LEARNERS' VOICES ON ASSESSMENT FEEDBACK: CASE STUDIES BASED AT A KWAZULU-NATAL SCHOOL

by

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ABSTRACT

The introduction of an Outcomes Based approach to education in South Africa has drawn attention to the nature of assessment. This research study investigated learners' perceptions of educator feedback and aimed at investigating and understanding: learners' meanings of educator feedback, forms of feedback that learners consider effective, and why do they consider these feedback forms as effective?

In this case study, journal writing and group interviewing were used as data collection instruments. The five participants were Grade: 9 learners from a secondary school in Phoenix, Durban. The participants engaged in seven units of journal entries each. Having read these journal entries, these five learners comprised the group that was interviewed. The group interviewing provided depth in the five case studies.

The findings of this study revealed that learners have significant perceptions of 'educator feedback'. Their definitions of feedback conveyed a broader concept of educator feedback than I had expected. Through their definitions of feedback, learners' outlined their expectations of educator feedback. Learners also disclosed their preferences for some forms of feedback over others. Furthermore, they provided reasons for valuing certain forms of feedback. Their views on the significance of feedback related mostly to: enhancement of learning; correction of errors and avoiding the same errors in subsequent tasks.

Moreover, learners divulged their positive and negative experiences of educator feedback. Learners' positive experiences of feedback resulted from feedback that promoted learning through remediation of errors and feedback that was motivating. Learners' negative experiences were linked to forms of feedback that they considered as inadequate. These forms of feedback were as inadequate in that learners did not understand where they had gone wrong or why they were wrong. Feedback that had a negative effect on their emotions caused them embarrassment. Forms of feedback that encouraged competition were not valued.

Learners raised concerns over the language of feedback (verbal and written) and also the use of red ink in written feedback. A further matter raised was that feedback should relate directly to the mathematics, rather than being personal.

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PREFACE

The work described in this thesis was carried out in the School of Science, Mathematics and Technology Education, University of KwaZulu-Natal, from August 2004 to December 2006 under the supervision of Sarah Bansilal and Angela James.

This study represents original work by the author and has not otherwise been submitted in any form for any degree or diploma to any tertiary institution. Where use has been made of work of others, it is duly acknowledged in the text.

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Thanks to my school **Principal & Governing Body** for granting me the permission to conduct this study. My **colleagues** …

> Teachers, your students have so much to say …
> Study their stories …
> If you are so concerned about their future
> Read about their concerns. (Benjamin Zephaniah, 1994)

DEDICATION

TO MY PARENTS, DAN AND RADHA NAIDOO

for encouraging me to undertake this study.

TO MY CHILDREN, SENOSHA AND RASAAYAN NAIDOO

for encouraging me to complete this study.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

In the past twelve years, South Africa has been experiencing economic, social, and political changes as well as several policy and structural transformations in the education system. The adjustments serve to "uproot old practices, beliefs and values about the social order and to replace them with new ways of conducting national business" (Manganyi, 2001, p.28). The changes extending into educational circles have been revolutionizing traditional methods of teaching and learning.

The new curriculum for South African schools is a watershed with its Outcomes Based approach presenting educational reform, driven by policy (Revised National Curriculum Statement Grades R-9, 2002). The new curriculum, called Curriculum 2005 (C2005) is aimed at improving all students' learning outcomes (Asmal, 1999). The National Department of Education's (DoE) assessment policy documents that assessment focuses "on the achievement of clearly defined outcomes" (DoE, 2002a, p.13).

The Outcomes Based Education (OBE) approach represents a new paradigm in education that aims "to equip all students with the knowledge, competence and orientation needed for success" (Pretorius, 1998, p.x) after schooling. As part of the curriculum reform process, in order to make the introduction of OBE meaningful, it therefore became necessary for assessment techniques to be reviewed. Changes to assessment have always been recognized as an important means of achieving curriculum change (Clarke, 1996; Pretorius, 1998; Seibőrger, 1998). "Outcomes Based Education is an approach that embraces the capacity of learners to … respond to wise guidance by teachers" (Asmal, 1999, p.9).

Traditionally, in South African schools, many educators assessed learners' mathematics tasks through feedback in the form of marking and assigning grades or percentages. "Assessment as simply … to assign grades" (Mfeka, Krupanandan, Dingle, & Naidoo, 2000, p.5) was a practice associated with the old curriculum. The DoE's

assessment policy document (2002a), offers a new dimension to assessment in South Africa. This policy (DoE, 2002a) stresses that the main purposes of assessment are "individual growth" and development of the learner. In this document, five uses of assessment are highlighted: baseline assessment, diagnostic assessment, formative assessment, summative assessment and systemic assessment. However this research will only focus on the following two uses of assessment.

- Formative assessment through which "constructive feedback is given to learners" (DoE, 2002a, p.21) informing them of their progress so as to improve learning.
- Diagnostic assessment through which the "nature and cause of barriers to learning experienced by specific learners" are identified. This diagnosis is to be followed by educators providing feedback to learners, offering "guidance, appropriate support and intervention strategies" (DoE, 2002a, p.21).

Uses of assessment are also grounded in two more recent policy documents. Firstly, the National Curriculum Statement Grades 10-12 (General) (DoE, 2005); which states that assessment should "be used to

- develop learners' knowledge, skills and values;
- assess learner's strengths and weaknesses
- provide additional support to learners
- revisit or revise certain sections of the curriculum and
- motivate and encourage learners" (DoE, 2005, p.1).

Secondly, the Revised National Curriculum Statements documents that assessment should support "the growth and development of learners" (DoE, 2002b, p.95). In analyzing the three documents, (DoE, 2002a; DoE, 2005; DoE, 2002b) it is clear that these policies endorse that the assessment of learners' performance should enhance individual growth and development and facilitate learning. Therefore, if the "purpose of assessment is to improve performance, not just audit it, [then] the techniques of measurement must be accompanied by quality feedback provided to learners" (Wiggins, 1998, p.43).

Carr et al. (2004) also emphasize the purposes of assessment and feedback as:

> Assessment is an integral part of the learning process and has both formative and summative functions. These two sets of functions are mainly a matter of when they occur in relation to their purpose, and not a differentiation of rigour or quality. Formative assessment is an on-going informed interaction between the teacher and student designed to enhance student learning. Therefore it provides feedback to the teacher and to the student about present understanding and skill development in order to determine a way forward. (Carr, et al., 2004, p.6)

Formative assessment relates to that integral process of appraising, judging or evaluating learners' work or performance and using this to shape and improve their competence (Clarke, 1997). Mathematics assessment is a mechanism for the construction of learners' mathematics competence (Clarke, 1996; 1997). The aim of assessment is to promote "learners' mathematical growth and competence" (DoE, 2005, p.7). Educator "feedback to learners is a crucial element" (DoE, 2002b) of this mechanism. It is on this crucial component of assessment that the study is focused.

1.2 Rationale and purpose for the study

Several learners in my mathematics classes demonstrate poor performance in mathematics. "In South Africa, poor results continue to dominate the news" (Engelbrecht, 1997, p.4). A report on South African learners' mathematics in the Third International Mathematics and Science (TIMMS) notes that "SA students performed poorly in comparison to students of the same age in other countries" (Engelbrecht, 1997, p.18). The standard 5 and 6 learners' average scores in the TIMMS study was below the international averages. This dismal performance of South African learners in the TIMMS study, reflect the need to enhance learners' mathematics competence. Despite the poor state of learners' mathematics performance, learners' mathematics understanding and its skills mastery, is central to the aims of OBE (Pretorius, 1998). The curriculum reform process also includes the introduction of compulsory school mathematics or mathematics literacy. Amongst the several fundamental principles of OBE, its goal is to equip all learners with competent knowledge for all to succeed (Pretorius, 1998). For learners to

develop this competence, I believe that educator feedback in assessment can support good assessment practices and so enable learners to construct mathematics knowledge.

My learners' poor performance and the high failure rates in mathematics, raises issues of the effectiveness of educator feedback. I question to what extent feedback practices benefit vast numbers of learners, do learners have particular feedback needs, is feedback communicated in a way that learners find useful or what form of feedback information will be most useful to learners. "We need to be aware of student beliefs, and take these into consideration when giving feedback" (Hyland, 2003, p.228). Since this study emphasizes interpretive dimensions (elaborated upon in section 3.2), "it seeks to understand situations through the eyes of the participants" (Cohen, Manion, & Morrison, 2000, p.29). What better way to is there to understand feedback experiences; than see feedback through new eyes — learners' eyes, through which this study was investigated.

As an educator of mathematics, it is my view that new assessment policies as outlined in the assessment policies of the Department of Education (DoE, 2002a; DoE, 2005), aim to change learners' poor performance in mathematics. Good assessment practices are crucial to sound construction of mathematics knowledge. As a crucial element in the assessment process, feedback is sometimes ignored. The Department of Education's assessment policies (DoE, 2002a; DoE, 2005) are reticent about feedback policies. Therefore, issues around feedback need to be foreground in order to improve the effectiveness of assessment. Hence, in order for assessment to be broadened to the scope envisaged by the Department of Education (and discussed in Section 1.1), the ways in which feedback is administered to learners needs to be explored.

Drawing on my 20 year experience of assessing learners' work and providing feedback, I believe that effective feedback to learners can address their individual needs regarding their mathematical skills and knowledge and also identify whether learners require remediation or enrichment.

My greatest concern about learners' performances has stemmed from observed instances of learners repeating their mistakes in several tasks; even though feedback on how they could remediate their mistakes was provided. My experience is supported by the following: "when feedback is given, it is often ineffective as an agent for improvement. Students seem to show the same weaknesses again and again" (Sadler, 1989, p.73). Like myself, Farrell (1992) too, speculates "Why do they keep making the same error ..." (p.656) despite educators' best efforts. According to Woolfolk (1995), feedback must indicate to learners why they are wrong for without such feedback "they are likely to make the same mistakes again" (p.571).

It is through this genuine concern that I embarked on this research study to; investigate what meaning learners give to educator feedback; to understand learners' perceptions of the different forms of educator feedback; and to realize which feedback forms they view as effective and why.

The findings of this study could be used to inform:

- educators interested in developing effective feedback mechanisms and providing effective feedback to their learners;
- teacher educators involved in educating future educators about the importance of feedback and the learners perceptions about effective forms of feedback
- subject advisors offering support to other educators so that these educators may improve their feedback practices.
- policy makers for consideration of assessment reform particularly with a focus on the place and role of feedback in assessment practices.

Additionally, the findings from this study would contribute to the literature on the concept of feedback, effective forms of feedback, and more significantly on learners' views about feedback.

1.3 A preview of the chapters that follow

In this chapter I briefly discussed the background, rationale and purpose of the study. In Chapter Two, I summarize the significant literature that was reviewed. Details of the methodological approach used in this study are discussed in Chapter Three. Chapter Four encompasses an analysis of the data gathered. This formed the basis for a discussion on the merits of the study and recommendations which are dealt with in Chapter Five.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The focuses of this literature review is parallel to the aims of this study; namely, the meaning of feedback, the different forms of feedback, and what constitutes effective feedback. In this chapter, the literature reviewed is largely of research conducted internationally as local research in this area appears to be extremely limited. This literature review is organized in a manner which is congruous to the focus of this study. Here I examine findings in research studies that have documented reasons for some forms of feedback being considered as more effective than other forms. Additionally, this chapter includes a theoretical framework outlining existing theories closely related to this study.

2.2 Developing a meaning for assessment

Assessment should play a powerful role in conveying information clearly and directly to learners about their learning (DoE, 2002; DoE, 2005). Assessment, being an integral part of education, is linked to all learning activities and is at the heart of educational endeavour (Clarke, 1996). Clarke (1996) sees assessment as having three fundamental purposes; to model, monitor and inform. Its purpose of 'informing' is a reference to assessment feedback. The issue of the purposes of assessment is central to educational reform. Being that as it may, promoting learners' learning is the central goal of our curriculum (DoE, 2002). It is ultimately the learners' actions that need to be informed by educators' assessment and feedback efforts.

Gardner (1992 cited in Verhage and de Lange 1997, p.17) emphasizes the goals of assessment in his definition of assessment. He defines assessment as the "obtaining of information about the skills and potentials of individuals, with dual goals of providing useful feedbacks to the individuals and helpful data to the surrounding community". According to Black & William (1998), the information obtained through assessment is used to offer learners feedback to modify their learning activities.

At its root, assessment is a communication process informing educators, learners, parents and policymakers about what learners have learnt. Assessment is "a continuous communication process between teacher and learners" (Linchevski, Kutcher & Olivier, 1999, p.3). A similar notion is presented by Clarke (1997) when he defines assessment as "an opportunity for mutual feedback and [as] a source of suggestions for action" (p. 2). No one seriously doubts the necessity for this communication, namely feedback, especially from educator to learners. "Feedback is not merely useful. It is an essential part of any completed learning" (Wiggins, 1998, p. 43). Furthermore, Bloom, Madaus and Hastings (1981) describe "providing feedback to students [as] a legitimate purpose" (p.92) of assessment. It may therefore be said that assessment "provides feedback to all and permits realistic adjustment of proximal learning goals" (Fuson, et al., 2000, p.201).

Wragg (2001) declares that "if assessment is to be linked to learning, then feedback, … is an important part of this connection" (p. 35). Wiggins (1998) subscribes to Wragg's assertion and explains why this connection between assessment and feedback is significant. To paraphrase Wiggins (1998); he believes that if the purpose of assessment is to improve learners' performance, then the methods of measurements must be accompanied by quality feedback. A similar association between assessment and feedback is presented by Tunstall and Gipps (1996a). In the process of assessment, they view "feedback from teachers to children [as] a prime requirement for progress in learning" (Tunstall, & Gipps, 1996a, p.389). This view of feedback advancing learning is a significant role of assessment in education (Higgins, Hartley, & Skelton 2002). Consequently, learning maybe viewed as "unproductive for a learner" (Laurillard, cited in Young, 2000, p.409) in the absence of feedback. Rowntree (1987) indicates how vital feedback is to learning in stating that feedback "is the life-blood of learning" (p.24).

The literature presented in the preceding four paragraphs illustrates that feedback is an essential component of assessment and without feedback, much of the value of assessment is lost. Although assessment and feedback seem to be inextricably linked in purpose and function, it is necessary for us to disentangle these two notions in order to

examine the role played by feedback within the assessment process. The following subsection is devoted to developing a definition of feedback.

2.3 Defining feedback

Feedback is a complex term to define (Askew & Lodge, 2000). What follows are some definitions of feedback from scanning the literature. The definitions of feedback presented here link feedback and assessment. The purposes and functions of feedback also appear to emerge from these definitions.

Some authors viewed feedback as imparting information or knowledge about learners' performance. Feedback means "information on results of one's efforts" (Slavin, 2003, p.353). The term feedback refers to "information on how successfully something is being done" (Sadler, 1989, p. 120). "Feedback is information about how a person did in light of what he or she attempted" (Wiggins, 1998, p.46). Dietz's (1998) definition extends to incorporate the purpose of feedback as well. She defines feedback as "information to another about what he or she has said or done. This information helps to clarify and respond to what has been observed or heard" (p.136).

Rowntree and Wragg define feedback as "knowledge of results" (Rowntree, 1987, p.24; Wragg, 2001, p.35).

While some authors viewed feedback as information about learners' performances, other authors described this information as relating to outcomes/objectives. According to Torrance and Pryor (1998), feedback tells learners "how well they have achieved particular objectives at a particular point in time and what else they might need to do in order to improve" (p.8). Ramaprasad (1983) defined feedback as information related to the "reference level [outcomes] of a system parameter" (cited in Clarke, 2000, p.34).

The literature reviewed, noted the function of feedback as identifying the gap between where learners are and where they need to be. Wiggins's (1998) idea of feedback being 'information' is elaborated upon as "information that provides the

performer with direct, usable insights into current performance, based on tangible differences between current performance and hoped-for performance" (Wiggins, 1993, p.182). This view is similar to that presented by Bloom et al (1981) who view feedback as a mechanism of indicating what each student has learned and what is yet to be learnt. Black, Harrison, Lee, Marshall & Wiliam (2003) add that feedback provides information about 'gaps' in learning and if this information is not used to alter the gaps, then "there is no feedback" (p.15).

Besides identifying gaps in learners' performances; several writers highlighted the role of feedback as providing help on how learners could close/alter the gap. In addition to their definition above, Bloom et al. (1981, p.156) note that feedback is portrayed as "individualized corrective help". There are three key ideas that I would like to elaborate further, which are implied in the preceding definitions. I will refer to other sources to strengthen my argument. Firstly, besides informing learners of their current achievement, feedback should "indicate what next steps in their learning trajectory should be" (Black et al., 2003, p.42). Moreover, Black et al. (2003) note that assessment provides "time for feedback to achieve remediation" (p.23). Secondly, Ramaprasad (1983) defined feedback as "information about the gap between actual level and reference level of a system parameter which is used to alter the gap in some way" (cited in Clarke, 2000, p. 34). Sadler (1989, cited in Clarke, 2000), comments on Ramaprasad's definition as: information about the gap between actual and reference levels is considered as feedback only when it is used to alter the gap. Thirdly, Hattie (1993, cited in Burnett, 2002) defined feedback as a means to direct learners in ways to improve by providing information regarding learners' "ability or inability to understand" (p.6).

Another view of feedback presented in the literature was feedback as a judgement. Askew and Lodge (2000) describe feedback as "a judgement about the performance of another … in the belief that the recipient will be able to adjust subsequent performances" (p.6). This definition is broadened by Hargreaves, McCallum and Gipps (2000) as "imparting directly a judgement of a child, a child's strategies and skills, or a child's

attainment (often in relation to goals) and giving information about that judgement" (p.23).

The term feedback is also used "to describe any of the numerous procedures that are used to tell a learner if an instructional response is right or wrong" (Kulhavy, 1977, p. 211).

Feedback as a response is portrayed in the following sources. Zellermayer (1989) states that feedback is a way to describe the parameters of constructive response to students work. In maintaining the concept of feedback as a response, I take account of the dictionary definition of feedback. The Wordsworth Concise Dictionary defines feedback as a "response or reaction providing useful information or guidelines for further development" (1994, p.354). In my opinion the Wordsworth Concise Dictionary definition encompasses the main ideas presented in this subsection in a succinct manner and is the one that I will use as a referent in this study. I chose this definition as I believe that every form of feedback discussed below (Section 2.4) involves some type of response. This definition also includes use of assessment for further development as set out by the Department of Education (DoE, 2002; DoE, 2005).

2.4 Forms of feedback

Feedback could take several forms from being evaluative, which is judgemental (Askew & Lodge, 2000; Hargreaves et al., 2000; Kulhavy & Yekovich, 1976); or descriptive, making specific references to the learner's actual achievement, competence or improvement (Black et al., 2003; Bloom et al., 1981; Clarke, 1997; Rowntree, 1987; Wiggins, 1998; Zellermayer, 1989). Although the Department of Education informs us that "methods of feedback include … teacher's oral and written comments" (DoE, 2002b) there is a silence on feedback policies relating to the inclusion of several forms of feedback in assessment practices. A discussion on the forms of feedback, as identified in the literature reviewed, follows.

2.4.1 Feedback in the form of ticks and crosses

Feedback in the form of ticks and crosses is the most common form used to indicate whether answers are right or wrong. A study on teacher feedback strategies used in classrooms, revealed that incorrect responses may be indicated by the use of a cross, dot or underlining (Hargreaves, et al., 2000). In the same study, it was observed that "crosses to indicate a wrong answer were less common than ticks to indicate a correct one" (Hargreaves et al., 2000, p.25). Instead, teachers fed back that an answer was incorrect by: putting a question to the learner, repeating the original question or posing a new question. This study also noted that ticks were a common form of feedback showing a learner that their response was right. However, only a few teachers fed back a question when an answer was correct, by for example asking a learner to explain in more in detail because the answer was absolutely right. The function of ticks and crosses was to sort out the correct from the incorrect answers, that is confirm attainment or not.

Kulhavy & Yekovich (1976) remark that the judging of answers as absolutely correct or absolutely wrong is 'counterintuitive'. Their study focused on the effect of right/wrong feedback on learners' confidence in their answers. According to them when confidence in a correct answer is high then feedback is likely to receive superficial attention. In such a case the learner briefly checks that the feedback matches the response. Crooks (1988) explains that with confidence, feedback on correct answers has little effect on subsequent performances. On the other hand, if the learner is sure of the answer and discovers that it is wrong, the feedback is given more attention and acts as a corrective device. When a learner's confidence in their answer is low, feedback indicating that he/she is wrong could result in acceptance. To sum up Kulhavy & Yekovich's finding (cited in Crooks, 1988) "the most effective form of feedback will depend on the correctness of the answer [and] the student's degree of confidence in the answer" (p.456).

Bangert-Drowns, Kulik, Kulik & Morgan (1991) studied the effect of feedback forms on learners' achievement. They reported that when "learners are only told whether an answer is right or wrong, feedback has virtually no effect on achievement"

(Bangert-Drowns et al., 1991, p. 528).

