WESTERN CAPE COLLEGE

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on
Teacher's knowledge of their practices:
Impact of an Intervention and Support Programme to

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Teachers' knowledge of their practices: The impact of an Intervention and Support Programme

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1. ORIENTATION AND OVERVIEW

1.1 INTRODUCTION

One of the key principles of current efforts to transform our education system is the emphasis placed on life-long learning. If we apply this concept to teacher education, then pre-service and in-service education of teachers should be seen as a continuum. Traditionally the pre-service education of especially primary school teachers belongs to the domain of Colleges of Education. We will argue here that Colleges of Education are uniquely placed to provide structured in-service courses and thereby give substance to the key principle of life-long learning for teachers.

In this chapter we shall provide a brief background of an experimental programme which combines both pre-service and in-service teachers, that focuses on accelerating change in in-service teachers' knowledge of teaching and learning. But first we need to give a briefbackground of Outcomes Based Education (OBE) and its relationship to teaching and learning.

1.2 OBE AND TEACHERS' PEDAGOGY

The key principles of Outcomes Based Education (OBE) has been formulated by Spady (1996) as follows:

I. All students can learn and succeed, but not on the same day in the same way.
2. Successful learning promotes more successful learning
3. Schools control the conditions that directly affect successful learning in schools.

Outcomes Based Education focuses on teaching and learning processes that will guide the learner to achieve pre-determined outcomes. These outcomes should be clearly formulated, observable demonstrations that occur at the end of the learning experience, In structuring the learning experience(s), the teacher's role is crucial. The teacher has to use her *subject knowledge* to structure learning opportunities to achieve the outcomes. Secondly the teacher has to structure the learning environment in which the learners can succeed. The *management style* of the teacher is therefore under the spotlight. Thirdly the fact that the learners need to demonstrate that they have achieved the outcomes, means that continuous *assessment* of the progress of learners is necessary. Finally, the emphasis on "real life challenges", adds the dimension of how the teacher perceives the *curriculum*. OBE requires a pedagogy which reflects the philosophy of learning expressed above. Spady (1988) describes this pedagogy as "active modelling, expecting success, intensive engagement, diagnostic assessment, and constant feedback to students about their performance" (Spady, 1988;5).

Assessment in OBE is always against some pre-determined standard, always individual and should be conducted after the student has had ample time to achieve the outcome (Killen, 1996). This calls for substantial shifts in teachers' assessment practices. It moves away from procedures which are conducted at the end of a unit of work, to procedures which become integral to the teaching and learning process. Its focus is not confined to cognition only, but calls for assessment of knowledge, competence and personal qualities that can be useful to the learner in real life. Assessment practices commensurate with OBE, reflect a movement away from norm-referencing to criterion-referencing, from summative to formative assessment and away from recall to outcomes.

In content-based teaching, curriculum documents are always written for a collection of schools. The curriculum is then interpreted by the teacher, detail is added and structured for the specific needs of the school. In content based teaching the starting point is the content and the objectives are derived from that. In an OBE curriculum what the students should learn becomes the starting point. The content based curriculum is dominated by time considerations with a specified amount of work that has to be covered in a certain time period. In OBE, what the learner learns become the focal point.

That the implementation of OBE in South African schools should be accompanied by a different pedagogy is also clear from a glance at the critical outcomes which are cross-curricular outcomes that give guidance and direction to the specific outcomes.

CO 1 : Identify and solve problems that display responsible decision-making using critical and creative thinking.
CO 2 : Work effectively as a member of a team, in groups, community or organisation.
CO 3 : Organise and manage oneself and one's activities responsibly and effectively.
CO 4 : Collect, analyse, organise and critically evaluate information.
CO 5 : Communicate effectively using visual, mathematical and/or language skills in the modes of oral and / or written presentation.

It is clear that the current reform initiative places a tremendous responsibility on the teacher to be creative and innovative in her teaching and to develop means in order for all learners to be successful. A serious drawback for the intended reform is that the teachers who are now called upon to redefine their ideas about teaching and learning are themselves products of traditional teaching. This re-conceptualisation of the role of the teacher has, however, left many in-service teachers with feelings of insecurity and doubt. Colleges of Education are uniquely placed to step into this void and to provide opportunities for in-service teachers to cope with the new demands.

In this study we look at the impact of an INSET programme, which combines intervention and

support, to help teachers to formulate a different view of their classroom practice. It recognizes that this view is a multi-faceted construct, consisting of a variety of interacting components. Some of these components are the teachers' beliefs, knowledge, images as well as the values and attitudes of the teacher towards teaching and learning. Notwithstanding the complexity of the teachers' views on teaching and learning, we confine ourselves in this study to the teachers' knowledge and possible changes that may occur as a result of the intervention and support programme. If we want to understand how teachers might deal with reform, we must understand the teachers' knowledge and especially how teachers' knowledge changes.

1.3 THE TEACHING INTERVENTION AND SUPPORT PROGRAMME (TISP)

The Teacher Intervention and Support Programme (TISP) at the Western Cape College of Education (WCCE) was launched in 1995 in an effort to ameliorate the differences between the assistance given to student teachers by the supervising teachers and College lecturers. It is an experimental in-service programme designed to help teachers develop a constructivist view of learning as a foundation for classroom practice. It is geared towards helping teachers develop their abilities to teach in a manner that involves students in a problem-solving, active-learning approach to learning.

Twenty six primary school teachers were invited to participate in TISP of 1998. Teachers participated on a voluntary basis and no formal certificate was issued for completing the course. The teachers attended the intervention programme at WCCE between 22 - 30 April 1998. The eight day course focussed on making teachers aware of their own beliefs and practices and to engage them in activities that would assist them in changing these beliefs and practices. While these teachers were attending TISP, the Higher Diploma in Education (HDE IV) students of WCCE substituted for them in their classes. This ensured that there was no interruption in schools. Approximately 3 HDE IV-students acted as substitutes for each teacher who participated in the intervention programme.

On acceptance to the programme, each teacher was assigned to a course presenter. The course presenters are all members of staff of the Western Cape College of Education. The presenter was called upon to be the mentor of the participant and to provide on-going classroom-based support to the participant for a period of six months. In addition to the classroom support, increased networking became an important feature of the programme.

The following then, are the features of the programme:

- Teachers participate as learners in the programme.
- The presenters model the way(s) they expect the teachers to teach.
- Intervention and support are important elements to accelerate change in teachers knowledge of Mathematics, Science and English teaching and learning.
- The programme offers extensive opportunities for teacher networking, as both reflection and networking are important for professional development (Kreiner, 1996).

1.4 AIMS OF THE STUDY

The main aim of this research is to study changes in teachers' knowledge of their practices as they progress from existing teaching practices to one which is more commensurate with the ideals of Outcomes-based Education (OBE). More specifically, it looks at the changes that occur in teachers' knowledge of the curriculum, of assessment, of classroom management and of the subject - Mathematics, English and Science. The following were the research questions:

1. What are the distinctive characteristics of the teachers' knowledge of curriculum, assessment, classroom management and subject matter before TISP?
2. What are the distinctive characteristics of the teachers' knowledge of curriculum, assessment, classroom management and subject matter after TISP?

1.5 RELEVANCE OF THIS STUDY

The study has relevance for both pre-service and in-service teacher education for the following reasons.

- Colleges of Education have long been recognized as natural bases for INSET provision (Hofmeyr & Jaffe, 1992), yet few Colleges offer INSET courses other than those which lead to formal qualifications. This study describes a viable model for Colleges of Education to provide quality opportunities in life-long learning for teachers.

- The degree to which student teachers can benefit from practice teaching experience is to a certain extent dependent on the repertoire of teaching skills of the supervising teacher. The more limited this repertoire, the less likelihood there is that student teachers will be exposed to alternative teaching strategies in real school settings. Furthermore, a limited teaching repertoire on the side of the supervising teacher may increase tension between

student teacher and supervising teacher as the latter may block attempts at innovation and change by the student teacher.

- The model offers a solution to opportunities for life-long learning for in-service teachers. While teachers attend the intervention programme, the final year student teachers can substitute for them in the classrooms. This allows the student-teacher to engage in professional development activities and to experience real school.

- The teachers who qualify in the programme can then be identified as key teachers to mentor first and second year student teachers. In addition, they can become the locus of whole school development activities at their schools.

Studying the teachers' knowledge before and after the programme, informs on:

- which areas of teacher knowledge are most resistant to change, and which are more susceptible to change

- the development of new life-long programmes that will use the teachers' knowledge base as focus

2. A FRAMEWORK FOR TEACHER CHANGE

2.1 INTRODUCTION

That the teacher plays a major role in creating the environment in which children learn, is not disputed. If we agree that the teacher plays a major role in establishing the learning environment, then certainly what the best environment is and how to create it; how children learn and the part the teacher plays, is determined by, among other, the teachers' own knowledge of what the best is.

The teachers' knowledge is a multi-faceted construct which comprises of knowledge of the subject, the learners, of the school, of the school system, and of pedagogy. It is generated mainly from four sources : from teacher education, the teacher's interaction with other persons (colleagues, learners, parents, subject advisors, etc.), from events and constraints that constitute the teacher's work context, and from the teacher's recollections of what it means to be a learner in the classroom (Eraut, 1994).

Various authors have attempted to classify the teacher's knowledge. Elbaz (1983) study of the teachers' "practical knowledge" distinguishes between rules of practice and more abstract principles of practice, the use of which largely depends on reflection, and the images of what good teaching is all about. Brown & McIntyre (1993), used the term `professional craft knowledge' to study teachers' knowledge. They studied the consequences of teachers' actions and decisions upon learner actions and outcomes in order to define effective teaching and learning to elicit the knowledge, the professional craft knowledge, that informs everyday classroom teaching.

Shulman (1985, 1986) in his typology of teachers' knowledge proposed a minimal set of seven distinct knowledge categories - knowledge of subject matter, of curriculum, of learners, educational aims, of other content, pedagogical content knowledge and general pedagogical knowledge. Of these, the teachers' subject matter knowledge (SMK) and pedagogical content knowledge(PCK) has held particular appeal for researchers to understand the knowledge base of teachers. In our characterization of the teachers' knowledge, we were influenced by Shulman's typology, and especially the amount of work that was done in the teaching and learning of Mathematics (Borko, et. al, 1992); of English Writing (Mosenthai & Ball, 1992; Feiman

Nemsher, 1991) and Science (Wilson, et. al. 1987).

