single step of phronesis called for in the realistic model and

accountability and support.

1.11 Teacher Educators actions and principles.

To select the perspectives to be measured actions and principles needed to be selected. This was done by collating actions and principles identified from seventeen research papers (Allender, 2001; Baird, 1992; Bullough, 1997; Gordon, 1961; Guilfoyle et al, 1997; Korthagen and Kessels, 1999; Loughran, 1997; Mayeroff, 1971; Mitchell, 1992; Mitchell and Mitchell, 2005; Munby and Russell, 1994; Myers, 2002; Peterman, 1997; Ponte, 2004; Van Manen, 1991;

William, 2011) (multiple cited in Loughran 2006). Repeated or very similar actions and principles were then deleted to render a final list.

Principle	Related actions
A. Modelling	<ol style="list-style-type: none"> 1. Aligning beliefs with practices 2. Teaching in ways the teachers have been encouraged to teach themselves.
B. Honesty	<ol style="list-style-type: none"> 1. Honestly seeing the teacher educators own behaviours 2. Being conscious of teaching behaviours in general 3. Confronting teaching as telling 4. Challenge beliefs while still being supportive and respectful 5. Able to display vulnerability in difficult situations 6. Making teachers aware of instances where the teacher educator has responded to an unanticipated event.
C. Possession of foundational knowledge	<ol style="list-style-type: none"> 1. Able to go deeper and so address underlying features of teaching and learning 2. Able to show complexities of why teaching procedures/ideas/views work 3. Knowledge of schooling and wider social contexts

	<p>4. Understanding social philosophy and the aims of education in a democracy</p> <p>5. Explores new methods and techniques</p> <p>6. Knowledge is socially constructed</p> <p>7. Articulates domains of knowledge</p> <p>8. Links domains of knowledge</p>
D. Listening	<p>1. Allows teachers to question the teacher educators views in light of their own experiences</p> <p>2. Balances listening to teachers needs with listening for information for the teacher educators use.</p> <p>3. Adjusts the difficulty of an activity while it is in progress</p> <p>4. Wants to hear from others</p>
E. Trust Building	<p>1. Articulation of principles</p> <p>2. Articulation of program structure and decisions</p> <p>3. Teachers know their ideas will not be devalued by others</p> <p>4. Concerned with maintaining self esteem</p> <p>5. Concerns are not dealt with in a superficial manner</p>
F. Value Independence	<p>1. Allows teachers to take responsibility for learning</p> <p>2. Individuals personal theories of teacher education acknowledged</p> <p>3. Teachers create their own sense of continuity</p> <p>4. Independence is acknowledged and respected</p> <p>5. Teacher educator is able to withhold judgement</p> <p>6. Teacher educator is conscious of own wait time</p>

	<p>7. Allows teachers to make their own decision about how to incorporate an idea into their teaching</p> <p>8. Promotes good studenting as opposed to good students</p>
G. Teaching is a relationship	<p>1. Responds to the concerns of individuals</p> <p>2. Responds to the concerns of the group</p> <p>3. Responds to the changing interplay in group dynamics to build positive approaches for the benefit of the group</p>
H. Purpose	<p>1. Ensures objectives in development are clear and explicit</p> <p>2. Encourages questioning about objectives frequently</p> <p>3. Distinguishes between teaching activities, procedures, and strategies</p> <p>4. Encourages engagement and challenge</p> <p>5. Encourage metacognition for the development of personal theories</p> <p>6. Sees beyond the present and to the obligations to the children instead</p> <p>7. Helps teachers apply proportionate attention to the different domains of knowledge</p>
I. Reflection	<p>1. Able to recognise teacher's problems and offer alternative view points</p> <p>2. Provides opportunities for teachers to undertake reflective practice</p> <p>3. The teacher educator exposes their own reflective practice to teachers</p>

2. Methodology

2.1 Literature Review

2.1.1 Action Research

Action research has a long history stretching back almost a hundred years. Kurt Lewin is famously attributed its earliest use as a way help solve social conflicts. By providing a means for reflective thought, discussion, action, and collaborative research to ordinary people Lewin hoped it could help social problems. After some refinement Lewin classified four types of action research

1. Diagnostic action research designed to produce a needed plan of action. The change agents would intervene in an already existing situation (for example, a race riot or anti-Semitic vandalism), diagnose the problem, and recommend remedial measures. Unless the proposed cures were feasible, effective, and acceptable to the people involved, however, this design of action was often wasted.

2. Participant action research in which it is assumed that the residents of the affected community who were to help effect a cure

must be involved in the research process from the beginning. They would thereby realise more keenly the need for the particular steps finally decided upon; at the same time their 'ego investment' would support the remedial program. This type of action research - an example would be a community of self-survey - seemed to be most effective for a limited range of problems. It was useful in disclosing particular and local facts (not general principles) which could provide examples for other communities

3. Empirical action research was primarily a matter of record keeping and accumulating experiences in day-to-day work, ideally with a succession of similar groups, such as boys' clubs. An inherent weakness of this procedure was that conclusions were drawn from experience with a single group, or with several groups differing in numerous ways, without test controls. Despite this handicap empirical action research could lead to the gradual development of generally valid principles as clinical medicine had already demonstrated.

