

Grade R Educators' Perceptions of Their Own Practices: A Case Study of Educators in the Eastern Cape of South Africa

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ABSTRACT Foundational knowledge in mathematics performance of South African learners seems to be one of the major challenges in education. Hence, this paper focusses on Reception class educator's views of their practices. An observation tool was utilised to capture fifty-six lessons from fourteen educators participating in the research, followed by interviews of five purposively selected educators. The triangulation of the two data sources resulted in a thematic report. Results revealed that educator practices were in some cases appropriate for the Reception class, but that in other cases because of the educators' lack foundational knowledge, their practices were out of step with research driven insights.

INTRODUCTION

The South African education system has for some time, come to the realization of the importance of early childhood education stimulation for human development (Dreyer 2017; Juan and Visser 2017; Richter et al. 2012). This is evident not only by the commissioning of several major studies that have published reports on ECD from the department (Department of Social Development (DoSD) in collaboration with UNICEF (2010) but also by other independent academic research (Excell and Linington 2011; Feza 2016). The research supports the fact that Grade R (Reception class) is a critical stage for the development of learners, whose establishment must be based on well thought out policies, well developed programs and implemented in centres that are up to standard. These have to be made proper for this function, as well as operated by qualified educators (Dreyer 2017; Atmore et al. 2012; Richter et al. 2012).

Poor performance related challenges in mathematics in South Africa, are also documented in international studies such as the Progress in International Reading Literacy Study (PIRLS) and the Trends in International Mathematics and Science Study (TIMSS) by Mullis et al. (2012). In addition, regional studies like the Southern

Africa Consortium for Monitoring Education Quality (SAQMEQ) by Spaul (2011) also indicate the same challenges.

Inequities in early years of learning do not belong to South Africa alone nor the African continent. This challenge is a global challenge that seems to scar international education and impedes progress. Hence, new innovative ways of addressing such discrepancies are critical. The education system in the United States of America for example, continues to implement interventions such as building blocks for Pre-K mathematics to improve early mathematics to their learners. This program in the Department of Education is premised in the What Works Clearing house project (WWC). These interventions indicate improvement with building blocks on a smaller scale and Pre-K on a medium scale of improvement (WWC 2013). This supports the notion of international challenges in the early education sector.

A European commissioned report highlighted that poor mathematics performance is not innate to learners' abilities but a result of poor education systems (European Commission 2014). This report argues that socio-economic status of the learners plays a significant role in their performance. Inequities seem to be the biggest global education challenge. Research fur-

ther indicates that South Africa has made success in providing physical access for most learners to Grade R classrooms (Atmore et al. 2012; Richter et al. 2012; Juan and Visser 2017).

The educators who handle Grade R must provide a rich, safe and educative learning environment (UNICEF 2005) and that the activities they expose the young learners - age appropriate and stimulating (Simonsen et al. 2008; Oliver et al. 2011; Barressi 2015). The years from birth to four years are crucial in the learners' development because cognitive development relating to intelligence, personality and emotions takes shape during this window in a persons' life. Starkey et al.'s (2004) longitudinal study revealed that children who went through quality early childhood development (ECD) programs did not drop out of school, did not go to jail, nor become misfits but became good citizens.

Clements et al. (2008) as well as Oliver et al. (2011) further show that if quality education fails at this stage, the child remains an unlit candle and runs the risk of being delayed, incapacitated, underdeveloped and even disabled (Koppershoek et al. 2014). Educators are the most critical variable in making sure that young learners receive highly stimulated experiences for their cognitive development. This is because educators shape the learning environment for all the pieces to be in place and provide learners interests through play. However, there is limited research on how grade R educators view their own practices in the classrooms. This paper therefore aims to give a voice and gain insight into Grade R educators' perceptions about good practice. In doing this, the paper will respond to ideas of how Grade R educators perceive their own practices in teaching mathematics as well as how Grade R educators describe their classroom practices for conducive learning. It further checks whether educators assess their activities to see if they are age appropriate or not.