2.2 TEACHER LEARNING

In considering how teachers acquire new knowledge it is useful to draw an analogy with the acquisition of knowledge by learners. Our own views on this issue were influenced by the introduction of constructivism as a major philosophical and psychological position in the discourse on education. Constructivism derives from a philosophical position that human beings have no access to objective reality (Von Glasersfeld, 1983). Knowledge is constructed from our own perceptions and experiences which are mediated through our previous understanding.

Constructivism as an epistemological position is often associated with the Piagetan notions of accommodation and assimilation. Assimilation refers to the incorporation of new knowledge into existing structures, while accommodation is the resultant re-organisation of those mental structures to handle more complex problems. Depending on which of these two aspects are stressed, various forms of constructivism can be identified. Ernest (1993) distinguishes between information processing, radical constructivism and socio-constructivism. In determining our position, we were influenced by socio-constructivism which claims that knowledge is socially mediated.

2.3 CONCEPTUAL CHANGE

The participating teachers were therefore not seen as empty vessels that needed to be filled, but as possessive of existing ideas, which are subject to change. The process by which the existing ideas change, is called conceptual change. This change may not always be a correction, neither does it always result in a replacement; it may yield an alternative to an existing view (Goodman & Elgin, 1988).

Several studies have used a constructivist setting to help teachers to change their views of teaching and learning. Our own views were influence by the work of Schifter & Simon (1992); Schifter & Fosnot (1996) who took a Piagetian position that change requires a process of disequilibration. In helping teachers to change their ideas about teaching and learning, activities should be structured that would induce disequilibration in the teachers' knowledge base. Alternative strategies should then be modelled to facilitate the restructuring of the teachers'

existing ideas of teaching and learning.

2.4 THE TEACHERS' PEDAGOGICAL CONTENT KNOWLEDGE (PCK)

PCK essentially refers to what teachers know about teaching a specific content field. Shulman (1987) describes this kind of knowledge as the different ways of representing and formulating the subject matter to make it comprehensible to others, understanding what makes the teaching of specific topics easy or difficult and knowing the conceptions and pre-conceptions that students bring to the learning situation. The teachers' PCK of Science or Mathematics or English teaching is therefore the distinctive knowledge that teachers have in order to transform the content to make it interesting and comprehensible to the learners. It describes how teachers integrate the content into planning for instruction and classroom actions.

Several studies have proposed a further categorization of PCK. Askew et. al. (1997) have studied teachers' knowledge of teaching styles, teaching resources, of pupils responses and classroom management. After analysing the PCK of eight fifth grade teachers, Marks (1990) has painted a portrait of PCK as composed of four major areas: knowledge of subject matter, knowledge of student understanding, knowledge of the instructional processes and knowledge of the media for instruction. Cochran et. al. (1993) have offered an expanded view of PCK which is based on a constructivist view of learning and suggested that it should include knowledge of the subject matter, knowledge of pedagogy, knowledge of the students and knowledge of the environmental context.

In this study, four categories of the teachers' knowledge will be studied: knowledge of the curriculum; of assessment, of classroom management and of subject matter. Since the teachers actions in their classrooms will be observed, this is knowledge-in-action' (Schon, 1983). Data on the teachers' knowledge will also be obtained from their descriptions of their subjects.

The teachers' knowledge does not exist in isolation and the context in which the teacher operates should also be taken into account. Some of the contextual factors that should be taken into account, include:

- the school ethos
- learner and parent expectations
- school environment

- networking opportunities, etc.

2.5 THE TEACHERS' SUBJECT KNOWLEDGE

The teacher's subject knowledge is not seen in quantitative terms (i.e. the number of courses taken), but rather in qualitative terms which emphasizes the contextual and relational aspects of the knowledge. The teacher's subject knowledge is seen as comprising of knowledge of content that is being taught and knowledge of the connectedness of these concepts. Although research shows that teachers with limited subject knowledge are less effective (Ball, 1989), there is also evidence that teachers whose knowledge is more connected and conceptual, are also more conceptual in their teaching (Fennema & Franke, 1992).

Many of the findings on research on teachers' subject knowledge present a deficit model of teacher knowledge (Kennedy, 1991). Observation of lessons given by these teachers suggests that a lack of understanding of subject knowledge, leads to a concentration on inculcation of disconnected skills. On the basis of such findings, it has been argued that improving the teachers own subject knowledge base will lead to better teaching (Alexander, Rose & Woodhead, 1992). Leinhardt, Putnam, Stein & Baxter (1991) in their analysis of good and poor mathematics teaching concluded that subject matter knowledge impacted in several ways. Teachers' mental plans for lessons were dependent upon their familiarity with the content to be taught (Borko, Livingston, McCaleb & Mauro, 1988) and the questions asked and explanations offered to learners reflected the teachers' subject knowledge.

That the teacher's subject knowledge plays an important role in structuring the learning environment is beyond dispute. It is realised that in OBE the point of departure is not necessarily content but outcomes. However, the realisation of these outcomes occur through the mediation of the content that the teacher chooses as most appropriate for that purpose. The more limited the teacher's subject knowledge, the greater the likelihood that inappropriate materials and activities be selected to achieve these outcomes.

2.6 TEACHERS' KNOWLEDGE OF ASSESSMENT

Assessment of learning is important in every educational system. It allows the educator (and the learner) an opportunity to see the extent to which the outcomes were achieved. In addition to

providing information on progress, it allows the educator to draw conclusions on instructional needs and the effectiveness of the learning programme.

A different approach to education requires different forms and instruments for assessment. As the goals of education change, so the goals with assessment change (Marshall & Thompson, 1994). Furthermore, an underlying motive here is that the assessment methods are greatly significant for the success of educational reform. Assessment should not be directed at the acquisition of isolated skills, but give as complete a picture as possible of the learner.

OBE requires different goals for assessment as well as different assessment techniques. In addition to new goals and multiple assessment techniques, OBE also calls for integration of assessment with teaching. The teachers knowledge of assessment is understood to be knowledge of the goals of assessment, knowledge of assessment techniques and knowledge of the integration of assessment as part of teaching.

2.7 KNOWLEDGE OF CURRICULUM

How the teachers view curriculum has an impact on their classroom practice. Many different authors have different opinions on what the concept curriculum really means. One such typology comes from Schubert (1986). He describes one view of curriculum as a programme of planned activities. This image of curriculum focuses on activities which can be planned in advance, which include - choice and sequencing of subject matter, teaching techniques and assessment practices. He distinguishes between two extreme views when it comes to planning. The one views curriculum as a written document and the other accepts it as a plan in the minds of educators, which is evolving. Written documents may range from daily lesson plans to curriculum guides or commonly known as syllabi. The common thread in all these notions of planning, written or unwritten is that they are planned activities. To view curriculum as planned activities is to place major emphasis on outward appearance rather than inner development.

Schubert (op. cit.) also proposes a second view of curriculum as intended learning outcomes. He contends that curriculum should not be the activities but should focus directly on the intended learning outcomes. This shifts the emphasis from means to ends. Intended learning outcomes are a convenient way to specify purposes. This curriculum design would entail all the materials, plans and arrangements that would enable the student to reach the intended outcome.

Shulman (1987) describes the teachers' knowledge of curriculum as her understanding of programmes and materials. Knowledge of the programme refers to knowledge of the content, knowledge on how the content relates to other subjects (cross curricular) as well as familiarity with what was taught in previous grades about the particular topic. Knowledge of materials on the other hand refers to the selection and the use of resource materials.

2.8 KNOWLEDGE OF CLASSROOM MANAGEMENT

Management of the learning environment becomes an important aspect for teachers trying to change their teaching practices. Although descriptions of classroom management by various writers is varied, the general summarizing of good classroom management is that it is the establishment of a productive teaching and learning environment. (Duke, 1990: Fontana, 1987: Marland, 1993).

McManus (1989) identifies among a myriad of skills, certain basic classroom management skills that should be developed in teachers involved in the management process. Some of these skills, like control, learner involvement, classroom organization and communication patterns are paramount if the teacher is to effectively manage the learning environment.

The first imagery of control reflects the teacher as being rigid, dominant and solely in control of what happens in the classroom. This creates an environment that is restrictive and not conducive for the learners to be engaged in and part of the activities in the classroom. For Fontana (1987) control has a broader meaning and a process of running an organized and effective classroom, a classroom in which the abilities of individual children are given the opportunity for development, in which teachers fulfil their proper function as facilitators of learning, and in which children can acquire sensibly and enjoyably the techniques for monitoring and guiding their own behaviours. Learners are given the opportunity to assume responsibilities for their own behaviour and of indeed taking democratic and well informed decisions.

Management of the learning environment must allow for greater learner involvement and allow them to construct their own knowledge and take responsibility for their own learning. Learners need the freedom to discover, through exploration, the different ways to build solutions. This process should be organized and recorded to the pre-determined plan of the teacher whose role is to facilitate the students' exploration. The restrictive nature of learner involvement not only

restricts the opportunities learners could have of developing a variety of life skills but could be a major contribution to disciplinary problems and deviant behaviour.

Classroom organization has to do with the physical design of settings (Doyle,1996). When the teacher dominates, the tendency is for learners to be seated in neat rows and each individual restricted to a particular seat. In the participatory classroom, learners are arranged in groups or seating befitting the planned activities. More opportunities are created for learner-learner and teacher-learner interaction.

Communication patterns refers to the way the teacher verbally interacts with the learners. In the traditional classroom this is restricted to a one-way communication. Real communication is an open, two-way street, in which the teacher talks and listens. The learners are also given opportunities to give their input to finding solutions to problems in the classroom (Moore, 1992).

3. THE INTERVENTION AND SUPPORT PROGRAMME

3.1 INTRODUCTION

In helping teachers to re-conceptualize the teaching and learning situation, both intervention and support were identified as crucial elements in the change process (Schifter & Simon, 1991). In this chapter we shall report in greater detail on both these components.