Wragg (2001) acknowledges that although mathematics is a subject where answers are clearly right or wrong, assessment appears straightforward only on the surface. Assessment in mathematics is more than right or wrong answers if pupils are to make progress and "there is no guarantee that a tick or a cross will achieve this on its own" (Wragg, 2001, p.61).

2.4.2 Feedback in the form of marks/scores/grades

Another commonly used form of feedback is that of grading which is used to quantify performance. The value of a single score, mark or grade is questioned by several authors (Black, et al., 2003; Black & Wiliam, 1998a; Black & Wiliam, 1998b; Black & Wiliam, 2006; Bloom et al., 1981; Butler, 1987; Clarke, 1996; Cross & Cross, 1980/1981; Gipps, 1995; Higgins et al., 2002; Kohn, 1994; Rowntree, 1987; Sadler, 1983; Slavin, 2003; Talbot, 1989; Tunstall & Gipps, 1996a; Watson, 2001; Wiggins, 1998; Wragg, 2001; Young, 2000).

A mathematics educator organization in the United States called National Council of Teachers of Mathematics (NCTM), devised Assessment Standards which offer direction for schools. With reference to the NCTM Assessment Standards: "Assessment is the process of gathering evidence about a student's knowledge of, ability to use, and disposition towards mathematics and of making inferences from that evidence…" (NCTM, 1995, p.3). Scores, marks or grades on their own, are considered inadequate for drawing inferences from (Clarke, 1997). He claims that "such a multifaceted portrayal cannot be given by a single measure" (Clarke, 1997, p.4). Feedback that quantifies student performance "assumes that mathematical competence or capability is linear in character [and] can be aggregated arithmetically rather than qualitatively" (Clarke, 1996, p.359). Since assessment is a process serving several functions, he asserts that a number or a grade does not provide learners with sufficient information to act upon. Grades offer spurious precision and this is "incompatible with the goal of helping students to learn" (Kohn, 1994, p.2).

Wragg (2001) considers grading as an attempt to simplify or discard complex information. He declares that a grading procedure can 'sacrifice' precisely that detail that might contribute constructively to a learner's subsequent actions. Clarke (1996) also believes that grading is a 'fairly simplistic' form of assessment feedback. A mark on its own says "little about what children can or cannot do" (Wragg, 2001, p.28). Feedback in "its least useful form … comes as a mark or grade" because a mark is 'non-specific' (Rowntree, 1987, p.24). He mentions that a mark neither explains to learners what they have done to merit such a mark nor what they could do to improve.

Talbot (1989) scrutinizes significance of marks. He questions if 80% means a distinction then does it means that a learner scoring 79% is not worth a distinction. "Are marks absolute? Is there a significant enough difference between the performance of candidates who scored 79% and 80%...?" (Talbot, 1989, p.11). Moreover he questions whether marks portray the truth about learners: do 39% and 40% justify one candidate failing and the other passing.

In a study by Chater (1984), cited in Clarke (2000), it was found that the main purpose of marks was for teachers to generate some record. The Kings Medway-Oxfordshire Formative Assessment Project (KMOFAP, henceforth) conducted several studies that investigated assessment practices in British mathematics and science classes. In reviewing the research studies of the KMOFAP (Black & Wiliam, 1998a; Black & Wiliam, 1998b; Black et al., 2003; Lee, 2001), it was found that the allocation of marks and the grading functions were over-emphasized. Furthermore, the findings of the KMOFAP were consistent with that of Chater's study (1984) in that the collection of marks to fill up records was given greater priority (Black et al, 2003; Black & Wiliam, 1998a; Black & Wiliam, 2006; Lee, 2001).

In a small-scale quantitative research project that looked at students' responses to feedback, Young (2000) has drawn attention to the emotional impact of receiving marks. His research focused on how students react to feedback. Beyond the mature students that

Young studied, he vouched that there are 'psychologically vulnerable students' in all classes (Young, 2000, p.409). Pitts (2005) reminds us that it is easy to underestimate the extent to which "careless feedback might affect their [learners] development and emotional stability" (Pitts, 2005, p.219). From Young's study (2000), there emerged a relationship between how students responded to feedback received and their self-esteem (judgement of self-worth). Students with a high self-esteem displayed acceptance of feedback received. Those students with low self-esteem are vulnerable to unfavourable judgements. Likewise, findings from the KMOFAP report that feedback by grades damage the self-esteem of low attainers.

Feedback in the form of marks, scores or grades create competition and comparison among learners (Askew & Lodge, 2000; Black & Wiliam, 1998a; Black & Wiliam, 1998b; Black et al., 2003; Carnell, 2000; Crooks, 1988; Slavin, 2003; Watson, 2001; Woolfolk, 1995) and "can hurt social relations among classmates" (Krumboltz & Yeh, 1996, cited in Slavin, 2003, p.505). Learners become distraught because they associate adequacy with a particular mark (Clarke, 1996). In comparing themselves to others, learners with high scores feel "too little challenged" and those with low scores feel "demotivated" (Black, 1998; Black & Wiliam, 1998a; Lee, 2001). Woolfolk (1995) notes the effects of grading on students in highly competitive classes. Competition among students may be "particularly hard on anxious students or students who lack confidence" (Woolfolk, 1995, p. 570). Further evidence to support Woolfolk's (1995) view emerged from a study by Perrin (1991, cited in Black, 1998). The weak pupils, in Perrin's study (1991) saw feedback with scores as a source of pressure which made them anxious. Over and above this, Woolfolk (1995) reflects on some research evidence (Moos & Moos, 1978; Tricket & Moos, 1974) where competitive classroom atmosphere, created through grading, are associated with increased student absenteeism and dropout rates. Crooks (1988) too, takes into account the effect of grades on low attainers. He regards the social comparison that arises from grade-giving as "crucial for the less able students, who might otherwise receive little positive feedback" (Crooks, 1988, p.463). Findings from the KMOFAP also note that apart from marks encouraging competition, feedback in the form of marks "teaches pupils with low attainment that they lack ability and are not able to

learn" (Lee, 2001, p.40). Harlen (2006, p.76) too, acknowledges that feedback to learners plays "a key role in determining their feeling of being capable of learning". Amongst the several guidelines (Crooks, 1988) suggested for reducing anxiety and social comparison in the classroom, is the avoidance of the use of grades.

In her controlled experimental studies, Butler (1987) offered three forms of feedback to learners, one of which was feedback in the form of marks. She repeatedly found that learners perform less well and are less interested in what they are doing when they are graded than when feedback encourages them to focus on the task. Feedback in the form of marks emphasizes social comparison and "promote an ego-involved orientation" (Butler, 1987, p.475) and does not enhance learners' involvement in the task. This could be the reason learners often "seem more interested in their own and their friends grades than in their learning" (Butler, 1987, p.3). Butler's (1987) findings included that both performance and interest in a task declines amongst high achievers if marks are not awarded, since the task will no longer be perceived as relevant to demonstrating their high ability. "Grades may encourage an emphasis on quantitative aspects of learning, depress creativity, foster fear of failure, and undermine interest" (Butler & Nissan, 1986, p.215). Kohn (1994) perceives this outcome, as a result of grading, as ironic if the rationale for assessing learners is to encourage them to perform better.

2.4.3 Feedback in the form of comments

Comments indicating a pass/fail. "Another kind of feedback the student may obtain, sometimes instead of a grade or mark, is knowledge of whether he has passed or failed" (Rowntree, 1987, p.25). A pass only informs a learner whether he/she has reached some understanding of what knowledge or skill is required to meet a predetermined standard. The extent of knowledge is not portrayed by the comment 'passed' as it signals that a learner has achieved some knowledge. A pass "will not tell him how or in what way he may have over-achieved" (Rowntree, 1987, p.25). In the same way, the comment 'failed' does not tell a learner "what particular aspects of the required performance he is deficient in" (Rowntree, 1987, p.25).

Comments expressing approval/disapproval. As with other feedback forms, brief comments expressing approval or disapproval could be verbal or written. Hargreaves et al. (2000, p.26) recognize praise as expression of approval, where praise phrases include: 'Well done', 'Good Boy/Girl', Brilliant', etc. and phrases expressing disapproval include; 'Disappointing', 'Try harder', 'Weak', etc. Hitz & Driscoll's (1994, cited in Burnett, 2002) study, on the use of praise suggested that constructive encouragement was needed for enhancing learners' self-esteem. This involves "focusing on improvement and efforts, using sincere comments and recognizing students' feelings" (Burnett, 2002, p.6). Black (1998) agrees that self-esteem is influenced by the way teachers respond to their learners' work, hence making feedback a 'delicate and crucial factor'. He indicates that learners that are self-protective will tackle any task that does not "expose them to public failure or criticism" (Black, 1998, p.135).

Burnett's study (2002) measured students' preferences for teacher praise using Elwell and Tiberio's (1994, cited in Burnett, 2002) Praise Attitude Questionnaire to determine students' perceptions of praise and feedback. Of a sample of 747 students, 91% of students preferred to be praised 'often' or 'sometimes' while 9% reported that they never wanted praise. Merret and Tang (1994) conducted their study on students' preferences for rewards, reprimands, praise and punishments; and the effectiveness of each of these techniques. They used a revised version of Houghton et al. (1988, cited in Merret & Tang 1994) Rewards and Punishment Questionnaire. The findings from a sample of 1779 students revealed that most of the students preferred to receive praise 'often' or 'sometimes' (90%) and very few students never wanted praise (10%). These findings are in line with Burnett's mentioned earlier. An overall consideration of students preferring praise showed that most students (58%) wanted to be praised quietly, while 42% preferred loud public praise (Merret & Tang, 1994).

Bulter's study (1987) included determining whether praising of students' performances would result in higher task-involved or ego-involved perceptions. The praise group merely received the praise phrase; 'very good'. The results confirmed that

the praise group yielded higher ego-involved perceptions than task-involved perceptions. In addition the results reinforce the reservations that praise will not "enhance interest if it is given in such a way as to promote ego rather than task involvement" (Butler, 1987, p.481). Slavin (2003, p.353) therefore recommends that "praise for a job well done should specify what the student did well". A point worth noting is that general praise boosts learners' ego and does not enhance learning unless praise spells out where learners have excelled.

Crooks (1988) however, questions the value of praise within the feedback process. He claims that there is little support "from classroom research for making praise a prominent part of feedback" (p.456). Having directed several programs for the Centre on Learning Assessment and School Structure (CLASS), Wiggins (1998) observes "that many educators seem to believe that feedback means giving lots of approval and some disapproval … [and] feedback is like the children's game of hot and cold" (p.46). Hence Wiggins (1998) pointedly states that praise encourages students "keeps them in the game" (p.46) but it cannot help them to improve their learning. The preceding quotation demonstrates that Wiggins (1998) supports Crooks (1988) claim. Moreover, the KMOFAP reported that where such classroom culture prevails, learners neglect to reflect on how to improve on what they do not know (Black et al., 2003; Black & Wiliam, 1998a).

Brophy's study (1981) on the effect of teachers' praises on students' achievements; show that teachers' praise in their feedback to students does not essentially enhance students' achievements. Additionally, he explains that praise has different purposes and meaning in different contexts and that its quality is, therefore, more important than its quantity. When students are "praised … without any explanation, they are unlikely to learn from feedback" (Slavin, 2003, p.353). Taking into account that younger and less able students may benefit most from praise; praise "should be reserved for specific achievements that truly represent substantial accomplishments for the individual student" (Crooks, 1988, p.456). "Praise should be used sparingly" (Crooks, 1988, p.469) rather

than learners being offered "frequent, trivial or inappropriate praise" (Brophy, 1981, p.27).

Feedback in the form of comments that refer to learners' efforts or abilities may be termed as 'attributional feedback' (Burnett, 2002; Craven, Marsh, & Debus, 1991). Craven et al.'s (1991) study focused on learners that scored in the lowest three quarters of their class on an academic self-concept questionnaire. The purpose of their study was to examine the effects of feedback administered by researchers and teachers. This intervention was designed to enhance learners' mathematics and reading self-concept through effort feedback and ability feedback. Their research findings demonstrate "modest levels of self-concept enhancement" (Craven et al., 1991, p.26) through attributional feedback and further suggest that ability feedback is more important and valued by students.

Brief verbal and written comments. Comments could be directed to learners through verbal and written feedback. Early research by Page (1958, cited in Crooks, 1988; Cross & Cross, 1980/1981; Rowntree, 1987; Woolfolk, 1995) found that feedback in the form of simple positive comments were beneficial while harsh criticism is counterproductive. Contrarily, work done by Sadler (1983), through informal investigations with his own class, bears evidence that brief comments do not promote improvement in learners work. He argues to expect improvement in performance through brief comments is "a fundamental miscalculation" (Sadler, 1983, p. 62).

Research studies (Black & Wiliam, 1998a; Burnett, 2002; Butler, 1987; Young, 2000) have emphasized the influence and importance of verbal and written statements directed to or at learners. Black et al. (2003) reviewed numerous reports that disclosed that verbal feedback affect learners' self-image and is unlikely to improve their involvement in tasks when learners are only told of how well or how badly they have done. Butler (1987) too, cited several studies that viewed nonspecific verbal praise as centering around learners' ego than on the demands of the tasks at hand. Tunstall & Gipps (1996) investigated the types of feedback administered to learners and how

learners understood this feedback. Their evidence suggests that "there are dangers in making feedback to individual children public" (Tunstall & Gipps, 1996, p.403).

Young (2000) explains that the "most powerful and potentially dangerous dimensions of students' feelings about feedback is the extent it impacts on themselves as people" (p.414). Boud (1995, cited in Young) asserts that what teachers write and say can easily be assumed as comments about learners themselves rather than their work. From Young's study (2000), it was apparent that while students with low self-esteem take any comment as an indictment of themselves. Those with a high self-esteem see the comments as bearing on their work only. In his study, students with low self-esteem perceived comments as personal and of having a great impact on them. Verbal comments that are derogatory are viewed as 'absolutely annihilating'. Similar findings emerged from Carnell's study (2000). Her study took account of how students described learning with the help of someone. "Interestingly, all examples were about verbal communication" (Carnell, 2000, p. 46) where students expressed that they took offense to the teacher's blunt comments.

Further conclusions from Young's study (2000) reveal a sharp contrast between students of low self-esteem and high self-esteem. Students who demonstrate high self-esteem were positive about receiving verbal criticism and were not personally devastated by adverse comments.

With regard to written comments, Woolfolk (1995) affirms that written comments are most supportive when they are personalized and provide constructive criticism.

Feedback comments accompanied by a mark/grade. Butler's controlled experimental study (1987 and 1988) together with relevant research within the KMOFAP (Black et al., 2003; Black & Wiliam, 1998a) set out to examine the effects of feedback in the form of marks accompanied by comments. The KMOFAP analysis accords well with that of Butler's whose study showed that there are no learning gains from feedback in the form of a combination of marks and comments. Butler (1987) observed that learning cannot be

advanced through feedback that included marks and comments because students ignore comments when marks are also given. In fact the value of feedback comments are "eclipsed by learners' reactions to scores or grades" (Young, 2000, p.409).

The explanations for marks-comments yielding no benefit on learning follow. Black and Wiliam (1998a) point out that assigning of marks alongside comments completely wiped out the value of the comments. It was reported that students rarely read comments; instead their first reaction on getting work back was comparing marks with their peers. On examining their books, Black et al. (2003) observed that "the same comments frequently recur in a student's book" (p.43), implying that students do not take note or act on the comments.

2.4.4 Feedback as diagnosis of strengths/weaknesses

Feedback drawing attention to errors. A useful technique of alerting learners as to where their mistakes lie is by ringing, underlining, placing question marks or dots at the point of error. Hargreaves et al. (2000), Rowntree (1987), Woolfolk (1995) and Wragg (2001) list these as techniques for locating learners' errors, 'faulty strategies' or incomplete answers. If a learner has made a mistake, Wragg (2001) recommends that the teacher should alert the learner to this mistake by any of these techniques. Rowntree (1987), on the other hand, regards these techniques as "too cryptic to be useful" (p.206).

In drawing the learner's attention to errors, the teacher is not actually giving the learner the correct answer but rather picking out some areas that need special consideration. Tunstall and Gipps (1996a) observed that in this technique learners' self-checking and correction is important in that anything underlined indicates an error and tells the learners to "go and find out [what's] wrong" (p.399). However, Wragg (2001) understands that although there is a possibility of teachers ignoring errors and not directing learners' attention to them, "doing nothing ... would be inadvisable" (p.75).

Descriptive written/verbal feedback on errors. Descriptive written feedback refers to feedback that is explanatory and ensures that learners understand why their work is

correct or incorrect. This form of feedback includes diagnosis of learners' weaknesses and suggestions for learners to improve. Several researchers and authors (Bangert-Drowns et al., 1991; Black, et al., 2003; Black & Wiliam,1998b; Bloom et al., 1981; Clarke, 1996; Crooks, 1998; Freeman & Lewis, 1998; Higgins et al., 2002; Kelly, 2006; Kulhavy & Yekovich, 1976; Kulhavy, 1977; McCow et al., 1996; Rowntree, 1987; Sebba, 2006; Torrance & Pryor, 1998; Tunstall & Gipps, 1996a; Wiggins, 1998; Wragg, 2001; Young, 2000; Zellermayer, 1989) sanction the use of descriptive feedback in classroom assessment practices. Their approval of descriptive feedback on strengths and weaknesses is based on its relation to learners' cognitive development through involvement in tasks.

One study that illustrates the benefits of descriptive feedback is the Together and Apart (TAP) (Linchevski et al., 1999) project. In this project mathematics is taught in mixed-ability classes in secondary schools. The Mathematics learning and teaching initiative (Malati) in South Africa bases its work on the same together and apart principles. One of the goals of both projects is to support equity by acknowledging learners' mathematical diversity through "allowing all students to fulfill their mathematical needs, abilities and preferences" (Linchevski et al., 1999, p.1).Evidence that the diagnosis of learners' 'Indispensable Mathematics Knowledge' (IMK) led to an improvement in mathematics learning, was captured in both these studies. IMK refers to essential mathematical knowledge required to enable learners to cope and succeed with upcoming tasks. Having identified learners' weaknesses, feedback was used to address these weaknesses with learners being placed "apart". During this period "apart" learners engaged in different activities and direct feedback was provided with respect to identifying where they went wrong. Thereafter, they worked together with learners with adequate IMK. Results of this research indicate that students' achievements from the TAP project were significantly higher than those who were simply sorted into groups according to their abilities.

McCow, Driscoll, & Roop (1996) allege that pointing out mistakes to learners so that they have knowledge that they have erred may not be sufficient to help them improve

learning. Learners "need to know why a mistake is a mistake and why an alternative answer would be better" (McCow et al., 1996, p.455). They regard the nature of such feedback as descriptive and that which provides details of the teacher's initial assertion. Wiggins (1998) also agrees that there is a need for feedback to be descriptive so that learners understand better what they 'did and did not do' and what more or less they need to do to succeed. He emphasizes that if a learner's reasoning is vague or fallacious then descriptive feedback will help the learner "understand exactly what needs to be fixed and how to fix it" (Wiggins, 1998, p.47). Similarly, Wragg (2001) too believes that diagnostic profiles can assist a learner by revealing the extent to which the learner can handle a set task.

In his paper, derived from four phases in a study on written feedback to students, Zellermayer (1989) looked at how students perceived teachers' feedback intentions. In response, students explained that the most valuable feedback comments were those comments that explained why things were wrong. Additionally, this feedback should be explanatory because the more information learners have about their response, the better they would understand why they made it Kulhavy's (1977). This is ties up with Freeman and Lewis (1998) and belief that in order for students to act on feedback, feedback must be explanatory and "it has to be sufficiently detailed" (p.49).

Amongst the numerous studies within the KMOFAP, some studies concentrated on feedback comments to learners. Teachers of the project started off by offering brief feedback comments to students. These comments were progressively developed to provide more details to learners. It was aimed to find the best way to communicate to learners what they had achieved and what they needed to work on next. The project interviewed teachers to investigate learners' reactions to this feedback and the value that learners attached to the feedback comments they received. The analysis indicated that feedback in the form of detailed comments improved learning (Black et al., 2003).

In their study, Higgins et al. (2002) ascertained that 80% of their learners disagreed with the statement 'Feedback comments are not useful'. Many of these learners

interviewed, indicated that they "wanted tutors to highlight the strengths and weaknesses of their work" (Higgins et al., 2002, p.58). Analogous findings are reflected in Hyland's study (2000, cited in Higgins et al., 2002) were 90% of learners believed that feedback that identified their strengths and weaknesses brought about a sense of achievement. From their study, learner expectations surfaced. Learners expected an elaboration of the brief written comments in margins. They anticipated an explanation of the brief comments at the end of their tasks. Higgins et al. (2002) consequently concluded that their data suggests that the majority of learners "value feedback comments which focus on skills relating to a deep approach to learning" (p.61).

Lober and Pierce (1990) believe that feedback concentrates more on identification of weaknesses than identifying strengths. They caution that if there is continued emphasis on students' errors without recognizing students' strengths, then "students will become discouraged and resentful" (Lober & Pierce, 1990, p.199). In addition, they advise that students be pointed out sections of their work that are well done as such positive reinforcement through feedback can make correction of errors more 'palatable'.