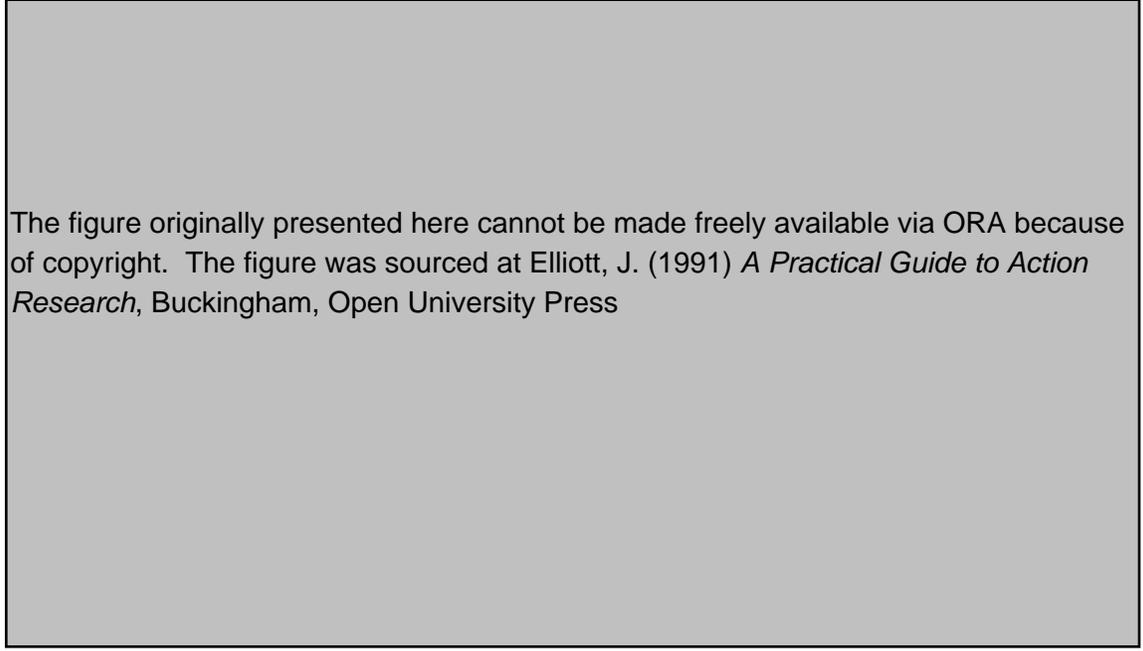
4. Experimental action research called for a controlled study of the relative effectiveness of various techniques in nearly identical social situations. Of all the varieties of action research, the experimental had the greatest potential for the advancement of scientific knowledge. Under favourable circumstances it could definitively test specific hypotheses. It was, however, the most difficult form of action research to carry out successfully.' (Marrow, 1969, p. 198 cited by Adelman, 1993, p13-14)

Some purposes of action research are identified by Christenson et al (2002, page 260)

- to change teaching practice
- to reform teacher education
- to promote school reform
- to create social change
- to create a body of knowledge on teaching
- to make schools and society more democratic
- to view teaching itself as a form of inquiry
- to support collaborative conversations using feminist models
- to promote professional development

My use of action research as a method for teacher development was born out of my own experience when first coaching two years ago. It was a decision based more on a case of 'going back to the drawing board' after realising more could be done with a specific development objective for each teacher and so only the first three goals that decision. The fact that it followed Kurt Lewins basic cycle is testimony to the intuitive logic of the process.

Action research in its plainest form is a process that, according to Elliot, is a 'basic cycle of activities...' made up of



The figure originally presented here cannot be made freely available via ORA because of copyright. The figure was sourced at Elliott, J. (1991) *A Practical Guide to Action Research*, Buckingham, Open University Press

Elliot however seeks to refine this model with some important provisos and cautions. The first proviso is that

the general idea should be allowed to shift. In the example of the Afl development, the idea was allowed to shift, in fact as a consequence of ensuring the root of the change sequence lied in the personal domain of the teachers. Second, 'reconnaissance' should occur constantly and not just at the beginning. And finally Elliot cautions that implementation at each action step 'is not always easy', evaluating a faulty implementation could lead to drawing false conclusions.

The resulting improved cycle is then similar to what I have used in the Afl development programme with the addition of 'Monitor implementation and effects' and 'Reconnaissance (to) explain any failure to implement, and effects' components (Elliot 1991, pg 71). Elliot then details five activities he considers to make up action research.

1. 'Identifying and clarifying the general idea'

'Improving teachers perceptions of the actions and principles of teacher educators increases the relevance of teacher education. How does the quality of such perceptions vary?' is an example of a general idea statement that will

be used in this research. In the selection of a general idea Elliot points out that for the action research to work the problem identified should be solvable by the action research and is something in need of improvement. In this case it is supposed that teachers' perceptions can be improved and that improving the perception serves a purpose for successful teacher change.

2. 'Reconnaissance'

This refers to an analysis of a situation from two perspectives - describing, and explaining the facts of the research. So in describing facts for this research refers to what has already been discussed about perceptions and the assumed facts regarding teacher change, that they relate to relevance of what is perceived and hence the ultimate utility of the principles and actions by the teacher.