3.2 THE INTERVENTION PROGRAMME

The intervention programme was run during two weeks of practice teaching when the HDE IV students were available to substitute for the participating teachers. The focus of the programme was to create an awareness of the teachers' own views on teaching and learning, classroom management and resources; the introduction of experiences that would lead to a disequilibrium in teachers' thinking and participation in activities that would lead to an expanded view of their classroom practices.

(a) AWARENESS

During the awareness phase, the purpose was to make teachers aware of their own practices and some ofthe beliefs underpinning these practices. These activities were all structured around getting the teachers to talk about their own practices and to reflect on it. Teachers were also encouraged to talk about what they perceived to be an ideal classroom situation and the kind of stumbling blocks that prevented them from having these ideal classrooms. Teachers worked in groups and shared their ideas with the rest of the class. Typically the catalysts for change during this part were seen as external - better resources, "better" learners, supporting principal, etc.

Teachers were also asked to voice their concerns and fears about the impending change that the implementation of OBE requires. Some of the typical responses here were about large classes, a "methodology" for OBE, lack of networking, etc. In response to the kind of expectations that they had about TISP, some said that the concerns mirrored their expectations. Teachers were not only encouraged to talk about their practices, but also to write about it. The keeping of ajournal, with

time set aside each day for entries, as well as short narrative stories became important outlets for teacher expression.

(b) DISEQUILIBRIUM

Regarding teaching as a problem-solving activity in which routine and non-routine problems are solved (Simon, 1995), provided the framework for the choice of activities during this disequilibrium phase. Activities which simulate hypothetical classroom situations were constructed and then given in written form or acted out. The teachers were then called upon to debate this in a group and to formulate a response.

This model can be described as a reflective model which is driven by planned conceptual interventions. The basic motivation was to get teachers to confront and reflect on their own conceptions about the nature of teaching and learning. In order to achieve this, two types of situations, conflict and comparative, were created.

In a conflict situation a problem is generated that will force the teachers to become aware of their own (sometimes deeply held) ideas about a particular aspect of teaching and learning. The choice of problem would be such that the teacher's existing ideas do not have the capacity to solve it. The consequent dissatisfaction with the existing idea will then hopefully lead to its rejection and open the way for a new idea.

The following activity which uses role-playing serves as an example to engage teachers in discussion about understanding in mathematics:

> *The Fundamental Theorem of Arithmetic states that if one activity can be performed in m ways, and another in n ways, then both can be performed in m x n ways. Using this as a background teachers were given an activity to match 2 sets of pants with 3 sets of shirts. After completing the task and arriving at the algorithm that there are 2 x 3 ways, one of the presenters (Rob) enters the room. On enquiry on what it is that the group was busy doing, another presenter(Bunita) responds that they are just multiplying the numbers. After giving a set of problems the following questions were then posed. Do you think they all understand? To the same extent? Is there perhaps a difference? Explain.*

In comparative situations the focus is on alternatives to existing ideas. Teachers were invited to discuss the strength and weaknesses of different ideas. In particular, new ideas were evaluated in terms of their ability to address anomalies identified with the conflict situations. Following all lessons, teachers were asked to reflect upon their experiences. What did they learn? What contributed to the learning? How was the activity structured? What was the role of the facilitator? etc. In this way the activity itself became the grist for reflection in the development of a new practice.

(c) EXPANDED VIEW

The technique employed roughly follows the Kuhnian model (1970) for a paradigm change during a scientific revolution. With the simulated activities, the teachers' implicit ideas were made explicit. With the introduction of an anomalous situation, an attempt was made at inducing a disequilibrium in the teachers' belief systems. Finally an alternative, which was both plausible and intelligible was offered in the form of the programmes on offer.

MLMMS - Realistic Mathematics Education

The mathematics focus was on Realistic Mathematics. Realistic Mathematics uses real life situations as the starting point which serve as both a source for mathematics and a field for its application (De Lange, 1993). This approach highlights contextual situations as points of departure, the interactive nature of the teaching-learning process and calls for integration of mathematical concepts.

NATURAL SCIENCE - The Environmental Context

The focus of the Science programme was on learning Science in an environmental context (Saunders, 1992). With this approach the teachers' understanding of incidental learning and how it can be used as a springboard for developing deeper understanding of the local environment, becomes the main focus. An holistic view of the dynamics of the environment is emphasized.

LANGUAGE, LITERACY AND COMMUNICATION- Writing.

The primary goal of the Writing project was to explore new and exciting ways of engaging learners in the process of writing(Calkins, 1986). It engaged teachers in the process as learners in order for them to facilitate learners' intentions about writing,

Further integration was ensured by choosing a central topic for all the different learning areas. For the reconstruction of new ideas, we selected "The Environment" as the phase organizer. Each learning programme then selected a Programme Organizer, the Specific Outcomes (SO's), the Assessment Criteria (AC's) and formulated Performance Indicators (PI's).

3.3 THE SUPPORT PROGRAMME

To provide support to the supervising teachers, a three tier support network was put into place. On the first tier there was the network at a particular school where the participating teachers met. Many of these network sessions were impromptu with teachers experimenting with an idea and then offering to teach it for a colleague. The more structured first tier meetings were held with the presenter who was assigned as the mentor for that group.

The second tier network consisted of the participating teachers in neighbouring schools who met to exchange ideas. This was also an unstructured meeting with teachers being encouraged to meet with colleagues from neighbouring schools and to exchange materials. The third tier network consisted of the whole group meeting at a designated place to share and exchange ideas. These meetings were called by the Director of TISP and the focus was to identify general problems and the sharing of experiences with the whole group.

In addition to this support network, the presenters provided classroom based support to the teachers. During the support phase the presenters predominantly had the following roles:

- advisor : giving advice to the participating teacher on aspects that the teacher were worried about. For example, one of the frequent request for help was on assessment.
- co-planner: helps with the planning of lessons and or modules
- co-teacher: teaches with the teacher when requested to do so. This meant that we the presenters had to go to the schools and teach the lesson in the participating teacher's class.

The ten College presenters were assigned to the participating schools and were required to go to the school once per week. The typical task of the presenter was to establish needs and to pass it on to the group. In response to an identified need, the Mathematics or Science or Language specialist(s) would go out and work with the teacher. Some of the tasks would therefore be to plan a particular approach to a lesson with the teacher, or to actually teach a lesson to the class while the teacher observed the lesson. Logistical problems with having to provide support to 26 teachers, forced us to focus on the six participants in this study.

RESEARCH DESIGN

4.1 PARTICIPANTS

Twenty six primary school teachers were invited to participate in the Teaching Intervention and Support Programme (TISP) between 22- 30 April at the Western Cape College of Education. The research programme was explained to them and they were invited to participate in it. The sample of 6 teachers who became the participants in the research project, all consented to participate freely. The selection was based on teachers' willingness to participate (some were not willing), the approval of the principals and the shortest distance from WCCE.

The six teachers eventually selected came from 4 different schools. Their experience of primary school teaching ranged from 5 - 31 years, and their formal academic qualifications ranged from College Diploma to Bachelor-degrees. Of the 6, 3 were male and 3 female. (See Appendix B for the data on the participants.)

4.2 DATA GATHERING

The researchers decided on a qualitative approach in which information was gathered through two interviews and four observations of each participant. The same semi-structured interview was conducted before the participants came onto TISP (i.e. before 22 April) and in October (on completion ofthe intervention and part ofthe support phase). The second interview included an additional question in each section on how the teachers' views have changed. (See Appendix D).

The interview had a semi-structured format in which certain sections were identified and certain questions phrased. However, it needs to be said that researchers were encouraged to explore a particular section further ifthe need for this arose. The sections covered the teachers' knowledge about assessment, about classroom management, about materials and programming and some subject knowledge on a specified topic. Some of the questions were included to give indirect corroborating evidence on what was said explicitly. For example, the questions on "good teaching" and "context"can be classified under this section.

In addition to the semi-structured interview, two lessons of each teacher were also video-recorded before the intervention and again in October. The teachers were asked to teach lessons that they would regard as good lessons. The selection of lessons to be recorded was entirely entrusted to the teacher. For each lesson that was video-recorded, two researchers also independently wrote field notes oftheir observations of the teacher's actions and the classroom interaction (See Appendix F). The writing of field notes was structured around the four topics under discussion - subject knowledge, the curriculum, the classroom management and assessment. From the video-recording and field notes it was possible to construct "thick descriptions" which encapsulated both the action (field notes) and the talk (transcriptions).

The initial video-recordings were of poor quality because of a lack of funds. The second series of recordings were however, more professional. In total our database consisted of 12 completed interviews, 24 video-recordings of lessons together with field notes on each.

The research design selected was an ethnographic one (Hammersley & Atkinson, 1995) for it was felt that its qualitative methods provide sufficient flexibility for describing, interpreting, exploring and explaining the teachers' knowledge.

4.3 ANALYSIS OF THE DATA

Both the interviews and the lessons were transcribed. The transcription of the talk during the lessons gave us the opportunity to apply the same coding procedure consistently. The video provided additional information as to context and setting. In analysing the data we found it useful to divide the lessons in separate episodes. The analysis of each episode gave us a lot of insight in the finer details of the teachers' knowledge. We admit that this might not be the best basis for understanding the teachers' knowledge base.

The analytical procedures used were to organise the data around the four categories of teachers' knowledge; to generate sub-categories in each category to test emerging hypotheses against the data and to search for alternative explanations of the data. Throughout the whole process we engaged in report writing.

Analysis of these descriptions was done by open coding (Strauss & Corbin, 1990). The coding categories were revised and developed and memo writing (Miles & Huberman, 1994) was used to

document the issues emerging. The final product contained the following categories and sub-categories.

4.4 INDICATORS OF TEACHERS' SUBJECT KNOWLEDGE

The teacher's subject knowledge has been described as consisting of knowledge of content and knowledge of the connectedness of the content. Knowledge of content (Mathematics and Science) refer to the facts, skills and concepts of the curriculum. Knowledge of connections in Mathematics and Science can be described in terms of how the particular content is connected to other topics within the subject self and in other subjects (cross-curricular).