2.4.5 Feedback offering suggestions for improvement

Sadler's (1989, cited in Boston, 2002) definition of feedback bears reference to information used to guide learners towards achieving their desired goal having identified gaps in their existing knowledge or skills. In this view of feedback, the correction function of feedback is seen as probably the most important aspect (Gipps, 1995; Kulhavy, 1977). From Kulhavy's paper (1977), it is apparent that children who were told that their responses were wrong and who were then corrected, did extremely better than those who received a mere 'yes or no'. With this in mind, I now review literature on feedback in the form of guidance or suggestions for correction so that learners can improve.

To a great extent feedback tend to take strengths for granted in that it provides more information on how learners can improve on their weaknesses. Freeman & Lewis (1998) caution that feedback should include information on learners' strengths. Although certain

learners may not need to put any more work into those things they are already good at, such feedback motivate and encourage learners. Feedback should indicate areas for development (enrichment) and suggest how learners might tackle these. In Wales and England, the Task Group on Assessment and Testing (TGAT) was created to frame assessment procedures. The TGAT suggests that positive achievements "be recognized and discussed and appropriate next steps … be planned" (Kelly, 2006, p.129). Freeman & Lewis (1998) propose that suggestions for further development be sensitively handled. Suggestions offered through feedback should be perceived by learners to be attainable and within their grasp. Through these suggestions, feedback assists learners to move ahead one or two steps with reasonable effort.

Another source of data that speaks to feedback, in the form of guidance, to all learners on both their strengths and weaknesses is that which emerged from the KMOFAP. "Feedback which focuses on what needs be done can encourage all to believe that they can improve … can enhance learning" (Black et al., 2003, p.46). Amongst the recommendations that emerged from the KMOFAP is that a culture of accomplishment should be promoted in classrooms seeing that every learner can make achievements by building on their previous performance. This culture is advanced by providing learners with "feedback about what their next steps should be" (Black et al., 2003, p.46).

The TGAT endorsed the use of diagnostic feedback. Diagnostic feedback was described as feedback "through which learning difficulties may be scrutinized and classified so that appropriate remedial help and guidance can be provided" (Kelly, 2006, p.129).It was evidenced in Higgins et al.'s (2002) investigation, that 92% of their learner participants rated feedback "that tells you what you could do to improve" (p.60) as most important. Correspondingly, Bangert-Drowns et al., 1991 emphasize that the most helpful type of feedback provides comments about errors and offers specific suggestions for improvement and encourages students to focus their attention thoughtfully on the task. This view is in correspondence with Bloom et al's. (1981) who state feedback with individualized corrective help is provided to help each student to learn. Learning is enhanced because feedback is accompanied by corrective procedures and prepares

learners to handle subsequent tasks with greater success. Further, Woolfolk (1995) realizes that feedback balances criticism of learners work by providing them with suggestions on how to improve.

The researchers of a study cited earlier (Hargreaves et al., 2000) suggest feedback strategies for specifying or implying techniques for improvement. Through feedback educators could point out what is lacking in a learner's work by first recognizing what is not lacking (noted by Tunstall & Gipps, 1996a and Woolfolk, 1995). Feedback that includes re-demonstrating or re-explaining of skills can indicate to the learner how he/she can improve (Tunstall & Gipps, 1996b, also agree). When feedback is in the form of modeling the educator's correct answers; learners may be asked to compare their responses to the educator's. Such a comparison between learners' responses and educators' answers, guides learners towards improving on their performance. Feedback could advise a learner to concentrate on a particular skill in order to improve. An alternate way to bring about improvement proposed by (Rowntree, 1987) as well is to provide feedback that requests of learners to refer to a particular page or section in a text book.

Clarke (2000) recognizes that children need to be shown what they could have achieved and where to go to next; in other words "they need to be shown how to 'close the gap' between current and desired performance" (p.35). This is concept is described by Tunstall and Gipps (1996a) as 'specifying the way forward'. Several years of action research led to Clarke's (2000) development of practical feedback strategies. The focus of which was on distance marking rather than when the child is present. She perceived that feedback strategies in the form of prompts will enable children to improve or 'close the gap'. The inserting of arrows in children's work indicated where improvement could take place. Together with the arrow, a 'closing the gap' - prompt is written to help the child know how to improve that segment of work. What's more, 'closing the gap'-prompts can be used to guide children to making improvement on the arrowed part. Prompts as a feedback strategy could be written as a reminder or an example. Instead of feeding back large sections of prose that children may not understand (at the bottom of

children's work), feedback that provides prompts are viewed as more accessible to children. Children from Clarke's action research (2000) reportedly appeared to enjoy making improvements through prompts and admitted that it had made a difference to their learning. Apart from displaying gains, this feedback strategy is very supportive for children with special needs as it boosts self-esteem. This was due to that fact that prompts directly address and support the exact needs of a child. Feedback prompts get children to focus on one particular thing and guides them to improving a repertoire of skills.

Wiggins (1998) makes a distinction between feedback and guidance as he believes that there is a common misunderstanding that the two are synonymous. According to him, while feedback is what resulted from learners actions, guidance tells the learner how to improve the situation. Worthy of note, is his opinion that giving advice or guidance does not make much sense unless it to seen as a logical response to feedback. He deems a genuine learning moment of feedback as when learners sees their "work through the assessor's eyes and understands a mistake as a mistake" (Wiggins, 1998, p.52) and not when educators leap directly to giving guidance or advice. Once learners see a mistake as a mistake, they should be confronted with guidance. He vouches that all learners yearn for such feedback because they are put in a position to recognize what they have done incorrectly and they are empowered to do something about it.

Some of the perceptions of feedback expressed by students that participated in a study (Carnell, 2000), cited here previously, are presented below. Feedback that provides suggestions for improvement are seen as good because goals are unveiled giving them something to work towards. Learners believe that teachers are trying their hardest to make them learn by offering feedback that gives them a sense of direction and purpose and provides advice. Learners divulged that they could actually take offence when feedback is put across bluntly.

Rowntree (1987) states that the tone of feedback is significant in that the teacher–student relationship could be threatened by a negative tone "but guidance can be offered without sounding either condescending or threatening" (Rowntree, 1987, p.207).

There are several factors that influence what feedback action is taken to correct learners work so that they may improve. Wragg (2001) points out that he has never believed that writing in a pupil's book is likely to destroy the child's confidence. He does nonetheless anticipate a problem when children make several errors and written suggestions for correction of every single one at the same time could be overwhelming. In fact, on investigating students' reaction to the way their books were marked and establishing their value of feedback comments, one of the clear messages from students of the KMOFAP was that they did not want teachers to use red pens because they felt that it ruined their work (Black et al., 2003).

A case study by Townshend, Moos and Skov (2005, cited in Sebba, 2006) placed great emphasis on verbal competencies where goal-setting and verbal feedback was strongly featured. Results from this study indicate that oral feedback was preferred because it was quick and flexible. This allowed an immediate response from the student "enabling misunderstanding to be clarified rapidly" (Sebba, 2006, p.189).

2.4.6 Scaffold feedback

Sadler's (1989) definition of feedback, cited formerly in section 2.4.2, incorporates the purpose of feedback as addressing discrepancies in knowledge that learners display, namely the difference between their current status and the desired end. "Providing feedback in the middle of an assessment is sometimes the only way to find out how much a student knows" (Wiggins, 1998, p.60) in terms of the 'desired end'. He mentions that situational cues enable one to locate what is known but perhaps forgotten. Put in terms of feedback, learners can quickly recover from 'memory lapses or mistakes' when feedback makes them conscious of what they do not know. Wiggins (1998) also quotes The British Assessment of Performance Unit (APU) in mathematics using this strategy. Drowns-Bangert-Drowns et al. (1992), however, warn if feedback is made available before learners begin memory search, it is likely to diminish or inhibit mindfulness and stop learners in goal orientation. This is when feedback is unnecessary and may restrict or interrupt learning experiences.

Both Sadler's (1989) and Wiggins's (1998) concepts are in keeping with Vygotsky's theory of Cognitive Development (1978) that make a distinction between a child's actual development and potential development. "Actual development is determined by what a child can do unaided by an adult or teacher" (McCow et al., 1996, p. 44) whereas potential development is what the child can do through adult guidance. In Vygotsky's (1978) theory of Cognitive Development, the gap between actual development and potential development, that is, between what a child can do unaided by an adult and what he/she can do "under adult guidance" (p.86) is termed the zone of proximal development (ZPD). The ZPD describes tasks that a child has not learnt as yet but can learn at a given time. Through feedback processes, the "hints and prompts that help children during assessment could form the basis" (Slavin, 2003, p.48) for children to work in their ZPD.

Scaffolding, a term coined by Jerome Bruner (1962, cited in McCow et al., 1996) is an approach for helping children in their ZPD and in which a more capable person provides support to less skilled persons until they develops the skill more proficiently (McCow et al., 1996; Slavin, 2003). Black et al. (2003) acknowledge that scaffolding during assessment support learners towards attaining targets.

During the assessment process, feedback in the form of meaningful and appropriate guidance can be used to develop learners' skills and knowledge about the content and about their progress. This intervention (feedback) assists learners in crossing their ZPD (Carnell, 2000; Clarke, 2000). Carnell (2000) adds that this form of feedback reflects the view of learning as a construction of knowledge where the outcome is 'extension' (p.56) or gaining of knowledge. Such scaffold feedback is offered in dialogue between teacher and learner so that skill proficiency and knowledge competence is gained (Carnell, 2000; Clarke, 2000). Feedback for learning takes place when learners build on what they already know by asking questions (Carnell, 2000). This "cognitive change is … as much a social as an individual process" (Neuman, Griffin, & Cole, 1989, p.76; Torrance & Pryor, 1998).

One of the many KMOFAP studies has provoked Wiliam (1999) to conclude that the timing of feedback when assessing is crucial. This KMOFAP study involved 64 pupils of which 32 engaged in a task with "scaffold responses", that is receiving only as much help (feedback) from their teachers as they needed when they got stuck. The other 32 pupils were given a complete solution as soon as they got stuck. This was followed by a new problem to work on. The outcome of this KMOFAP study revealed that pupils given scaffolding responses learnt more and retained their learning for longer than those given full solutions. Commenting on this KMOFAP study, Wiliam (1999, p.9) notes that scaffold feedback saves teachers' time and develops skills through "minimal intervention [and] promotes better learning".

Zellermayer's (1989) study of written feedback also searched to identify 'constructive feedback. His review of studies of oral interactions exemplifies social interactions made in teachers providing the learners receiving feedback. Framing this interaction, feedback through dialogue is perceived as a possible way to scaffold students' development through their ZPD; hence allowing the student to complete the task (Zellermayer, 1989). In discussing the importance of providing scaffold feedback to learners, James (2006) reminds us to "remove the scaffold when they can cope on their own" (p.57).

Clarke (1996) too, maintains that competence is socially constructed and assessment "should be recognized … as a powerful mechanism for the social construction of mathematical competence" (p.334). Tunstall and Gipps (1996a) concept of 'constructing achievement' is teacher feedback where language plays role in extensively articulating the nature of children's competence and achievement. The description undertaken "is much more in conversion or discussion with the child" (Tunstall & Gipps, 1996a, p.399). Teachers that participated in Tunstall and Gipps's (1996a) study reported that this type of feedback, it seemed to be less of 'teacher to the child' and more of 'teacher with the child'. Here a wider audience was also an important feature, being all the other children in the class. Such verbal dialogue provides feedback to all learners in

class. According to Wragg (2001), this feedback is especially important in whole class, in being audible; it can influence so many children. In addition he views feedback of this nature as a valuable opportunity to link assessment and learning.

2.5 Factors influencing the effectiveness of feedback

Black & Wiliam (1998a; 1998b) conducted an extensive research review of 250 journal articles and book chapters to determine whether formative assessment raises academic standards in the classroom. By comparing the average improvement in test scores of learners in their research with that of typical learners on the same test, they concluded that efforts to strengthen formative assessment produce significant learning gains. Given that feedback, from teachers, is an essential part of formative assessment, I examine what constitutes effective (and ineffective) feedback. In scanning the literature, five factors that influence the effectiveness of feedback, emerge.

Timeliness of feedback. The timeliness of feedback has received considerable attention by authors and researchers. Kulik & Kulik (1988) used meta-analytic techniques to review the findings of 53 studies on the timing of feedback in verbal learning. Results of their meta-analysis were not as straightforward. They identified different categories of study and found different results for each of the categories. The key factor that influenced these differences was whether (or not) the test questions were identical to earlier feedback questions. Where different questions were used, most studies found a small advantage for immediate feedback. Where identical question were used, most studies found a modest advantage for delayed feedback. "Delayed feedback was effective but only in contrived situations; such as where learners were encouraged to acquire test content or learn lists with feedback that would repeat the stimulus word" (Bangert-Drowns et al., 1991, p.216). In tasks that presented greater cognitive demands, for instance conceptual learning in applied situations, immediate feedback was superior to delayed feedback.

In his article aimed at integrating work done on feedback processes, Kulhavy (1977) comments on the timeliness of feedback in the occurrence of correct and incorrect answers. Furthermore, he makes an association between timeliness of feedback and

retention. When a student receives immediate feedback after an incorrect response, the likelihood of interference between correct and incorrect responses is high. Alternatively, when there is delayed feedback, there are greater chances that the correct answer will be learned from feedback. Studies on the Delay-Retention Test (DRT), analyzed by Kulhavy (1977), show repeated that "delaying the presentation of feedback for a day or more leads to significant increases in what students remember on a retention test" (p.214). Correct answers are remembered just as well whether feedback is delayed a day or given immediately.

Numerous researchers and writers (Freeman & Lewis, 1998; Higgins et al., 2002; Lober & Pierce, 1990; Slavin, 2003; Wiggins, 1998; Wragg, 2001) acknowledge that a decision surrounding the timing of feedback is crucial. Wragg (2001) thinks that the timing of feedback should be appropriate to the activity. For example, when assessing skills immediate feedback may be essential so that learners act on advice to improve. Divergently, if learners are first required to reflect on their performance, then delayed feedback may be appropriate. Wragg (2001) is heedful that long delays in feedback are however rarely advisable, unless a learner "has developed a block to further learning and needs a break … to make a fresh start" (p.67).

Wiggins (1998) extracts findings from Harvard University's Assessment Seminar. Students reported that the single most important ingredient for making a course successful "is getting rapid response on assignments and test" (p.59). Lober and Pierce (1990) take into account learners' views on the promptness of feedback. Students value prompt feedback because they are generally extremely interested in finding out "how they did" on any given task. If feedback is delayed, then students "think that the teacher did not regard the task as very important and therefore feel they wasted their efforts" (p.199). Lober and Pierce believe that will result in students sensing that whatever they do in class is insignificant. They therefore recommend that a second task should not be given until feedback on the first one is given.

Freeman and Lewis (1998), Higgins et al. and Wiggins (1998) recognize timeliness of feedback as vital that feedback needs to be provided as soon as possible after the task. They also believe that the greater the delay in feedback, the less likely it is that students will find it useful or be inclined to act on it. Higgins et al. (2002) consider immediate feedback as imperative especially if learners are given opportunities to improve their draft efforts. Therefore, comments on performance should be returned to students as soon as possible after submission. Wiggins (1998) deems feedback that is delayed as ineffective since it results in too long a delay in usability or too late to use. Feedback should take place while it is still clearly relevant to learners, that is, it should be provided soon after a task is completed.

Slavin (2003) notes the immediacy of feedback is very important. He realizes that if students engage in a task at the beginning of a week and do not get feedback by the end of the week, then the informational and motivational value of the feedback will be diminished. Firstly, he explains, if students made any mistakes, they may continue all week making similar errors on related tasks that might have been prevented by feedback on their performance. Secondly, a long delay between performance and result could confuse the student. He draws attention to the impact of delayed feedback on young students especially. They may have little understanding of the comments they receive, seeing that comments are based performance which occurred several days earlier.

Relevancy of feedback to learning outcomes. Feedback "is most effective if it focuses students' attention on their progress in mastering educational tasks" (Crooks, 1988, p.468) and relates to what their instruction is focused upon (Zellermayer, 1989). Taking into account Zellermayer's (1989) view and Sadler's (1989) definition of feedback, Clarke (2000) constructs a definition of effective feedback. She defines effective feedback for marking as when "the teacher must give feedback against the focused learning objectives of the task (whatever the child was asked to pay attention to), highlighting where success occurred against those objectives and suggesting where improvement might take place against those objectives" (Clarke, 2000, p.37). Crooks (1988) points out that feedback that places such importance on personal progress

promotes self- efficacy, encourages effort attributions, and decreases attention to social comparison and competition. Feedback in the form of marks, scores or grades are considered as ineffective in that it encourages competition (Black, 1998; Black & Wiliam, 1998b; Crooks, 1988; Lee, 2001; Rowntree, 1987; Wiggins, 1998; Woolfolk, 1995).

Wiggins (1998) affirms that effective feedback provides confirming (or disconfirming) useful evidence about learners' results relative to goals. This view is captured by Easely & Zwoyer (1975, cited in Crooks, 1988). They claim that feedback to children should accept their answers not as things to just be judged as right or wrong but as information revealing what the child thinks. This descriptive feedback, with details to help learners work through their misconceptions or weaknesses in their performance, is endorsed as effective by several authors and theorists cited earlier. Good feedback is informative and "intended to prompt learners to act and in order to do this it has to be sufficiently detailed" (Freeman & Lewis, 1998, p.49). Crooks (1988) together with Freeman and Lewis (1998) indicate that details contained in feedback must be just adequate to allow the learner to proceed. Too little and too much information included during feedback can be equally ineffective. Wiggins (1998) reflects on ineffective feedback as feedback that provides nonspecific advice.

"Good feedback is relevant" (Freeman & Lewis, 1998, p.49) to the individual learner, respecting their approach to the task as well as issues relating to the development. Comments by students in Higgins et al's study (2002) suggest that they perceive feedback as negative if it is impersonal where feedback to all students are similar or merely reproduced. Effective feedback is also relevant when it is based on specific assessment criteria for the task. Contrarily, ineffective feedback portrays the assessment process as "mysterious or arbitrary to the performer" (Wiggins, 1998, p.49).

Relevant feedback fosters correction where learners are able to self-adjustment through the feedback that they receive. Wiggins (1998) maintains that effective feedback is distinguished from ineffective feedback in that effective feedback enables learners to

improve through self-adjustment. Self-adjustment is possible through feedback that prompts and supports children in examining their work (Tunstall & Gipps, 1996a). On the other hand, ineffective feedback keeps learner "constantly dependent on the judge [teacher] to know how they did" (Wiggins, 1998, p.49).

The comprehensibility of feedback. There are two issues to consider here. The first is the language itself and the second is the legibility of the writing. Freeman & Lewis (1998) remind us that the audience of feedback is children. Bearing this in mind, they imply that the language used in providing feedback must be considered in order for feedback to be effective. This is due to language playing an important role in feedback constructing the way forward (Tunstall & Gipps, 1996a). Clarke (2000), Hargreaves et al. (2000) and Higgins et al. (2002) identify language as a barrier to the use of formative feedback when students increasingly fail to understand the 'taken-for-granted' academic discourses which underpin assessment criteria and the language of feedback. The results of numerous studies, (Hounsell, 1987; Orsmond et al., 1996; 1997; 2000; Lillis, 1997; Street & Lea, 1997; Ivanic, 1998; Chanock, 2000; Hartley & Chesworth, 2000) cited in Higgins et al. (2002), echo the view that students frequently experience difficulty in interpreting the academic language underlining assessment and that good feedback is clear and accurate. Students in Higgins et al's study (2002) consider feedback that is too general and vague, to be of formative use, as unconstructive. Their own research reported that only 33% of their respondents divulged that they understood the language.

Taking into consideration the language barrier to the efficacy of formative feedback, students may disregard written advice (Higgins et al., 2002). A study (by Marzano & Arthur, 1977 cited in Zellermayer, 1989) found that most students ignored teacher's comments; they often "misunderstood and misinterpreted what feedback meant" (p.149). 40% of Higgins et al's (2002) questionnaire respondents found feedback comments difficult to read and grasp. Even the messages from learners that participated in the KMOFAP were apparent in that they wanted their teachers "to write statements that could be understood" (Black et al., 2003).

The legibility of written feedback is important if feedback is to be comprehendible. Another contributing factor to feedback being ineffective is illegible writing. Such illegible written feedback hinders reading of feedback and hence understanding thereof. Learners within the KMOFAP evidenced that they would like teachers "to write legibly so that the comments could be read" (Black et al., 2003).