3. 'Constructing the general plan'

In this part Elliot provides a checklist of statements to produce as a set of guidelines for the process to work consistently amongst collaborators. In the use of action

research in the development programme this is most appropriate, but for the action research that will be used in this research collaboration will not take the form of disseminated action research. Instead I will carry out the research with participating teachers providing the data for the research. Of course this does not mean a plan should not be devised, but that the general plan does not have to be in agreement with the teachers beyond collecting the data from them, the use, sharing, and storage of the data they provide.

4. 'Developing the next action steps'

When deciding the next action steps for the next cycle of action Elliot considers three aspects of analysis. In line with his anticipation that implementation of the action may not go to plan he suggests using monitoring techniques to provide evidence of how well the action was carried out. In the case of this research, introspection and critical self analysis of the tools I use to collect data may fall under this category. Techniques of data collection should be able to provide evidence of intended and unintended outcomes. It is paradoxical to suggest a data collection and analysis process could anticipate the

unanticipated, but at least it can be expected to anticipate the unintended or be general enough to capture even unanticipated effects without being specifically designed to do so.

5. 'Implementing the next action step(s)'

Elliot's experience with action research becomes very apparent as he warns of the sensitivity of timing the action step of consequent phases. Careful consideration of multiple aspects of subsequent action needs to be taken. Elliot warns of 'troublesome side-effects' from the reconnaissance involved and the need to wait for change to occur in teachers and school students as possible determinants in the timing of the next phase.

With the development programme taking the action research form it seems logical for this research to follow suit. By following a parallel sequence of action research data regarding the perceptions of teachers can be collected in coherence with the applied phases of the professional development programme. Kelly (1985), ultimately pro action-research, discusses the advantages and disadvantages of the model. She cites arguments regarding the importance of

flexibility and intuition in opposition to the rigorous procedures of the cycles of research, and the possibility that collaboration can lead to advocacy instead of research. Both points are relevant to the action research as used in the professional development. For the purposes of this research flexibility, intuition need not be abandoned as accountability of the structure lies in its quality rather than form.

The action research facilitator.

Action research could conceivable be carried out without any leadership due to its democratic and collaborative form. However Krell and Dana (2012) explain that facilitators are important for the success of action research. They are required 'to develop relationships with their teachers, negotiate power dynamics between administrators and teachers, challenge teachers to think outside their boxes, structure the process, manage work sessions and make relevant resources available to teachers, all while trying to limit their authority and also grow professionally throughout their experiences. The inquiry coach has a multifaceted, multilayered role intrinsically

related to the context, teachers and administrators involved.' (Krell and Dana, 2012 pg 830)

2.1.2 Interviews

While questionnaires allow data to be quickly collected and easily compared they lack the level of personal description a participant can provide. In many studies personal description can be an obstacle to objectivity, but when the object of study is subjective quantity as is 'perception' the personal description becomes an important indicator and source of reflection to understand the nature of a perception. For this reason qualitative interviewing will be used at each phase of the action research.

Qualitative interviews range from structured, semi-structured, and unstructured interviews. Edwards and Holland (2013) argue that structured interviews tend to be quantitative in nature and suggest for qualitative research the continuum begins at semi-structured and ends at unstructured. The advantage of losing structure is in the increase in flexibility. With a continuum in mind all interviews then have a degree of semi-structure about them

with the extreme 100% unstructured interview being an uninhibited informal conversation with no specific topic of interest.

The three main components of any semi-structured interview are then 1. An exchange of dialogue, 2. An issue the researcher intends to discuss with increasing flexibility along the continuum, and 3. The provision of a suitable context to situate the issue under discussion.

The nature of an interview is dependent on the approach taken. A positivist approach to the interview values the objectivity of the data and seeks to separate 'value free' knowledge from beliefs (Williams 2000). How any knowledge is value free is questionable and irrespective the object of study are related to beliefs and so a positivist approach would seek value free knowledge about beliefs and perceptions, probably a paradoxical task. A critical realist approach maintains the objectivity of positivism by accepting that the subject of research exists independent of peoples perceptions. So that while teachers will have a perception about their 'perception of teacher educators actions and principles' it does not determine what the perception is in truth, in fact there may exist

such perceptions without the teacher perceiving perception's existence under study (existence without perception). This stance is balanced with the notion that to access this hidden 'unperceived' world a researcher must use subjective judgement leading to an interpretive element in the research approach. The subjective judgement implies the researchers own beliefs will colour the direction an interview takes, the analysis of the data, and conclusions drawn. The approach mitigates against this by seeking truth through 'negotiated dialogue' (Edwards and Holland, 2013 pg 22)

There exist a variety of tools that can help facilitate an interview. Talk is obviously used by both researcher and participant, but a guide should be used in a semi structured interview to keep the interviewer on track appropriate to the level of structure determined. The guide should take into consideration the purpose of the interview, what information is being sought from the interviewee, the time available for the interview, and the preparedness of the interviewee with respect to the research topic. Recordings and written text are powerful tools that can be used to elicit responses from the interviewee. To understand teachers' perceptions recordings

of interaction between the teacher and the teacher educator could be used to zero in on a particular point of teacher perception.

