

Teacher Professional Learning: An Analysis of Teachers' Views on Their Professional Content Knowledge

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ABSTRACT The study sought to capture teachers' views on their professional learning. It was a qualitative case study. Six teachers from two different teacher clusters participated in the study. Data were analysed through thematic content analysis. Findings indicated that participants displayed adequate understanding of their professional practice and the variables that enhance or hamper it. A recommendation to pay attention to teachers' voices in the creation and design of their professional development programmes was made.

INTRODUCTION

Until 1994, which marked the beginning of the education transformation in South Africa (SA), most teachers possessed poor subject matter knowledge and were not adequately equipped to teach in their classrooms. The poor subject matter knowledge and poor training is usually noted amongst teachers that are in historically disadvantaged school settings. The teacher education programs for these teachers were of poor quality and there were hardly any professional learning opportunities and support to enhance these teachers' professional knowledge and growth (Mestry et al. 2009; Jita and Ndallane 2009; Bantwini 2010). Although a notable improvement in the provision of the professional learning opportunities that are supposedly aimed to bring growth in teachers' knowledge of content and teaching practices is seen, the lack of subject matter knowledge and pedagogical content knowledge remains unchanged (Mulaudzi 2009; Smit 2001; Botha 2000; Jita and Ndallane 2009; Bantwini 2010).

In addition to other intervention programs, education leaders are encouraging teachers to assume responsibility for their own development through the launch of the recent Strategic Planning Framework for Teacher Education and Development (Department of Education 2011). Before teachers can be expected to take charge of

their learning, it is critical to hear from them how they approach and view their learning and teaching practice. Developing a much more detailed picture of how teachers in the system view their professional learning will significantly inform further efforts to promote and support the learning of these teachers. Arguably, no one can understand what truly happens in the classroom until the people who are doing the teaching articulate what they understand about it. This study sought to explore key elements of purposively selected teachers' understanding of their own professional learning, gained after analysing their professional experiences. The study also considered how those elements might be used to influence the design of the professional development programs that are meaningful to teachers' professional learning. It has been established that when teachers are able to articulate and examine their insights and strategies that they bring into their practice, improvement in their teaching is evident (Harris and Muijs 2005; Camburn 2010). The study took cognisance of the fact that teachers everywhere are not usually explicit about their practical knowledge, especially in contexts such as South Africa, where the early foundations for practical knowledge runs counter to current expectations for professional learning. Teachers' view of their own learning is likely to be conflicted, limiting, and poorly understood, yet, it is important to acquire such knowledge.

What happens in South Africa is that most of the teacher professional development models are yet to address teachers' subject matter knowledge and their instructional practices (Nd-

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lalane 2006). Also research in this context still falls short of providing a clear and detailed picture of what teachers understand about their professional learning. The research does not capture the teachers' voices on the assistance they need in order to gain professional competency. As already mentioned, this study sought to determine the elements of teachers' knowledge through their views and further explored how that knowledge (teachers) contribute towards the design of effective professional development approaches.

Theoretical Framework

The article uses the theory of reflective practice to shed light on the understanding of the teachers' views and thoughts on their professional learning in refining their praxis. The theory of reflective practice was popularised by Schon (1983) in his book "The Reflective Practitioner" where he introduced different types of knowledge that professionals need to possess in order to perform well in their practices. He was inspired by Dewey's work that focused on experience as used by teachers to enhance their learning (1933). Reflective practice is described as a deliberate action (Ghaye 2011) where a practitioner scrutinizes his or her professional practice to identify what has worked successfully and what has not worked in order to learn from that. Through reflective practice, teachers articulate stories of what they experience in their professional worlds with the hope of using those experiences to create new experiences for themselves. When teachers are engaged in experiences where they create something new, through own inquiry or sharing with peers, that process is known as teacher professional development (Ndalane 2006).