Each of these categories were then judged in terms of the correctness, which simply means that the interpretation of the teacher is the accepted one. The second sub-category that was identified was the meaning that was attached to the content. An indication of the meaning that the teacher attaches to content is obtained from the basic representational forms that are chosen. For example, for a Science lesson on forces, basic representational forms would be "pull or push", mass and acceleration , etc.

The third sub-category for the teachers' subject knowledge was the connectedness of the content. Here we distinguish between vertical and horizontal connections. Vertical connections refer to links with related concepts in the subject. It is identified by links to related work done in previous grades or that will be needed for future grades. Horizontal connections refer to the integration with related concepts in other subjects or in real life.

The indicators for Writing were somewhat different from that used for Science and Mathematics. The three sub-categories identified were the intentions (purposes) ofthe writer, knowledge ofthe processes of writing (such as revising and editing) and the genre in which writing takes place (e.g. narrative, autobiography, poetry, etc.).

CATEGORY	Mathematics/ Science sub-categories	Writing
Knowledge of content	Correctness Meaning Cross-curricular links Real life links.	Intentions Process Genre
Knowledge of relationships	Correctness Meaning Cross-curricular links Real life links	

4.5 INDICATORS OF TEACHERS' KNOWLEDGE OF CURRICULUM

The teacher's knowledge of curriculum has been described as the teacher's knowledge of programmes and ofmaterials. Knowledge ofthe programme refers to knowledge of the content, knowledge on how the content relates to other subjects (cross curricular) as well as familiarity with what was taught in previous grades about the particular topic. An integral feature of this organization is the concept of connectedness. Here we would differentiate between lateral and vertical connections. A lateral connection is one that relates to similar topics in other learning areas and a vertical connection relates to similar topics that were taught in previous grades or that will be needed in a later grade.

Knowledge of materials refers to the selection of materials, and the use of materials. With materials we imply the use and selection of texts or learning material that would enable the teacher to make cross curricular connections as well as connections with real life situations. Materials include the use of prescribed text books;other text books, newspapers, journals and real life situations.

For us knowledge of materials also refer to the choice and use of in particular, alternative curriculum material. With alternative material we imply materials other than, the available prescribed text readily available to educators. Alternative materials would also mean making use of everyday, real-life situations and contexts to facilitate the learning process.

CATEGORY	Sub-category
Knowledge of programme	Selection of content Sequencing View of curriculum Type of planning Lateral connections Vertical connections
Knowledge of materials	Selection of material Use of material Integration

4.6 INDICATORS OF TEACHERS' KNOWLEDGE OF ASSESSMENT

Knowledge on the goals of assessment would be the particular focus of the teacher. Assessment should not focus solely on ready knowledge of various facts and the ability to perform isolated skills in routine problems. It should rather be concerned with developing concepts and skills that can be used to solve various non-routine problems that have its origin in reality. Some of the goals of assessment required by OBE are problem-solving, higher-order thinking, reasoning, a critical disposition and communication of findings.

There are many assessment techniques available to teachers, e.g., tests, open-ended questions, observation, discussions, etc. Certainly what is required is the use of multiple assessment techniques, including written, oral and demonstration techniques. An important pointer in this regard is the priority assigned to observation. Closely linked to this is the role of the teacher - as administrator, as diagnostician and as remediator. Also included in this section is the preference for real life applications

Knowledge of integration of assessment with teaching requires an holistic approach. This calls for integration of a number of ideas from within the subject, developing problem situations that require applications across different subjects and viewing assessment as part of teaching.

CATEGORY	Sub-category	Descriptors
Knowledge of goals	Thinking skills	Higher vs Lower order
	Disposition	Acceptance vs critical
	Values	Absent or present
	Problem-solving	Absent or present
	Communication skills	Encouraged or discouraged
Knowledge of techniques	Written	Types
	Oral	Types
	Learner demonstrations	Types
	Role of observation	High or low priority
Knowledge of integration	Timing of assessment	Continuous vs end
	Cross-curricular projects	
	Feedback	

4.7 INDICATORS OF TEACHERS' KNOWLEDGE OF CLASSROOM MANAGEMENT

The teacher's knowledge of classroom management has been described in terms of the knowledge of control, communication patterns, learner involvement and classroom organisation.

CATEGORY	Sub-category
Knowledge of control	Locus of authority
	Type of learning environment
Knowledge of learner involvement	Exploration encouraged
	Responsibility for learning
	Reaction to deviant behaviour
Knowledge of classroom organisation	Physical arrangement
	Access to materials
	Group composition
Knowledge of communication patterns.	Teacher-learner
	Learner-learner
	Learner reflection

5 TEACHERS' KNOWLEDGE OF THEIR PRACTICES

5.1 INTRODUCTION

In this section we discuss the results of the investigation into teachers' knowledge of curriculum, of assessment, of classroom management and of the subject. The descriptions will be comparative, covering the teachers' knowledge before and after the intervention and support programme. In this sense, this section addresses the two research questions.

5.2 FIONA'S KNOWLEDGE OF HER PRACTICE

Fiona is the Head of Department at school E. She has over 20 years of teaching experience which includes a stint in Australia. She teaches mainly Mathematics to Grades 5 and 7 and also English to Grade 5. She volunteered to participate in the study as a Mathematics teacher. Fiona has a three year College Diploma. During the last two years she has attended two INSET-courses of which the TISP one is the latest.

- FIONA'S KNOWLEDGE OF MATHEMATICS -

Fiona describes her own ability at Mathematics as good. This confidence has not changed over the six months that she participated in TISP. She has a good grasp of the mathematical concepts, procedures and principles that must be taught but her own understanding has changed from more procedural to more conceptual. Before and after the intervention she was very clear on the end-product that she would like to achieve with each lesson. However, both the process and the context to achieve these products have changed.

Previously her main source of activities came from textbooks, although not one textbook. She obtained a load of old textbooks from the USA and was impressed by the bright and colourful layout. The overriding issue for her was that the activities should be visually attractive to the learners. These activities sometimes lacked a concrete basis, although she was quite aware of what was expected from learners in the next grades and what they did in the previous grades. After the intervention both the context and the process became very important considerations in selecting the teaching approach. Whereas the lessons before the intervention made use of a lot of practical and colourful activities for the

learners, the lessons after the intervention were built on usefulness in real life. For example, the lesson on equivalent fractions became an exercise in working as a waiter at a restaurant and sharing food among a number of people seated at different tables. These activities served the purpose of directing learners, under Fiona's guidance, to master the procedures.

She holds the view that "mathematics is not about a page of numbers with addition, subtraction, etc. It is about life, explaining your life and explaining where the addition, subtraction, etc. fits into your life." This personal view of mathematics now determines both the selection of content and the type of relationships that are sought. For her a lesson on geometrical shapes incorporated map-reading skills which she deliberately chose because it is used in History and Geography. She explicitly states that finding shortest distances on a map is a life-skill, dividing loaves of bread is a real life phenomenon. Fiona's confidence in her own ability to do mathematics, helped her to make the change to contextual and cross-curricular links.

- FIONA'S KNOWLEDGE OF CURRICULUM

Fiona felt that as Head of Department it was expected that she should be familiar with the senior primary mathematics curriculum (read syllabus). This syllabus was seen as prescriptive on what should be done. Before the intervention she arranged and taught the content in the same sequence as it appeared in the syllabus. The sequence for teaching fractions in Grade 5 followed the usual order of first introducing the concept, establishing equivalence and then moving on to addition and subtraction of fractions. This view allowed her to make many vertical connections, i.e. with what was taught in previous grades, but few lateral connections. Furthermore, the syllabus was the plan of activities, for assessment, for teaching styles, etc.

Fiona used to get her ideas for lessons from textbooks, even though she consulted different textbooks for ideas. After the intervention, her planning starts from real life situations "f rom which the abstract mathematics should be developed". Her point of departure now is a situation with which the learners are familiar, e.g. a map of the suburb in which the school is located became the starting point of a lesson on topological features of shapes. Similarly the lesson on fractions used a real setting of a restaurant as a point of departure. Furthermore, the choice of this context allowed her to facilitate meaning-making by learners for the fraction concept, equivalence of fractions, as well as addition, subtraction and multiplication of fractions. She mentioned that some of the new ideas for lessons are obtained from networking with other teachers. Rather than starting from specific content to plan her lessons, she now

focuses on a context and tries to extract the content from it.

Fiona describes the change she underwent with regard to the selection of resources very succinctly. "No longer will I complain that the school does not have money for materials. It does not have to be stuff that you spent money on." She now consciously looks at objects from everyday life to decide if it can be usefully applied as resource material in her lessons.

- FIONA'S KNOWLEDGE OF ASSESSMENT

As regards assessment, Fiona used to emphasize the cognitive aspects, focusing on lower order thinking skills like memorizing and instrumental understanding. Oral assessment took the form of numerous questions, and written assessment was about collecting scores from tests and the examination. Assessment was also done mainly at the end of teaching.

She now emphasizes the learner's own thinking, stating that "teachers should remove themselves. The lessons are not about themselves - it is about the children and their mathematical processes." Her focus now is on facilitating learner communication. In observing her lessons, she moved from group to group to elicit information from them. In her interaction with learners, she plays various roles - the doubting Thomas, cajoler, motivator, etc. She confesses that she does listen a lot more to learners than she used to do.

Her assessment techniques are also more varied now. A higher priority is placed on observation of learners and what they do. Oral assessment techniques now include questioning and encouraging learners to justify their strategies. Written assessment techniques include the usual tests and examination but she also gave a project on measurement that learners had to research.

Fiona feels that she has overcome the problems with assessment in large classes. She now focuses on a few groups at a time. She believes that both group work and individual learning should be assessed. In attending to individuals she would sit next to the learner, to enquire or to explain. In assessing learner's solutions strategies she still feels that she uses what is required in the next grade as a guide.