Wilkinson and Birmingham (2003, page 63) provide a concise list of advantages and disadvantages which I now consider with relevance to this research

Advantages

'Because of your indirect involvement as a researcher, you can achieve a 100 percent response rate for your questions.'

In practice this may be true, but even in face to face interviewing ethically interviewees are not obliged to answer every question asked.

'You can decide on follow-up questions (considering whether they are appropriate, or if you can glean any further useful information by asking them).

This is a critical advantage in that the 'negotiation of dialogue' can literally take place within the interview as a source for subjective judgement.

'You 'hear' far more than just what the participant 'tells' you. You can observe body language and interpret the tone of a response to a question'

While this is true reporting and analysing such information could be difficult and also highly subjective to the interviewers interpretation.

'Participants often see interviews as opportunities to voice opinions and 'let off steam' about subjects.'

A welcome opportunity to hear opinions which could reasonably be expected to related to their perceptions of a particular subject. Even if not the main subject under study the data could indicate underlying beliefs that relate to the perceptions under study.

'In most cases, they provide vast amounts of rich and useful data for further analysis'

The fundamental purpose of the interviews in this case.

Disadvantages

'A good interviewer requires considerable training in interview techniques.'

While I cannot claim to have considerable training, at least by way of repetition and self evaluation in an action-research cycle the interview technique might improve.

'Interviews are time-consuming and costly to conduct. As a rule of thumb, you should allow two days' transcription time for one full day of interviewing.'

With only four participants this will not be a considerable disadvantage.

2.1.3 Questionnaires

Questionnaires are a commonly used method of data gathering, many of the advantages based on the simplicity of their use and ability to provide quantitative data.

The questions within a questionnaire can take different forms. Closed questions involve a closed set of possible answers. The most common form of such a question are those that can be answered yes or no. Conversely open-ended questions have no restrictions to how they are answered. In this case analysis is not as straight forward

as with closed questions since the answers cannot be anticipated. Multiple choice questions allow for questions that would otherwise be open ended to be restricted to a selection of answers chosen in the questionnaire design. Scaled items have the advantage of providing a basis for quantitative measurement. The most common form of which involves a 'Likert' scale for respondents express an opinion ranging from strong agreement, to strong disagreement etc. This could be useful in assessing teachers perceptions of a given principle or act at any given point in the action research process. It would allow comparisons to be made between teachers but also an objective measure to track subtle changes in perceptions as the research unfolds.

Menter et al (2011, page 105) provide a comprehensive list of advantages and disadvantages which I now consider with relevance to this research

Advantages

'Survey questionnaires are flexible in the sense that a wide range of information can be collected. They can be

used to study attitudes, values, beliefs, and past behaviours.'

Since I have already identified a large number of teacher educator actions and principles there should be a corresponding number of categories of perceptions of them. The fact that a questionnaire can be designed to collect information on a wide range of perceptions related to beliefs this is clearly relevant.

'They are relatively easy to administer - though not necessarily easy to design.'

Working with only four teachers should make administration fairly straightforward regardless of this advantage, the complexity in design make it difficult to use only a questionnaire to get sufficient data.

'Closed questions make for rapid data analysis - but it is also possible to include 'open' questions that are more complex to analyse.'

With my claim that the exploration of perception is highly subjective it would be difficult to analyse even open questions using a critical realist philosophy as could be done with a semi structured interview.

'There is an economy in data collection due to the focus provided by standardised questions. Only questions of interest to the researcher are asked, recorded, codified and analysed. Time is not spent on 'tangential' questions.

Time is a valued resource for all participants, questionnaires can determine the context of research by default and can help set the scene for further data gathering methods if used in a mixed approach.

Disadvantages

'They depend on the subjects' motivation, honesty, memory, and ability to respond... ..They may not be motivated to give accurate answers, in fact, they may be motivated to give answers that present themselves in a favourable light.'

'You cannot spontaneously followe up answers within a questionnaire....'

'You cannot get a sense of how wholeheartedly or confidently the respondent is providing their answers. It is a relatively 'mechanistic' form of data gathering.'

The first disadvantage can be argued to be relevant for other data gathering methods including by interview. The search for 'truth by negotiation of dialogue' necessary to critical realism refers to the analysis of data, it precludes the assumption that what is said will be taken at face value since perceptions do not make reality. It is because of disadvantages such as these that a mixed approach which allows triangulation is useful. The triangulation forms part of the negotiation of dialogue, allows follow up at least with reference to the questionnaire and perhaps to work out how 'wholehearted' the respondents answers are.

2.2 Research Methodology

The information from the literature review above suggests valid data can be drawn from a mixed methods approach using a likert based questionnaire as a source of preliminary data to inform the structure of consequent semi structured interviews. Recordings, or transcripts of recordings could be used in the interviews to prompt discussion of events with an understood focus of the

teachers' perceptions throughout the development programme. Results from both the questionnaires and interviews can be used to track any changes in perception and the data can be interrogated to answer the research questions.

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2.2.1 Questionnaire design

The questionnaire was then designed to prompt the teachers to think about these teacher educator principles and actions relative to each other and in relation to the Afl action research they were undertaking.

