

# Portfolios as a Tool for Professional Development: A Basis of Reflective Practice

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This paper focuses on a component of a model to encourage and support teacher reflection in a professional development programme attempting to change the teaching and learning of mathematics. Our goal is to educate teachers to become analytical, self-reflective and adaptive agents in the classroom. The purpose of this paper is to report on the initial attempts by participant teachers to construct mathematical portfolios to promote reflectivity.

## Introduction

The launch of a new curriculum in South Africa resulted in major changes in teaching practices. A shift toward reflective practice has become part of the alternative assessment strategies promoted in the new curriculum, Curriculum 2005. Portfolios have been identified as one of the new assessment strategies. Research has highlighted the great potential of portfolios as a tool for reflectivity (Green & Smyser, 1996; Wolf & Siu-Runyan, 1996; Blake et al., 1995).

This study was framed by two important determinants. First, if teachers are expected to adopt multiple assessment methods, then they must experience them. Secondly, to examine how primary school teachers would respond to a shift from traditional assessment practices (testing) to undertaking performance assessment involving alternative assessment strategies to collect evidence of significance.

## Assessment and Curriculum 2005

The use of portfolios as part of classroom assessment practice in South Africa was stimulated by the introduction of the outcomes based model of education. Under the old system assessment was traditionally seen as something to be done to learners at the end of a period of teaching and learning. In the old system the teacher controlled the teaching and assessment.

The introduction of Outcomes Based Education (OBE) spurred an important change in how assessment is perceived. The change impacts on teachers' classroom practices, and some of these changes require teaching to be integrated with assessment. Teachers need to develop a wider range of skills in assessing learning outcomes. There is a recognition that there is a need to develop a wider range of methods and approaches to assessment, recording and reporting.

## Why Portfolios?

The use of the mathematics portfolio within the course was a way to give in-service teachers a first hand opportunity to experience portfolio construction as a process that they will probably be using in their classrooms.

I saw the use of a portfolio for in-service teachers as an opportunity to document their own professional growth and development and to highlight some of the important ideas they have learned in the mathematics education course. This idea is supported by Blake et al.

(1995), who agree that the inclusion of reflective practices enhances professional growth. One way schools can promote reflection and self-assessment is to encourage the use of teacher portfolios.

Significant in the preparation of a teaching portfolio is the opportunity that allows teachers to reflect on the meaning and evidence of reflective teaching. Green & Myser (1996) describe teacher portfolios as a means to integrate all the aspects of teaching so that teachers can see for themselves where they are and where they are going professionally. My intention with the portfolio therefore was to inspire this type of reflection. Reflection allows us to learn from our experiences; it is an assessment of where we have been and where we want to go next.

### Planning and Implementing the Portfolio Process

The portfolio task was introduced during the students' first visit to the University. The teachers received a selection of readings on portfolios and these were discussed and analysed.

The portfolio was proposed as a collection of carefully selected items accompanied by short reflection statements. Topics included self-assessment undertaken to critically assess own teaching; reflection on student learning was required as evidence of what makes their teaching effective in their own environment.

The portfolio also included reflections from students, that is, evidence of student self-assessment. The idea was to allow students to reflect on their strengths and weaknesses and to be active participants. In this process students become responsible partners in documenting their learning.

Each portfolio comprised three parts. The first part referred to the mathematics education course during the first professional block of the teacher education programme. It consisted of reflective statements, and journal entries. The teachers were asked to analyse their learning throughout this period.

The second part documented their field experience, reflecting on classroom experiences through observations, journal writing, collecting examples of children's work, analysis of own teaching and examples of own material developed.

The third part involved reflecting on the mathematics education course during the second professional block. The teachers were encouraged to include a diverse set of information gathered across a variety of learning contexts. This part assessed whether there was growth in the way they articulated.

### Discussion of Portfolio Findings

The portfolios were collected and assessed at the time of completion. The criteria for the portfolios were discussed with the participant teachers on the course. Unedited teacher/learner responses of the portfolio reflections have been included in an attempt to enhance the discussion.