The tone of feedback. Furthermore, Freeman & Lewis (1998) take note of the tone of feedback to children. Feedback written in an informal style and tone attempts to move students forward in their learning. There is a need for the tone of feedback to be handled judiciously, absent of cynical tones that undermine and demoralize (Wragg, 2001). Broadfoot (1979) warns that when feedback classifies learners, for example, as 'dull' or 'passive' or 'able'; this could have a "compounded effect on subsequent interactions between the teacher and pupil" (p.119)

Feedback in the form of praise and criticism is also associated with the tone of feedback. With regard to effective feedback that includes praise and criticism, the literature reviewed proposed to balance of praise or criticism as well as details explaining the reasons for praise or criticism. Wiggins (1998) looks upon exhortations, such as: "Try harder", "Your writing is harmful" or "Good job" (p.49) as ineffective feedback; whereas effective feedback is characterized by descriptive language.

Effective feedback motivates and encourages learners to succeed. The tone of feedback must be motivational. Subsequent to receiving effective feedback that stimulates them, children preserve for longer at a task (Clarke, 2000).

Feedback as dialogue. Linchevski et al's. (1999) description of assessment also portrays feedback as communication; stating that "should be a continuous communication process between teacher and learners, providing information for students' mathematical needs" (p.3). This links up with the notion that effective feedback encourages dialogue, and should include a response from learners on the usefulness of the feedback their received (Freeman & Lewis, 1998). This feedback, as dialogue between pupils and a teacher,

"should be thoughtful, reflective, focused to evoke and explore understanding, and conducted so that all pupils have an opportunity to think and express their ideas" (Black & Wiliam, 1998b, p.12). Feedback in the form of dialogue is endorsed by several writers (Askew & Lodge, 2000; Black & Wiliam, 1998a; Black & Wiliam, 1998b; Freeman & Lewis, 1998; Linchevski et al., 1999; Torrance & Pryor, 1998).

2.6 Theoretical framework

This study researched learner's perceptions of what constitutes effective feedback. This research draws on a constructivist perspective within which learners are viewed as actively constructing their own mathematical understanding as they participate in practices and whilst interacting with others (Cobb, Jaworski, & Presmeg, 1996). Social constructivism sees the development of knowledge as a social process where social interaction is an important and critical context for learning to take place (von Glasersfeld, 1989). I believe that feedback in the form of dialogue is a reference to this social interaction.

The constructivist model of teaching and learning identifies the role of the learner as one of "building and transforming knowledge" (Applefield, Huber & Moallem, 2001, p.3). This role of the learner is relevant for the purpose of this research study in that effective feedback initiates each learner's ability to self-adjust accordingly (Wiggins, 1998). This process will lead the learners to revise their knowledge; illustrating feedback "as a means to direct students in ways to improve" (Burnett, 2002, p.6).

Constructivism proposes, "learner conceptions of knowledge are derived from a meaning-making search in which learners engage in a process of constructing individual interpretations of their experiences" (Applefield et al., 2001, p.3). Hence, learners 'crave' feedback that is specific and relates to their intent (Wiggins, 1998, p.52).

Such "feedback is evidence that confirms or disconfirms the correctness of [learners'] actions" (Wiggins, 1998, p.46). Further, guidance that is provided empowers learners to act on the feedback in light of their own learning.

Drawing on Piaget's Learning Theory on Intellectual Development (1970, cited in Applefield et al., 2001; Bell, 1978; McCow et al., 1996; Slavin, 2003), this study focuses on the role played by the learner in learning. This theory asserts that learners are responsible for and take an active role in their intellectual development through processes of assimilation and accommodation. Every "piece of new information causes the stack of old information to be modified to accommodate the assimilation of the new information" (Bell, 1978, p.100). Feedback to learner embodies and demands that learners self-adjust (Wiggins, 1998). In understanding the need to rectify their errors, learners move their own learning forward. Through feedback learners are informed of their strengths and weaknesses and offered guidance and advice on "how to close the gap" in their knowledge (Black & William, 1998b, p.10). In this self-adjustment (Piaget's assimilation and accommodation of knowledge), learners are able to learn and achieve more. Piaget's (1970) perspective emphasizes that individual knowledge construction is stimulated by internal cognitive conflict when learners strive to overcome mental 'disequilibrium' (Applefield et al., 2001, p.3). Piaget (1970) believes this disequilibrium is the result of children negotiating discrepancies between new and old information. As a result of equilibrium, mental structures develop and mature "the mind not only receives new information but restructures its old information to accommodate the new" (Bell, 1978, p.100).

This restructuring of old information to accommodate new information is significant in this study. I view educator feedback as an important aspect of assessing learners work since feedback can inform and help learners in revising and creating new understanding out of their existing knowledge. This, according to Piaget's theory, is accomplished through 'social transmission'. Piaget believes that interaction and cooperation is vital since formal operations would not develop in the mind if there is no exchange and coordination of viewpoints among people (Bell, 1978). The idea of learners redefining their knowledge through social interaction is a direct reflection of Vygotsky's (1978) socio-cultural perspective which accentuates the supportive guidance of mentors

as they enable learners to achieve skills, understanding and competence (Applefield et al., 2001).

For Vygotsky (1978), central to the process of learning is the role played by social interaction in the development of higher cognitive functions. My research relates to this theory in that the providing of feedback to learners is a social interaction (verbal and written) between the educator and learners. This feedback (social interaction) is an attempt to improve the learners' mathematical skills so that they are able to progress to another level (development of higher cognitive functions).

Educator feedback to learners can close the gap between where learners are in their learning and where they have the potential to be. This resonates clearly with the Vygotsky's (1978) concept of the zone of proximal development (ZPD also discussed under scaffold feedback)– "the distance between the actual developmental level as determined by independent problem-solving and the level of potential development as determined by problem-solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p.86). Tasks within the zone of proximal development are ones that a child cannot yet do alone but can be successfully completed with the help of their teacher or competent peers (Applefield et al., 2001; Slavin, 2003).

Educator feedback to learners informs them of their mathematical gaps (or barriers). Learners encountering these barriers, when attempting tasks, can only move forward when these barriers are overcome. When educators provide scaffold or immediate feedback to learners so that they can proceed with their tasks, the learners are able to work within their zone of proximal development (Applefield et al., 2001).

2.7 Chapter summary

This chapter served to provide insight into current literature on educator feedback. It is conceded that the review of literature in South Africa is extremely limited. I have however been able to locate several international studies which focus feedback issues that

are directly related to my study. My study aims at understanding learners' perceptions of educator feedback, using a case study approach.

CHAPTER THREE: RESEARCH METHODOLOGY AND DESIGN OF STUDY

3.1 Introduction

At the outset, this chapter will present the research methodology including the design of the study. Secondly, the qualitative approach that was adopted for this research project, together with the critical questions upon which this research was based are discussed. Thirdly, this chapter examines the context of the study and provides an explanation of the process of selection of the participants. Finally, the design of the study and the data collection instruments, which were used to investigate learners' perceptions of educator assessment feedback, are described.

3.2 Research approach (locating the study)

The aim of the study was to understand and make sense of the learners' perceptions of the different forms of educator feedback and the influences of educator feedback on learning of the learners (participants), and how feedback and learning factors mediate one another.

The paradigm "most suited to this case study" is that of a naturalistic inquiry with emphasis on interpretive dimensions where the goal of the researcher is to understand reality (Cohen et al., 2000, p.181). Glaser & Strauss (1967, cited in Cohen et al., 2000) state that interpretive researchers "set out to understand the [subjects'] interpretations" (p.23) of reality. Hence, this study is located in the interpretivist paradigm. Cohen et al. (2000) maintain that the interpretive research paradigm assumes that people's subjective experiences are real, and that we understand them and that the qualitative research techniques are best suited for this task. The understanding of individuals' interpretations … has to come from inside, not the outside" (Cohen et al, 2000, p.20). Similarly, I aimed to understand my learners' perceptions of feedback in my class.

My position as an interpretive researcher, aiming to learn what my learners consider to be effective feedback, is in keeping with Neuman's (1997) view that the interpretive researcher wishes to determine what is meaningful to the people being

studied. More importantly, he draws attention to, the interpretive approach acknowledging that people experience the world differently. With this being the case, they may or may not share the same meaning or interpretations (as learners' perceptions of feedback may or may not differ). Neuman (1997) further highlights the interpretive researcher's proper role as being a passionate participant, "involved with those being studied" (p.73) in order to accomplish understanding of perceptions. I therefore believe that my role is appropriate to that described by Neuman (1997).

Of pertinence within this study is my intention as a researcher to understand my learners' perceptions of the effectiveness of the different forms of feedback. Lincoln & Guba (1985) maintain that the naturalist "elects to carry out research in the natural settings" (p.39). I view my study as naturalistic inquiry since the field is a natural setting being my own classroom and learners. In the naturalistic paradigm, the researcher aspires to understand reality from the subjects' perspectives and contexts within which they occur. Furthermore, naturalistic inquirers as well as other human beings (my learners) are used as data sources (Cohen et al., 2000; Cohen et al., 2000; Lincoln & Guba, 1985).

A reason for the use of case studies in this research is enlightened by Hitchcock & Hughes (1995). They asserted that case studies offer most to teachers, because it can be used to "test existing practice an everyday environment … and evaluate existing professional practice" (p.323). In this study, I investigated learners' perceptions the existing practice of administering feedback to my learners. A qualitative case study approach provided me the opportunity to concentrate on a specific instance or situation (Cohen et al., 2000), namely the administering of feedback to learners. I chose to undertake a case study in order to make a case (learners' perceptions of different forms of feedback) understandable. Since I sought to understand and interpret my learners' perceptions of the different forms of feedback, a qualitative case study approach was valuable. The reason for this being that a qualitative case study is characterized by "detailed description of situations, events, people [and] interactions … from people about their experiences, attitudes and thoughts" (Patton, 1980, p.20) about a situation.

Merriam (1988), working in the context of education states, "a case can be defined in a number of ways: as a person, a programme, a group of people, and a movement" (p.153). Furthermore, a case is "a single bounded system or an instance of a class of phenomena" (Merriam, 1988, p.153). According to Denscombe, (2003) a case study "focuses on just one instance of the thing that is to be investigated" (p. 30). In this research the case is 5 case studies of learners' perceptions of educator feedback.

In addition, I found the qualitative case study approach of great value since in qualitative research, the researcher selects a particular case, rather than a variable, through which the researcher gains an understanding of a broader phenomenon. Cohen et al. (2000) acknowledge a benefit of case studies as taking place "in real context, recognizing that context is a powerful" (p.181). A case study approach therefore suites this research; in that its 'real context' is that of an educator providing different forms of feedback to learners.

Stake (1995) identifies case researcher roles. Appropriate to this study are the roles of 'teacher' and 'interpreter'. He notes that in the case researcher's role as a 'teacher', "the intention of research is to inform…" (p.91). Through this research, I hope to inform my feedback practices. Further, the case researcher as an 'interpreter' "recognizes and substantiates new meanings" (Stake, 1995, p.97). In this study I aimed to recognize and understand learners' perceptions of educator feedback so as to improve my practices.

In keeping with the purposes of this study (as set out in Chapter One); Cohen et al. (2000) explain why cases studies are 'a step to action':

> They begin in a world of action and contribute to it. Their insights may be directly interpreted and put to use; for staff or individual self-development, for within-institutional feedback; for formative evaluation; and in educational policy making. (Cohen et al., 2000, p184)

3.3 Critical questions

The critical questions that were investigated within this study are as follows:

- What meaning do learners give to educator feedback?
- What are the different forms of educator assessment feedback that learners consider as effective
- Why do learners consider these forms of educator feedback as effective?

3.4 Context of the study

This study was conducted at a secondary school in KwaZulu-Natal (previously an all Indian school). This is a co-educational school with an enrolment of 1107 learners. Approximately 60% of the learners are African, with the remaining 40% of the total learner population being made up of Indian, Coloured and White children. The learners reside in Phoenix, kwa Mashu, Inanda, Ntumzuma areas which are within a 20km radius from the school. . The learners socio-economic backgrounds range from lower to upper middle class. As an educator at the school I have known the participants of this study since their inception at the school in grade 8. As both their form educator and mathematics educator since their entry into secondary school, I have developed a cordial relationship with the participants. For this reason, I chose the school and the participants through convenient sampling.

Convenient sampling is a non-probability sampling procedure that indicates that the researcher chooses the most convenient population element (Steyn, Smith, Du toit & Strashem, 1994). Of relevance to this study, is Cohen et al.'s (2000) remark that a convenience sample may be the sampling strategy used for case study research. They describe convenience sampling as choosing the "nearest individuals as respondents and continuing that process until the sample size" (Cohen et al., 2000, p.102) is obtained. From my Grade: 9 mathematics class of 39 learners, eighteen learners participated in the initial stage of the research (journal writing). I thereafter requested for volunteers to participate in case studies. Nine learners volunteered as case study participants. When I informed these nine learners that the interviews would be held out of the school hours, four of them withdrew. Unlike the four that withdrew, the five learners that remained

were available to be interviewed after school hours as they did not rely on public transportation to their homes. Anderson (1999) describes convenience sampling as "quick, easy [and] available", for example, "volunteers at … school" (p.123), as in this study. These five participants included three male and two female learners. There were three Indian and two African learners among the participants.

3.5 Ethical issues of the study

The participants in this study were promised confidentiality and anonymity. All participants were notified that their participation was completely voluntary and that they could withdraw at any time they wished to.

A preliminary meeting was held in my classroom during a lunch break prior to the research process. At this juncture the nature, process and purpose of the study were explained to all 18 learners. Learners were also invited to ask questions so as to seek clarity on any issue or uncertainty that they were experiencing during this stage. At the same juncture, letters of informed consent, addressed to participants and their parents, were issued. In this letter, learners were assured that their participation in this study will not be compromise their mathematics learning in terms of syllabus coverage. Through the letter of consent they were also requested permission to participate in this study and to be interviewed at a time and venue convenient to them.

Learners were interviewed in a group so that they do not feel as intimidated as they would if interviewed individually. Cohen et al. (2000) points out that "group interviews of children might also be less intimidating for them than individual interviews" (p.287). I believe that the learners, in this study, did not feel compelled to participate as they were asked to volunteer. The learners' voluntary participation is an indication that they did feel not uncomfortable or threatened, to work with me. I acknowledge the power dynamics that exists between learners (as participants) and their educator (as researcher). The issue surrounding the power dynamics is discussed in greater detail under Interviews and group interviewing (Section 3.7.2).

3.6 The design of the study

The design of the study entailed three phases as shown in the table below (Table 3.1). Table 3.1 provides a description of the tasks that I had undertaken together with the activity that arouse from each of the tasks.

Table 3.1 Three phases of the design of the study

PHASE	TASK	ACTIVITY
1	Providing learners with different forms of feedback.	Reading and interpreting learners' journal entries on their perceptions of the different forms of feedback.
Time frame	Seven hours over twenty days	Twenty five hours for twenty five days
2	Planning interviews.	Selecting participants for interview through convenient sampling.
Time frame	Five days	Five days
3	Setting up and conducting of the group interview.	Transcription of interviews from video-recordings.
Time frame	2½ hours	40 hours

In my role as a case researcher as a teacher (Stake, 1995), during the first phase, I presented all learners with six tasks on solving linear equations. These tasks included solving equations by inspection providing algebraic solutions to equations. The tasks contained simple equations, equations with brackets, equations with fractions and equations with fractions and brackets. Thereafter, I provided different forms of feedback to learners. The forms of feedback that was provided are listed here in chronological order: ticks and crosses, tick and crosses accompanied by a mark, ringing or underlining of errors, verbal and written correction of errors, immediate scaffold feedback as required

by learners in verbal and written form and delayed feedback that included a final (brief) comment.

On receiving each of the above forms of feedback learners logged journal entries expressing their perceptions of the feedback that they received (as specified in 3.7.1).

Having read each of the eighteen learners' journal entries on the different forms of feedback, I identified areas that required further probing. After which, I planned (phase two) and conducted (phase three) the group interview with the five participants.

3.7 Data collection methods and instruments

In this study document analysis and interviewing were used as data collection methods. Learners' journal entries were the data collection instruments for document analysis and group interviewing was data gathering instrument for interviewing. Both the journal entries and group interviewing enabled me to investigate the learners' perceptions and experiences of educator feedback.

3.7.1 Document analysis and journal writing

"Documents considered as primary sources include … log books". In this study learners' workbook are the documents since they used their workbooks as journal to log their entries". "The journal is a diarylike series of writing … written in prose rather than traditional mathematics style of numbers and equations" (Nahrgang & Peterson, 1986, p.461). This explains why "enthusiasm is generated for journal writing" (Watson, 1980, p.519) in mathematics classrooms. Through journal writing, students "are encouraged to think freely in writing … in their own words … This writing is free from concern about style and such technicalities as spelling and punctuation" (Mett, 1987, p.534). Morgan (2001) notes that negative feelings about mathematics stem from the impression that the subject is cold and abstract. However the informal genre of journal writing links mathematics to human experiences (as participants in this study log their experiences of educator feedback). Such formats, with little (or no) formal constraint seem appropriate for the purposes of this research as a very 'free' format allows learners to express their

experiences, opinions and feelings without restrictions. The result of which is the diversity of opinions expressed (Stempien & Borasi,1985).

During journal "writing the audience is usually absent" (Emig, 1977, p.124). This absence of face-to-face interaction encourages learners not to hold back their opinions or feelings. This presents advantages especially with shy or emotional people (Stempien & Borasi, 1985). Although writing is slower than talking (Emig, 1977), this is an advantage for data collection. The writers (learners) have "more time to think about what they are writing" (Morgan, 2001, p.233); hence journal writing is clear, refined, complete and precise.

Stempien & Borasi (1985) acknowledge the content addressed by journal writing extends to learners thoughts, feelings and attitudes towards strategies employed in learning mathematics. This makes it a useful tool to investigate learners' perception of educator feedback; since "journals furnish an excellent probe into students' perceptions" (Mett, 1987, p.535). Stempien & Borasi (1985) also claim that through the practice of journal learners become aware of their feelings and thoughts since they are given a chance to reflect on these. This view is shared by Yinger and Clarke (1981, cited in Borasi & Rose, 1989) who observed that journal writing "put writers in a position to learn what they feel" (p.353).

Borasi & Rose (1989) maintain that the benefits from journal writing rely heavily on the "degree of trust existing between teachers and students" (p.349). Through my two year association (and interaction) with the participants, I believe that mutual trust has been developed. Hence, journal writing as a data gathering instrument for this study was advantageous.

Journal writing is a useful instrument for collecting data as it is "where students can write down any thought" (Borasi & Rose, 1989, p.348). Over and above this, Borasi & Rose (1989) outline the value of journal writing as 'therapeutic' in that learners openly disclose their feelings. Of particular reference to this study, is the recording of their

perceptions of the different forms of feedback that was received. This is valuable for the purpose of this study; since I expected learners to reveal perceptions of educator feedback, without inhibitions so that I may understand their perceptions.

Furthermore, journals "open a channel of communication with every student to the degree he or she chooses" (Mett, 1987, p.535). With this being so, journal writing offers learners autonomy in the choice of the length and content of their entries (Borasi & Rose, 1989). Learners are therefore not limited to the length of their responses nor are their restricted to answering a particular question (as in a questionnaire). Journals therefore have the potential of yielding rich data.

I decided to use journal writing as one of the data collection instruments, but before I doing so, journal writing was piloted since its concept is a new experience within the teaching and learning of mathematics. It was from a pilot study that the design of this research was formulated.

Each of the participants logged seven entries. The focuses of each of the entries are as follows (in chronological order):
Journal Entry 1 focused on participants meaning of educator feedback.
Journal Entries 2 to 7 focused on learners' perceptions on the different forms of feedback as listed:
Journal Entry 2. Feedback in the form of ticks and crosses.
Journal Entry 3. Feedback in the form of ticks and crosses, accompanied by a mark.
Journal Entry 4. Feedback in the form of ringing and underlining of errors.
Journal Entry 5. Feedback in the form verbal and written correction of errors.
Journal Entry 6. Immediate scaffold feedback as required by learners in verbal and written form.
Journal Entry 7. Delayed feedback that included a final (brief) comment.

Seeing that learners logged their entries immediately after receiving feedback, journal writing was comparatively easy to collect. Journal entries were readily available, as I was

present and learners handed in their entries immediately after completion. In contrast to questionnaires, an advantage of journal writing was that it yielded a return rate of 100% and that there was no ruined copies. Every entry contained usable data.

Participants seemed clearly comfortable expressing their perceptions on educator feedback, "even when they [perceptions] were negative" (Borasi & Rose, 1989, p.353).

On completion of reading of the seven journal entries of each of the eighteen participants, I requested volunteers to participate in the case studies. Five learners volunteered on their availability (as discussed in sections 3.4 and 3.9). The five learners that volunteered formed the 5 case studies participants that were interviewed. I conducted a group interview with these five participants.

3.7.2 Interviews and group interviewing

According to Cohen et al. (2000) the interpretive research paradigm assumes that people's subjective experiences are real. Further they suggest that we understand them by interacting with them as interviews provide "access to what is inside a person's head … what a person likes or dislikes [preferences] … and what a person thinks [perceptions]" (Cohen et al., 2000, p.268). By interacting with the participants during the group interview, it has made me aware of learners' feedback preferences and has enabled me to understand their perceptions of feedback.

