Applied Psychologists as Problem Solvers:

Devising a Personal Model

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Summary
This paper describes how one educational psychology training course introduces problem solving to its trainees. Over a three year period tutors have increasingly provided less and less in the way of a blueprint for trainees and more and more a set of experiences designed to help them devise and then test out their own individual models. In the main part of the paper the first two authors describe the experiences that they, as tutors, provide and in the appendix the third and fourth authors outline the models they, as trainees, have developed by the end of a training year.

Introduction

Preparing educational psychologists to work in a range of professional contexts requires a unifying framework for both the trainers and the trainees. Given the rapidly changing contexts within which psychologists are being expected to work, exclusive adherence to one particular school, method or style of applied psychology, – psychometric, behavioural, humanistic, or whatever, – seems highly inappropriate.

In the British context, an enthusiasm for 'problem solving' as a principle governing psychologists' practice has become apparent in recent years (Cameron and Stratford, 1987). Such approaches offer a set of skills for carrying out the range and type of work frequently required both by employers and consumers of Educational Psychology Services. They are, in short, in keeping with the current demand for accountable services aimed at the needs of clients and consumers.

We are, nevertheless, also aware that the term 'problem solving' is so widely used as to mean almost all things to all people. We chart our own thinking and practice as being originally guided by those problem solving models that could be said to display a logical, sequential approach and probably owe their origins to the world of computer programming and artificial intelligence. However, we have also come to realise the many inadequacies of these models for dealing with the complex interpersonal perceptions, motives and behaviour that are encountered in work in a professional context. In this paper we describe the way in which we work with trainees so that they derive their own individual problem solving models based on this rationale. (For a review of the range and commonalities of problem solving models see Reynolds et al, 1984.)

The Sessions

The First Session – The Stages of Problem Solving in a Professional Context

Rationale

Very early in the full time one year Masters degree at Nottingham University, the second day of term in fact, we provide a full day workshop in which we begin to orientate the group towards problem solving in a professional context. This day obviously has to serve a number of other functions, the most important of which is to contribute to team building. We

also intend this day to set a tone of active engagement with tasks and a recognition of individual differences in approaches to problem solving. Consequently, it contains a high degree of group work and experimentation with activities designed to encourage the maximum individual participation and a minimum of 'solutions' provided by tutors. We have progressively reduced the amount of lecture-led tutor input and increased our provision of workshop experiences in respect of devising problem solving models (PSMs) following regular formative evaluation by means of yearly trainee feedback (see Appendix).

Structure

We start with a casework example deriving from the fieldwork practice of one of the tutors. The problem is complex and only an introductory description is given at first. The task then set the trainees is to be the psychologist and '*see how far you can go towards solving this problem.*' The method they are to employ is the interviewing of various participants in the drama, all of whom will be acted by the tutor who has presented the problem. Trainees can, for example, ask questions of the various members of staff, the pupil, and his parents.

The trainees are split into three groups of four and then given 10 minutes to begin to formulate questions they would like to ask the various 'participants'. Each group in turn can then interview whichever participant they wish by asking to see key personnel such as the 'headteacher', 'teacher', 'parents' and 'child'. Although this first set of questions lasts for only five minutes most groups manage to ask questions of at least two or three participants. While the second and third groups of trainees repeat the same exercise the first group uses this 10 minutes to formulate their approach for a second period of questioning for which they will be allocated 10 minutes. In this way, each group explores a second set of questions.

Different groups of trainees inevitably pursue different lines of thought and strategies. Some spend a considerable amount of their time with one participant pursuing one particular course of enquiry whilst others attempt to ask a few orienting questions of as many sources as possible. Some find that the questions they have prepared beforehand suddenly become redundant when one of the participants says something that they had not anticipated. Others in such circumstances express a need to go away and devise new questions on the basis of unexpected replies.

After a coffee break each group makes a short presentation of their attempts 'to solve the problem'. These presentations usually include an attempt to divine the cause of the problem either in terms of immediate triggering events and/or in terms of more distant predisposing factors. Some groups go no further than this whereas others also attempt to devise plans aimed either at preventing a recurrence of the difficulties or at some other aspect they have become aware of during questioning.