The questionnaire was divided into two parts. Part A asked the teachers to reorder the principles in order of their perceived importance to professional development in general and to then reorder the actions for each principle in the following column

Part B involved the same task but asked for their perceived importance in relation to the action research professional development we were actually undertaking.

Instead of using a Likert scale I opted to ask the teachers to list the principles in order of their perceived importance to force a cardinality between the different items. The assumption made is that any subtle change in perception might still leave the rating for an individual item the same 'still important' etc, but that a change in order could detect a more subtle change 'still important but not as important as...'. .

2.2.2 Interview design

The purpose of the interview is, in the first place, to answer the three basic research questions

1. Which principles and actions are perceived as low priority?

The answer to this can be initially ascertained from the questionnaire data. The interviewer should try to investigate the items individually to explore absolute reasons for prioritisation and once this avenue is exhausted to look at the relative reasons for the order selected.

To do this in the opposite order could influence their perception of an item in isolation.

2. Which principles and actions are perceived in an unintended way?

In discussing each item the interviewer should look to see any discrepancies in the teacher educators perception of an item and the teachers perception. An exploration of how the teacher came to their understanding of the item and how it therefore may or may not have featured in the teachers view of the development programme has the potential to reveal underlying beliefs so is an important part on the interview.

3. Which principles and actions are more sensitive to change?

In the first cycle this may be more difficult to collect data on, but the potential is there for teachers to change their mind in the interview from what they had written in the questionnaire. Perhaps after the discussion they may indicate an uncertainty or a wholeheartedness for the position of particular items.

The three questions are purposefully specific to the object of the study, but it is expected that the conversation is more open and less structured to allow the teacher to reveal themselves as learning teachers in their own terms. The practicalities of exploring 46 teacher educator actions across 8 principles of practice is also problematic and the interviews may be carried out in parts to avoid fatigue.

An initial focus on the principles that interest the teacher should get the interview flowing. Followed by a focus on the principles and actions that are uninteresting as I suspect items with a weak perception or conception may

come under this category and perhaps more instrumental in revealing the teachers underlying beliefs.

2.2.3 Ethical considerations

In carrying out this research a CUREC application was made detailing the research that was expected to be carried out, and in fact went beyond what was actually carried out. A letter of invitation was signed by all participants and the school head granting permission for the research to be carried out. The letters of invitation guaranteed that pseudonyms would be used throughout the research, for teachers and the school and that the content of all data gathered would not be shared with the school or any other third parties. The CUREC process is very thorough and also led me to consider disposal and storage of the data collected. Questionnaires were collected physically and will be destroyed after analysis in this paper. Interviews were recorded on a dictaphone, transferred to my personal computer, transcribed for analysis, and after completion of this research will be destroyed.

The role of power play was also of special concern, as a new teacher in the department when commencing this research

I was surely perceived as an unknown quantity. In introducing the research I made clear that the project was completely independent of the school, would not be shared with the school, and was being produced to complete my MSc Teacher Education course. At the start of each interview I reminded each teacher of the complete separation between the research and the school.

Time availability is a typical issue in most schools, however the third term of the school calendar sees the teaching load of many teachers greatly reduced due to students in two years leaving for study leave and so the majority of the research took place during this time.

3. Findings and Results

The combination of the questionnaires and interviews performed after each phase of the professional development action research. Results in an action research/case study hybrid for each teacher the results of which are discussed for each teacher in the next section. Without going at length to reproduce all the detail of each questionnaire

and the full spectrum of interviews I have chosen to highlight points that emerge of direct relevance to the research questions.

3.1 Phase 1

Mr Pepsi

Questionnaire responses used in interview

Part A

Principles in order of most important first
B (Honesty)
D (Listening)
C (Foundation)
H (Purpose)
E (Trust)
I (Reflection)
F (Independence)
A (Modelling)
G (Teaching is a relationship)

Interview responses

Mr Pepsi believed 'teaching is a relationship' was not as important a principle for teacher educators compared with the other principles. He recalled how in the past he completed online teaching courses which he believed were somewhat successful despite being completely video driven. He did acknowledge how it was much more important in the

action-research process that we had begun. 'Because of your training plan we have to meet and discuss what we do with our kids, I could learn about assessment for learning from a book, practice it myself. I don't mean its wrong the way you want us to do it, but it could be done without sharing with others'. When discussing 'independence' Mr Pepsi expressed puzzlement at it being viewed as low priority. Two points emerged, first just because it was low down on the list did not mean it was low priority. He believed it was low down on the list because the other principles were more critical to training. After offering to change the position of independence he maintained it was where it should be but that he valued his independence in the classroom and from that personal viewpoint he would have it as a higher priority.

Miss Cola

Questionnaire responses used in interview

Part A

Principles in order of most important first
H (Purpose)
A (Modelling)
C (Foundation)
B (Honesty)
G (Independence)

D (Listening)
F (Teaching is a relationship)
E (Trust)
I (Reflection)

Interview responses

Miss Cola literally groaned at the need for reflection, 'There was so much time spent on reflection at uni, but we learnt far more by just being in class and getting on with it. Learning on the job works, and I think thats a good thing how what we're doing now..' When reflection was pointed out as a key component to the action research process she recognised this as different to reflection as described by the action items in the questionnaire. Our end of phase meetings as described earlier were intended as an opportunity to discuss the classroom experimentation. A difference in our perception of reflection became apparent. For me the the act of discussing our findings would cause a necessary act of reflection on the part of the teachers as they recalled the experiment to perform the SWOT analysis. Miss Cola interpreted this instead as an opportunity to share ideas and thought it more as an act connected to the 'teaching is a relationship' principle. I duly noted that in the next phase I would involve some way to connect the

analysis as a chance to reflect on their second experiment in an attempt to close this gap in perception.