Of particular interest is also the way she changed in reacting to leamers' mistakes. In the past when a leamer made a mistake with the addition of fractions, she reverted to the same equivalence chart to explain the same strategy to the leamer. When a learner made a mistake with a fraction after TISP, she

tried to gauge the learner's personal understanding first by asking the learner to explain by means of a drawing what the fraction meant.

- FIONA'S KNOWLEDGE OF CLASSROOM MANAGEMENT

Fiona's class has 53 learners who are grouped in 4 - 6 learners per group. She believes that groups should be of mixed ability. She feels that proper preparation is the key to successful classroom management. Learners in the different groups are assigned specific roles, one of which is to keep order in the group. The type of learning environment fosters learner-learner interaction and communication is encouraged. Although the learners were also seated in groups before TISP, she did not place the same emphasis on learner-learner communication.

Fiona feels that she is on the right track with regards to a pedagogy that is required by OBE. She still needs to "hone her practice" and expresses the need for greater networking. She regards the exposure to the other teachers in a co-operative environment as having a crucial influence on her professional development. As she puts it "It is easy to buy a textbook, but my own exposure to networking with other teachers, has had a profound influence on my own development".

5.3 VICTOR'S KNOWLEDGE OF PRACTICE

Victor is a 26-year old Mathematics teacher with 5 years of teaching experience. He started the year at one school but was later in the year redeployed to a different school, His first priority is to hold a permanent appointment. He qualified with a B.A.-degree with no Mathematics courses, but now teaches Mathematics, Geography and History. Victor agreed to participate in the research programme as a Mathematics teacher.

- VICTOR'S KNOWLEDGE OF MATHEMATICS

Before the intervention programme, Victor described his own abilities at Mathematics as average. However, he changed it to good after the programme which reflects his greater confidence. Before the intervention, Victor's understanding of mathematics was almost entirely instrumental, focussing on teaching the learners the procedures for computations. The focus of the lesson on addition of fractions was to establish the rule for finding a common denominator, to convert fractions to equivalent fractions and then to add the fractions. Connections with other subjects or with real life experiences did not

exist, although references like "..but you were taught this in the previous grade..." were frequently made. Although the learners brought apples, chocolate and other real objects to class, the division of these objects were only mentioned in passing. Victor emphasized the mathematical products, while context received scant attention.

One of the lessons after the programme on mass showed a refreshing shift away from mathematical products. It utilised a newspaper story about whales as a context. Learners were directed to construct an idea about the magnitude of different mass units (ton, kg, etc.), and to convert from one mass unit to another. A second lesson on time made use of times for TV-programmes as a starting point. The learners' own experiences on watching TV were used to help them to construct images of time periods and to read both digital and analogue time. In both cases the context were utilised to draw on the important mathematical ideas. In response to where he got the ideas for these lessons, he admitted that he got it from other teachers in the network.

- VICTOR'S KNOWLEDGE OF CURRICULUM

Victor described the standard procedure for planning a mathematical lesson as follows: start with the curriculum (read syllabus); get the textbook, consult with a colleague about the main ideas and then teach the lesson! After the programme he showed a preference for choosing a context as point of departure. For example, the story of Keiko the whale, or the TV-time of Teletubbies became the starting point for lessons on mass and time respectively.

In the lessons observed before the programme, Victor sometimes used real world objects. These were not really exploited because Victor preferred his own chalkboard representations. He clearly perceived his role as that of Explainer, explaining everything in great detail after which the learners are given the opportunity to practice what they have 'learned". He is the role giver and the learners must imitate what he has done.

Even though his later lessons emphasized the context more, Victor still under utilized the context. His pre-occupation with explanation is still very much evident. In this sense he remains a dispenser of information even though the starting point is different. This also means that although there are now more connections to real life, these connections are not fully exploited.

- VICTOR'S KNOWLEDGE OF ASSESSMENT

Before the programme, Victor was primarily the manager of the learning process. He walked around to give instructions on what to do. He would admonish those who did not comply with his instructions. He relied heavily on exercises at the end of the lessons to assess learning. Other techniques that he employed were calling learners to the chalkboard to show the others a particular solution. Testing was done at the end of certain time periods according to a test programme. A final form of written assessment was that Victor believed in giving homework on a regular basis. As regards oral techniques, Victor focussed on questioning. The type of questions were mainly memory recall questions and wrong answers were routinely ignored. This is how Victor reflected on his practice "You know, one minute I explain to the class something. Then I turn my back and ask the same thing to a child and I get the wrong answer. I wonder what it is that I am doing wrong."

After the programme, Victor's written assessment techniques included practical worksheets on the contextualized lessons. The questions were still too much focused on learner cognition, and opportunities for integration with other subjects are mostly lost. Also too, problem-solving is not given the status it deserves. In summary, it can be said that Victor has changed the context, but still needs to extend his repertoire of techniques to include the assessment of related skills, values and attitudes as well.

- VICTOR'S KNOWLEDGE OF CLASSROOM MANAGEMENT

Perhaps the greatest shift that Victor has made is in his classroom management. The initial lessons had the learners seated individually with very little learner-learner interaction. He also separated the weaker learners from the more gifted ones "so that I know where they are". On one occasion when he wanted the learners to do paper-folding, the learners worked in pairs. He experienced control as something personal, saying that "it is my appearance, the tone ofmy voice" that determines discipline in class. The classroom was characterised by the lack of educational noise, with the voice of the teacher the only noise for long periods of time.

After the programme the classroom, arrangement showed a welcome difference. The learners were .seated in groups of six and this time around there were mixed ability groups. The arrangement and the selection of materials allowed for greater leamer-learner interaction, but the communication pattern was still dominated by the teacher. Only limited exploration was allowed. Victor's changed practice can be

described as dispensing information, but now in a co-operative setting.

Victor also expressed the need for greater networking opportunities because he believes it is through greater networking that his practice will improve.

5.4 JOHN'S KNOWLEDGE OF HIS PRACTICE

John is a Science teacher for Grades 5 & 7 at school F. He has over 8 years of teaching experience after completing a BA-degree at a resident university. He also completed his professional training at the university but accepted a teaching post at a primary school because of the unavailability of a suitable post at a high school. He initially taught in the Social Sciences but with the rationalization of teachers at the school, he was asked to teach Science. Although not qualified to teach Science, he is now a senior teacher at the school. With no tertiary training in Science nor any Method courses in science, the only INSET course that John attended was the TISP course.

JOHN'S KNOWLEDGE OF SCIENCE

Although John did not have any tertiary training in Science, he has a good understanding of the basic Science concepts. He was inspired by the present principal from whom he took over in the teaching of science. John's understanding of Science concepts is procedural, focusing on the transmission of the facts and concepts. The learners have to memorize and recite these concepts albeit directly from the textbook, thus the prescribed textbook is the main source of information. The lesson on forces is illustrative of his teaching approach before the intervention. The entire lesson was dominated by teacher explanation of the definition of forces and the impact of forces. Intermittently the teacher would do a teacher demonstration, like rolling a ball, to illustrate some concept.

After the intervention he admits that he uses a wide range of resources to prepare his lessons. The link with the network between the college and other teachers has broadened his own understanding of science. This broadening of his scientific base, has "given me much more confidence and I am now able to handle the input from the learners so much easier".

John used the examples from the textbook to illustrate basic concepts but ensured that learners were not allowed to give examples from their environment to possibly display their understanding. The

learners now have more opportunities to add examples from real life examples. John not only allows and encourages this but his correct handling of these unprepared teaching moments, underscores not only his growing understanding of science, but is developing in him the ability to link concepts with the real world, thus making sense of the understanding science in the environment.

JOHN' KNOWLEDGE OF CURRICULUM

John admits that because of his limited exposure to an understanding of the science curriculum for the primary school, he regarded the prescribed syllabus as the one and all in terms of science teaching. This was reflected in selection of content of lessons being what was in the syllabus and also then the textbook, a textbook selected that was as near to the prescribed syllabus as possible. John had and still has the ability to make many vertical connections but his linking with other subjects and other topics beyond the scope of the primary school syllabus has vastly improved.

The material used in the lessons were those depicted or mentioned in the textbook and there was limited evidence of using any other suitable material for developing the learners' understanding. Very few learners had the opportunity to interact with the material as John preferred to demonstrate and ask a few learners to copy the demonstration. He now makes use of a wide range of material, allowing learners to bring some from their homes and use these during lessons. John holds the view that "anything can be used if it will help the learners with their understanding".

JOHNS' KNOWLEDGE OF ASSESSMENT

John's primary form of assessment before the programme was based on mostly lower order questions throughout the lesson thus expecting the answers to be as closely, if not exactly, as listed in the textbook and chorusing of the concept summaries from the chalkboard at the end of the lesson. This was followed by a test to ensure that they know the facts because "facts are important". Hardly any corrective feedback was given or this was deemed not to be necessary because the examinations only tested concepts as handled in class. The learners were constantly being reminded of the importance of passing. Learners were not given the opportunities to express their understanding of science in demonstrating or setting up simulated experiments.

Now after the programme, John allows learners to do more things on their own, though guided by a

worksheet, and learners are expected to report either in groups or as representatives of groups. He consciously assesses the contributions of these groups: He states that "giving a group mark makes it easier and gives me more time to get to the learners to help with problems". He now attends to the groups and also individual learners in the groups much more frequently. He is able to correct their possible mis-conceptions sooner and the learners get feedback much sooner.

He allows them to record their findings or observations on a rough page and also uses this page as part of his assessment giving him an idea what the understanding is of the individual learner. John now demonstrates a wider repertoire of assessment techniques added to the regular tests and prescribed examination.

JOHN'S KNOWLEDGE OF CLASSROOM MANAGEMENT

John's initially was the center of all activities in the classroom. The learners were restricted to their work places, arranged in the traditional rows, for the duration of the lessons. The only sound that permeated from the classroom was the voice ofthe teacher, the muffled sound of children's suppressed coughing interspersed with the repetition by the learners' echoing of the concepts taught. Some group work was allowed but this was restricted to activities as listed in the textbook not making provision for learners to give their input.