At this stage, there is often some discussion of the common and the unique points that have come out of the three different groups' questioning sessions. Because the focus of interest inevitably becomes the detail of the case and the intention of the day is to consider the different stages of problem solving, the tutor then describes the actual subsequent developments in the particular case so that this aspect of the exercise can be 'rounded off'.

The trainees then return to their groups of four and are asked to consider, and to attempt to represent visually, the processes and stages that they felt they went through as they were carrying out the earlier task. When we first used this approach with trainees we ensured that a discussion of processes such as the generation and testing of hypotheses took place by introducing these and other concepts ourselves beforehand. However, by the time we were working with our third year of trainees we had learned that it was only necessary to give the minimum of instructions for this part of the task.

After lunch each group is asked to present and describe on their prepared overhead projector transparency, their first attempts at constructing a problem solving model. This exercise imposes the requirement that the presentation is primarily visual, and the possible assumption that problem solving is itself a visual and sequential task. However, we are consistently distinguishing between the stages in professional thinking or behaviour which place the worker in the most favourable position to solve problems, and the cognitive act of problem solving itself. The exercise therefore should not be taken as evidence that we believe the act of problem solving to be a wholly visual process. Nevertheless, visual presentations, of the sort we require from trainees, encourage them to make explicit and to classify the processes they worked through in the group activity, and to present them in a sequential format. (Explaining to others what you have been doing is a well practised technique for making it clear to yourself.)

The trainee models at this stage vary in their dependence on verbal description, but generally include visual conventions such as decision trees,

diagrams, feedback loops and even cartoons. Whilst there is a breadth of variety and ingenuity in the way the models are represented, and most trainees do settle for some form of sequential decision-making format, this does not imply that causality itself is a linear process.

For the final part of the afternoon the trainees are presented with another problem similar to the one with which they commenced the morning and again split into their three groups. On this occasion, however, the task also requires the participants to pay conscious attention to the model they have recently devised and to attempt to follow it as they both plan their questioning and process the information deriving from it.

The day finishes with a plenary session in which the trainees describe the development of their own models and any further thoughts they have about the aspects of problem solving that their model still does not address.

The Second Session: Personal Construct Theory

Rationale

The purpose of this second half-day session, which takes place about a week later, is to introduce concepts from Personal Construct Psychology and to begin to ask questions about the inter-personal and systemic aspects of problem solving in a professional context.

Structure

During the first day, the models were fairly impersonal, in that the interpersonal aspects of information getting were not seen to be problematic. The emphasis was on the processes of problem clarification, identification of information sources, information collection, hypothesis generation and hypothesis testing.

Personal Construct Theory is useful in that it raises the issue of the different ways in which people formulate and describe problems. In addition, it highlights the phenomenon of 'the private theory' in which participants' construing of problems may be closely linked to the ways in which they make sense of themselves and their relationship to the social world. With an appreciation of these issues, trainees are forced to move beyond simplistic notions of people as data sources and to see information as being filtered and created through sets of constructs, – those of their informants and their own.

The main features of Kelly's theoretical formulation are introduced briefly. Following this, an exercise is carried out to illustrate the relevance of personal constructs and private theories to problem solving.

Trainees are asked to list the surnames of 10 families whom they know. They are assured that the identities will remain confidential to themselves. They are then asked to consider the first two families together and ask in what way they are similar to each other but different from the third family on the list, – 'triadic elicitation'. The way in which they are similar is then written, in a single word or short phrase at the left hand side of a piece of paper. Trainees are then asked to write down what they consider to be the opposite of this word or phrase at the right hand side of the paper. By comparing subsequent pairs of families and contrasting them with a third, a list of opposing characteristics, or bi-polar constructs, is built up.

When each member of the group has built up a list of up to 10 different bi-polar constructs in this way, the tutor asks one member to give one construct and then asks how many other members of the group also obtained this or something very similar. The next member of the group is then asked for a construct and again a check is made on how many others have this item on their lists. This exercise reveals that only a very small proportion of constructs are shared by even two people within the group – that constructs are truly personal!