METHODOLOGY

The participants for this paper were 17 grade R educators participating in Community engagement intervention program sponsored by National Research Foundation in South Africa. The project focuses on professional development in the Eastern Cape of South Africa. However, only fourteen of the educator's video lessons were available and only five were utilised for this pa-

per. The other three educators could not be included because they did not attend this workshop and therefore their work could not be fairly selected. The fourteen educators observed five selected, previously videotaped lessons from their classrooms during the workshop. They made comments on an adapted tool from Clements et al. (2008) with a focus on classroom management and culture only. The educators assessed and commented on their own practices observed following the structure of the tool.

Researchers collected classroom observation instruments from the educators, and captured the data on an excel sheet following the tool's topics. In addition, five purposively selected educators were interviewed to tease out some of the responses that were pertinent in the observation tools and provided rich details. The researchers captured interview notes and typed them on a word document as field notes for analysis. This was set out to enable patterns of views and reflections made by the educators as they commented and explained how they saw their own work. The researchers then grouped all similar occurrences from the observation data with the aim of observing patterns. They grouped contrasting occurrences separately in a document. As triangulation, the two sets of data were then compared side by side to observe emerging themes of what was coming out as the picture of the educators' views.

RESULTS

Educator Role

The study established that educators viewed their roles as critical in facilitating learning. They carefully reflected on how they carried that role on the aspect of proactively initiating, supervising and organizing the learning environment. Excerpts from educator B confirm this practice:

Educator B:

I have a commitment to teach learners mathematics concepts such as counting shapes and geometry. To do this I plan the activities that make it possible to demonstrate the idea. I have seen that Grade R learners follow what they are taught if concrete manipulatives are used to demonstrate. I give instructions to learners and monitor that they act in line with my instructions.

However, in exercising their role, educators acted out of line with expectation of the Mathematics Curriculum (CAPS) policies as well as class management traditions. The practices by educators did not match research driven insights that urge the educators to be learner centred. Instead, educators insisted giving learners choices caused the learners to be unmanageable. They said giving opportunity to every learner to make preferences in terms of activities, would not enable them to manage the classes or maintain routines they considered useful in strategically organizing their classrooms. Current practice based on research does not support teacher centred learning. Scholars like Feza (2016) encourage educators to give room to learners to show interest in what they want to do, and for the educator to aim the teaching to the level where the learners are. What is crucial is for educators to allow the learners to have fun by exploring and choosing among an array of activities which educators indicated in this paper was not their practice.

Interview data from Educators E and G in their own words confirms this:

Educator E

I direct learners on activities to do. I do not wait for them to tell me what they want because if I ask them they may say they want to play or paint during mathematics time. I insist they do as I tell them because I am in charge.

Educator G

As an educator, I am responsible for planning what the learners do. I tell them the activities they must do to learn shapes, and counting. I think that is what I have to do because if I allow learners to control the material they learn they may even refuse what is good for them.

Purposeful Activities

Educators indicated that they planned activities that targeted developing particular concepts when they were teaching. They for example, target numeracy and engaged learners to count using manipulatives combined with song. They insisted they do not just play games for fun that have no focused learning. This practice fits well with the curriculum expectations. For educators to focus on a concept and then use exciting ways to present the concepts using poems, action song and games is what is en-

couraged by research. On utilizing activities that focused on particular concepts, educators acted in line with curriculum expectations. This finding is in tandem with claims by such scholars as Feza (2013) who advocate for specialised educator training. Scholars such as Pournara et al. (2015) argue that specialised training accrues as gains in learner performance. The following are the educators' actual words confirming this practice:

Educator E

When I need to teach counting, I plan an activity that covers the numbers I want to teach. If I want to teach counting one to ten, I select a poem or song that covers the numbers, such as ten monkeys rolling on the bed and one falls down and then they remain nine. As the learners, sing they dance and count with fingers and I think this makes me achieve the objective I set to teach the learners number recognition and counting in sequence.