Schon (1983) alludes to the four key ideas which include 'technical rationality', 'knowledge - in - action', 'reflection -in -action' and 'reflection-on- action'. He used these four ideas to give an image of how practitioners learn. The ideas are briefly explained below:

(1) Technical Rationality

Technical Rationality refers to the fact that practitioners learn to practice in their fields in theory. For example, teachers learn about 'how to teach' and solve practical teaching problems

in places that are outside their workplaces. Consequently, when faced with problems in their classrooms they find it hard to apply what they have learned in order to solve those problems. This learning disempowers the educators in that they are merely used as 'technicians' and are not given an opportunity to contribute towards enhancing their knowledge and practice.

(2) Knowledge – in – action

This idea talks about that development which practitioners gain from their everyday practice. It then enables teachers to execute their practice effectively. Simply stated, teachers apply their own theory to their practice.

(3) Reflection – in – action

This refers to the act of learning from what you do while you are doing it. It is often that unspoken understanding that practitioners gain on the spot. For example, when a teacher asks the learner a question and quickly gets that the question was not clear when the learner frowns, then asks the question.

(4) Reflection – on – action

This refers to that purposeful act of looking back that occurs after the event and away from it. This is done in order to set the pace for future action. Practitioners think about something significant that took place in their practice or did not take place and they learn from that and determine what could be changed for next time.

The present study recognizes that comprehending what goes on in one's professional practice does not automatically warrant the professional growth of that individual. However, engaging teachers in such reflective practice is likely to reveal new insights of where these teachers come from, what they actually learn from their practice and how that knowledge can be used to create better learning for them.

Teachers' Content Knowledge and Pedagogical Content Knowledge

Through professional learning, teachers get a deeper knowledge of their subject matter, come to know young learners they teach better, and develop knowledge and skills how to teach in

such a way that student learning clearly benefits. Professional learning refers to the changes in the thinking, knowledge, skills, and approaches to instruction that form practicing teachers' range of behaviours (Knapp 2003). It can take place in many different settings such as in a classroom, in a conversation with a colleague, and in various professional development programs. Moon (2004: 15), in her generic overview of learning, states that to learn something can mean, "getting to know or have knowledge to do something". Stated simply, learning can be clarified as 'knowing that' and 'knowing how'.

For teachers to gain this professional knowledge, powerful forms of professional education are crucial. To develop this kind of knowledge, teachers need to move from a phase of 'what they need to know' and 'how they learn to teach it' attained in their teacher education to 'what they know' and 'how they teach what they know' phase from their continuous professional development programs. If not, by the time they reach their classrooms, they find it challenging to do what they are supposed to do there.

A number of scholars have explored this matter of teacher knowledge in an effort to understand the connection of this knowledge and the improvement of teaching practices. Shulman (1986, 1987) is the mastermind behind the conceptual framework of teachers' professional knowledge and identifies various components that form this knowledge. These components include general content knowledge, general pedagogical knowledge, curriculum knowledge and pedagogical content knowledge. Other scholars such as Sawyer (2001) and Ndalandane (2006) also explored different types of knowledge that is necessary for teaching. They focus on the component of teacher knowledge on the general pedagogical knowledge (Shulman 1987). This article focuses particularly on the component of content knowledge which Shulman categorizes into subject matter content knowledge, pedagogical content knowledge and curricular knowledge (Shulman 1987).

Some form of high-quality learning opportunities that elicit the understanding of subject matter, learners and learning, as well as teaching methods that bring about quality learning amongst the learners that teachers teach, is necessary (Borko 2004; Boatright 2008; Kriek and Grayson 2005). Many professional development opportunities, especially those in developing

nations, are yet to focus on what teachers actually do in their classrooms.

High Quality Teachers' Professional Development

Research in the developed world regards 'high-quality' professional development (PD) as the best tool for changing teaching practices (Valli and Hawley 1999; Supovitz and Turner 2000). A number of scholars have established a professional agreement that professional development can be regarded as high quality if it includes some of the following critical features: explicit focus on subject matter; active engagement in learning activities; intense and extended period of engagement; collaboration with peers; 'reform type' PD that differs from traditional PD in that they include study groups, coaching and mentoring; and forms a coherent part of wider set of opportunities for teaching and learning (Desimone et al. 2001; Valli and Hawli 1999; Wilson and Berne 1999; Borko 2004; Penuel et al. 2007; Coenders et al. 2010).