An actual list obtained by asking each group member for one of their bi-polar constructs is shown below:

interesting	.....	boring
divorced	.....	together
self-employed	.....	employee
traditional	.....	modern
fun loving	.....	serious
grown up children	.....	young children
all children at home	.....	children left home
insincere	.....	genuine
rigid	.....	flexible
active	.....	passive
task focused	.....	people focussed
high maintenance	.....	low maintenance

The point is clear, if a similar exercise were to be repeated in which the elements were 'schools' or 'teachers', another set of divergent lists might well be the result.

In addition to being personal, Kelly also postulated that constructs are bi-polar. This is illustrated by asking around the group for a common 'pole' used by more than one trainee. The term 'fun-loving' was found to be one such example. The two trainees who had used this pole were then asked for the contrast pole they were using with it. One provided 'depressive' and the other 'serious'.

Examples such as these allow trainees to see that in a problem solving context the use of terminology by different participants must be treated with caution. Someone may be describing a family (or teacher or child) as fun-loving and using this term as an implicit contrast with 'depressive' whereas the recipient of this information, the psychologist perhaps, receives the term as implicitly contrasting with 'serious'. Whereas these nuances of the language invest it with great richness, in a problem solving context, where there may be high levels of anxiety and pressure on a psychologist to achieve a 'solution', a sensitivity to these aspects of the various participants' descriptions is essential. Finally, in this particular exercise, the notion of core constructs and private theories are briefly introduced by means of the method known as the 'Hinkle Ladder'.

The Hinkle Ladder technique is introduced as a method for finding the position of a construct in a person's hierarchical construct system. One of the trainees acted as a volunteer in order that the technique might be demonstrated in relation to the examples of constructs relating to families.

The trainee was asked to choose one of her bi-polar constructs and she selected

high maintenance ..... low maintenance

On being asked which type of family she would prefer to be in, she replied 'high maintenance'. She was then invited to fill in the gaps in the phrase

'... because families that have high maintenance are ... whereas families that have low maintenance are ...'

In this example the trainee replied 'stuck within the home' and 'freer to pursue individual interests'. Repeating the procedure of choosing the preferred type of family and filling in the gaps in the phrase relating to the reason for this, produced the construct

dependent ..... independent

and one final step yielded

enmeshed ..... self reliant

The relevance of the private theory derives from the central assumption of Kelly's theory which is that the major purpose of individual human existence is to strive to make sense of the world and thus be able to make predictions about it; in Kelly's terms, 'man as scientist'. Core constructs usually lie at or near the apex of hierarchically arranged construct systems and often relate to issues such as identity, morality, social competence and social order. In this example, when discussing her constructs afterwards, the trainee said she felt the exercise had been getting 'a bit too close for comfort'.

Problems involving children may impinge upon some of these arrangements of constructs, the reason that a 'problem' is defined as such may well be that a private theory held by a teacher or parent is being challenged. Either the private theory held by the adult is able to accommodate the 'problem', and appreciating this would probably mean abandoning some fairly ingrained methods for understanding the world, or the child's behaviour, or whatever else is being described as the problem, is described as 'not making sense'.

The main point being made at this stage is that in a problem solving context, a psychologist is likely to be working with others who may have a high investment in conceptualising problems, their possible origins and solutions, in a particular way. The act of asking certain questions, – in some cases, of asking any questions, – and the consideration of possible interventions are likely, in some instances, to represent a threat to systems of constructs clustered into private theories. Indeed, Kelly offers a definition of 'threat' in construct terms as '... the awareness of an imminent comprehensive change in one's core constructs'. At this stage we are requiring trainees to become aware that the act of asking questions, even the seemingly innocuous, once somebody has decided that a 'problem' exists, always has the potential to threaten the private theories of various participants. In this statement we are also including the psychologist's theories.

The session was rounded off with a discussion of core constructs and private theories and some speculation about the types of private theories that might be threatened by different problems concerning children and young people.