The topics include:

- Feedback from learner's own reflections;
- Analysis of own teaching;
- Material developed; and
- Journal entries.

## *Feedback from Learner's own Reflections*

Student reflection provides teachers with a more meaningful picture of student understanding/misunderstanding or growth. This data can be useful for teachers in instructional decision making. This is evident from the following examples of a multigrade classroom (Grades 5 to 7).

### Example 1. Sisanda Mami Grade 6 5 June 1998

This year I learnt how to help other children, how to ask teacher if there is something that I do not no in maths. I have the problem. My problem is that I do not understand Multiplication. I need more help to multiply by factors. I do not feel happy in maths because it is hard. My worry is that I do not understand if I multiply using factors.

### Example 2. Yandiswa Grade 6

This year I like Maths. Last year I didn't like very much. This year I calculate the sum in different ways. We are talking English in Maths. I understand how to divide in different ways. We do a lot of Maths. If another one has a problem I can help him or her. I ask to another person If I have a problem.

Another student expresses positive emotions concerning mathematics.

### Example 3. Boniswa Grade 7

Last year I didn't understand very much Maths but this year I feel better. I like how to add a sum into different ways and I get the same answer. I like maths because it helps me to think, to do things on my own. Last year I didn't understand how to add a sum into many different ways but this year I try. I like how to divide or multiply using factors. I understand how to multiply into different ways. Last year we didn't do very much Maths but this year we do a lot and we enjoyed to see visitors at my school. If I have a problem I ask to another person to help me. I like Maths because my teacher help me when I have a problem in my sum I'm doing.

Liebars (1999) suggests portfolios give students an opportunity to pull together what they have learned and to document their growth. In Example 3 reflection provides the reader with a sensitive portrait of what the student knows and is able to do. It presents a broader picture of how the student has changed or improved. The students' writing demonstrates clearly how students feel about mathematics which is not usually possible to observe.

Students' writings revealed how students felt about themselves as learners. One student wrote the response below in Example 4 Probably no example is as telling as that of this student. The anxiety is evident in this statement. It gives insight into what many other students must feel when confronted with similar situations.

### Example 4. Mzwamdoda Mqhayi Grade 8

I do not like Mathematics because it is difficult and I fail it. Also my teaches in grade 5 did not explain to us. She wrote answers on the board but we did not understand the answers that is why I hate mathematics and I don't want to do it in grade 10 because I don't want to fail. The Change I want is that I must understand it so that I can like it.

I have learnt a great deal about both the teachers and their teaching by reading what students have to say about their learning. The teacher portfolio has energised the professional status and development of educators. Portfolios offer teachers a wide range of information from a variety of tasks and settings.

## *Analysis of Own Teaching*

As teachers' responses were read I was struck by the realisation of the benefits of self-reflection. Smyser and Green (1996) say that portfolios empower teachers by making them

reflective. The following self-assessment by a participant teacher shows how reflections can serve as an assessment of where teachers are and then further refinement of goals to get to the next stage.

#### Example 5. Self Assessment

I struggled to do cooperative work in so much that I use to find myself doing individual learning. Reflection on my teaching helped me to realise where the problem lies. As time went on I got used to it. So I discovered that it is not easy to move away from something you use to do but patience is the solution as Rome was not built in one day.

With the activities I wanted to do so many activities that will help in promoting my aims of developing eg. + x ÷ & -. I realised that this is not the thing. I can never do all the activities of number sense within a short period of time what I could only do is to try to extend an activity to fit in eg measurement.

I also used to forget to remind pupils about roles because they tend to forget allocating roles for themselves. I just could remember when they were starting to work some having already started. They liked too much to be a scribe. So in my planning I had to put a big NB star so that I can see it and remind them about it.

The following teacher is rethinking her work and feels good about this commitment. She speaks about her new focus on what students are learning rather than on what she is teaching.