Mr Vimto

Questionnaire responses used in interview

Part A

Principles in order of most important first
B (Honesty)
E (Trust)
H (Purpose)
D (Listening)
A (Modelling)
C (Foundation)
G (Independence)
F (Teaching is a relationship)
I (Reflection)

Interview responses

Mr Vimto explained that without honesty and trust he would in no way be happy to participate in any project let alone professional development. When asked about the role honesty took shape in his classroom he said 'same thing, why would I be dishonest with them?' and again a difference in perception became apparent. When looking at the action

points under the honesty principle my perception of it does not see lack of honesty as 'dishonest'. For example not 'displaying vulnerability' in my perception would be harsh to call dishonest. Mr Vimto still maintained that despite my perception being an interesting way of making 'not honest not dishonest' he still believed honesty was more important in professional development. Admitting he understood that when he is reluctant to display vulnerability in class he explained - 'Students are different, you know that ..., being vulnerable in front of teenagers is a million times different to being vulnerable in front of adults'.

Miss Ribena

Part A

Principles in order of most important first
A (Modelling)
F (Teaching is a relationship)
H (Purpose)
I (Reflection)
C (Foundation)
B (Honesty)
D (Listening)
E (Trust)
G (Independence)

Miss Ribena believed the act of modelling allowed her to judge the value of an idea very quickly. 'Plenty of times in the past, I've taken part in training sessions with endless powerpoint slides, brainstorming and all manner of things that could have been skipped if the thing was just demonstrated'. Miss Ribena believed the vast majority of what she knew as a teacher developed from seeing other teachers, especially her PGCE mentor model teaching methods. When asked if she feared that this might lead to mere mimicking of another teachers actions she explained that modelling was important to her not just to learn but to decide if something was worth her trying out, and that if she did try it out she valued the act of reflection having tried it out. Miss Ribena confirmed it would be difficult for her to try something out if she did not first judge it to have potential. Miss Ribena's beliefs at this stage would indicate that without some change in her personal domain it would be difficult for her to follow the guskey change sequence 'external domain-enact-domain of practice...'

Phase 1 Summary

The variety of responses from the four teachers demonstrate the varied mix of teachers present in this department. The 'teaching is a relationship' principle was unsurprisingly low for three of the four teachers. Both the school wide and department staff-rooms are seldom used by the science teachers who are usually alone working in their labs. My expectation at this stage was to see generic principles such as honesty and trust to feature higher for each teacher. Except for the case of Mr Vimto the consensus on the position of honesty did not reflect a low priority for it in absolute terms, just that the others were more important.

3.2 Phase 2

In response to the findings after phase 1 the following changes were made prior to the commencement of phase 2:

1. The questionnaire was simplified to reduce the need to prioritise teacher educator actions. The purpose of the

questionnaire was to support the interview discussion. The first phase showed the nine principles provided enough grounds for discussion when paired with the actions to inform meaning. To ensure the connection between principles and actions were maintained but to reduce the tedium of prioritising the 46 items teachers were asked to highlight half of the action items they considered more important.

Mr Pepsi

The questionnaire results for part B showed a shift in priorities H (purpose) moved up, the change was explained in terms of a lack of focus as the action research diverged into the different directions each teacher took. The discussions that had been taking place as part of the mentoring process made Mr Pepsi believe the purpose of the training was unclear. Were they developing Afl collaboratively or was he looking at an unspecified development in his 'gestalt'. The discussion regarding gestalt growth engaged Mr Pepsi's interest but he valued knowing how his performance would be judged. Clarity of purpose would allow this. When asked why he felt the need to be judged he answered 'it just puts things in

perspective, if my development is only in relation to what I'm already doing then how can I be sure I'm taking a good direction?'

This shows some discomfort from Mr Pepsi in the use of the realistic model, as if he needs the theory with a T from the external domain to anchor and direct his development.

Miss Cola

In response to sharing my perception of reflection after analysing phase 1 Miss Cola did indeed raise her perception of the importance of reflection. Directed reflection seemed to be her true objection. 'If it doesn't get in the way of real work then why would I have a problem with. When you look at it that way, where it happens automatically, then its real and not forced. Thats the kind of reflection that is needed. When asked why the fact that it had become easy raised its importance she explained that it was always important 'without it how are you going to work out if what you are learning is any good? As long as it comes about from actually doing stuff and not artificially forced by essay writing...'. Miss Cola seems to be expressing a

preference of reflection from the domain of practice to her personal domain.

The nuances of meaning revealed by the interconnected model are to some extent already existing in the beliefs and preferences of teachers and can shape the perception of a teacher who has to assume meaning from a teacher educator who does not articulate the very specific meaning of professional language.