The Domains: An Interactive View of Problems

Rationale

The purpose of this third half-day session, which occurs a few days later, is to introduce the notion of the 'domains' within which a problem might be construed and within which a psychologist might attempt to devise interventions. It also serves to raise the systemic nature of many problems, and ways in which the different domains interact (Cooper and Upton, 1991; Dallos, 1991; Dowling and Osborne, 1985). It further underlines that the involvement of an applied psychologist inevitably adds an extra dimension to a problem (as in 'It was so bad we had to involve the psychologist').

For instance, how often does a psychologist unwittingly predefine a problem before setting out to 'solve' it. Regardless of the presenting problem, is the answer always going to be family therapy, precision teaching or systemic work? And, of course, in a consultative context the consultee may also have a determinedly predetermined set of expectations about the outcome. Such expectations influence the way in which the problem is construed and presented, the nature of the supporting evidence, and the degrees of freedom underlying what the psychologist might feel able or permitted to do.

How does the psychologist prevent her/himself from professional railroading? Or, more insidiously, from the sort of collusion that might occur when both parties share the same hidden agenda, with the result that there is a closing down of the issues even before the 'enquiry' has begun? There is a real risk that in the early stages we might unwittingly seek data to confirm pre-expectations, so that bias is built in at stage one. Certain other classes of data might be ruled out or deemed uncollectable. For instance, a school might say, 'You will never get anything from those parents or that stepmother'. Or the psychologist might think 'I won't get much from that particular teacher'. Not only are such assumptions likely to be incorrect, they will distort the current picture and subsequent data collection. The most common example is when the educational psychologist is under extreme pressure from the problem presenter to rule out certain aspects and carefully consider others. ('Please ring X urgently, s/he needs to decide whether this pupil should be suspended or in a special school!')

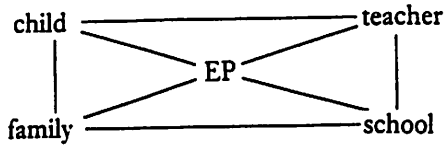
We have found this one of the hardest stages to describe and account for in professional work. Unsatisfactory terms such as 'experience' or 'professional judgement' are often used (and by ourselves) to explain the decision to follow a particular PSM line of enquiry and reject others. For instance, the same presenting problem might be defined as a reading difficulty requiring a particular form of intervention, a social skills problem that would benefit from training within a group of similar pupils, or a staff training need that might best be met by involving the school in a curriculum development project. Different presenters, and different psychologists might each focus primarily on a different aspect. Assuming that there are valid grounds for each of these initial definitions, is it sufficient for a psychologist to start from an *a priori* position in respect of one of them, and apply a PSM to it, ignoring the existence (and contribution) of the others?

Structure

We address this difficult area by an exercise designed to sensitise the trainees to the range of domains or contexts in which a PSM may be applied. The trainees work in three groups listing on a flipchart as many problems as they can envisage that might come the way of an applied psychologist. They are then asked to cluster those that appear to hang together in some way, and then write the clusters and any suggested headings for these on a separate sheet. For the next step they are asked to propose possible causes/explanations for those problems involving children, schools or other client groups. An example of a similar list of hypotheses from practising educational psychologists has recently been provided by Frederickson et al (1991).

This exercise can generally be accomplished in 30 minutes, and is followed by a poster session in which groups study, discuss and add to their colleagues' productions. We then reconvene in a plenary session and discuss whether this has contributed to the PSM and, if it has, how it might be incorporated. Five major interacting domains have been consistently identified in this exercise: the child, teacher, family, school and psychologist. The inclusion of the psychologist stems from the realisation that the initial 'problem' actually changes with the involvement of a psychologist, and the perceptions of all other parties are likely to change as a result.

Most importantly, there is a mutually interactive, rather than an additive relationship between each of the elements of the domain. One way of presenting this is shown in the diagram below:



(A similar model is presented by Coulby and Harper, 1985.)

We could elaborate further on the significance of the 'domain' in the development of our PSM, but at its simplest it is a 'template' or aide-memoire to help us overcome any tendency to professional tunnel vision in the way in which we construe problems and seek to solve them.