One of the more visible signs of John's previously held idea that 'children should be seen and not heard", has been what now happens in "their" classroom. The learners are arranged in groups and although the old desks are still used, John is already toying with the idea of providing proper tables, an idea picked up from other teachers in the TISP-network

The previous tension in the classroom has been replaced by a "relaxed" buzz reflecting a hive ofactivity from the learners. John himself admitted that he had to get used to this apparent noise but because the learners are actively involved in the learning process, he feels more comfortable knowing that they are leaming.

5.5 PAT'S KNOWLEDGE OF HER PRACTICE

Pat is a grade seven Science teacher at school B. She completed a Junior Primary course at a College

and has 10 years' teaching experience. Apart from attending the TISP course this year, she has attended a course in Cognitive development and an OBE-orientation programme for the Foundation Phase before. She was still teaching in the Foundation Phase just prior to the TISP programme started but felt that she was not challenged enough at that level and requested to be transferred to the Senior primary section. Here she opted to teach Science because some of the other teachers were not willing to teach science. Included in her matric course were Biology and Science, although she "did not really enjoy science".

PAT'S KNOWLEDGE OF SCIENCE

Pat, because of her exposure to Science at Matric level, has a fair understanding of content but for her teaching of Primary School science, she relied exclusively on the prescribed textbook. Not all the learners have been given textbooks and they rely totally on her to provide them with reading material and explain concepts.

Pat is teaching Science to non-mother tongue learners and to help them with their understanding, she has to repeat everything in the mother tongue.

She held on to the textbook almost throughout the entire lesson and only put it down when writing notes on the chalkboard. These notes were but a copy of the textbook and the learners spent a lot of time copying from the chalkboard. Since her exposure to the programme, not only has her confidence grown but she is including a wider range of resources in preparing her lessons. The contact she had with other teachers has helped broaden her own understanding.

PAT'S KNOWLEDGE OF CURRICULUM

Since Pat's primary source for her teaching was confined to the textbook and her recent switch to teaching science in the Senior Primary phase, her knowledge of the Primary Science curriculum was very narrow and thus there was hardly evidence of making any link with related concepts either within the subject itself or with other subjects. " I try to teach what was prescribed".

Before the programme, limited connections were made to real world situations and although most of

her learners come from a very poor community, she did seem to think that they could be exposed to science in that environment.

Since viewing a resent lesson on acids and bases, it is clear that she has moved away from that narrow view because included are material used in that community: plastic cups, plastic bottles for storing water. In consulting more than the prescribed textbook and again her contact with other teachers, it is clear that she is not only using a wider range of readily available resources but are showing evidence of linking the content with the real world of the child: soaps and lemon juice are now part of the lesson.

PAT'S KNOWLEDGE OF ASSESSMENT

Pat readily admits that before her only form of assessment was tests, tests, tests! Learners copied the notes from the chalkboard and this was the basis for the tests. Hardly any questions were asked because " I could not stand the noise and felt very nervous when they started making the slightest noise."

A wry smile appears on her face when she says:"I am now comfortable with the noise because it's a learning noise, the children are learning by themselves and I just guide them." She now allows for their input either by asking questions or making other contributions in class. She is including, at great expense, worksheets in her lessons and allows the learners to explore using the given resources and formulate their own conclusions. She expects from them to give their input throughout the lesson and does not wait until the end of the lesson to assess anything. Although most ofher questions are still on a very basic cognitive level, there are indications that she is willing to include questions of higher order in her lessons.

PAT'S KNOWLEDGE OF CLASSROOM MANAGEMENT

When she started out with teaching science, she kept the arrangement of the desks as it was: rows and each learner at a desk. She was inspired by the stand-in student teacher to move the learners whenever there was an opportunity for group work. Now she has arranged the classes in groups of 6 learners and although she has to move from class to class to teach, the seating in the classes are maintained.

The learners are given more opportunity work on their own and " there is a difference in class, they are excited and no longer bored. I do not do so much talking." She has left the safety of standing

behind her desk to teach and now moves between the groups and help them with problems they are likely to encounter. Pat also admits that she "works less in class but does much more preparation before."

5.6 NICOLE'S KNOWLEDGE OF PRACTICE:

Nicole is a 28 year old language teacher with 7 years teaching experience. She qualified at a university with Afrikaans as a major subject and now teaches language to grade seven learners. Although she can be regarded as well qualified academically, she has not attended any INSET courses other than TISP during the past year. She agreed to be part of the research programme as a language teacher.

• NICOLE'S SUBJECT KNOWLEDGE:

During the pre-intervention phase, Nicole was asked to describe how she would go about planning a good writing lesson. She responded by saying that she would give the children ten key words and would then ask them to write a paragraph on the topic that she has selected. In many cases the theme of the paragraph would be part of a module. What the intention with the piece of writing was, was not seen as important. The processes of brainstorming, free writing, revising, editing and publishing were not worked through. The selection of the particular genre in which the writing should take place, was also not considered. It was important for Nicole that pupils use the correct language, that the spelling and grammatical style be according to what she viewed as "acceptable" or "pure" language. When planning writing exercises she did not spend much time to reflect on the meaning or purpose of the particular piece. She followed her planned programme and stuck to it as rigidly as possible.

After the intervention she was again asked the same question. She no longer gave writing exercises for the sake of writing, but she wanted writing to be relevant to the children's real life situation. She preferred that they work on something that they can learn from and use in the "real' world". She also no longer prescribed what they will write about, but would encourage them to interpret the theme for themselves. She gave them a range of pictures relating to sport and encouraged them to base their ideas for writing on it. She felt learners respond more positively to writing if they are given more independence. A video recording of a writing lesson attempted by Nicole shows very distinct features of a process approach to writing. Learners were taken through the following processes: brainstorming, free writing, editing, re-writing and publishing. Learners were also given the opportunity to praise, polish and question one another's written work. Cross-curricular links and making real life links,

according to Nicole, have become much more important to her. A good teacher to her now, is one that does not only stick to one aspect, but is one that looks broader than her specific learning area.

- NICOLE'S KNOWLEDGE OF CURRICULUM:

Nicole's view of curriculum at the start of the project can be summarised as a programme of planned activities. She followed the syllabi as prescribed. A prescribed text book was selected because it could fit in with the planned programme. It was easy to use the prescribed text book because learners all had copies of it. On the question of whether she thought the materials were relevant to the needs of the pupils she responded: "What I needed I could find in the textbook. Learners needs were not important. The most important thing was to plan a successful lesson".

After the intervention programme, Nicole felt that her most important criteria for planning a lesson and selecting material should be relevance. She now asks herself the questions: How will my learners benefit from my lesson and programme? What do I want my learners to learn from this particular exercise? It has become important for her to link her topics to real life situations. It has also become much easier for her to make cross curricular links. She says:" In the past I saw myself as a language teacher. But I was wrong. I realise that what I do in language can be related to other learning areas as well". She no longer sees herself as the possessor of all knowledge, but realises that learners also have an important part to play in the learning process. She feels that she had never really given her pupils the opportunity and the space to construct their own knowledge. After being exposed to an intervention programme where she herself became an active learner, she realised that her children had enormous potential and that she needed to provide them with appropriate opportunities.

- NICOLE'S KNOWLEDGE OF ASSESSMENT:

Nicole's view of assessment she described as traditional. Learners had to know concepts. She was satisfied when learners could give her the correct answers. She would ask mostly lower order questions. Thereafter written work would be given. She would then mark the exercise workbooks, and decide whether she is satisfied with their answers. The goals of assessment were not to assess skills, disposition, values, problem solving skills or communication skills. The purpose of assessment was to ensure that learners know grammatical and syntactical structures. Written and oral forms of assessment remained her most important techniques of assessment. Learner demonstrations were not really encouraged. Observation received a low priority. Integration of assessment techniques has not been

considered. Cross curricular projects and allowing learners to give feedback on their experiences ofthe learning project are non-existent.

Nicole felt that in terms of her assessment practices she experienced a few changes. She felt that all forms of assessment should not be totally dependent on her. She now also encourages group assessment and peer group assessment. Together with her learners, they will develop criteria for assessment and they will also decide when and how they will use the various criteria. Nicole feels that she now assesses much more than content, whether her learners know the "stuff" is no longer so crucial to her.

She believes that she still concentrates too much on summative forms of assessment, and would like to focus much more on formative assessment. She expressed the need to expand her knowledge around assessment techniques and strategies. This might be remedied through more in-service programmes. She is of the opinion that all teachers struggle with assessment because they have not adequately been exposed to all the different types of assessment techniques.

' NICOLE'S KNOWLEDGE OF CLASSROOM MANAGEMENT:

Before the TISP-programme, Nicole's classroom was organised in groups of 5-6 learners. The reason for this arrangement was purely practical. She felt it provided her with more space to move around in the crowded classroom. She thought children cannot really learn from one another and viewed the teacher as the main source of knowledge. She would always identify the "clever" children in the class and would allow only them to assist the weaker learners in the class.

After the TISP-programme the seating arrangements remained. This time they seemed to be more meaningful to her. Learners were now encouraged to work in groups. She realised that pupils can in fact learn from each other. They were showing more initiative and responsibility. She discovered that interactive learning makes large classes much more manageable. She assesses certain groups during certain lessons. She says that she never wants to revert back to her old method. She realised that OBE demands a new approach and feels excited about experimenting with new ideas.

5.7 EUNICE'S KNOWLEDGE OF PRACTICE:

Eunice is a 41 year old, grade 4 teacher. She has 18 years' teaching experience and completed her

studies at a College of Education. She qualified as a general teacher and it is expected of her to teach all the subjects to her grade fours. Eunice agreed to be part of the research project as a language teacher.

• EUNICE'S KNOWLEDGE OF LANGUAGE:

Eunice described a good language teacher as one who loves the subject and that tries to make the subject interesting. Based on a language lesson she taught before the intervention programme it became evident that when planning a writing lesson, the intentions, the processes involved and the selection of a genre were not seen as important. Learners were given a topic on which they had to prepare a few sentences. After the intervention programme, Eunice made some changes when selecting topics for writing. She felt that pupils had to relate to the topics and that the topics had to relate to the real life situations of her learners. Intention with writing now became a very important component in her ' planning phase. She now encourages them to write letters to their parents and friends and even allow them to make cards for special celebrations, such as mothers day, as part of her writing programme. As far as the processes involved in writing are concerned, Eunice felt that she has not taken the time to explore the various processes. Although pupils were encouraged to select their own themes, she still remains attached to writing as a product.