First, numerous researchers affirm that collective participation of teachers in learning opportunities can foster their subject knowledge and instructional improvement. Working collaboratively and through discussion, teachers are able to change their beliefs about what is important in content subject and about what their students are capable of doing (Garret et al. 2001; Borko 2004; Lind 2007; Penuel et al. 2007; Coenders et al. 2010).

Second, PD requires a dual focus on both knowledge of subject matter content and an understanding of how children learn specific content (Garret et al. 2001; Penuel et al. 2007; Supovitz and Turner 2000; Fishman, et al. 2003; Borko 2004). For instance, PD programs that include an explicit focus on subject matter, engage teachers as learners and followed by ongoing support can help teachers develop powerful understanding of the content subject (Borko 2004).

Third, researchers assert that activities that extend over time, provide teachers with opportunities to reflect on their practice, engage in in-depth discussions about their content and teaching practices with their colleagues and allow them to implement the new instructional practices (Garret et al. 2001; Hawley and Valli 1999; Borko 2004; Penuel et al. 2007; Camburn 2010). PD that is of longer duration and time span is more likely to

contain the kinds of learning opportunities necessary for teachers to integrate new knowledge into practice (Penuel et al. 2007).

Fourth, PD is likely to be more effective when it engages teachers in concrete teaching tasks and based on teachers' experiences with students, thus promoting active learning (Garret et al. 2001; Penuel et al. 2007; Borko 2004). Learning is fostered when teachers engage in conversations about new material, discuss strategies for effective teaching, push one another to experiment around new initiatives, and work collaboratively to share expertise (Borko 2004).

Fifth, PD activity is more likely to be effective in improving teachers' knowledge and instructional skills if it forms a coherent part of a wider set of opportunities for teachers' learning and development, for example, building on what teachers have learned, content and pedagogy aligned with national, state and local standards (Garet et al. 2001; Penuel et al. 2007). If teachers perceive the alignment between the PD activities and their own goals for learning and goals for students, they commit to adopting the innovation (Penuel et al. 2007). Finally, there is a growing interest in 'reform' types of PD that differs from traditional professional development. These include study groups, mentoring, coaching and networks for developing teaching within specific subject matter areas (Garet et al. 2001). 'Reform type' PD activities are more practical in that they focus specifically on how to enact pedagogical strategies, use materials, and administration assessments associated with particular curricula (Penuel et al. 2007).

It is not yet clear whether this high-quality professional development recommended by the developed countries can be possible in the South African context of teacher professional development. A notable growth, however, of the professional development models that carry some of the components of high-quality PD is seen. For example, the cluster development programs seem to afford teachers with the opportunity to share and collaborate with their colleagues, thus enhancing their subject matter knowledge and instructional practices (Ndlalane and Jita 2009).

METHODS

Design

This paper draws from a qualitative case study that explored the understanding of pro-

fessional learning of selected teachers who are in two different "clusters" in KwaZulu - Natal school districts. Qualitative research was the best way to learn about the issues at the heart of this study because the aim was to study what meaning teachers attribute to their professional learning and their professional development opportunities (Miles and Huberman 1994; Merriam 2009). The power of words can be more convincing to a reader than summarized numbers (Miles and Huberman 1994). What an individual says in their own words is much easier to believe than numbers that might be complex to understand. A case study was chosen because it provides the researchers the ability to focus on the particular phenomenon in order to gain a rich and 'thick' description of that phenomenon in a manner that brings clear understanding to the reader (Yin 1994; Merriam 2009). In this study, the phenomenon was the teachers' understanding of their professional learning and practice.

Sample

Six teachers (3 from secondary school; 3 from primary school) participated in this study. They were purposefully sampled from two clusters. One cluster was from the rural school district and the other one was from the township school district. The teachers were believed to be rich in knowledge about subject matter and teaching practices.