After these sessions the trainees are set the task of individually devising a visual representation of a PSM for applied child psychologists working in a professional context. Such a PSM should represent a compromise between being as comprehensive as possible and being as visually accessible as to be of the most use. This representation may be supported by a small amount of explanatory text.

The particular sessions described above are located in between a number of orienting lectures, workshops, visits and practical placements. Many of these and their extensions through the training year, will yield techniques of assessment, intervention and evaluation, and frameworks within which to formulate problems, that can subsequently be subsumed within problem solving models. In addition, the trainee educational psychologists are set the task of continually relating their model to the casework practice they carry out under the supervision of field educational psychologists.

Selecting Between Domains: Making the Best Choice

Rationale

We have found that, although psychologists in training may have an intellectual awareness of the potential domains of a problem, the pressures for solutions and the interpersonal dynamics of professional situations can nevertheless still lead them to make a very early selection of one particular domain to the exclusion of others. Consequently, a workshop session is built into the course about two months after the introductory sessions when trainees have had a little experience of practical work. For this workshop we are joined by two colleagues, Elaine Hack and Penny Holland, from the neighbouring Educational Psychology Service in Nottinghamshire. The aim is to increase sensitivity towards all the domains in which a problem and its possible solutions may be located. A further objective is to ensure that the procedures that finally lead to giving some domains priority over others are made explicit, in the belief that this will make 'knee jerk' styles of professional work, with their potential insensitivity to certain domains, less likely to occur.

Structure

A hypothetical case, derived partially from fieldwork experience, is constructed by the staff before the workshop. The initial information is presented on four different sheets of paper, each sheet representing one domain – the pupil's perspective, his mother's, the classteacher's and the headteacher's. All four sheets include the information that 'John is about to be suspended from school' but otherwise the statements contain some information that is unique to each and some that is common but has a different emphasis.

The trainees are informed of this and then split into four groups, each of which receives only one of the sheets. The task that is then set is to accept that, for some unspecified reason, the group is only permitted to work with their particular information source, and to decide on the further questions they would like to ask of that source, the hypotheses they might find themselves forming and the interventions they might possibly recommend.

After this, and without discussing outcomes, the trainees are allocated to new groups, this time three groups of four, in such a way that each new group contains one person from each of the previous ones. In other words, each new group contains one person who has been working on the problem from the pupil's perspective, his mother's, the class teacher's, and the headteacher's. The new task set for these groups is to pool their previous deliberations and to decide on a course of action for which the total working time cannot exceed six hours. This restriction on time is partly to reflect professional realities but is mainly to prevent a tendency for hypothetical exercises to lead to solutions that avoid setting priorities for action, which are inevitable in practice, and to veer instead towards 'a little (or a lot) of everything'.

The three groups then bring their interventions back into a plenary discussion. Each describes the course of action they have devised. The discussion is then led by one of the tutors who uses a projected transparency of the domains to aid the group. The groups are asked to comment on a number of questions:

- How much did your original understanding/hypothesis facilitate or obstruct your approach to new information/hypotheses/interventions?
- Which person or persons were you working with most and why?

- Whose original interpretation of the problem do you find yourself agreeing with most?
- Whose satisfaction/approval etc. are you most trying to gain?

Finally, trainees are asked to describe the criteria they have found themselves using to select between hypotheses. One group of trainees suggested the following as principles to bear in mind when deciding upon lines of enquiry and action to follow:

- Whether any aspects could be seen as 'critical', ie whether real harm might be done to a child if certain action is not carried out quickly.
- The length of time different interventions might take to have an effect could affect decisions.
- Gaining increasingly more insight into a problem does not necessarily help bring about changes.
- There may be a need to ask whether this was a legitimate role for a psychologist.
- There may be an ethical issue concerning the degree of intervention into people's lives that is permissible.
- Another consideration might be the extent to which a particular aspect of a problem seems resistant to change.
- The psychologist should ask whether s/he has or should have the skills to carry out certain interventions.