Mr Vimto

Mr Vimto keenly expressed appreciation for the style of the development action report especially the democratic nature of discussions that would take place. He made multiple changes to the lower priorities in his list of principles which became (the top four stayed the same):

I (Reflection)
F (Teaching is a relationship)
G (Independence)
C (Foundation)
A (Modelling)

When asked about the multiple changes, Mr Vimto explained he felt more benefit from the SWOT analysis we were doing

and that he suspected that in the long run this would become more useful to him. In his many years of teaching (he is only a few years away from retirement) he has always known working with other teachers has the potential to be both fruitful and a waste of time. During the interview because I suspected Mr Vimto was merely saying what he thought I wanted to hear. I asked him how the programme could be improved avoiding eye contact he replied 'err thats a tough one. I do wonder how others people might be recognised for their efforts because of the friends they have'. Mr Vimto was referring to a current issue of divisive politics in the school, while collaborating with others how could he protect his effort. A common theme regarding trust reflects his high prioritisation of honesty and trust.

Miss Ribena

After her post phase 1 interview Miss Ribena downgraded her ranking of Modelling from the number one spot. From her perspective this was completely logical, after her first phase experimentation she had modelled afl herself and had the chance to discuss other teachers modelling of afl. At

this point in the action research modelling as a principle is less of a priority.

Phase 2 Summary

Every teacher changed the priorities of their perception of teacher educator principles. The evidence shows some principles to have a stable perception and others are more sensitive to change. The more involved the teachers were in the collaborative aspects of the professional development the more they valued the 'teaching is a relationship' principle. The non teaching specific principles 'Listening', 'Honesty', and 'Trust' did not change for any teacher. Miss Ribena also showed how the perception of a priority can change depending on the needs of the moment.

3.3 Phase 3

The final phase of the action research cycle was used to measure the teachers' perceptions in anticipation of starting a fresh cycle with a new development purpose. The questionnaire now included a request to indicate which principles and actions they would like to see more or less of.

The semi structure interview also included an open ended question regarding concerns they had in continuing the process afresh.

Mr Pepsi

The focus of the interview was directed by Mr Pepsi regarding his need for purpose and independence as pressing priorities. Thoroughly bought into the idea of gestalt development his attention was now how he could pursue this more independently. His introverted character was strongly at play here. 'If my gestalt sends me in a different direction to the other teachers, how important is it to work on the same idea as the other teachers?',...'Isn't it of greater benefit to the students for me to work on what will have the most effect on their performance instead of working on the next idea on Miss Fanta's wishlist?' (the head of faculty)

The buy in to the gestalt model seems to have exacerbated a desire to work separately from the rest of the department. On one hand purely independent development is not the vision Miss Fanta has for the department, but on the other hand Mr Pepsi's desire to progress should be encouraged.

Miss Cola

Miss Cola expresses a similar concern regarding the next topic of development. She wanted to maintain the collaborative nature of the process, but wanted a say in the topic selection. 'It made sense this time round because we didn't think about the direction our own learning should take...'. Now they have an idea and what to have more control over it. This response is certainly a step toward democratic growth in the department, Miss Cola was willing to compromise and work with other teaches but at least wanted her say in the decision making process.

Democratising a department, indeed a school, needs to be taken in two direction, involving leadership and teachers. The work done with the teachers could have created an imbalance between the desire of the teachers to have more say and the authority of the leadership in an already politically charged school.

Mr Vimto

Mr Vimto did not change his final prioritisation of principles but felt that, as the development of Afl came to an end there was a need for me to evaluate what was actually being delivered. I acknowledged that due to timetable limitations could not have observed his implementation and evaluate what he had been doing directly. Mr Vimto's request is actually what Elliot (1991) termed reconnaissance in his extended version action research.

Miss Ribena did not complete the third interview due to long term absence

Phase 3 summary

My own goals of democratising the process came through for two of the three teachers although this was not an explicitly articulated aim of the programme. The programme by my design was perceived by me to begin a change sequence from the personal domain by persuading myself that the expectations began their, but in hindsight this was an

overreach and may have been simply persuasion that ignored the reality of what the teachers plainly perceived as change directed by Miss Fanta firmly in the external domain. Miss Cola did suggest a plausible sequence where the enactment from the personal domain to the external domain took the form of 'having a say' in the selection of what would be developed. This is a more concrete enactment than merely recognising how an already chosen topic could be used to develop their gestalts.

4. Analysis

With a sample size this small it is difficult to create a meaningful analysis to draw replicable conclusions. Instead the four teachers represent cases of verified possibilities of what can occur, highlight the differences between different personalities of teacher, and provide clues linking underlying beliefs with perception and reaction to the way in which teacher educators work.

1. Which principles and actions are perceived as low priority?

Mr Pepsi's beliefs are clearly rooted in his self belief and his desire to get at the heart of an idea and run with it. This was evidenced in his need to understand the inner motivations and workings of Afl often expressed in collaborative sessions and also in his desire to understand the realistic teacher development model so that he could take charge of his own development.

His perception of the principle 'teaching is a relationship' seemed only to budge on forced practical grounds. My programme insisted on collaboration and so it was logically important that I managed social relationships. But given the choice he would not have. Perhaps his introverted disposition should be allowed for and the principle of 'teaching is a relationship' should not be perceived as a one size fits all principle applied by the teacher educator.