#### Example 6. Analysis of My Own Teaching

On the whole, my teaching has improved since I have been to RUMEP. Firstly I have changed my attitude towards my work as a teacher. Now I am more interested in developing my pupils as a whole rather than focussing on how productive they are, that how they pass tests and exams. Rather I am interested in their daily performance and skills that they have. Now I encourage my pupils to discuss, share ideas and work together as much as they can. I am not syllabus-driven like before when I had to rush and sometimes leaving some of the pupils behind.

Through continuous assessment now I can see that pupils' performance is different, in speed and otherwise, so I am able to accommodate that. However, I still battle with the practice of letting them keep their own portfolios. Either they do not write on the portfolios frequently enough or they are not quite able to express themselves in English, especially the grade 5's. I have somewhat hope that by the end of the year I would have won this battle.

### *Material Developed*

Part of the requirements for the portfolio content was to include examples of own material developed. The following response is a reflection on this process.

#### Example 7. Reflection on Own Material

Before I went to Rhodes I never thought that I could develop my own teaching and learning material. First of all, I have been able to use "waste material" creatively for example, using waste paper to teach various geometric concepts like symmetry, congruency, etc has proved very useful to me. In the process, my students gained some skills because they had to collect the material, cut out things themselves and then display their work in class. For example, they have been able to make various polygons and these, together with their properties, are displayed in the classrooms.

Secondly, I did give my pupils projects to do and they earned marks by making some apparatus which they used in their learning. For example, I gave pupils tasks to do geoboards using wood and nails. They were able to come up with quite good wood blocks which with my help, were developed into beautiful square shapes and ultimately we had enough geoboards to learn the geometric shapes, etc. they even brought some elastic bands so I did not have to buy these.

The fact that the teachers on the course were requested to reflect on the mathematics material they developed in their own classrooms resulted in positive benefits for the teaching and learning of mathematics. It is true that the change in instructional decision making is greater when the teachers are responsible for their own professional growth.

### *Journals*

For the journal writing process the teachers were asked to respond to certain questions to assist them to reflect on the learning experiences during teaching on the course. According to Burk & Littleton (1995) more is learned from reflecting on an experience than from the experience itself.

Teachers' journal entries revealed that they felt confident now about implementing OBE. They felt good about working cooperatively in small groups, it helped them to feel comfortable and motivated to bring about change in their classrooms. The following reflections are teachers' written responses to teaching events.

1. Personal Concern:

(Expressing personal matters that had an impact on your class participation)

Group work and co-operation in group activities helped me in that now I have confidence to express myself in front of the class doing presentation without fear. The co-operation and support and suggestions we made in the groups helped me a lot in that my learners as from next week I'm gonna arrange them in groups of 5 or 4 so that they can learn from one another.

2. Personal Concern:

(Expressing personal matters that had an impact on your classroom participation)

The concern I had and of which I think will have an impact on my class is that of allowing them (learners) chance to come up with their own opinions and suggestions when solving problems. Each and every learner has his own way of doing things.

3. Other:

I enjoyed the topic about reflection because it gives me an idea of what to do and expect. I can now look back and evaluate my learners and also give them chance to express themselves.

### Conclusion

The teachers on the course had no previous experience of the portfolio process. The process of creating a mathematics portfolio proved to be a valuable tool for professional development.

I support Green & Smyser (1996) when they state that "the only way teachers can learn about their own strengths and weakness as teachers is to reflect ...". Current reform movement in mathematics education recommends reflective practice in teacher education. Increase of reflective thinking on teaching is seen as primary benefit of teaching portfolios. The preparation of the teaching portfolio challenged teachers to be critical of their own teaching practice. In modelling the portfolio process opportunity is afforded to formalise and structure reflection. This is consistent with Schon (1983) who feels strongly that teachers increase their effectiveness in the classroom by being "reflective practitioners" – those who study and reflect on their actions.

I will continue to use the teacher portfolio as a tool for professional development to encourage reflective practice.

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