When carrying out practical work in Psychological Services, trainees are asked to attempt to apply their PSMs. Before carrying out each step in casework trainees are encouraged, not only to have clear objectives for the interview, or carrying out the observation, or writing the letter, or whatever, but also to state at which stage of their PSM they are operating. After each of these contacts, in addition to evaluating the outcomes against the objectives, trainees are asked to judge how well their PSM supported them in their actions and whether any section, or all of it, requires alteration in the light of these attempts at application. By this stage there is a heavy emphasis on the PSM being something that actually works for the individual trainee. After about six months of the course, a workshop is held in which each trainee describes their PSM with the help of a visual representation and talks through its evolution in the light of practical experience. After this opportunity for cross-fertilisation, trainees are encouraged to develop their model further if they think this is required and to produce a final written account of the whole process at the end of the year.

Conclusion

We have learned – and still are learning – a number of fascinating, and for us, exciting lessons about problem solving. Above all, problem solving is not a mechanical operation and the potential problem solver brings to the situation, and must be aware of his/her own personal assumptions, values and prejudices. Therefore, in order to prepare psychologists to become professional problem solvers the workshops become a problem solving exercise for both tutors and trainees.

The workshops, and the individual PSMs that are produced in them, have highlighted the ways in which the 'problem', its nature, significance and ownership, will be successively redefined. The very act of studying a problem changes it. The introduction of an EP as a professional problem solver adds a further dimension, which interacts with all other implicated domains/systems and how they are perceived. As a result of this we have progressively moved away from simple cause-effect attributions to bring in the interactive way in which systems influence each other.

We accept that there is a distinction between the visual representations of the PSMs (see Appendix) and the actual cognitive processes which underpin problem solving. The PSMs serve as an aide-memoire to guide practitioners through various stages and ensure that evaluation is built in. Given the complexity of the cognitive, emotional, social and systemic processes involved, evaluation is inevitably going to lead to successive developments and changes in the PSMs that are produced. If we encourage psychologists to evaluate the outcome of their own and other people's interventions, it seems only sensible to evaluate the model we use in addressing problems in the first place.

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Figure 1. My Model of Problem Solving (Carol Stewart-Evans)