The objective of qualitative interviewing "is a fine-textured understanding of beliefs, attitudes, values and motivations … of people" (Gaskell, 2002, p.39). With this objective in mind, I chose qualitative interviewing as a data collection method. In addition, qualitative interviews are described as "face-to-face encounters between the researcher and informants directed toward understanding informants' perspectives" (Platt, 2002, p.40).

Yin (2003) identifies the interview as "one of the most important sources of case study information (p.89). Qualitative interviewing complements a qualitative case study

(as this one) by "providing a "thick description" of a particular" situation so that in-depth or detailed understanding of the case study is presented (Patton, 1980). Gillham (2000) also agrees that case study and interviewing complement each other in obtaining "in-depth data which will give [the researcher] insights and understanding of particular individuals" (p.17). Furthermore, (Tierney & Dilley, 2002) maintain that learner interviews aim to; "represent the words and worlds of students … to include the voices of those being educated in the learning process" (p.458). I therefore believe that interviewing is apt for the understanding of learners' perceptions in this study.

Gaskell (2002) thinks that there should be some prior data to inform the selection of respondents in qualitative interviewing. This prior information was existent in the participants' journal writing.

Within qualitative interviewing, there is the issue of trust between the interviewer and interviewees. It is debatable whether the interviewees can trust the interviewees and if the interviewees can say what they really feel (Gaskell, 2002). Gaskell (2002) believes that a relationship of trust can be achieved by putting the interviewees at ease and ensuring that they are relaxed. In this study the long association between both the interviewer and interviewees supported a relaxed and comfortable climate.

I decided to interview these participants as a group rather than individually because children are more at ease and more confident in a group (Gaskell, 2002). The power dynamics of an educator interviewing a learner individually could result in learners saying what they believe the educator would like to hear. Individual interviewing could not only restrain learners' thoughts, but could also make them uncomfortable and anxious. Eder & Fingerson (2002) argue that "the researcher's power can be reduced while making the interviewing context more natural if children are interviewed as a group rather than individually" (p.182). During the group interview I found all learners contributing to the discussion. This was most helpful because in certain instances when learners experienced difficulties in expressing themselves; then another learner filled in the details.

The tone of the interview was informal – more conversational style, this too was an attempt to make learners feel relaxed and comfortable. Some resources, (Kvale, 1996 and Rubin & Rubin, 1995; cited in Warren, 2002) describe qualitative interviewing as "a kind of guided conversation in which the researcher carefully listens so as to hear meaning of what is being conveyed" (p.84). Yin (2003) too, stresses that interviews in case studies are to be "guided conversations rather than structured queries" (p.89). This conversational tone gave me the freedom and opportunity to phrase questions as I liked and to probe responses that where ambiguous. This flexibility of the group interviews provided more prospects for the interviewees to discuss they meant hence strengthening the validity of the data (Eder & Fingerson, 2002). Group interviewing, as a data collection method, proved useful because of its capacity for generating discussion.

The group interview was conducted in my classroom – a venue familiar to learners (their form and subject room). This is in accordance with naturalistic inquiry, I decided on a natural setting as opposed to imposing 'strenuous laboratory conditions' for research (Lincoln & Guba, 1985). The group interview was video-recorded as well as audio-recorded. The video-recording was done by a fellow learner of the class; someone the group was familiar with. The purpose of utilizing the skills of a fellow learner was to ensure that learners did not experience the video-recording as an intrusion by an outsider.

In an attempt to combat some of the problems associated with the group interviewing, some preventative measures had to be taken. Taking into consideration, "not all those invited [to interviews] turn up" (Gaskell, 2002, p.48), I informed learners in this study of the interview's date and time. All of the five learners that volunteered arrived for the interview. Prior to the commencement of the group interview, learners were briefed on some aspects of interviewing. An appeal was made to them to speak loudly and clearly and not too fast. Poland (2002) cautions if "people [are] speaking too softly to be heard well" (p.637) then the quality of recording will be affected. The learners were reminded not to speak simultaneous as transcribing would be difficult. Learners were supplied with a pencil and a sheet of paper so that they could write down

(so that they remember) issues, questions or matters they wish to raise. After an interviewee had spoken learners could then voice what he/she wished to.

Poland (2002) notes that much aggravation can be prevented if the interviewer ensures to take measures to assure quality tape recording. To avoid interruptions during the interview, a 'Please do not disturb. Interview in progress' sign was posted on the classroom door.

Before the start of the interview I ascertained that the electricity power points were working properly. Moreover, the audio-recording served as a precaution in the event of problems of audibility arising from video-recording. I took care to press the correct buttons on the tape recorder. As a safety measure, it was also ensured that batteries were available in the event of a power failure.

The group interview was lengthy and the transcribing became very time consuming and exhaustive. The transcriptions were prepared by me and all spoken words were included verbatim.

3.8 Triangulation

Yin (2003) mentions that "a major strength of case study data collection is the opportunity to use … different sources of evidence" (p.97). He elaborates further that the "rationale for using multiple sources of evidence" is for triangulation. Hitchcock & Hughes (1995, p.324) clarify data collect are data collect "from more than one person" as in this study. For the purposes of methodological triangulation, that is "the use … of more that one method of obtaining information", journal writing and group interviewing were used in this study. Stake (1995), adds that methodological triangulation serves "to increase confidence in our interpretations" (p.114). Both data triangulation and methodological triangulation were used to strengthen this study.

Rigour in the research was achieved by the criteria suggested by Lincoln & Guba (1985) "credibility, transferability, dependability and confirmability" (p.233). This research addressed these criteria as indicated in the table that follows (Table 3.2):

Table 3.2 Rigour criteria in this study

STRATEGY	CRITERIA	APPLICATION
Credibility	Prolonged engagement in the field; Member checks	Journal entries, video-recordings, group interviewing. Participants to verify comments given.
Transferability	Dense description	Verbatim quotes from journal entries, video-recording of group interview.
Dependability	Triangulation Dependability audit	Journal entries, Video-recording of group interview. Transcripts.
Confirmability	Triangulation Confirmability audit	Video-recordings, journal entries, group interview. Transcripts to be checked.

3.9 Analysis of data

I collected seven journal entries from each of the 18 learners that initially participated in the study. Having read all 126 journal entries I requested volunteers to form the group of case study learners. The five learners that volunteered formed the group that was interviewed. The group interview was transcribed. The 35 journal entries (7 from each of the 5 learners) and the transcriptions of the interview were analyzed. Each of the five learner's perceptions of educator feedback was analyzed from both sources of data (individual journal entries and group interview). This formed an individual case analysis for each learner. In discussing each case, the order of events is chronologic (in order of journal entries). Thereafter, a cross case analysis was conducted for each of the focuses

of the journal entries (in chronological order). Here commonalities and differences in learners' perceptions of each of the different forms of feedback were revealed.

3.10 Limitations of the study

The sample in this study is small and inhibits the drawing of generalizations, which is not the main purpose of this qualitative study. To emphasize this point, Cohen et al. (2000) state that convenience sampling do not represent any group apart from itself. It "does not seek to generalize about the wider population, for a convenience sample that is an irrelevance" (p.103). This view is supported by Opie (2004, p.74), who writes that the "issue of numbers for a case study is … meaningless". Stake (1995) adds that "the real business of case study is particularization, not generalization" (p.8). However, this study is one that other educators of mathematics can relate to since the context of administering feedback is a task every educator employs.

Convenience sampling was used in this study; where participants were my own learners. Administering feedback to learners in one school indicates that this research has limited scope.

Nonetheless, I do believe that this study will highlight important implications for my own feedback practices.

3.10 Chapter summary

In this chapter, I have outlined the main aspects of the research methodology and design used in my study. Herein the data collection techniques as well as how the data was analyzed are included. I have explained the merits as well as the constraints of the methods used. In addition I have discussed the triangulation undertaken.

CHAPTER FOUR: FINDINGS

4.1 Introduction

In this chapter, I present the analysis of the data with the intention of providing reasonable answers to the research questions of this study. As this is a qualitative case study, in the analysis each of the five cases will be examined separately. A cross case analysis of the five cases will follow the individual case analysis. The data collected from each of the learners seven journal entries (as described in Chapter Three), together with transcripts of the group interview will be used in both the individual and cross case analysis.

In the analysis of the data, direct quotations from learners' journal entries as well as from transcripts of the group interview are used. Quotations from learners' journal entries were used as they appeared in learners' journal entries, that is, their spelling or grammatical errors were not corrected. The group interview was transcribed verbatim. Learners grammatical errors were retained when quotations from the group interview was used.

In order to acknowledge and differentiate the source of the quotation, I used the following notation. 'J' for a journal entry or 'I' for interview transcription. Whenever journal entries quotations were used, these were also numbered, for example, 'J3' signifies journal entry 3 (There are 7 journal entries as explained in 3.7.1.). Alongside the source the letter 'L' and a number follows, referring to a specific learner, for example, 'L2' is learner 2. The date of the journal entry and the interview is also indicated within parenthesis. Therefore, '(J1L1, 27-08-04)' is journal entry 1 of learner 1 written on 27-08-04, whilst '(IL1, 20-09-04)' refers to interview transcription of learner 1 on 20-09-04.

4.2 Analysis of the individual cases

In the analysis of the individual cases, each case begins with a brief profile of the learner. An analysis of each learner's meaning of feedback follows. Thereafter, the learner's perception of the different forms of feedback received (in chronological order) is

discussed. The discussion relates to their perception of the effectiveness of each feedback form.

Riva's Case. Riva is a fifteen year old Indian male learner whose home language is English. His mathematical competence is above average and the evidence of this is from his assessment scores which range from 60% to 100%. Below is an analysis of Riva's meaning of feedback and his perceptions of the different forms of educator feedback.

Riva's initial journal entry on "What is feedback?" states that "feedback refers to a teachers report back on any kind of work that is done" (J1L1, 27-08-04). Riva's reference to "any kind of work" suggests that he understands feedback to be linked to a teacher's report in assessing all learners' tasks. In other words, he expects feedback on all work done, irrelevant of the type or kind of work. Furthermore feedback should not be restricted to particular tasks, but should be provided on all work. "Report back" suggests that he anticipates the educator to say something about his task.

In Riva's second journal entry he documented his perceptions of feedback in the form of ticks and crosses. Having solved all the equations correctly, Riva stated "I felt nice getting all right but I feel comments encourage me…" (J2L1, 30-08-04). He perceives feedback in the form of ticks and crosses as being inadequate in that he is not offered the encouragement that a comment would offer. On the contrary during the interview he maintained that ticks are inspiring. He said "…when you get all your work right, you get all ticks. That like, motivates you." (IL1, 20-09-04). In addition to this, Riva perceives ticks as delivering a positive message in indicating that learners are making headway in their learning. The message is "…you're doing well" (IL1, 20-09-04) and that "you're on the right track" (IL1, 20-09-04).

According to Riva, receiving crosses can be discouraging but could also be motivating as well as. During the interview, he said that "…when you get crosses…you get like, de-motivated; you get discouraged. (I L1, 20-09-04). He mentioned that crosses make "you feel like, you're not understanding" (I L1, 20-09-04) suggesting that crosses

convey to learners that they didn't comprehend the work. On the other hand, he perceives crosses as an inducement to do more work, in the sense that "you must go and try harder to get that exercise right" (IL1, 20-09-04).

Riva's third journal entry was based on his perception of feedback in the form of marks, (accompanied by ticks and crosses). He noted that the mark gives him "confidence" (J3L1, 02-09-04). I believe that the reason the mark gave him confidence was that he achieved total marks. My belief was confirmed during the interview when he stated that receiving good marks are motivating most of the time. "Motivating is the good marks … most of the time" (IL1, 20-09-04). He also perceives good marks as telling him that he understands the work. "When you get those good marks … you like know you understand the work" (IL1, 20-09-04). However, Riva also perceives marks to be superfluous when he remarks that "it's also not very necessary" (IL1, 20-09-04). He explains " you don't need the mark like 4 out of 5, or 5 out of 5 … you can count for yourself and you know what mark you got" (IL1, 20-09-04). He has linked marks with ticks. To him, he 'can count' the number of ticks to establish the mark that he has achieved.

In Riva's fourth journal entry, he recorded his perceptions on feedback in the form of ringing and underlining errors. For him, this feedback that showed where his errors were, was beneficial because "pinpointing the error was helpful" (J4L1, 06-09-04). "Pinpointing" suggests that he perceives underlining and ringing as useful to identify errors precisely. In the course of the group interview, Riva notes that learning takes place from feedback, in that it draws attention to errors by ringing and underlining. He said "you learn from it" (IL1, 20-09-04). He went on to explain that ringing and underlining can be referred to at a "later stage like the exam time; you can go back; see what your mistakes was and learn from them" (IL1, 20-09-04). However, Riva does view ringing and underlining as making his work appear slovenly. "It makes your book kind of untidy" (IL1, 20-09-04). The appearance of his work was important to him since he is a learner who works very neatly at all times.

Rivas fifth journal entry offers information on his perceptions of his feedback where I corrected his errors verbally and in writing. He wrote, "Doing my correction was helpful, but I think it was not necessary (J5L1, 07-09-04). His view that correction of his errors by the teacher was unnecessary could be due to the fact that his mathematics competence is above average. He sees himself as competent enough to correct his own mistakes. He states "I can do my own correction…" (J5L1, 07-09-04). "Some learners cannot correct their own work. Some learners need all the help that they can get" (IL1, 20-09-04). Being a self – directed learner, he believes that when feedback corrects his errors, he is "being spoon fed" (J5L1, 07-09-04). He perceives feedback that only directs him to errors as more important. He wrote: "Being shown my mistakes is more important than doing my correction" (J5L1, 07-09-04).

Riva's journal entry response to scaffold feedback indicates that he perceived that this from of feedback to be the best. His entry reads: "I felt that…this is the best way of marking" (J6L1, 09-09-04). This perception was reiterated during the interview, when he said, "I think calling the teacher…is good" (IL1, 20-09-04). He favored scaffold feedback because scaffold feedback is immediate and hence, errors are not repeated. "If you made a mistake once and at the same time the teacher corrected you, you wouldn't have made the same mistake twice" (J6L1, 09-09-04). The above comments indicate a sense that he has the power over what he can ask the educator.

His statement: "Verbal feedback is better…written feedback is useless if you don't understand what the teacher writes" (J6L1, 09-09-04) indicates that he sometimes does not understand the educator's point. His preference for verbal feedback over written feedback is also indicated. He perceives verbal as essential for "clarifying what the teacher wrote – especially [the] maths terms" (J6L1, 09-09-04). The written feedback language appears difficult for him to comprehend. "Clarifying" suggests that verbal feedback helps to make sense of what the educator has written (which he did not understand). Written feedback is perceived (by Riva) as "useless" in that the purpose of feedback is unfulfilled if the learner does not understand the written feedback.

In his final journal entry (on delayed feedback in the form of a comment), Riva stated that late feedback is better than immediate feedback because "the work has more time to settle in our head" (J7L1, 15-09-04). This implies that in the interim of awaiting feedback he comes to terms with comprehending what he had answered. This perception was maintained in the interview when he said: "delayed feedback was good for me. It gave me time so that work could settle in my head" (IL1, 20-09-04). The time delay also served as a period for him to reflect, "[I] keep on thinking what I got, where I went wrong…in the assessment" (IL1, 20-09-04).

Riva's perception of his comment ('excellent') is that the comment "excellent" is "encouraging and motivating (J7L1, 15-09-04). Nevertheless, he says that there was no need for feedback since all his answers were correct: "Because all my work was correct, there was no need for feedback. I did not find it [comment] useful as a result" (J7L1, 15-09-04). He seems to suggest feedback is not required when all answers are correct. Riva also perceives feedback in the form of comments to be stereo-type. "Comments match the % like 70 – 80: very good , 80 – 100: excellent. It says nothing about the performance" (J7L1, 15-09-04). His point is that educators examine the learner's percentage and provide a comment on the percentage instead of providing a comment on the manner in which the learner has worked. ("It says nothing about performance") (J7L1, 15-09-04). Further he prefers positive feedback that encourages learners and not negative feedback that belittles learners. "I like feedback that is encouraging and motivating…not ridicule or mock you" (IL1, 20-09-04).

Cleme's Case. Cleme is a 15 year old Indian male learner whose home language is English. His marks on assessment tasks range from 70% to 90%, I therefore consider him to be a high achiever in mathematics. What follows is the meaning that Cleme gives to feedback and an analysis of his perception of the different forms of feedback.

In his first journal entry his perception of feedback reads, "Feedback is saying something from the teacher's point of view" (J1L2, 27-08-04). His view portrays the educator's role as judgemental in administering feedback. "… saying something …" was

elaborated upon when he added that feedback "… is also a good way to communicate" (J1L2, 27-08-04). Cleme provided a reason as to why feedback is a good way to communicate. This reason being "so that people know what the teacher realy wants" (J1L2, 27-08-04). Feedback was portrayed as a means of communication of the teacher's view so that learners are familiar with what the teacher requires. This perception was further elaborated on during the group interview. Although he maintained the notion of feedback being a form of communication, he displayed advanced insight of how feedback is aligned to communication. Cleme views "rings, crosses … as a form of communication with the student" (IL2, 20-09-04).

Cleme's second journal entry was based on his views on feedback on the form of ticks and crosses. He wrote "I had all right so this type of marking was fine" (J2L2, 30-08-04). During the group interview however, his opinion of feedback in the form of ticks and crosses was that "there's no learning from it" (IL2, 20-09-04). He explained that when work is "crossed, basically a pupil doesn't know where did I go wrong…" (IL2, 20-09-04). It may therefore be that ticks and crosses are only acceptable to Cleme when all his work is correct. If there are errors in his work, then ticks and crosses are unacceptable. To him, a cross communicates that something is wrong but it doesn't reveal where the learner went wrong.

In his third journal entry, Cleme noted down his perceptions on feedback in the form of ticks and crosses accompanied by a mark. Having obtained full marks for his task, he wrote "I feel this marking is not meaningful because the four ticks will tell me … four out of four" (J3L2, 02-09-04). In terms of feedback that is communicated in the form of a mark, Cleme commented that learners' perceptions will differ since it "depends on how [they] interpret it" (IL2, 20-09-04). He explained that good marks would ensure that some learners continue to aspire towards high marks all the time. In other words, good marks are motivating for these learners. He believes that other learners that achieve good marks could "over estimate" themselves and are inclined to think they "don't need to learn" (IL2, 20-09-04).

He is also mindful of learner's perceptions of a "weak mark". Receiving a bad mark could get learners to "give up on themselves, but if the learner is a "positive person" the "bad mark" could get them to work "and try to go forward" (IL2, 20-09-04). On the contrary, he observes that learners that do not achieve high marks resort to copying to get into "competition with friends" (IL2, 20-09-04). Then "copying comes into play and they push for this all the time. Basically this is not a good way of marking" (IL2, 20-09-04). Feedback in the form of marks could persuade some learners to copying in order to obtain good marks. With reference to feedback in the form of marks, he stated that "this is not a good way of marking" (IL2, 20-09-04).

I offered feedback that drew attention to learners' weaknesses by ringing or underlining errors. Cleme's fourth journal entry contained his perceptions on ringing and underlining of errors as a feedback form. His journal entry read "ringing of my mistakes was helpful because I could see were I went wrong" (J4L2, 06-09-04). During the group interview, he revealed that feedback that pointed out where he went wrong communicated a "challenge" to him (IL2, 20-09-04). The challenge posed was that of getting to the point of error and correcting it by himself. Worthy of note, is that he did exactly that in his task and hence wrote "I then went back to my work and corrected it on my own" (J4L2, 06-09-04). He further added that he "personally made it a mission … to become better at that … certain step" (IL2, 20-09-04). The former quote indicates that he accepts the responsibility of his learning.

When feedback offering correction was administered Cleme noted the following in his fifth journal entry "this is the best …you clarified my thoughts in correcting it" (J5L2, 07-09-04). This perception had evolved during the course of experiencing the different forms of feedback. During the group interview, Cleme's perception of feedback that offers correction was that "it takes out the challenge of … trying to get the sum right again … it not so much works for me" (IL2, 20-09-04). He explains that the feedback shouldn't include correction; instead the teacher has to tell [communicate to] you that you are wrong and just leave it at that…" (IL2, 20-09-04). In addition, Cleme suggests that a

learner that lacks the ability to face the challenge of rectifying his/her errors be offered "guidance" (instead of correction).

Cleme's sixth journal entry related to scaffold feedback that was administered on learners' request. He wrote "I feel better getting my work marked like this" (J6L2, 09-09-04). Cleme confirmed that he preferred requesting for feedback when the need arose so that he would not be disturbed whilst working. If feedback is to be offered on learners' request, Cleme expressed concern as to what would happen to learners that are "shy" and "will not call for a teacher. … the pupil will be offered no feedback at all" (IL2, 20-09-04). This could be the reason for his approval of feedback to a group instead of an individual. He views this as the educator "talking to the whole class so everyone will be able to learn at once" (IL2, 20-09-04). He appreciated feedback in verbal form. During the group interview he provided details on the significance of verbal feedback for all learners. He notes that when verbal feedback is offered to a particular learner, many other learners also benefit from what the teacher says. "Students that are…afraid to ask the teacher [for] help" (IL2, 20-09-04) will pick up on the verbal feedback that the teacher offers to others. He believes that during verbal feedback the teacher does not address one learner but the whole class.