Educator H

I teach number through games such as having those in jackets standing and counting to a number such as twenty, the next lot may be those with cardigans also counting to a given target such as forty and this game goes on until the class is over and the teams win points as they manage the targets.

Age Appropriate and Age Inappropriate Activities

Educators mostly assigned age appropriate tasks such as fitting shapes to make a hut or showing how many manipulatives make a given number. Even action songs and chorused poems were suitable for the learners of grade R age. This is particularly significant because it fits well in key foundational knowledge concepts where learners are supposed to be able to make accurate one-to-one correspondence association, which shows they really can count. This fits well with the advocacy of such scholars as Kamii (2014) and Feza (2016).

Excerpts from educator C confirm this:

Educator C

When I teach number, I demonstrate to learners the number of manipulatives that make the targeted number, let us say five. I lift the five manipulatives high one by one counting showing that when put together they make five. I then ask learners to do the same in a loud chorus accompanied by song. At the end, the col-

lection of five manipulatives is re-counted to confirm it indeed is five.

There were few cases where the activity was inappropriate and learners struggled to fulfill instructions and failed.

Excerpts from educator G exemplify this:

It is true that at times learners dismally fail to do what I instruct them to do. I only realized afterwards that at one time all of them failed this particular activity. They were throwing the stones in the wrong direction. The game requires learners' precision in throwing the ball into the air and coordinating that as the ball comes down, it is caught and swiftly thrown into a target collection bowl. This calls for multiple coordination skills in eye measurement to see that the ball goes high enough to allow readiness for catching it, while coordinating the hand and eye for a swift response to catch it and throw it into a targeted collection bowl, and still be able continue within a set rhythm to repeat the action. In this particular instance, learners threw the ball at an angle that did not allow catching it. When most of them failed, I stopped the futile attempts realizing learners were not yet able to play this game age wise.

Use of Play

There was unanimous agreement by all the educators that they definitely used play as an enjoyment to teach numeracy. Research also supports the idea of using play to enhance learner stimulation when teaching in early grades (Montague-Smith and Price 2012). The practice is also in-line with curriculum expectations. Play was utilised in the form of songs, chorused poems that were action filled and in games. The class engaged in varied indoor as well as outdoor games mediated by the educators. Out-door games included skipping accompanied by count songs, jumping into squares while counting and reverse counting songs.

The following direct quotes from the educators' notes confirm this:

Educator H

I use play by making learners sing tunes when counting such as ten ducks going out to play with only nine returning home. Learners dance to the tunes and demonstrate numbers with fingers.

Educator D

Learners play games such as skipping to song and counting while the whole class sings and claps hands urging the ones playing to do it faster! I think this practice is in line with the curriculum expectations.

DISCUSSION

Literature Review

Developing Conducive Classroom Environment

Characteristics of a suitable classroom environment for young learners should support, develop, and nurture learners' interest, curiosity and stimulation (Evertson and Weinstein 2006). The classroom therefore as a stage in which the learning mainly takes place must be carefully designed to allow the child to re-direct and opt for activities that appeal to the mind (Oliver and Reschly 2007; Barressi 2015). The guiding principles for best practices in forging learning environments ought to be designed with the aim of creating the settings fit for the age group of young highly excitable learners, which can be modified at any time if learners so wish (Oliver et al. 2011; Barressi 2015; Korpershoek et al. 2014). Barressi (2015: 1) came up with five principles that guide best practices in shaping the learning environment, elaborated below:

The classroom should be a place where learners have freedom to think creatively and act in the enabling space and atmosphere of a supportive environment that is free from any fear or suppression of their intuition. The educator as the chief designer of this space deliberately creates and fosters academic, social as well as emotional growth (Evertson and Weinstein 2006; Sugai and Horner 2006; Brophy 2006; Korpershoek et al. 2014). Scholars like Greer-Chase (2002), Oliver et al. (2011) and Simonsen et al. (2008) have observed that a carefully shaped and well-managed classroom will have the benefit of curtailing disruptive behavior of learners.