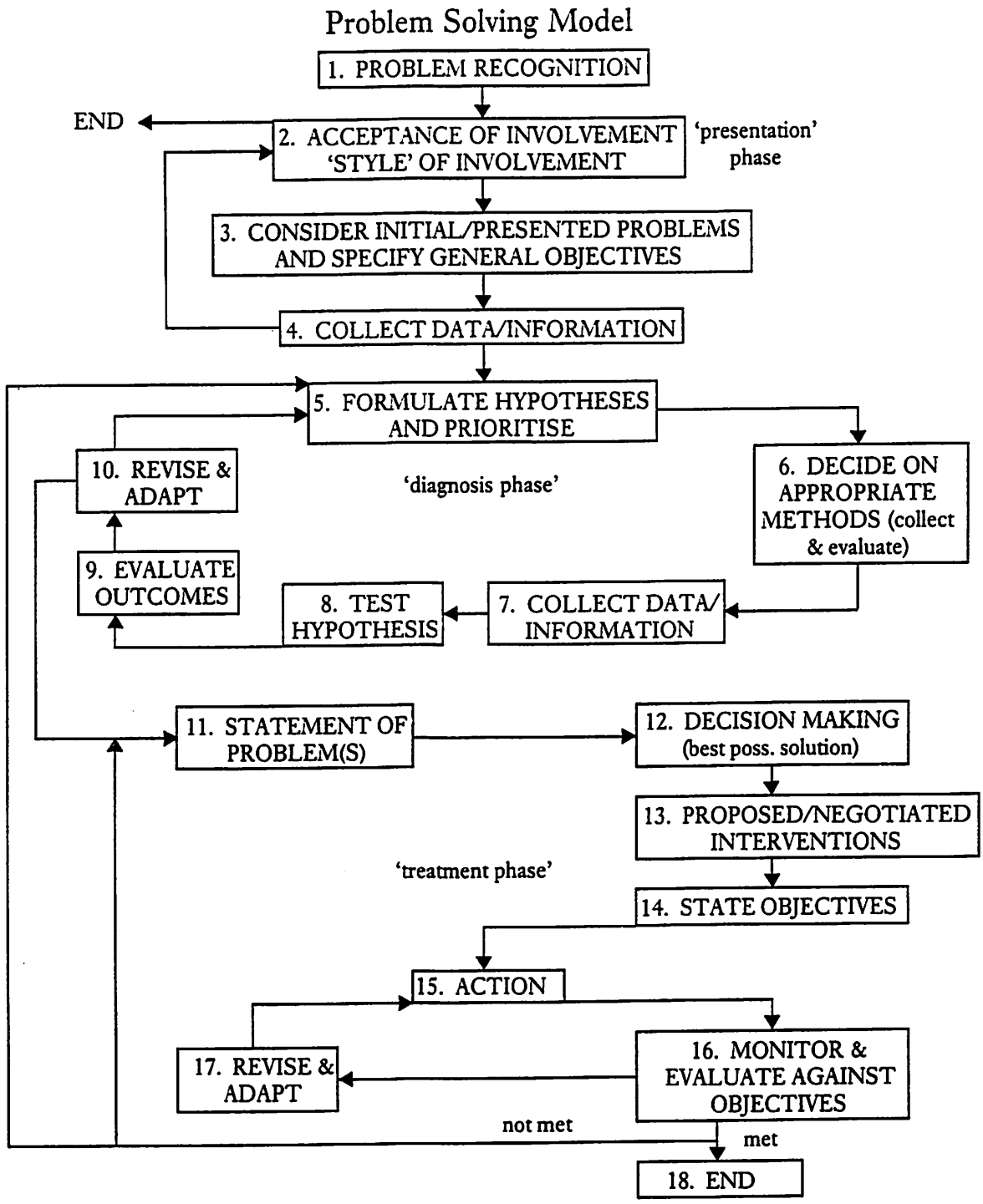
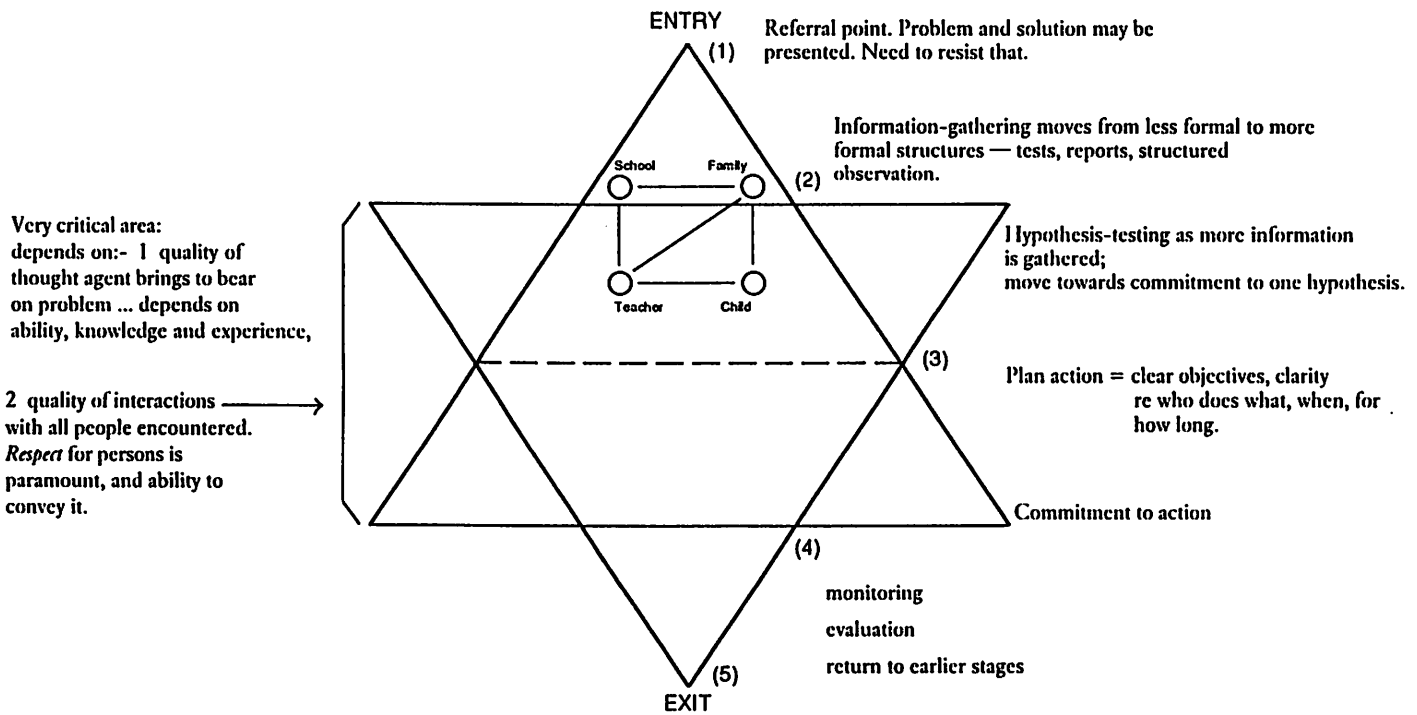