Instruments

Data was collected through the interviews and the review of the documents. Open-ended semi-structured interviews were used to understand how these teachers interpreted their day-to-day experiences with their subject matter and how they teach it (Merriam 2009). Semi-structured interviews were chosen because they enabled the researcher to get specific information from the respondents, respond to the situation presented by the respondents and at the same time allowed the researcher to probe and follow up on ideas that they raise.

The review of documents was also done by the researcher to supplement and highlight what was learned from the interviews. The documents that were reviewed were the new Curriculum and Assessment Policy Statement document and Professional Development Program Documents.

Procedure

Each participant was involved in two sessions of semi-structured interviews on different dates. The interviews were audiotaped and transcribed. The initial interview sessions took approximately 45 – 60 minutes per teacher. Follow up interview sessions with each teacher lasted between 15 and 35 minutes. The follow-up interviews were done to gain additional information and clarify questions that arose from the first interview session. The participants were assured that the information shared will be kept confidential and pseudonyms will be used. In addition, the new curriculum documents, subject and assessment teacher guides, and few samples of workshop resources were reviewed to confirm the themes around which the questions were organized.

Data Analysis

Using strategies from Merriam (2009), Saldanha (2009), Miles and Huberman (1994) the researcher read the transcripts and coded using phrases and labels from the words that were used by the participants and research questions. From those coded phrases the researcher identified categories that helped to scan the entire data systematically for instances of the themes at work. Then these themes were linked together to get the bigger information that they provide about my research questions.

RESULTS

The following vignettes present the findings based on the data of the study participants. The teachers' biographies are presented first. The biographical information lays the ground for interpreting the participants' views. The vignettes present the views of these teachers on their subject matter and teaching practice, as well as their perceptions on the possible shaping influences. The teachers' views are later grouped under two categories that are labelled as the "elements of understanding".

(1) Teacher A

This is a high school teacher who teaches in a township school. He started teaching in 2007. He holds a four-year Bachelor of Education (B.

Ed) degree, a one-year Advanced Certificate in Tourism and is currently furthering his studies towards the Master degree in Education. His specialisation subjects were Business Studies and Accounting. He chose these subjects because they were his favourite subjects at school and he excelled in them. He teaches mostly in the Further Education and Training (Grades 8 - 10) phase and has a teaching experience of 7 years.

(2) Teacher B

This is a high school teacher who teaches in a township school and has a teaching experience of 17 years. She holds a three-year Secondary Teachers diploma which was obtained prior the educational transformation era. Her major subjects at the college were Home Economics and Zulu. Her choice of Home Economics was influenced by her passion for cooking and sewing. Later she improved her qualifications and added an Advanced Certificate in Adult Basic Education and Training (ABET), a certificate in Tourism. Currently, she is engaged in Honours degree in School Guidance and Counselling. She teaches Home Economics, Travel and Tourism and Zulu in the FET phase.

(3) Teacher C

This is a primary school teacher who teaches in a rural primary school and has 18 years teaching experience. He holds a 3-year Primary Teachers' diploma. His specialization subjects were English and Zulu but he has never taught Zulu. Although his initial teacher training was for the primary phase, he taught English to the FET phase for fourteen years. He is currently teaching all subjects except Maths, Social Sciences and Zulu in the intermediate phase and this is the 4th year. His choice of the first specialization subject, English, was influenced by his English primary teacher who was his role model and spoke English well. Also, he comes from a family who had passion for English, his older siblings are also English teachers.

(4) Teacher D

This is also a primary school teacher who teaches in a rural primary school and has 24 years of teaching experience. Her qualifications are a

3-year Primary Teachers' diploma, Bachelor of Education and the ABET certificate. She specialised in Math and English. Currently she teaches Math, English and Zulu to the Intermediate and Senior phases. The teaching profession was not her first choice but it was the most accessible job at that time of her high school completion.

(5) Teacher E

Teacher E is a high school teacher who teaches in a township school. He has been teaching for 26 years in the same school. He holds a 3-year Secondary Teachers' diploma, Further Diploma in Education and an Honours degree in Business Management. His specialisation subjects were Biology and English and he has been teaching Biology, currently known as Life Sciences for the past 15 years. His choice of the teaching profession was influenced by one primary school teacher who was his role model.