• EUNICE'S KNOWLEDGE OF CURRICULUM:

When planning a lesson Eunice would follow the syllabus as prescribed. She would then turn to her prescribed text book to select a suitable text. After the intervention programme she finds that she no longer follows the prescribed programme slavishly. She allows her learners' needs to inform her planning. She sees the whole world as a resource and she finds that where ever she goes, she finds herself looking for suitable resources to use in her classroom. She no longer remains text book bound but is able to exploit other contexts as well. As a class teacher, she finds it easier to make cross curricular connections. Making lateral and vertical connections in terms of language is something she feels she needs to become more sensitive of

EUNICE'S KNOWLEDGE OF ASSESSMENT:

Before the programme Eunice's goals with assessment were to make sure that learners give the correct

answers. She insisted on the use of proper language and the rules of language had to be adhered to at all times. She relied mostly on asking questions, mostly lower order questions, to assess learning. Thereafter written exercises were given. These written exercises were also mostly questions of a lower order. Her lesson after the intervention proved that Eunice was exploring a wider variety of assessment techniques. She now makes a deliberate attempt to use more formative forms of assessment. Peer assessment and assessment of group activities of learners were also attempted. Continuous assessment has became part of Eunice's daily planning and she finds that she no longer only relies on written work. Tests, examinations and projects still remain part of her assessment techniques, but they are no longer seen as the most important forms of assessment.

- EUNICE'S KNOWLEDGE OF CLASSROOM MANAGEMENT:

Eunice was a person that liked "order". Desks were organised in neat, straight rows. Things were well organised. She knew exactly where her "weak" children, her "clever" children, her "quiet" children and her "noisy" children sat. She was able to control her learners at all times. She found it difficult to work with groups larger that 45. She tended to be very strict with them - because strict teachers usually have well controlled classes.

After the TISP-programme she started changing her classroom setting. Learners were now organised in groups of 5-6 learners. However, she still feels very uncomfortable with managing group work. Although it is not easy for her to cope with the interactive approach as yet, she feels that she is not able to revert to the old teacher talk method. She knows that she must change. This is what is expected of her as a teacher. She feels that she now understands the demands of OBE and she ascribes her ability to deal with the changes, to the TISP- programme. She finds that she now treats her learners differently and that they in turn, react differently. She finds them more outspoken, free, challenging and imaginative. Eunice feels that the encouragement that she receives from her colleagues and from the TISP support group serves as encouragement for her to continue changing and reflecting on her practice.

6. SUMMARY AND RECOMMENDATIONS

6.1 INTRODUCTION

In this chapter we give a brief summary ofthe findings for the different participants across the different subjects. We shall conclude with a number of recommendations for life long learning for teachers.

6.2 TEACHERS' SUBJECT KNOWLEDGE

The teachers' knowledge in both Mathematics and Science proved to be adequate. All ,the teachers have mastered the basic concepts and are confident in their own abilities to teach the subjects at the levels where they are working at presently. Despite the fact that some of these teachers had no tertiary training in Science and/ or Mathematics, they coped very well with the content. However, it is in the quality and quantity of the links, both cross-curricular and with the real world, that a major change occurred. The teacher's knowledge of Science and Mathematics are no longer as decontextualized as it was before TISP. The teacher's own understanding of subject has therefore changed from mainly procedural to more conceptual.

The Language teachers saw good writing as correct spelling, correct grammar, correct syntactical structure. The focus was on delivering a product which they would grade as acceptable or not. The fact that a modular system was in use in both schools, meant that links within the subject were made. However, links with real world situations were not consciously pursued. After TISP, both teachers regarded the purpose ofwriting as important. For them the guiding question became "How would the learners benefit from this experience?". The extent to which the two participants viewed writing as a process differed, with Nicole showing evidence of knowledge of all the processes involved. Both teachers now also view cross-curricular links as of far greater importance.

6.3 TEACHERS' KNOWLEDGE OF CURRICULUM

This is the domain where the participants showed the greatest shifts. In the selection and use of materials, the participants reliance on prescribed texts came through very strongly, even though it sometimes included using different textbooks. We actually witnessed the textbooks being placed at

strategic places while the teachers were teaching. This changed to selecting a suitable context as a starting point for teaching. The criteria that the participants used for selection of the context were relevance to the learners and, the potential to develop integrated strands across the different learning areas. A significant development was the observed adaptation of materials for local conditions. The use of disposable materials (plastic bottles, sticks, etc.) in a Science lesson is such an example.

The participants moved from a narrow view of the curriculum as a programme of planned activities to a wider view of curriculum as a broader, integrated programme. The point of departure is no longer that a particular content in the syllabus has to be covered, but a suitable context to achieve some pre-determined goals (outcomes). The planning is far more integrated which is enhanced by the fact that most of the participants are teaching more than one subject.

6.4 TEACHERS' KNOWLEDGE OF CLASSROOM MANAGEMENT

The physical organization in the different participants' classes showed some variety. Some teachers used individual seating, while others created a co-operative setting. The one common denominator was that all the teachers were dispensing information - to individual learners or to groups. The reason for groups settings was interesting with one participant citing more space as a reason for having groups in her class.

All the teachers changed to group settings after TISP, with varied management styles. In some cases thereis alotof learner-leamer interaction while in others teacher-learner communication predominates. In the latter case, the teacher has changed from a dispenser to individual learners, to one in group settings. The pattern for learner involvement also shows diversity. On the one hand Fiona actively encourages the learners to explore and explain their thinking, while in other cases the teachers still guide the learners through the processes

The participants' learner control ideology also shows shifts. For Eunice the individual seating was a way of controlling possible deviant behaviour. Most of the participants regarded control as personal - they had to maintain order in class. With the introduction of co-operative settings, the participants now have different views. They now believe that when learners are actively engaged in the learning process, it minimizes disciplinary problems. Fiona involves the learners in control by assigning different responsibilities to them.

6.5 TEACHERS' KNOWLEDGE OF ASSESSMENT

Before TISP, the participants focused narrowly on learner cognition. R ecalling facts. and concepts from memory was the main goal and the techniques used were mainly questioning and written tests. These tests were scheduled at fixed points, usually on completion of a section of the work.

The participants now encourage the development of a wider range of skills in learners, even though it may be sometimes implicit. For example, in the Science and Writing lessons, the context allows for the inculcation of certain values and attitudes, but the necessary techniques to formally assess these are still lacking. This lack of suitable instruments for assessment is also visible in assessment of learner oral communication. The exception here is Fiona who is consciously assessing learner understanding by insisting on justification while engaging learners in debate.

The participants' use of written assessment techniques broadened to include both projects and worksheets. In the case of Science teaching, the learners received in some instances blank sheets of paper to elicit their intuitive understanding of concepts. However, in most cases the participants do not wait to take cues from the learners, choosing rather to explain to the class. Based on the evidence of the lessons that we have observed, the participants are all moving away from end assessment towards more continuous assessment. However, the teachers still lack instruments to assess a wider range of skills, values and attitudes and also are not sure what to do with the evidence. Assessment is therefore not entirely integrated with teaching.

6.6 RECOMMENDATIONS

1. Colleges of Education should be seen as viable sites for delivery in the pursuit of the ideal of life-long learning for teachers. They have both the capacity and the infra-structure to achieve this goal. Lecturers at Colleges are involved with teacher education while the College buildings are under utilized during practice teaching time with student teachers in schools.

2. The structure of TISP can be used to facilitate change in teachers' practices. Both intervention and support are powerful elements in helping teachers to re-conceptualize their practices.

3. Attempts at helping teachers to change their practices should include an intervention strategy. When teachers experience the type of learning environment that they should implement, rather than being taught about the environment, the conditions for success are greatly enhanced.

Teachers who participated in the study confessed to the building up of their confidence to explore with a different pedagogy because they had personally experienced it.

4. Continued support of teachers is essential to help them during their own transition. The participants all singled out the networking and the interaction with colleagues as powerful motivating forces to continue with their own professional development.

5. The teachers' knowledge of their practices can be expanded through a programme like TISP. The knowledge base of individual teachers did not expand to the same extent, nor was the expansion the same across the four different areas under investigation. The teachers' knowledge of curriculum and classroom management changed the most, while knowledge on assessment showed the least change. It is recommended that far greater emphasis be given to improving the teachers' knowledge of assessment.

6. Some of the features of an OBE programme are inherent in TISP. The participants learned to emphasize cross-curricular links, appreciating real life contexts, got experience in continuous assessment and the development of materials.

7. The teachers need to own the process of change. In our programme this was achieved by allowing the teachers to produce their own materials, to experiment with the new approach and to share their experiences with colleagues.

8. There is a need for a follow-up to the single intervention. Teachers expressed the need to be drawn together for a follow-up course of shorter duration. It is recommended that a follow-up course of two days be added to the original programme, somewhere near the completion of the support programme.