On receiving feedback with comments, Cleme's seventh journal entry reads that it was "a good way of marking only if you have a good one [comment] … [it] keeps you positive" (J7L2, 15-09-04). Nonetheless, he wrote "… if I had something wrong the comment would not have helped me in any way (J7L2, 15-09-04). On the other hand, during the interview he said that he didn't find comments necessary since learners know when their work is "excellent" or when they "must improve" (IL2, 20-09-04). Nevertheless he acknowledges that while positive comments build confidence; negative comments are de-motivating. He stated good comments "keeps you in … giving you confidence" whilst a comment "like 'weak' … pupils will just give up on themselves" (IL2, 20-09-04).

Cleme alleges that comments such as 'fail' or 'pass' are inadequate in that 'fail' does not indicate "how close they [learners] came to passing" (IL2, 20-09-04) as this could range from 0% to 39%. Similarly 'pass' does not justify the quality of pass. To him, 'pass' as a comment appears to indicate that two learners achieving 40% and 100% are both of "equal" ability.

In journal entry seven, Cleme also commented on delayed feedback. He stated "I don't think late feedback is good because I forget the way I arrived at my answer" (J7L2, 15-09-04). This view was repeated during the group interview where he said "… when it was delayed, I almost forgot what I've done" (IL2, 20-09-04). Cleme considered what could happen in the interim of awaiting feedback. He stated "… as we wait for feedback we are doing other tasks and we … carry on repeating our mistakes over and over" (IL2, 20-09-04).

As a point of closure, Cleme remarked that a teacher's distribution of expected answers to learners and the correction of learners work do not constitute feedback. "In order for someone to learn …. The teacher [should] point out your mistakes …. Just having the answer, I don't think … will help" (IL2, 20-09-04).

Edi's Case. Edi is a 15 year old African female learner. Although her home language is isiZulu, she has a very good command of English. Her mathematics ability ranges from average to above average as her performance in the subject has not been consistent. Her assessment scores range from 30% to 60%.

Edi's first entry was based on her definition of educator feedback. To her, feedback is when an educator has given learners a task then he/she "will mark the work and will point the mistakes" (J1L3, 27-08-04) to the learners. "…mark … and point out the mistakes" implies that she expects diagnosis of her mistakes after the educator has supervised her work. In addition to this, 'mark' could also imply an evaluation of her work where feedback is quantitative, in the form of a mark or percentage. Edi also noted that through feedback once the educator identifies learners' mistakes, the educator

explains "what [the learner should] look out for when given a task" (J1L3, 27-08-04). To her, through feedback, learners are conscience of not repeating their mistakes. She explained that: "feedback helps the student to recognize their mistakes and where they tend to go wrong and they rectify the mistake the next time they do a task" (J1L3, 27-08-04). Even during the group interview, Edi's definition of educator feedback focused on the identifying of mistakes. The idea of feedback identifying mistakes was extended to the educator "giving advice or guidance on how you're doing … she'll give [advice or guidance] on how to correct your work" (IL3, 20-09-04).

In her second journal entry, Edi recorded her response to feedback in the form of ticks and crosses. Her entry read: "I do not recommend this type of marking because I got an equation wrong but I don't know where I went wrong" (J2L3, 30-08-04). Edi appears to believe that feedback in the form of ticks and crosses is inadequate because "the teacher did not explain how I got it wrong and I still cannot figure out why I got it wrong" (J2L3, 30-08-04). During the group interview, Edi maintained that feedback in the form of ticks and crosses was not "… a good type of marking" (IL3, 20-09-04). She explained her reason for this when she said: "when you get a cross you don't … know how well you did … and how you got that wrong" (IL3, 20-09-04). Edi highlighted the importance of feedback that provides information on where errors lie. According to her, when you get something wrong (a cross) "you do have to rectify that mistake, but how because you do not know where you went wrong and how to rectify this mistake" (IL3, 20-09-04). Her need to rectify this is so that she "can be able to avoid that [mistake] the next time" (J2L3, 30-08-04).

In her third journal entry, Edi commented on feedback in the form of ticks and crosses with a mark. Even this form of feedback did not appeal to her. She said: "I do not recommend this type of marking" (J3L3, 02-09-04). "…do not recommend" indicates her condemnation of feedback in the form of ticks, crosses and a mark. To her, feedback in the form of ticks and crosses whether accompanied by a mark or not, is equally inadequate. With regards to marks, Edi said: "I don't find putting a mark there necessary" (IL3, 20-09-04). As in the case of feedback in the form of ticks and crosses, she

mentioned that feedback in the form of marks too, do not identify errors. She wrote: "I [do not know] why or how I got it wrong" (J3L3, 02-09-04). During the group interview, Edi commented on some of her colleagues views on feedback in the form of marks. She said: "... some of them just want to pass. When they get a pass mark, they're so happy" (IL3, 20-09-04). It would therefore appear that the only message that marks transmit to some learners is that of passing or failing. This however, is not so for other learners like Edi. She stated: "I get very disappointed ... getting 40" (IL3, 20-09-04).

Edi's fourth journal contained a record of her perception of feedback in the form of ringing and underlining of mistakes. Feedback that directed learners to their mistakes did meet her approval. During the interview, Edi maintained that feedback in the form of mistakes is inadequate. She stated: "... the teacher must not like only ... underline the mistakes. She must show me what I did do wrong" (IL3, 20-09-04). She explained what she meant: "the kind of feedback I prefer is specific feedback on errors ... and how to rectify ... the mistakes ..." (IL3, 20-09-04). Edi provided an example of what she referred to: "... for example, she must say 'you do not know how to transpose... I'll learn how to transpose" (IL3, 20-09-04). She wrote "I don't like this type of marking" (J4L3, 06-09-04). She explained the reason for her disapproval as "...the teacher marked the work and only ringed what I had wrong...I had to figure out why I had it wrong by myself" (J4L3, 06-09-04). "...only ringed" suggests that the educator had not done enough in terms of feedback that was offered. Having stated that she "had to figure out" what her work was wrong by herself, it is implied that the educator feedback (ringing/underlining) fell short in that regard. During the group interview, she said: "I don't find it [ringing and underlining] useful" (IL3, 20-09-04). According to Edi, some learners maybe capable of rectifying their own errors whilst others may find it "very hard to understand how they went wrong and to rectify their mistakes will be very challenging to them [or] impossible for them to do themselves" (IL3, 20-09-04). She stated that these learners "need...guidance and advice so they can do better" (IL3, 20-09-04).

In her fifth journal entry Edi wrote down her perception of feedback that includes correction of mistakes. She wrote: "I highly recommend this type marking because when

the teacher does the correction in my presence I get to learn" (J5L3, 07-09-04). This indicates that Edi favours feedback that offers corrections of mistakes. She considered learners that "don't understand the exercise" (IL3, 20-09-04) and she stated that these learners will experience difficulty in rectifying their mistakes" (IL3, 20-09-04). She repeated that these learners needed "guidance and advice … [to] correct their work" (IL3, 20-09-04). Edi valued the written form of correction (offered through feedback) because she could refer to this feedback at a later stage. She wrote "it [feedback that offers correction] stays in my book and I can look at it for future if I have forgotten how to do it" (J5L3, 07-09-04). Her closing remark on feedback that offers correction read: "I think that this one is the best" (J5L3, 07-09-04).

During the group interview, Edi expressed that she welcomed the availability of educator feedback whenever she needed help (scaffold feedback). She appreciated asking the educator: "… where did I go wrong" and being told: "where you need … to improve" (IL3, 20-09-04). Nevertheless, Edi realizes that calling the educator for feedback has a disadvantage in that the educator may find it annoying. She stated: "In some instances … there are teachers that get irritated when they are called" (IL3, 20-09-04). Edi recorded her perceptions on scaffold feedback in her sixth journal entry which read: "This type of marking is fair & okay" (J6L3, 09-09-04). "Fair & okay" conveys the notion of scaffold feedback as being acceptable. She explained that scaffold feedback is "fair & okay because you get verbal feedback at the same time and you won't do [the same] mistakes in the following equations" (J6L3, 09-09-04). She further made a note of the disadvantage of verbal feedback as "we tend to forget sometimes … maybe … we'll do the same mistake again" (J6L3, 09-09-04). Since she believes that there is a possibility of forgetting what is explained verbally; she stated her preference for written feedback. "…written feedback is good for we can refer to it whenever we need to" (J6L3, 09-09-04). Nonetheless, during the group interview, Edi acknowledged the need for both verbal and written feedback. She stated: " I find that way of marking very helpful … this year we e doing some of last years work … I can go to last years book and see … this is what ma'am told me … I can replay that moment again and remember how to do it" (IL3, 20-09-04). In addition to this, during the group interview, Edi commented

on verbal feedback being fine if the educator does not embarrass the learner. She mentioned: "it is good feedback when the teacher won't embarrass you …" with verbal comments such as "you're so stupid" (IL3, 20-09-04). To Edi, verbal feedback must relate to the learners' mathematics ability and should not be personal. She remarked: "… if the teacher explains the maths … its okay … it must not be personal" (IL3, 20-09-04).

Edi's last journal entry concentrated on feedback in the form of comments and feedback that is delayed. Edi received "good" as a comment on her task. She was not pleased about this comment ("it is … a let down" (J7L3, 15-09-04)). According to Edi, 'Good' tells her that she is "on the right track" (IL3, 20-09-04) and she is not content with this comment. She did however admit that the comment had had a positive effect on her. She wrote: "… the positive impact is that it makes me more determined to work harder next time" (J7L3, 15-09-04). On the other hand, she is aware of the negative aspect of feedback in the form of comments. In her view, comments do not highlight her errors or indicate how she could improve. She noted: "The negative thing about this [feedback] is that it does not explain where I got wrong and how I could improve next time" (J7L3, 15-09-04). She maintained this view during the group interview as well. She stated: "if you're doing good, you know I'm doing okay but you need to improve here, there … so I can go to "excellent" (IL3, 20-09-04). She believes that: "comments should tell me how I can improve" (J7L3, 15-09-04). To her, a comments such as 'passed' or 'failed' is not the focus of feedback. She stated: "I think that feedback is not about passing or failing it's mainly about … getting feedback in order to improve and do better in your subject" (IL3, 20-09-04). Edi communicated the message that feedback should chiefly aim at improvement.

Edi's remark on delayed feedback is: "this is not good because by the time I get feedback I would have forgotten what I had written" (J7L3, 15-09-04). She liked "immediate feedback" (IL3, 20-09-04). She wrote down: "I prefer immediate feedback so I could correct my mistake" (J7L3, 15-09-04).

Chri's Case. Chri is a 14 year old female learner of Indian descent. Her home language is English. Chri's mathematics competence could be viewed average since her scores on assessment tasks range between 40% and 60%. She is, however, very competitive and strives towards improving her performance. She was actually spotted waving her assessment tasks at those learners who had obtained lower scores. At times, she mentioned that she was determined to beat those learners who had performed better than her.

In her first journal entry Chri recorded her definition of feedback as a teacher's task of informing learners of their performance. She wrote, feedback "is a task that the teacher does to inform us of how we performed" (J1L4, 27-08-04). She stated two purposes of feedback as "to ensure that we do good and understand" (J1L1, 27-08-04) and "it also tells you where you went wrong…what to do to get better…ways you can improve your working ability (J1L4, 27-08-04). The first purpose of feedback is to ascertain that learners understand the work and do well. The second is to reveal to learners errors so that they can identify where they went wrong and hence establish ways improve their ability. During the group interview, she maintained "it [feedback] makes you a better person … meaning in your schoolwork" (IL4, 20-09-04). The perception that feedback improves learning was emphasized in her journal entry and during the group interview. "… feedback is also very challenging", (IL4, 20-09-04). "It is very challenging" (J1L4, 27-08-04). In both the interview and journal entry, Chri conveys the perception of feedback as challenging. She explains that feedback is challenging "when a teacher comes to you…say that you need to do better; you need to improve" (IL4, 20-09-04). She perceives the challenge posed through feedback as inciting competitiveness amongst learners. "…You want to compete with your friends" (IL4, 20-09-04) "…I like competing with my friends. it is quite fun…" (J1 L4, 27-08-04). Chri conveys the impression that she enjoys being in competition with her friends.

In her second journal entry, Chri recorded her perceptions of feedback in the form of ticks and crosses. She noted that although "crosses" indicated that the answers were wrong she felt that finding out where her errors were, on her own, was time-consuming.

Her entry reads "…crosses indicated which ones had wrong… I was able to…find my errors … this took time" (J2 L4, 30-08-04). This shows that she wants to improve. According to Chri's remarks in the group interview, she perceived ticks and crosses a transmitting a message about learners understanding. She said "ticks and crosses…say … how well you are doing…like whether you understand." (IL4, 20-09-04). "…a tick … means you understand the section…a cross it's like…you need to improve" (IL4, 20-09-04). To her, ticks mean that the learner understands the content and crosses mean that the learner has to improve. Chris also perceives crosses to be slightly discouraging ("… crosses can be a bit discouraging at times." (IL4, 20-09-04)). I think that she interprets crosses as "a bit discouraging" because she is competitive. The discussion in the preceding paragraph revealed that Chri liked a challenge and enjoyed competing with her peers. Chri thinks of herself as rising above the odds and she does not perceive a cross as a hopeless situation. On the other hand "when you see a whole lot of crosses – like you are dumb" (IL4, 20-09-04). The presence of many crosses conveys the message is that the learner is stupid.

Chri's perception of feedback in the form of a mark, as stated in her journal entry, is that marks are not necessary. She writes, "It was not necessary for you to write because I can see I had one right" (J3L4, 02-09-04). During the group interview, Chri repeated her assertion that feedback in the form of marks is unnecessary when she said: "feedback…in the form of a mark is not really necessary" (IL4, 20-09-04). She believes that I had stated the obvious when I had written her mark (1 out of 5). She also appears to be upset (or perhaps disappointed) when she states: "Now I have to go and discover my own mistake before I make the same mistake in another task" (J3L4, 02-09-04). Chri attaches greater importance to determining of her errors so that these errors are not repeated.

I believe that she was upset (or disappointed) because I did not administer feedback that informed her of where her errors were. The fact that I had just assigned a mark (1 out of 5) and her comment that she said that she had to find her errors on her own shows that she views feedback in the form of marks as inadequate. Chri also acknowledges why

there is a need for her to find her errors. She knows that she needs to take the initiative to and find her errors so as not to repeat the same in another exercise.

During the group interview, Chri did not comment about receiving high marks but her comment on low marks was: "...it's really embarrassing to get like low mark..." (IL4, 20-09-04). Her desire to strive to achieve better results is illustrated through the following statement. "...you mustn't get discouraged, you must try to do your best and get a good mark" (IL4, 20-09-04).

With regards to feedback in the form of ringing and underlining, Chri realises that the purpose is to inform her of where her errors lie. "It tells you that in that step you got it wrong." (IL4, 20-09-04). "My mistakes where ringed and underlined so I knew I must go to that step to correct my work" (J4L4, 06-09-04). Through ringing and underlining, she knew precisely where her errors were and she perceives such feedback as saving her time. "This saved time I knew exactly where to look and do corrections" (J4 L4, 06-09-04). "... instead of working the whole thing again which takes up more time" (IL4, 20-09-04). Chri perceived ringing and underlining as a useful form of feedback. "This feedback was more useful" (J4L4, 06-09-04) since ringing and underlining directed her to her errors.

Chri perceives feedback that points out errors and corrects errors as being acceptable. "This type marking was okay." (J5 L4, 07-09-04). Whilst drawing her attention to her errors was welcome, she found it unnecessary that corrections be done for her. "Corrections done for you ... I don't think its necessary" (IL4, 20-09-04). According to her, if learners are informed of where their errors lie, they can rectify these errors by themselves. She states "the teacher points out where you went wrong, you can go on your own and correct it" (IL4, 20-09-04). Chri also implies that not all learners will be able to correct their own work. She remarks; "I think that bright learners can correct their own work; the teacher does not need to do correction for them." (IL4, 20-09-04). The inference Chri makes about feedback that offers correction is that weaker learners need correction more than brighter ones.

According to Chri's sixth journal entry, she favours scaffold feedback. She wrote "I prefer feedback when I need it and call for it" (J6 L4, 09-09-04). As expressed in both the journal entry and interview, Chri perceived scaffold feedback as "better because…the teacher won't interrupt your concentration" (IL4, 20-09-04). Chri believes that she would rather request feedback as she needs, instead of the educator administering feedback regularly. When an educator administers feedback routinely, she maintains that her "concentration is disturbed because the teacher has to do the marking" (J6 L4, 09-09-04). From the former statement, I get the impression that she perceives random feedback as a hindrance to her concentration. If she does not ask for feedback and feedback is administered, she perceives feedback as an imposition that results in a break in her thinking. She states: "you call a teacher…when you are stuck…it's better …instead of the teacher coming and bothering you all the time." (IL4, 20-09-04). I hate it when I am in the middle of something and the teacher wants to mark it (J6L4, 09-09-04). Chri has made a strong statement about the educator's presence being more of an intrusion than a welcome.

Chri's perception of the verbal aspect of scaffold feedback is that it benefits timid learners that do not question educators. "People that are shy and do not like to ask the teacher questions about maths" (IL4, 20-09-04) can hear the educator's explanation "if someone has a query" (IL4, 20-09-04).

Chri's last journal entry was on feedback in the form of comments as well as delayed feedback. The subsequent statement indicates that she perceives feedback in the form of comments as incomplete. In her journal entry she asks: "what did I do wrong in my working. I need to know how I can I improve in my working out" (J7 L4, 15-09-04). She however does state comments can encourage learners to do well consistently. She states "if you get an excellent…that encourages you to do better and to maintain that mark throughout the whole year" (IL4, 20-09-04). To her, comments are indicative of a learner's ability in terms of the educators expectation since she says "you get a comment…you know where you stand with that teacher and how much you know"

(IL4, 20-09-04). Chri always works with great effort and she therefore believe that receiving a negative comment "means if you do a little bit more…if you work like more harder, you'll manage to get an excellent" (IL4, 20-09-04).

Her view on delayed feedback is that the delay made her anxious. "It kept me in suspense" (J7 L4,15-09-04). However, she also saw a benefit in delayed feedback because it gave her the opportunity to reflect on her work. She wrote: "I like late feedback because it gives me time to think about my work. She did mention in both her journal entry and the interview that delayed feedback had a disadvantage. The disadvantage of delayed feedback is the likelihood of repeating errors in other tasks/exercises, while waiting for feedback. She said "the disadvantage … my errors are corrected too late, and errors can be repeated in other exercises while waiting for this feedback" (J7 L4, 15-09-04) or further "the disadvantage is … continue doing the thing wrong in your other work that you get" (IL4, 20-09-04).

As a final remark on feedback, Chri said "I found the most useful feedback was ... feedback that gives me details about my work…to tell me that I cannot, for example multiply integers… must be like specific" (IL4, 20-09-04). Clearly, from her closing remark, Chri perceives feedback as useful when her mathematics weaknesses are specifically addressed.

Mabu's Case. Mabu is a 16 year old African male learner, whose home language is isiZulu. He is a timid person, who works mostly by himself. His mathematics competence is average with assessment scores ranging from 30% to 50%.

Mabu made note of his definition of feedback in his first journal entry. In this initial entry, defined feedback as checking and reporting on work. The entry read: "The work…is checked and a report that's feedback is given" (J1L5, 27-08-04). "Checked" suggests that the educator is expected to make sure that learners' answers are correct through careful inspection of their work. Furthermore "report" suggests that he anticipates an analysis of his work. Mabu's journal entry also stated "when you don't

understand something…the teacher explained it back to you she/he is doing the feedback to you" (J1L5, 27-08-04). From the former statement, it is apparent to me that he perceives feedback to serve as remedial teaching. In addition, during the group interview he stated: "if…there's something…I don't understand…she will point it to you. She's giving you feedback" (IL5, 20-09-04).

Mabu's second journal entry expressed his views on feedback in the form of ticks and crosses. He stated that: "Ticks are good because it encourage me to do it correct" (J2L5, 30-08-04). I found it interesting that he did not perceive crosses to be discouraging in any way. He wrote "A cross don't make me give up. The cross tell me I have to get better in my work and I must be more careful when I answer" (J2L5, 30-08-04). Crosses indicate that he must be cautious in answering so that he doesn't "get it wrong again". (J2L5, 30-08-04). The notion of crosses encouraging him to be cautious was carried through the group interview. Although he stated "I won't like it if I have a cross" (IL5, 20-09-04), he said: "It [crosses] encourages me to do correctly the next exercise" (IL5, 20-09-04).