(6) Teacher F

Teacher F is a primary school teacher who teaches in a rural school. She has 14 years of teaching experience and has been teaching in the current school for the past 4 years. She holds a 3-year Primary Teachers' diploma and a Further Diploma in Education. Her specialisation subjects were History and English. Currently, she teaches in the Foundation phase. Her choice of the teaching profession was influenced by her aunt who had a passion for teaching.

Knowledge about Subject Matter and How to Teach It

The first element of understanding considers teachers' knowledge of their subject matter and teaching it. Included in this element are categories about knowing subject concepts, how teacher learned these concepts, and how they teach the subject in their classrooms. Ndjalane (2006) alludes to this element of understanding as 'knowledge of practice' and 'knowledge in practice'. Teachers attain this understanding from their initial teacher training and the on-going training from their working experiences. All these teachers displayed knowledge of the nature of their subjects as evident in their recounts of the concepts learned in their teacher training

programs, the purposes of learning the subjects and the way the concepts changed or not changed as the curriculum changed. They all emphasized the need of a good subject knowledge base in order to be in a position to teach their subject well.

Regarding learning to teach and teaching the subject, the teachers' views were mostly influenced by the period in which the training took place, that is, before or after the education transformation. For instance, both Teacher A and F's training experiences took place after the education transformation, they mentioned that they had teacher educators who used teaching methods that were learner centred and empowered them with different teaching skills and strategies. Thus their perspectives were that they were well equipped to teach in a 'new' way that the new curriculum demanded.

Teacher B, C, D and E's perspectives, whose training were before the education changes, differ to Teacher A and F's. They mentioned that their teacher educators tended to use teacher talk approach while they (teacher learners) sat and listened passively. They, in turn, were mostly using the textbook method to teach in their own classrooms. They both shared that they were forced to change their teaching methods and strategies since learners had to be actively engaged by doing more work on their own. The way teachers had to change is captured well in this extract from Teacher C:

So with this new approach, learners had to do things on their own like they had to do research now they were expected to work hard because they had to come and present that in front of everybody and say what they got. They also shared their experiences with other learners which didn't happen before; it was us teachers telling the learners that it's like this and that, so that made us as teachers to be seen as knowledgeable. Now, we have to dig deep when we are preparing our lessons, and also know that we are teaching people who are able to get that information by themselves, now they are able to challenge us in terms of when we ask questions yet before they never asked any question, whenever we would ask 'did you understand?', the answer was always 'yes'.

What Influences Their Understanding?

The second element looked at the influences that shape teachers' understanding. The cate-

gories under this element are initial teacher training, professional development and the school environment. Initial teacher training is the stage where teachers begin their long process of professional learning. The foundation of their subject knowledge and teaching practice is laid here. One can conclude from the discussion above on learning to teach that the teachers' initial teacher training made them the teachers that they are today. Their views suggest that teachers did not view their initial teacher training as impactful to their subject knowledge and teaching practices. Teacher A, for instance, pointed out *"that these training institutions need to produce teachers that are subject experts and know how to teach well"*. When asked how her training experience made her the teacher she is today, Teacher B responded as follows:

Okay, that training part helped me but not that much, what has helped me is that I have upgraded myself.

Regarding their professional development, all of them consistently viewed their professional development as inadequate for their professional growth. They emphasized that the professional development programs provided by the department of education left much to be desired. The following extract from Teacher C gives a general picture of how these teachers view the professional development programs:

If I tell the truth, we had one workshop in English and that workshop was in May (the interview took place in November) of which I don't think workshops should start in May because if they workshop us in May the damage is already done. I believe that right from the beginning of the year we should have a workshop where we will plan everything where they show us all that we should teach as well as activities to do and also give us resources and other handouts. Because if they say we should come in May there are people who have already messed up. Even visiting schools, but maybe the problem with that is their (subject advisors) number, there are a few of them, because they end up not coming to many schools.