2. Which principles and actions are perceived in an unintended way?

Miss Cola's case highlighted the limitations of language in setting perceptions. The act of reflection has a single meaning, how it is perceived relates to the subject and

form of the reflection. Without such clarification perceptions between teacher and teacher educator can be quite different.

3. Which principles and actions are more sensitive to change in perception?

Interestingly the results show that the perception of how relevant a principle can depend on a number of separate factors 3 of which surfaced in this study.

a) The nature of the principle, evidenced by the stability of the perception of honesty, trust, and listening - which I argue all have a universality of application beyond teacher education. As Mr Vimto explained he would not be involved in any project that did not take honest as a core principal.

b) The relevance to the training at hand, 'modelling' became less important as the teachers passed the introduction of the idea and worked instead on refining their implementation. Similarly 'foundational knowledge' became decreasingly important as the training called for

teachers to develop their own theories or to carry out their own research in the external domain to correspond with their situated needs.

c) The level of exposure to the principle, 'teaching is a relationship' steadily moved up in perceived importance at each phase of the action research. The interviews showed a normalisation of collaboration amongst peers not used to working together. As soon as the fruits of the effort began to appear appreciation of what could be achieved from the action of collaboration the perceived importance improved correspondingly. And similarly in Mr Pepsi's case under exposure to the principle of purpose, or at least muddled exposure, increased the level of importance he attached to it.

5. Conclusion and implications

Whether a principle is perceived as important or less important varied completely even in the small sample used in this study. The perception was seen to depend on the

disposition of the teacher. Hodkinson and Hodkinson (2005, p117) explain that teachers develop and continually refine their own sense of identity that impacts on how they work and learn. Dispositions within an individual develop over a long period of time and tend not to change except very gradually. Hodkinson and Hodkinson then provide 3 cases of teachers with different dispositions and how these effected each teachers learning. According to them dispositions have four ways that impact the learning of teachers:

- '- they bring prior knowledge, understanding and skills with them, which can contribute to their future work and learning;
- their dispositions influence the ways in which they construct and take advantage of opportunities for learning at work;
- working and belonging to a school and departmental community contributes to the developing habitus and sense of identity of the teachers themselves;
- the dispositions of individual teachers contribute to the co-production and reproduction of the departmental cultures where they work.'

Hodkinson and Hodkinson (2005, p 119)

The second point was at play when Mr Pepsi wanted to take advantage of the 'independence' afforded in following a realistic teacher education model. The challenge for the teacher educator then is to ensure teachers of all dispositions are used to the schools department. So that, for example, Mr Pepsi would not be encouraged to lock himself away in his lab to continue on self improvement impervious to his surroundings. But instead encouraged to use his dispositions to contribute to the 'coproduction of the departmental culture where he works'

Since perceptions depend on disposition which are difficult to change, teacher education programmes cannot expect teachers with different dispositions to work in the same way through a programme of improvement. Instead teacher educators need to come to terms with the different teachers' dispositions to orchestrate a departmental culture of development.

The implications of this research can be summarised as follows

1. Appropriateness of principles and consequent actions of teacher educators depend significantly on the underlying disposition of teachers. Teacher educators should not attempt a one size fits all approach but should adapt expectations according to the individual way teachers are likely to perceive their actions.
2. The motivation behind teacher educator actions can not be assumed to be implicitly understood. Technical language should be refined where confusion can arise. When a teacher educator articulates the expectations of a programme in connection with driving principles irrelevance can go undetected if confusion causes a gap in mutual understanding between the teacher and the teacher educator.
3. The use of principles and actions as espoused by established academic literature should not be used in an arbitrary manner. The nature of the principle and timing of its use should be considered carefully to ensure they are used with relevance and hence valued by the teachers.
4. Use of principles and action that appear to gain little traction should be perservered with if there is a

reasonable expectation that attitudes toward them have a good chance of improving with continued exposure.

6. Evaluation

At the design stage of this research and development project there was an expectation that more data would be collected from each teacher and from more teachers. Missing were also any data from management which could have allowed for a useful comparison between the perceptions and associated goals of the teachers and management. The difficulty lay in the organisation of time. Elliot (1991) warns against the time consumed in pursuing action research and provides ample advice to find time for gathering data.

Adopting the 'critical realist' philosophy in analysing the interviews allowed subjective judgements to be made, and to an extent the negotiation of dialogue could take place within the data collected. Triangulation as a way to reinforce this was not done as the questionnaire was not sustained as a source of quantitative data and instead transformed to a prompting tool midway through the action research. While this was done for practical purposes and with the acknowledgment that the interview data was richer because of the structure the questionnaires provided it

still meant there did not exist a second form of data to triangulate with. Had the analysis of the interviews used a positivist approach the result could at least have been claimed to be more objective. I do not believe this negates any of the findings since the 'truth by negotiation of dialogue' was met and no unusual assumptions were made in drawing conclusions from the data.

Additionally despite the common topic of Afl the divergence of direction each teacher took was beginning to stretch the needs of each individual apart. For the purposes of this research it was difficult after phase 3 to make comparison even across only 4 teachers because of the divergence in needs.

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