In his third journal entry, Mabu responded to receiving feedback in the form of ticks and crosses accompanied by a mark. He found marks less useful. His journal entry read: "With the crosses I know where's the mistakes but the mark doesn't tell me where's the mistakes. Its why ticks and crosses better than marks" (J3L5, 02-09-04). During the group interview he maintained that "to put a cross where you are wrong is better" (IL5, 20-09-04). He explained the reason for crosses being better in that a cross ensures that he corrects his work "and then learn from…mistakes" (IL5, 20-09-04).

Mabu's fourth journal entry focused on his perception of feedback in the form of ringing and underlining of errors. According to him, the ringing of his errors afforded him the opportunity of correcting his work immediately. He wrote: "When mam ring my mistake, I just correct it in the same time" (J4L5, 06-09-04). He valued this immediate correction of his errors. His journal entry read "it was good because I knew where to find my errors…If I didnt correct it I wouldn't get it right" (J4L5, 06-09-04). When feedback

includes ringing of errors, Mabu advises that these rings should not be ignored. During the group interview he said: "if mam rings something [do] not just look; leave it like that and say 'no' I don't know it…you must…get the answer" (IL5,20-09-04).

Mabu's journal entry, on feedback that offers correction of errors, indicates that learning took place through correction of his mistakes. He did however mention that he would prefer having to attempt to correct his work on his own. His entry read " mam ring my mistake and she did the correction for me and I learnt from my mistake…I would like to try and do my own correction first" (J5L5, 07-09-04). This indicates that he is prepared to take responsibility for his learning.

In his sixth journal entry Mabu recorded his perception of feedback that was offered when he required. The timing of feedback seemed important to him from this statement: "I liked this feedback because I can call for help whenever I want to" (J6L5, 09-09-04). Mabu also commented on verbal and written feedback since both forms were administered. His journal entry read: "Written feedback is better for me" (J6L5, 09-09-04). The same view was expressed during the group interview where he stated: "For me written feedback is better than verbal" (IL5, 20-09-04). He explained reasons for his preference as: "verbal feedback maybe the teacher can say the higher language…the mathematical language that I won't understand (IL5, 20-09-04). Mabu's journal entry on verbal feedback reads "I get lost I … in mams language sometime" (J6L5, 09-09-04). He is mindful that mathematical concepts maybe used in written feedback as well. He stated that he "can understand…even mathematical words" in its written form (IL5, 20-09-04). He further stated: "I can read it and make sense of it on my own" (J6L5 09-09-04). Written feedback provides reference for him to reflect upon. He stated: "I prefer written feedback because I can refer to the teachers comments…so when its written I can go home…I can still go over it and learn it…that's why I'm happy about written feedback" (IL5, 20-09-04). Mabu's perception raises the issue of verbal feedback being more difficult to comprehend than written feedback. The fact that written feedback is always available, for him to refer to, appeals to him.

Mabu's last journal entry relates to feedback that is delayed (this feedback included a comment). With regards to delayed feedback, he wrote "I think it is not good because I will even forget where I got wrong and how to correct it" (J7L5, 15-09-04). He prefers early feedback ("I'd prefer the immediate feedback" (IL5, 20-09-04)) because he "can see something wrong and…make it correct" (IL5, 20-09-04). He wants to "be able to correct [his mistake] immediately" (J7L5, 15-09-04).

Mabu's views on feedback in the form of comments that are good read: "It makes me feel happy and it encourages me to carry on do as much as I can to get 'excellent'" (J7L5, 15-09-04). Even negative comments don't appear to discourage him. He stated: "…if I get 'weak', I can see myself getting through. Here I mean I must pull up my socks…I need to do better…in this attempt" (IL5, 20-09-04). Negative comments will not put him down. To him, negative comments imply that he "must do better to get excellent" (IL5, 20-09-04). Off-putting comments encourage him. "I think 'weak' gives you the encouragement to do more" (IL5, 20-09-04). To him feedback is not about passing or failing. Instead it is about getting learners to understand their work. He stated: "feedback is not…failing or passing…I think it is for you as a learner to understand your work" (IL5, 20-09-04). According to Mabu, if "pass" was a comment he received, it will not be the end. He remarked: "if I see 'passed'…I will go over my crosses…the exercise that I got wrong and I'll correct it from there" (IL5, 20-09-04). This again indicates that he is willing to take responsibility for his learning.

As a final comment on feedback Mabu stated that feedback is not about getting correct answers from the teacher, instead feedback is about mistakes explained to learners. He stated: "feedback is not when…she just gives you all the answers and don't tell you… how to do the exercise" (IL5, 20-09-04).

4.3 The cross-case analysis

What is feedback? Riva stated that "feedback refers to a teachers report back on any kind of work" (J1L1, 27-08-04). Mabu's definition of feedback was boarder than Riva's. Mabu perceived educator feedback as more than a mere report. To him educator feedback

is when "work [is] checked and a report [is] given" (J1L5, 27-08-04). "Checked" suggests that the educator should first scrutinize or inspect learners' work and then report on learners' efforts.

Edi's definition of educator feedback related to when the teacher "will mark and will point … mistakes" (J1L3, 27-08-04). Her definition of educator feedback highlighted the role of feedback as diagnostic. She further explained that the diagnosis of errors through feedback result in learners "rectify[ing] the mistake the next time they do a task" (J1L3, 27-08-04). Apart from diagnosis of errors, Edi expected educator feedback to provide "advice and guidance on how … to correct your work" (IL3, 20-09-04). As Edi, Chri too perceived feedback as diagnosis of errors when she wrote; "it tells you where you went wrong" (J1L4, 27-08-04). Like Edi, Chri also anticipated feedback to "tell you where you went wrong" and to suggest "what to do to get better … improve your working ability" (J1L4, 27-08-04). Furthermore, Chri identified the effect of feedback that diagnoses errors and recognizes room for improvement. According to her, this is when feedback presents a challenge to the learner to improve. She also believes that this challenge urges learners to be competitive. The diagnostic purpose of feedback was further reiterated by Mabu during the group interview. He said if there was anything that he did not understand, the educator "will point it [out]" (IL5.20-09-04). However, unlike Edi and Chri who expect guidance on how to improve, Mabu expects feedback to serve as remedial teaching. He wrote when the educator "explained it back to you she/he is doing the feedback to you" (J1L5, 27-08-04).

Cleme was the only learner who defined feedback as the educator's viewpoint. He stated; "feedback is saying something from the teacher's point of view" (J1L2, 27-08-04). This perception was extended when he included that feedback "… is also a good way to communicate" (J1L2, 27-08-04). According to Cleme, it is through this communication (feedback) that learners get "to know what the teacher realy wants" (J1L2, 27-08-04).

To conclude: two participants (Riva and Mabu) viewed feedback as a report; the other two (Edi and Chri) defined feedback in terms of its diagnostic function being the

identification of errors; whereas the last participant (Cleme) portrayed feedback as communication of the educator's view. His portrayal of feedback as a view, suggest that feedback is the educator's opinion and in being so feedback might not be absolute. His perception implies that the educator's view could be an inference.

Feedback in the form of ticks and crosses. In a cross analysis of these learners' perceptions of educator feedback in the form of ticks and crosses, I have noticed similarities in Riva's and Cleme's views. Both these learners found ticks and crosses acceptable. Cleme described feedback in the form of ticks and crosses as "fine" (J2L2, 30-08-04) whilst Riva jotted down that he had "felt nice" (J2L2, 30-08-04). This could be attributed to them having performed well in their task. Furthermore Cleme revised his perception during the group interview during which he stated; "there's no learning from it" (IL2, 20-09-04). The reason being that when answers are crossed then learners "doesn't know where [they] went wrong" (IL2, 20-09-04). Edi was also concerned about crosses as she did not know how she got her answers wrong. Her strong disapproval of feedback in the form of ticks and crosses was expressed in her statement "I do not recommend this type of marking" (J2L3, 30-08-04).

For Chri, feedback in the form of ticks and crosses provide learners with information about their understanding. "Ticks and crosses say … whether you understand" (IL4, 20-09-04). Whilst Chri viewed a cross as "…a bit discouraging" (IL4, 20-09-04) she maintain that crosses signal to the learner that "… you need to improve" (IL4, 20-09-04). This perception was shared by Mabu as well. He noted down "…a cross don't make me give up. The cross tell me I have to get better" (J2L5, 30-08-04). Mabu was the only learner that construed crosses as a warning to learners to be cautious when answering subsequent tasks.

Feedback in the form of a Mark. In responding to feedback in the form of ticks and crosses accompanied by a mark, three of the five learners (Riva, Edi and Chri) perceived marks as unnecessary ("… it is not very necessary" (IL1, 20-09-04); "I don't find putting a mark there necessary" (IL3, 20-09-04); "… feedback in the form of a mark is not really

necessary" (IL4, 20-09-04)). According to these three learners, the ticks give learners an idea of how many marks they have achieved; hence there is no need for feedback in the form of a mark.

Edi, Chri and Mabu revealed the main reason for not valuing feedback in the form of marks. All three detected that marks did not identify their errors: ("… the mark doesn't tell me where's the mistakes" (J3L5, 02-09-04); "I have to go and discover my own mistakes" (J4L4, 02-09-04); "Why or how I got it wrong" (J3L3, 02-09-04)).

Cleme regarded feedback in the form of a mark as "not meaningful" (J3L2, 02-09-04). He reflected on the effect of feedback in the form of marks. He revealed that learners that attain low marks resort to copying to achieve good marks or to enter into "competition with friends" (IL2, 20-09-04). To him, since low marks sanction copying, feedback in the form of marks "is not a good way of marking" (IL2, 20-09-04). Besides Cleme, Chri also commented on the attainment of low marks. She said that '... it's really embarrassing to get [a] low mark" (IL4, 20-09-04). Nevertheless her conscientious nature came across in her statement; "you mustn't get discouraged, you must try you best and get a good mark" (IL4, 20-09-04). Cleme also mentioned that the attainment of high marks could result in learners "over-estimating" themselves. They therefore tend to believe that they '… don't need to learn" (IL2, 20-09-04).

Mabu established that feedback in the form of marks was less helpful than feedback in the form of ticks and crosses. According to him, while crosses indicate where errors lie, "… the mark doesn't tell [him] where's the mistakes" (J3L5, 02-09-04).

Edi maintained that as the consequence of feedback in the form of marks, some learners are content with obtaining 40% (a mere pass). She stated; "… some of them just want to pass. When they get a pass mark, they're so happy" (IL3, 20-09-04).

Some positive comments on feedback in the form of mark were expressed by Riva and Cleme. Riva state that the mark gave him "confidence" (J3L1, 02-09-04) and that

receiving good marks was motivating. Cleme remarked that good marks inspire learners to achieve high marks all the time. It would therefore appear that feedback in the form of a mark is only acceptable to learners that achieve high marks as in the cases of Riva and Cleme.

Feedback in the form of ringing and underlining of errors. Four of the five participants valued this form of feedback that included ringing and underlining of learners' errors. "Pinpointing the errors was helpful" (J4L1, 06-09-04) and "ringing of my mistakes was helpful because I could see were I went wrong" (J4L2, 06-09-04). "This feedback was more useful" (J4L4, 06-09-04); "… it was good because I knew where to find my errors" (J4L5, 06-09-04)). These participants appreciated feedback in the form of ringing and underlining of errors as this feedback form drew their attention to their particular point (or points) or error (or errors).

Three participants valued feedback that ringed and underlined their errors because they did not have to utilize too much time to find their errors. In the words of Chri "This saved time I knew exactly where to look and do corrections" (J4L4, 06-09-04).

Cleme, Chri and Mabu benefited from the ringing and underlining of their errors in that it made immediate correction of errors possible rather than spending time on discovering their errors. Cleme wrote "I went back … and corrected it on my own" (J4L2, 06-09-04). Chri knew that she "must go to that step to correct" her work (J4L4, 06-09-04). Mabu knew where his errors were and he "just correct[ed] it … the same time" (J4L5, 06-09-04).

Both Cleme and Mabu viewed feedback in the form of ringing and underlining of errors, as a challenge that was posed to them. To them the challenge was to correct the error that was pointed out either through ringing or underlining. Cleme said that he "made it a mission … to become better at that … certain step" (IL2, 20-09-04). Mabu advised that rings should not be dismissed. Learners must "not just look [or] leave it …" instead they "must … get the answer" (IL5, 20-09-04).

Riva concluded that ringing and underlining resulted in learning. He said "… you learn from it." (IL1, 20-09-04). In addition, he acknowledged that through references to such feedback at a later stage, learners are able to view what their "… mistakes was and learn from them" (IL1, 20-09-04).

Edi was the only participant that did not favour feedback in the form of ringing and underlining. She wrote "I don't like this type of marking." (J4L3, 06-09-04). To her, ringing and underlining of errors was insufficient. The feedback that she preferred must be "specific feedback on errors … and how to rectify … the mistakes" (IL3, 20-09-04).

Over and above this, Edi considers that learners are of different mathematics ability and some learners may find it "… very hard to … rectify their mistakes … or impossible for them to do themselves" (IL3, 20-09-04). She believes that ringing and underlining of errors will not suffice. These learners "… need … guidance and advice so they can do better" (IL3, 20-09-04).

Only Riva viewed ringing and underling as messy. He said; "It make your book untidy" (IL1, 20-09-04).

Feedback that included correction of errors. All five participants perceived this form of feedback (that included correction of errors) as helpful. "Doing my correction was helpful" (J5L1, 07-09-04); "You clarified my thoughts in correcting it" (J5L2, 07-09-04); "I highly recommend this type of marking." (J5L3, 07-09-04); "This type of marking was okay." (J5L4, 07-09-04); "… she did the correction for me and I learnt from my mistake" (J5L5, 07-09-04).

Although all five participants considered this feedback form to be constructive, four participants claimed to benefit more from merely knowing what their errors were than having the correction of errors done for them. Riva claimed that "Being shown mistakes is more important than doing [his] correction" (J5L1, 07-09-04). Cleme maintained that

feedback should "tell" learners what is "wrong and just leave it at that" (IL2, 20-09-04). Chri stated that if "… teacher points out where you went wrong, you can go on your own and correct it" (IL4, 20-09-04). Mabu believes that feedback should not provide learners with "… all the answers…" (IL5, 20-09-04) and he "would like to try and do [his] own correction" (J5L5, 07-09-04).

Riva, Cleme, Edi and Chri recognized the weaker learners' need for feedback that included correction. Weaker learners may not have the ability to correct their errors on their own. Riva said; "Some learners cannot correct their work … [they] need all the help that they can get" (IL1, 20-09-04). Chri stated; "… bright learners can correct their own work." (IL4, 20-09-04), implying the weaker learners required feedback with correction. Cleme suggested that these learners be offered some "guidance". Edi too, stated that these learners will experience "… difficulty in rectifying their mistakes" and they need "guidance and advice … [to] correct their work" (IL3, 20-09-04).

Scaffold feedback. All five participants welcomed scaffold feedback. "This is the best way of marking" (J6L1, 09-09-04). "I feel better getting my work marked like this" (J6L2, 09-09-04). "This type of marking is fair and okay" (J6L3, 09-09-04). "I prefer feedback when I need it and call for it" (J6L4, 09-09-04). "I like this feedback" (J6L5, 09-09-04). The main reason the participants preferred scaffold feedback was that feedback was readily available on request. Requesting for feedback as needed; ensured that errors were corrected immediately. Scaffold feedback prevented errors from recurring. Riva noted that learners would not make "the same mistake twice" (J6L1, 09-09-04).

Chri listed an advantage scaffold feedback as being that "… the teacher won't interrupt [her] concentration" (IL4, 20-09-04). In addition she stated it was better to request for feedback "… when you are stuck … instead of the teacher … bothering you" (IL4, 20-09-04). She dislikes being disturbed when she is in the midst "of something and the teacher wants to mark it" (J6L4, 09-09-04). In contrast, although Edi favoured

scaffold feedback, she revealed that "… there are teachers that get irritated when they are called" (IL3, 20-09-04) to provide feedback.

Cleme and Chri were concerned about learners that are either shy or afraid to request for feedback. Cleme realizes that these learners "… will be offered no feedback at all" (IL2, 20-09-04). Cleme, therefore appreciated scaffold feedback in its verbal form, for its perceived benefit to shy learners. He observed that through verbal feedback these learners can benefit. He believed that through verbal feedback the educator addresses "… the whole class so everyone will be able to learn at once" (IL2, 20-09-04). Learners that are afraid to request feedback will pick up on the verbal feedback that the educator offers others.

Riva drew special attention to the advantage of verbal feedback. His notion was that verbal feedback facilitates understanding through "… clarifying what the teacher wrote" (J6L1, 09-09-04). To him, mathematics terms and concepts became clearer and easier to understand through verbal feedback and written feedback was deemed "useless" if learners did not understand what the educator had written. On the contrary, Edi identified a disadvantage of verbal feedback, in view of the fact that learners "tend to forget … and do the same mistake again" (J6L3, 09-09-04).

Edi and Mabu expressed their reasons for liking written feedback better. Edi said: "… written feedback is good for [learners] can refer to it whenever [they] need to." (J6L3, 09-09-04). Mabu stated; "Written feedback is better for me … I get lost in mams language" (J6L5, 09-09-04). Through written feedback, he "… can read it and make sense of it on [his] own" (J6L5, 09-09-04). "When it is written [he] can go home … go over … and learn it… I'm happy about written feedback" (IL5, 20-09-04).

Finally Edi was the only participant that brought up the matter that verbal feedback should not be personal and embarrassing, with comments such as "you're so stupid." (IL3, 20-09-04). She believed that if feedback dealt with the mathematics, then "… it is good feedback … the teacher won't embarrass you … it must not be personal"

(IL3, 20-09-04).

Feedback in the form of a final comment. Each of the five participants' perception on feedback in the form of a comment was that good comments were encouraging. ("…encouraging and motivating." (J7L1, 15-09-04); "… keeps you in … giving you confidence." (IL2, 20-09-04); "… the positive impact is that it makes me more determined …" (J7L3, 15-09-04); "… encourages you to do better and to maintain that mark" (IL4, 20-09-04); "It makes me feel happy and encourages me to carry on" (J7L1, 15-09-04))

Although the learners claimed that positive comments had a positive psychological effect on them, feedback in the form of a comment was nonetheless inadequate. Riva viewed feedback in the form of a comment as scanty in that a comment says "nothing about performance" (J7L1, 15-09-04). Three other participants disclosed that feedback in the form of a comment is deficient in that a comment neither indicates errors to learners nor suggests ways that a learner can improve. "… if I had something wrong the comment would not have helped me." (J7L2, 15-09-04); "it does not explain … how I could improve" (J7L3, 15-09-04); "What did I do wrong … I need to know how I can improve" (J7L4, 15-09-04).

Pertaining to negative comments, three participants interpreted these comments as persuasion to improve. According to Edi, despite negative comments being "a let down" (J7L3, 15-09-04) it persuaded her "… to work harder next time" (J7L3, 15-09-04). The message that a negative comment conveyed to Chri was that if she work hard she would "manage to get an excellent" (IL4, 20-09-04). If Mabu received a comment such as "weak" the suggestion would be that he "… need[s] to do better" (IL5, 20-09-04). Cleme's perception of negative comments was quite the opposite. For him, bad comments were de-motivating and resulted in learners giving "up on themselves" (IL2, 20-09-04). Riva expressed his sentiments by stating that he did not like feedback that ridicule or mock" (IL1, 20-09-04) learners.

Three learners expressed their perceptions on feedback as a comment 'pass' or 'fail'. Cleme's impression was that "fail" does not show learners "... how close they came to passing" (IL2, 20-09-04) and "pass" does not denote the nature of pass. He clarified what he meant. Two learners that attain 40% and 100% will both "pass" as a comment although the quality of their passes is not equivalent.

Edi's and Mabu's perception was that the focus of feedback should not be about a 'pass' or 'fail'. Edi said; "feedback is not about passing or failing it's mainly about ... getting feedback to improve and do better"(IL3, 20-09-04). Mabu re-iterated Edi's sentiments when he said "... feedback is not failing or passing ... it is for you to understand your work" (IL5, 20-09-04).

Riva raised the issue that feedback in the form of a comment is standardized. According to him, a comment does not speak about the performance. Instead, "... comments match the % [percentage] like 70 – 80: very good, 80-100: excellent. It says nothing about the performance" (J7L1, 15-09-04).

Delayed feedback. It was only Riva and Chri that shared assenting views on feedback that was delayed. Riva preferred delayed feedback as "... the work [had] more time to settle in ..." (J7L1, 15-09-04). This delay in feedback afforded both learners time to reflect on "... where [they] went wrong" (IL1, 20-09-04) and to "... think about [their] work" (IL4, 20-09-04).

The other participants were dissatisfied with delayed feedback given that they could not recall aspects of the task. "I forget the way I arrive at my answer" (J7L2, 15-09-04); "I would have forgotten what I had written." (J7L3, 15-09-04); "I will even forget how to correct it" (J7L5, 15-09-04).

Two participants raised a disadvantage of delayed feedback. While awaiting feedback they were troubled about repeating errors in other tasks. "... as we wait for feedback we are doing other tasks and we ... carry on repeating our mistakes"

(IL2, 20-09-04); "… the disadvantage is … doing the wrong thing in your other work that you get" (IL4, 20-09-04).