However, they all talked about the cluster workshops in a favourable way. They acknowledged that the clusters have some impact on their teaching. They shared that the clusters helped them to communicate and set the task activities and assessment with their colleagues from outside their schools.

Generally, these teachers viewed their school environments as not contributing to their professional learning. The conditions that usually hamper teachers' professional growth in disadvantaged school settings include lack of school leadership support, minimal resources for teachers to work with and limited access to professional development resources.

Teacher A and D identified mainly the school leadership support as not enhancing their professional practice. Although Teacher A mentioned how they support his activities by trying to provide some resources and so on, there is no support regarding the subject content and teaching it. There is no form of mentoring and class visits, either from the subject advisor or the head of department in his school. Teacher B's view focused on the lack of resources. Throughout her experience Teacher B has worked in schools that are located in the disadvantaged communities where teachers face a number of challenges that hamper their teaching process. The following extract gives a glimpse of those conditions:

Schools did not have funds then and during those times the government did not provide schools with resources. And also sometimes schools had resources, then those schools would be burgled and those resources would be stolen.like I remember in my first school there were sewing machines and stoves and people in the community stole them so children ended up suffering because they could not do their practical lesson.

DISCUSSION

This study intended to analyse the elements of teachers' understanding of their own professional learning. In relation to the first element which encompasses the understanding of subject matter knowledge and teaching it, all three participants demonstrated an adequate understanding of their subject matter. All these teachers showed good knowledge of the concepts that they learned at their teacher preparation programs and that they taught to their learners. The subject matter knowledge goes together with how teachers learn to teach their subject matter. To develop this kind of knowledge, teachers need to engage in theory and practical application in their teacher education and on-going professional programs (Darling-Hammond 1997).

It is interesting to note how teachers tend to replicate their learning with their own learners, that is, they teach in, exactly, the same way they were taught. Richardson (2003) attests to this in her work with pre-service teachers, that the beliefs teachers bring to their workplaces are shaped by the teaching they have experienced as learners. Nevertheless, teachers' views on their professional practice revealed that teachers are also not blind to the fact that knowing one's content is crucial for one to produce quality teaching.

The second element includes the variables such as the initial preparation phase, professional development and school environment. The teachers paid attention to how these variables hamper or enhance their learning. They shared insight about their limited access to professional development opportunities, lack of support from the school leadership, and no support to supplement their initial training. This gives evidence to the fact that deprived professional environments in which teachers work with minimal support resources, limited access to PD resources, and lack of support from the organizational leadership can hinder the process of professional growth (Clarke and Hollingsworth 2002; Mushayikwa and Lubben 2009). As teachers shared their thoughts on these conditions, they showed a sense of frustration. Payne (2008) asserts that pervasive demoralization of teacher workforce under such conditions results.

These teachers' views about their professional learning reflect Schon's key ideas of reflective practice. For instance, usually their professional learning opportunities, which is the departmental and cluster workshops in the case of these teachers, occur outside their schools where learning is theorized. They do not learn about solving the practical problems that they encounter in their classrooms in those actual classrooms. As a result, by the time they reach those classrooms, as Darling-Hammond (1997) argues, they find it hard to implement what they have learned. This encompasses the idea of technical rationality which refers to the fact that teachers are just used as 'technicians' that need to deliver as expected.

CONCLUSION

The study revealed that teachers know their subject content, they know when topics change

and the need to adapt their teaching strategies to fit those changes. Teachers' views in this study disclosed that they know exactly what works or not work with their professional development programs, for instance. They also expressed what they think should be done to make these programmes meaningful for them.

RECOMMENDATIONS

From the findings of this study, a number of recommendations can be made. There is a need for the incorporation of the teachers' views on the connection between the content knowledge and effective teaching practices. The scholars that have interest in teacher professional learning issues should work on producing scholarship that includes teachers' voices in the design of their professional learning opportunities. Professional learning leaders also need to pay attention to these elements of teachers' understanding and consider them when planning teachers' learning opportunities.

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