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APPENDIX A

PARTICIPATING SCHOOLS

SCHOOL	AREA	SCHOOL ENROLMENT	NUMBER OF TEACHERS
A	KHAYELITSHA	913	25
B	KHAYELITSHA	1230	33
C	KHAYELITSHA	1274	29
D	KUILS RIVER	908	31
E	BLUEDOWNS	1321	40
F	BLUEDOWNS	1168	33
K	BLACKHEATH	1400	38

APPENDIX B

PARTICIPATING TEACHERS

TEACHER	SCHOOL	TEACHING EXPERIENCE IN YEARS	GRADES	SUBJECTS
NICOLE	F	7	7	AFRIKAANS HISTORY
JOHN	F	8	5 & 7	SCIENCE
VICTOR	K	5	5 & 7	MATHEMATICS GEOGRAPHY ENGLISH
FIONA	E	33	5 & 7	MATHEMATICS
PAT	B	10	7	SCIENCE
EUNICE	E	15	5	ENGLISH HISTORY NEEDLEWORK MATHEMATICS

APPENDIX C

TEACHING INTERVENTION AND SUPPORT PROGRAMME:

INTERVENTION PHASE:

22 - 30 APRIL 1998

COURSE PRESENTERS

ISOBEL SEPTEMBER
ZONKI SILWANYANA
CAROL PEFFER
JANE LAWRENCE
CINDY MAFANGA
TAKI MASUTA
EDDIE SMITH
ROBERT KOOPMAN
ALAN STEVENS
BUNITA KOHLER

TISP

INTERVENTION PROGRAMME

22 - 30 APRIL 1998

WEDNESDAY: 22 APRIL 1998:

8h30 - 8h45:	Welcome	Mr. L.B. Smith (Acting Rector)
8h45 - 9h15	Introduction Getting to know one another Ice-Breaker	 Carol Peffer Zonki Silwanyana
9h15 - 10h30	Expectations/ Fears/Concerns	Bunita Kohler Jane Lawrence
11h00- 12h30	Variations on Understanding.	Eddie Smith
13h00 - 13h45	Visions of a different classroom Environment.	Bunita Kohler Jane Lawrence Zonki Silwanyana
13h45 - 14h00	Basics of Journal Writing	Bella September Bunita Kohler

THURSDAY: 23 APRIL 1998:

8h00 - 10h30	Visit to the classrooms of previous TISP-participants. Sit in on lessons And engage in discussions with teachers. Aim: To expose them to alternative classroom practices.	 ALL
11h30 - 12h00	Reflection on Field trip and also Experiences of previous day.	 Robert Koopman
12h00 -13h00	What do you see?	Eddie Smith

13h30 - 14h30	What do you hear?	Jane Lawrence
14h30 - 14h40	Journal Writing	Bunita Kohler

FRIDAY: 24 APRIL 1998

8h30 - 9h00:	So, where are we now? Reflection on previous day's experiences.	Bella September.
9h00 - 9h15	Group dynamics:	Bunita Kohler
10h00 -12h30	Curriculum 2005 and Classroom Practice:	
	THE NEW SPEAK!!!!	Cindy Mafanga Taki Masuta
12H30 -13H00	Journal Writing.	

TUESDAY: 28 APRIL 1998:

THE FOCUS NOW SHIFTS TO THE THREE AREAS:

THE REALISTIC MATHEMATICS PROJECT
AN ENVIRONMENTAL APPROACH TO SCIENCE EDUCATION
THE LANGUAGE PROJECT.

8h30 - 10h00	SCIENCE	R. KOOPMAN
10H30- 12H30	MATHEMATICS	EDDIE SMITH
13HOO - 14H00	LANGUAGE READING	JANE LAWRENCE

WEDNESDAY:	**29 APRIL 1998**	
8H30 - 10H00	MATHEMATICS	Eddie Smith
10H30- 12H30	LANGUAGE THE WRITING PROCESS TOOK TEACHERS THROUGH THE VARIOUS PROCESSES OF BRAINSTORMING, FREE WRITING, CLUSTERING, EDITING, RE-WRITING AND PUBLISHING.	Bunita Kohler
13H00 - 14H00	SCIENCE	Robert Koopman
THURSDAY:	**30 APRIL 1998**	
8H30 -9H30	LANGUAGE	Zonki Silwanyana
9H30 -10H30	SCIENCE	Robert Koopman
11H00-12H00	MATHEMATICS	Eddie Smith
12H00-13H00	EVALUATION OF PROGRAMME	Bunita Kohler

APPENDIX D

SEMI -STRUCTURED INTERVIEW

SECTION 1: GOOD TEACHING

1. Do you know anybody who is a **good** Mathematics/English/Science (Yes or No?) Why do you regard this person as a good teacher.
   (- *Has your view of what constitutes a good Mathematics/ Science/ Writing teacher changed since you attended the TISP course?)*

SECTION 2: PLANNING FOR INSTRUCTION

I want you to think of a very good or excellent lesson that you have taught in the immediate past.

1. Did you **plan** for this lesson? With whom? How long did it take to plan for the lesson?
2. How did you arrive at the **specific examples/ situations** that were used in class?
3. Did you include any of the **learners' life experiences** in your planning of the lesson? How?
4. What type of **cross-curricular activities** did you plan for? How do you plan for cross-curricular work i.e. is the choice of a module guided by the [subject] in it or is the [subject] added on later?
   (- How do you say your planning has changed since you attended the TISP course?)

SECTION 3: RESOURCES (Resources refer to concrete materials and real life experiences)

With reference to the same lesson that you regard as good/excellent:

1. Where did you get the ideas for the lesson?
2. Which resources did you use? What motivated you in your choice of resources?
3. Were the resources effective? Why do you say so?
4. Did you utilize any of the **learners' life experiences** in your presentation of the lesson? How?
   (- Was there any change in the criteria for the selection of resources since you attended the TISP course? State the criteria.)

SECTION 4: MEDIATION

1. In what ways do you provide personal assistance to the learners? What do you do when a learner has difficulties with the content?
2. What do you do to encourage learners to become aware of the potential for learning from each other?
3. How do you allow for learners preferring to learn and participate in different ways?
4. What strategies do you use to help the learners to look critically at what they have done?
5. How do you encourage questions from learners and respond in ways that will facilitate learning?
6. What approaches do you use to help/ would be your response if pupils come up with the following responses to the same problem.

[INSERT EXAMPLE FROM MATHEMATICS/ SCIENCE/ WRITING]

(- How do you handle pupils with differing abilities since you attended the TISP course?)

SECTION 5: ASSESSMENT (is the focus on product or on process)

1. What did you hope to achieve with goo/ excellent lesson that you taught?
2. How successful was the lesson? What were the indications of the success of the lesson?
3. Which is more important for you - getting to the answer, or the way the answer was derived at? Why do you say so? How does it show in you teaching?
4. What forms of information about learning do you collect after or during a lesson?
5. What kind of feedback do you give to your learners (based on the assessment)?
6. Comment on the following two answers from different learners:

[INSERT EXAMPLE FROM MATHEMATICS/ SCIENCE/ WRITING]

(- Comment on any changes since you attended the TISP course?)

SECTION 6: IMAGE OF SELF

1. Suppose you need to explain to somebody what [subject] is, what would you say?
2. How would you describe you own [subject] abilities - weak, average or good? Why?
3. Do you like [subject]? Why? Why not?
4. Which topics of school [subject] do you like best?/ least? Why do you say so?
5. Which aspects of teaching are you good at? Which aspects of teaching would you like to improve on?

   (- Have your views about your own mathematical ability changed since the TISP course? How?)

   (- Have your views about your teaching abilities changed since the TISP course? How?)

SECTION 7: CLASSROOM MANAGEMENT

1. Briefly describe how your classroom is organised.
2. How do you cope with the range of [subject] attainment in you classroom.
3. What do you regard as an effective system of control of pupils?
4. Which factors in school do you regard as advantageous for the type of teaching that you would like to use?
5. Which factors in school do you regard as impediments for the type of teaching you would like to use?

(- Describe any changes in the way your classroom is organised since you attended the TISP course?)

(- Is there any change in you pupils since you have attended the TISP course? In what way?)

SECTION 8: REFLECTION

1. What kind of experiences would you like to have to become a better teacher?
2. To whom do you turn for advice for guidance when you want to improve on a particular presentation? How often do you do this?
3. What do you regard as the most important source for you own learning? Why?

(- Describe any changes since you attended the TISP course)

1.

APPENDIX E

TEACHING INTERVENTION AND SUPPORT PROGRAMME (TISP)

INCOME AND EXPENDITURE STATEMENT AS ON 31 OCTOBER 1998

ITEM	EXPENDITURE	TOTAL
INCOME:		
Joint Education Trust: (PEI)		R98,235.00
A. Personnel		
Organising Secretary - Sept/98	R 2,358.23	
Oct/98	R 4,339.45	
WCCE	R29,702.32	
Bookkeeper: WCCE	R 5,200.00	
B. Administration Costs		
Stationary: 19/6 Video's etc	R 275.76	
26/8 Stationary	R 962.09	
2/9 Stationary	R 118.10	
3/9 Stationary	R 59.42	
7/9 Stationary	R 25.00	
27/10 Stationary	R1438.17	
Telephone & Fax: 30/10 WCED	R 475.71	
WCCE	R3124.29	
Postage: 30/10 WCCE	R 500.00	
Photocopies: 30/10 WCCE	R1440.00	
C: Equipment		
Computer: 19/6 Computer Equipment	R7376.00	
27/10 Computer Equipment	R 124.00	
Flip Chart board: 27/10 Flip Chart Board	R 594.48	
Transport Costs: 3/98 Travel claims	R 533.79	
20/10 Travel claims	R 465.75	
29/10 Travel claims	R 51.84	
30/10 Travel claims	R1044.90	
Programme ending 30/11	R14403.72	
D: Facilitators Team Development		
23/9/98 - TIP Colloqium	R 300,00	

E: Programme Expenses			
Materials Development:	11/9 Diplomas	R 40.00	
	27/10 Diplomas	R 169.30	
	29/10 Videos	R 450.00	
	WCCE	R 4840.70	
Workshop Catering:	25/5	R 3317.40	
	8/9	R 368.36	
	15/10	R 1250.00	
	20/10	R 36.85	
	27/10	R 322.81	
	Workshops 4-5th Nov.	R 699.58	
Graduation: 13/10	Flowers Etc.	R 350.00	
14/10	Supplies etc.	R 695.68	
15/10	Supplies etc	R 150.00	
16/10	*Hiring of supplies & wages*	R 662.50	
20/10	Supplies	R 79.75	
F: Research and Publishing:			
To be negotiated with Prof. Cyril Julie.		R 4000,00	
G: External Evaluation:		R 00,00	
TOTAL EXPENDITURE		**R 92,345.95**	R 5889.05

APPENDIX F (OBSERVATION SCHEDULE)

Teacher : _____ School : _____

Subject : _____ Date : _____

Observer : _____ Duration : _____

Time (in min)	Subject matter	Curriculum	Classroom Management	Assessment