Figure 2. My Model of Problem Solving (Sarah Gammage)



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Appendix 1

Formulation of Problem-Solving Model

Carol J. Stewart-Evans

My initial problem solving model emerged from group tasks working on solving problems which we had been presented with. This was followed by my individual thoughts on working through hypothetical problems and a reflective analysis of the processes I was working through at each stage. The model which emerged was a 'Medical Model' of the problem solving process involving the three phases of 'presentation' of the problem, 'diagnosis' and 'treatment'.

During the course of my practical work in schools I was presented with a number of problems relating to individual children. At each stage of my involvement I considered which stage I was at within my own problem solving model and whether it corresponded appropriately to the current situation. I found it extremely useful to focus my attention in this way and my model gave me a framework for working which helped to clarify my thinking.

Overall my initial model worked well for me. However, after working through different problems at various stages I found it necessary to adjust and adapt my model in order to reflect more accurately the processes I was working through. I made one major change to arrive at the current version. My first model had only three stages in the 'presentation' phase. After practical application, I found it necessary to make adjustments and I included a stage whereby I could collect information *before* formulating a hypothesis. Additionally, I inserted a loop whereby it is possible to end involvement in the problem after the initial collection of data.

The model is now a useful tool for me. There are times when it is not necessary to work through every stage in detail and I move more quickly through some stages than others depending on the nature of the presenting problem. At other times the stages of problem solving seem to blur together. However, I have not felt it necessary to make any further changes and I continue to use the model as a framework to my thinking and working (see Figure 1).

Appendix 2

Problem Solving Model: Sarah Gammage

Introduction

My first model consisted of 10 linked boxes showing the following stages: a reminder about domains, formulation of questions based on the domains, information-gathering, forming hypotheses and defining the problem, review, forming objectives, planning and negotiating action, implementing the plan, monitoring and evaluation. Arrows showed that there could be recapitulation of stages such as moving from evaluating back to the previous stage of forming objectives or from implementing action back to defining the problem. These showed that the stages were not as discrete as the model implied.

Reasons for change

As a result of case-work and reflection on practice I found the model to be helpful in guiding action but generally too complicated and long-winded. I questioned its function. It needed to be an aide-memoire, a means of mapping a way through each new problem and a reminder of the need for pace and momentum in solving it.

The revised model

The first overlapping triangle in the revised version reflects expansion of knowledge of the problem and the second shows the narrowing of focus onto the most reasonable and likely working hypothesis within the parameters of one's professional work. The reality of working with a case-load is that involvement has to be purposeful, business like and crisp. The model helps to focus one's actions without sacrificing objectivity or rigour. It is applicable to individual case-work and organisations.

Final comment

The model does not show how problems may become redefined from an individual to an organisational level although this has very important implications for action. What is difficult to show in a diagram is the quality of the interaction of the problem-solver with the child, family school and other professionals. If respect for all people encountered in addressing the problem is not conveyed, the benefits of following the model (not jumping to conclusions too soon, collecting the perspective of each significant person, communicating clearly to others, having clear objectives and evaluating outcomes) are negated. (see Figure 2).

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