4.4 Chapter summary

The findings of this case study, in this chapter, reveal that learners do have deep meanings of educator feedback and feedback preferences. Several issues contribute to their preferences and learners supplied reasons for their preferences.

CHAPTER FIVE: CONCLUSION

5.1 Discussions of findings

Chapter Four examined and analyzed the data obtained from the journal entries and the group interview, with the participants. I now make a connection between findings in this study, and the literature reviewed (Chapter Two).

The results of the five case studies in this study indicate that learners have meaningful perceptions of the concept of 'educator feedback'. I believe that their concepts were meaningful and significant in that their definitions were evidenced in the body of literature reviewed (in Chapter Two). What surfaced from each of the five (case study) learners' definition of educator feedback conveys a broader perception of the term 'educator feedback', than I had expected.

I was surprised by the depth of their definitions. Their definitions were not superficial. For example, I found it interesting that none of these learners described educator feedback as the marking of answers right or wrong. Kulhavy (1977) however, defined feedback as a process used to tell a learner if a "response is right or wrong" (p.23).

The learners' definitions of feedback were profound it that their understanding of educator feedback provided some insights into the value and purposes of feedback. Moreover, their expectations of educator feedback were also disclosed. Learners in this study also considered other learners' perceptions and other learners' feedback needs.

The meanings that they attached to feedback included: the expectations that work is "checked" (Mabu) and followed by a "report back" (Riva). Another expectation was that if work was not understood, then through feedback "the teacher explained it back" (Mabu) to learners. The purposes of feedback that emerged from their definitions were that feedback "point out mistakes" (Edi) and suggest 'ways to improve' (Chri). In defining feedback as "a way to communicate" (Cleme), it is suggestive that dialogue in feedback is valued. Also worthy of note, is that the findings suggest that feedback should

not be limited to certain tasks. Feedback should be offered on all their work, that is, "any kind of work" (Riva). In juxtaposing learners' meaning of feedback and the definitions in the literature reviewed (in Chapter Two), I have detected some similarities.

The literature reviewed viewed feedback as imparting information on; "results of one's efforts" (Slavin, 2003, p.353) and "how successfully something is being done" (Sadler, 1989, p. 120). Feedback is "information to another" (Dietz, 1998, p.36) "about how a person did in light of what he or she attempted" (Wiggins, 1998, p.46). The concept of feedback as information is in line with the learners' notion of feedback, informing them of how they have performed. Chri noted that feedback "is a task the teacher does to inform us of how we performed".

The identification of gaps in learners' knowledge is a purpose of feedback presented in the literature reviewed. Black et al. (2003) stated that feedback provides information about 'gaps' in learning. From the data there emerged a parallel view where Edi believed that feedback identifies or points "out the mistakes" and Chri said that feedback "tells you where you went wrong". Mabu also shared the view that feedback identifies what a learner does not understand in that feedback "will point it to you".

Learners perceived feedback as offering them help to close the gap in the knowledge. Chri believes that feedback "tells you … ways to improve" and "make you better … in your schoolwork". Edi too, sees feedback as "advice or guidance … on how to correct your work". The literature reviewed also recognizes that feedback serves to close or alter the gap in learners' knowledge. Bloom et al. (1981) note that feedback is portrayed as "individualized corrective help" (p.156). Additionally, Black et al. (2003) insist that feedback should "indicate what next steps in their learning trajectory should be" (p.42). As Ramaprasad (1983) puts it, feedback is information which is "used to alter the gap in some way" (cited in Clarke, 2000, p. 34). Sadler (1989, cited in Clarke, 2000), reminds us that this information is considered as feedback only when it is used to alter the gap in learners' knowledge.

The data unveiled the forms of educator feedback that learners valued. In discussing the finding on learners' perceptions of the different forms of feedback, I also make comparisons between their perceptions and the literature reviewed.

With regard to the learners' perceptions on feedback in the form of ticks and crosses, two learners thought that it was okay to 'tick' answers. Riva and Cleme had all their answers right, in the first task, and thought that merely ticking of correct answers was okay. They perceived a mere ticking of correct answers to be acceptable and encouraging. Woolfolk (1995) emphasized that it is more helpful to tell learners that they are wrong than to tell them that they are right. Yet, in this study, feedback that indicates an answer is incorrect by a mere cross was seen as inadequate and unhelpful, as learners expressed a need to understand why an answer is wrong and how it could be corrected. Edi recognized the importance of understanding why an answer is wrong. If a learner does not understand why an answer in wrong, then that learner cannot "rectify this mistake" (Edi). Hargreaves et al. (2000) recognize this need for learners to understand why answers are right or wrong; and Clarke (2000) points out that "there is nothing gained over ticks and crosses" (p.40). Bangert-Drowns et al. (1991) also held the belief that being told an answer is right or wrong, has virtually no effect on achievement"(p.528).

With respect to feedback in the form of marks, it was clear that marks were 'unnecessary' and 'not meaningful' (Riva, Cleme, Edi, Chri and Mabu). However, marks did have a motivational impact on learners. Riva maintained that his marks gave him "confidence" and that high marks are "motivating". Cleme too, considered high marks as motivating since learners aspire towards attaining high marks all the time. Two disadvantages of allocating marks to tasks were also mentioned. Firstly, the allocation of marks, do not inspire learners to excel. The data revealed that learners that achieve high marks tend to assume that they do not need to study. Cleme observed that high attainers could "over estimate" themselves and they may be inclined to believe that "don't need to learn". Slavin (2003) also agrees that despite it being relatively easy for high ability learners to achieve A's and B's, some high achievers do less work than they are capable

of doing. Instead, learners are quite content by a pass mark. Secondly, while marks influence some learners to copy in order to pass, other learners copy to compete with their peers (mentioned by Cleme) because low marks are considered as both embarrassing and discouraging. "It's really embarrassing to get … low marks" (Chri). Clarke (2000,) too, notes with concern that "a strong emphasis on comparing pupils with each other which demoralizes the less successful learners" (p. 33). Low marks are not meaningful for those who achieve poorly. Edi commented on the association of a mark with a 'pass' or 'failure'. She notes that some learners are satisfied with a mediocre mark as long it a pass mark. "When they receive a pass mark they are so happy" (Edi). The literature does not mention whether marks promote mediocrity in learning.

Feedback in the form of spotting learners' errors through ringing and underlining was considered as useful and helpful in directing precisely where learners' mistakes were. Several authors (Hargreaves et al., 2000; Tunstall & Gipps, 1996; Wragg, 2001) also regarded ringing and underlining as a useful technique of directing learners to the location of their errors. Riva thought that "pinpointing the error was helpful". Cleme too thought ringing of mistakes was "helpful" as he went back and corrected his answer. Cleme interpreted ringing as a "challenge" and he "personally made it a mission" to improve on his errors. Learners (Cleme, Chri and Mabu) perceived this form of feedback as helpful in that it facilitated quicker (or immediate) correction of errors since feedback located learners' errors. Mabu appreciated the ringing of his errors because he could "just correct it in the same time". For Chri, ringing "saved time … [she] knew exactly where to look and do corrections". Edi did not approve of ringing of errors. Edi believes that ringing of errors is insufficient; she expects feedback on "how to rectify the mistakes. Consideration was given (by Edi and Cleme) to those learners that do not have the ability to correct their errors even when their errors are pinpointed. Though this form of feedback appeared challenging enough for learners to correct on their own, the inclusion of guidance (for those that need advise) for correction was suggested. One learner (Riva) pointed out that ringing and underlining was messy. "It makes your book kind of untidy" (Riva). Even learners of the KMOFAP shared this view and they "wanted their teachers not to use red pen because they felt that it ruined their work" (Black et al., 2003, p. 44).

Feedback in the form of correction of learners' errors was not well received. Four out of the five participants (Riva, Cleme, Chri and Mabu) did not welcome the teacher's corrections. Corrective feedback denies the learner the challenge of correcting his own mistakes. Cleme believes that correction "takes out the challenge" of a learner rectifying their work and that feedback should offer guidance instead of correction. Mabu too expressed that he would like to try to correct his work on his own. Riva and Edi note that feedback offering correction should be reserved for those learners that are not able to correct their errors by themselves. Riva realizes that "some learners need all the help that they can get". Chri added that "bright learners can correct their own work". There was a feeling that learners, in this study, simply needed errors to be pointed out to them. Thereafter they should attempt to correct the errors on their own. Feedback should offer correction only to those learners that experience difficulty in doing their corrections. This alerts us to learners needing more than just correction of errors. They value helpful comments, leaving them to do some of the work themselves. Carnell (2000) point out that feedback "is not a simple process of correction" (p.57). In "a dominant view … [of learning], feedback is the correction of performance" (Carnell, 2000, p.57). I note that "this dominant view" is not in keeping with the principles of Outcomes Based Education. Through Outcomes Based Education, assessment should help learners to "reach their full potential" (DoE, 2002b, p.94) through "constructive feedback" (DoE, 2002b, p.93).

Scaffold feedback, comprised dialogue, and was valued by all learners. Askew & Lodge (2000) endorsed this "model of feedback as effective in supporting learning" (p. 16) through dialogue. All learners in this study preferred requesting feedback as the need arises. This form of feedback is favoured by Chri, as she regarded routine feedback as a distraction, hindering her thought processes. Unlike routine feedback, scaffold feedback does not disrupt learners' concentration. Scaffold feedback helps the learner overcome difficulties encountered during a task. This scaffold feedback enables learners to surpass their ZPD; building their knowledge "by asking and being asked questions" (Hargreaves et al., 2000, p.31). Learners (Cleme and Chri) however did raise concerns as to whether scaffold feedback can benefit introverted learners, who may not request feedback. However, both Cleme and Chri observed that the verbal communication during

scaffold feedback advantaged all learners present. Learners that are "shy" (Chri) or "afraid to ask" (Cleme) can hear the educator's verbal explanation.

All five learners preferred feedback that offered them guidance and suggestions on how to improve; rather than 'bland' comments like 'Good' or 'Excellent' that do not provide helpful information. Four learners (Riva, Cleme, Chri and Mabu) viewed feedback in the form of a brief final comment as acceptable only if the comment is positive. These learners regarded positive comments as encouraging and kept learners optimistic. Negative comments were considered to be discouraging in that learners may "give up on themselves" (Cleme). It was however revealed that the interpretation of negative comments (such as 'weak, satisfactory, disappointing and must improve') was an individual matter. For Edi, negative comments made her "more determined to work harder". Like Edi, Chri also believes that a negative comment means that she needs to work "harder". Mabu interpreted negative comments as a message to "pull up his socks … do better". Even Woolfolk (1995), concurs that depending on the personality of the learners involved, feedback could have positive or negative effects on their performance. Learners (Edi, Chri and Mabu) remarked that they were not discouraged by negative comments; instead they interpret negative comments as implications to work harder. This corresponds with Woolfolk's (1995) notion that some extent "of failure may be helpful for most students" (p.570). Feedback in the form of a comment was seen to be unhelpful in that comments were stereo-typed in accordance with marks (Riva) instead of relating to performance. A view was held, that brief 'bland' comments did not highlight errors (Chri) or inform improvement (Edi and Chri).

Comments such as 'passed' or 'failed' were not regarded as feedback. Edi stated that "feedback is not about passing or failing … it's about getting … to improve". Mabu too, believed that "feedback is not failing or passing" but to promote understanding. Furthermore, the comments 'passed' or 'failed' were perceived as invalidating the quality of pass or failure. Cleme pointed out that 'passed' or 'failed' makes it appear as though 0% and 39% (failure); as well as 40% and 100% (pass) are equivalent. Moreover, Talbot (1989) questions whether marks portray the truth about learners: do 39% and 40% justify

one candidate failing and the other passing. A 'pass' or 'failure' may not necessarily indicate whether there are significant differences in two learners' performances. Learners in my study, mentioned that feedback should not relate to passing or failing, alternatively feedback should be connected with improvement.

Edi also revealed that comments should be performance related to their mathematics ability. She did not value personal comments that "undermine and demoralize" (Wragg, 2001, p.27). According to Edi a personal derogatory comment such as "you're so stupid" was perceived as embarrassing. Here, Edi reflected on feedback from other educators, as I did not feed back any personal derogatory comments.

On reflecting on the timeliness of feedback, three learners (Cleme, Edi and Mabu) appreciated immediate feedback. Immediate feedback facilitates timely correction of errors, which results in an adjustment in knowledge. For this reason, Cleme and Chri identified an advantage of immediate feedback as preventing the reoccurrence of errors in tasks that follow. In the interim of awaiting feedback that is delayed, learners were concerned about repeating their errors in subsequent tasks. This ties up with Slavin's (2003) belief that if feedback is delayed, then learners may continue making errors on related tasks that might have been averted by immediate feedback. The five learners did not express any disadvantages of immediate feedback. Two learners (Riva and Chris) believed that delayed feedback granted them an opportunity to reflect on their tasks and was therefore beneficial to the learning of these two motivated learners. This finding, that motivated learners value delayed feedback, is one that has not been reported in any of the literature that was surveyed. Perhaps this aspect needs to be further investigated.

Learners also remarked on written and verbal feedback. Verbal feedback was considered to be beneficial not only to an individual learner, but to all learners in the class (Cleme and Chri). In attending to a learner in class, verbal feedback addresses the needs of all those learners that are experiencing similar difficulties in their tasks. Wragg (2001) describes verbal feedback as advantageous and of assistance to the whole class "as it can affect so many people" (p.37). Edi noted that one of the drawbacks of verbal

feedback is that learners may forget what was said. In contrast, written feedback offers learners reference for both immediate and future use. The idea of having written feedback to refer to later on, appealed to learners (Riva, Edi, Chri and Mabu). These four learners identified written feedback, as a valuable resource for their later learning. Written feedback acts to reinforce what they have learnt, and is a source of information and guidance when they need it.

With regard to feedback language, learners commented on the use of language in verbal and written feedback. Learners favoured verbal and written feedback for different reasons. Firstly, verbal feedback was preferred to written feedback particularly when learners do not understand written language of feedback and the absence of the educator did not allow for explanations. Verbal feedback in the form of dialogue granted learners an opportunity to seek clarity through questioning. The language of written feedback was challenging for some learners (Mabu and Edi who are English Second Language speakers and Riva an English First Language speakers). They believed that verbal feedback could serve to clarify written feedback since mathematics terms were complex to comprehend. Secondly, learners expressed support for written feedback. Although the use of mathematical terms in written feedback was difficult, learners valued written feedback so that they can read and make sense of what is written at a later stage. To them, the advantage of written feedback is that it is always available in their books as a referent. The issue of the language of feedback was also raised by learners of the KMOFAP who "wanted their teachers to write statements that could be understood" (Black et al., 2003, p.44). One learner (Riva) in this study pointedly stated that feedback is useless if it is not understood. Wragg (2001) is adamant about learners' language competence. He makes a strong statement that the "written prose" of mathematical language makes it difficult for learners to "grasp and do justice" (p.60) to feedback.

5.2 Merits of the study

This study made use of two data collection instruments that complemented the study in yielding rich data. By no means does this insinuate that any one of these instruments was

deficient in itself; or that one compensated for the other. Triangulation was also possible, through the use of these two data collection instruments.

Through the use of journal writing as an instrument, objectivity is not threatened. The reason for this is that the data collection instrument (learners' journal writing) does not lend itself to data contamination. Learners wrote about their own opinions and were not influenced by the journal entries of other learners. More especially, learners' entries were not influenced by me, as I remained impartial. The unedited video-recording of the interview, also ensured that data contamination did not take place.

The findings from this research are applicable to other mathematics classes since the administering of feedback to learners on tasks on solving linear equations is not a unique practice that is confined to this study. Learners of many other mathematics classes might well share similar perceptions of educator assessment feedback, irrespective of the location of their schools.

It is acknowledged that educators are responsible for improving learning in classrooms. Nevertheless, how do educators improve their existing assessment practices to fulfill this responsibility? This study is not about radical assessment feedback changes but about an increased awareness of learners' feedback needs brought about through learners' voices. The impact of learners' voices, on forms of feedback, has significant implications for educators. Through learners' voices, an understanding of learners' perceptions of the effectiveness and a realization of learners' beliefs of educator feedback had emerged. Learners' voices are valuable, so that educators recognize what to take into consideration when providing feedback. For me, the greatest significance of the findings, in this study, is its emergence from learners' voices – a primary source of data.

Lastly, the strong emergence of qualitative research to study educational phenomena in a third world country is welcomed as a positive step in enhancing understanding.

5.3 Implications/Recommendations/Suggestions

From the findings of the study, the following recommendations are made:

For educators of all subjects and learning areas

- Educators need to empower themselves about the different feedback forms, so that they can build confidence in their administering of feedback.
- Educators need to offer different forms of feedback suitable to the assessment task to learners.
- They need to make a concerted effort in taking the initiative of administering useful feedback their learners; through identifying their learners' feedback needs.
- Educators' use of dialogue in feedback. The value of dialogue lies in helping identify the individual learner's needs thus helping the individual cross their own ZPD.
- A balance between written and verbal feedback must be maintained by educators.
- In offering feedback, educators should ensure that their language use is within the grasp of learners. Many learners of our multicultural classes are not English First Language speakers. No matter how useful the feedback provided might be, if it is not understood, then feedback is useless.

For the Department of Education. Worthy of note, is that educators that participated in the Rhodes University Mathematics Education Program (RUMEP) listed several assessment concerns. The list of concerns included: "innovative methods of assessment measuring process … assessing affective aspects of student learning [and] how to assess gifted and low-achieving students" (Malone, Stoker & Southwood, 1996). Bearing in mind these concerns together with the findings of this study, I make the recommendations below:

- The study reveals that there is a need for the Department of Education to stipulate suggested feedback policies into present assessment policies.

- There is a need for regular workshops by the Department of Education to educate and empower educators on effective forms of feedback.
- Subject advisors should also ensure that educators are providing learners with effective forms of feedback in their administering of feedback.
- Teacher educators should encourage future educators to incorporate effective feedback forms within their assessment practices.
- The in-service programs offered to educators upgrading their qualification at Higher Learning institutions should include programs on feedback forms as part of their course structure to empower educators.
- Finally, the Department of Education needs to create more realistic incentives in order to encourage studying in the education field towards research and innovation.

Implications for further research. The findings in this study revealed differentiated responses to the different forms of feedback. Hence, this study identifies areas that need further research.

- A study could investigate whether learners' feedback preferences are related to their mathematics competence.
- Further research could be conducted on the impact of the different forms of feedback on learning.
- Research could investigate the association between different forms of feedback and learner motivation.
- An investigation on learners' attitudes and anxiety towards educator feedback can be carried out.

5.4 Chapter summary

Several changes have occurred in reconstructing mathematics assessment so as to promote learners' mathematics efficiency. With assessment being such "internationally, mathematics educators are working to developing assessment schemes capable of … monitoring" the new mathematics curriculum (Clarke, 1996, p. 363). It is important to note, however that this enthusiasm is not universal. For example, Hong Kong still utilizes

conventional examinations and marking. Leung (1995, cited in Clarke, 1996) defended Hong Kong's conventional assessment practices. Their practices are "culturally consistent with the values of … a Chinese philosophy" (p. 363).

Contrarily, in England and Wales the national curriculum was reconstructed setting out skills and understanding to be expected of mathematics learners. To achieve these, the aims of assessment included; "highlighting common misconceptions, offering diagnostic information" (Clarke, 1996, p.365).

The Australian Education Council published a National Mathematics Statement. As a consequence, learning outcomes are progressively grouped into levels. There is "neither the requirement nor the expectation that performance will be graded" (Clarke, 1996, p.366). Instead performance is monitored.

In the United States of America, a new vision of assessment was provided with the publication of the Assessment Standards for School Mathematics (NCTM, 1995). The NCTM identified six assessment standards, those significant to the focus of this study follow. Assessment should; "reflect the mathematics that all students need to know and be able to do … enhance mathematics learning [and] … promote valid inferences about mathematics learning" (Clarke, 1996, p.367).

Assessment developments in Netherlands were introduced through the Realistic Mathematics Education (RME) (Clarke, 1996; Verhage & de Lange, 1997). The RME tabled five principles underlying assessment. Of relevance to this study is that the main purpose of assessment is to improve learning with emphasis to provide learners "with feedback concerning their learning" (Verhage & de Lange, 1997, p.17).

Within the past decade changes in South Africa have spread into the educational sectors, transforming teaching and learning. Changes to assessment have always been recognized as an important means of achieving curriculum change. There is no doubt that whether Outcomes Based Education (OBE) had been introduced or not; changes in

mathematics assessment would have occurred; as contemporary mathematics assessment reveals "an international consensus regarding the nature of mathematics learning" (Clarke, 1996, p.327). South Africa links well with these global changes, especially in assessment (DoE, 2002; 2005).

Internationally, the centrality of assessment within the curriculum has been acknowledged (Clarke, 1996). Several countries have launched large-scale mathematics assessment reform within their education systems. Whilst educationalists ascribe various reasons for these reformations, one reason is clear … assessment must *feed back* for learning.

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