The learning materials should be suitable and tangible to enable the learner to concretise abstract concepts to foster comprehension and clarity. Research has shown that in addition to a stimulating setting, the materials for the task have to be appropriate and concrete so that learners use their senses to manipulate and connect with concepts they are engaged in learning (Simonsen et al. 2008; Oliver et al. 2011).

The classroom environment should be set to encourage multiple independent choices so that it allows for elasticity as learners intuitively think out of the box and use natural capitals in discovering new ways of shaping their experiences (Clements et al. 2008). Learners in the early ages need to be started on the right path of independently making up their minds on what they prefer as well as what they feel works for them in order to achieve. This is also endorsed by Kamii (1984, 2009, 2014) and Russell and Kamii (2012) who consolidate Piaget's (1978) ideas and argue for learners to have autonomy, be themselves and feel confident that their choices matter and that they can rely on their own thinking.

Nature of Activities for Young Learners

Teacher Initiated Activities

Educator initiated opportunities should be framed so that they play out giving a chance for learners to interact in diverse ways that allow new experiences to unfold. Creating a setting that enables play is desirable. This happens when educators build a play corner or centre in the classroom or playground. If for example, an educator wants learners to paint, setting materials and spaces for it as well as demonstrating the activity goes a long way to enabling it to happen. This is better than giving a speech that says it is desirable for learners to paint (Korpershoek et al. 2014). Small groups also allow learners to engage intensely with one another without others being left out and they are easy to monitor (Simonsen et al. 2008; Oliver et al. 2011).

Learner Initiated Activities

Learners participate verbally and practically to demonstrate their knowledge and skills as well as exhibit their work in writing. They should in some occasions drive their own learning when allowed to choose from among provided options what they prefer to do in terms of activities (DBE 2012). This means even the nature of communication should be conversational, dialoguing and warm rather than sharp instructing commands. Learners at this are sensitive to the climate and culture in the classroom, which should enable them to feel they are free to make choices as well as initiate activities.

Educator's Role in Facilitating Interaction

The early childhood learning environment should allow for a multiplicity of observable approaches for interaction (Simonsen et al. 2008). Educators should foster an enabling learning environment. This should allow learners to be able to interact as individuals, as pairs, or in groups of three or four, as long as they feel comfortable to do so and engage in the various activities. It should also allow for re-grouping if there is need for new formations (Siebert 2005). Variety should also be allowed for engagement such as robust and low key activities, indoor and outdoor activities as well as own or teacher suggested tasks (Barressi 2015; Simonsen et al. 2008). Learners need to interact both with their educators as well as with their fellow learners.

Time Management

Sufficient time has to be set for completion of tasks. If time for tasks is not sufficient, objectives are also not accomplished. Educators ought to be aware that if learners do not complete activities they feel a sense of frustration and dissonance when they have to start on the next activity (Hoy and Miskel 2008; Ugwulashi 2011). Unfinished business feels unfulfilling and robs learners of a sense of accomplishment.

Developmentally Appropriate Practice

Young learners have a short span of concentration. An educator for the Grade R learners should allow breaks for rest and change of activity as well as change of scene. From vigorous activities such as outdoor games where they will be loud racy activity, the learners may do well to settle to a calmer quieter and less draining activity that allows high adrenalin to ease.

Grade R educators should allow for collaborative group achievements as these stimulate and strengthen cooperation as well as healthy competition. The classroom becomes a place where learners meet age mates who are likely to share their experiences and interests. As such, they also enjoy social exploits that teach them to negotiate, to invite, and in turn be invited. They also get opportunities to participate as well as learning to observe social rules, norms and boundaries.

Age Appropriate Tasks and Activities

Activities for Grade R learners should be appropriate for their age. Learners at this age cannot handle games for example, that demand complex simultaneous mental, psychomotor, eye and hand coordination. Thus if educators task their learners to do activities such as games that are inappropriate for their age, the learners may fail to do the tasks. They may instead revolt, disobey, switch-off, or in some cases desert and leave the class for some other more attractive environment. Learners opt-out when they feel aversion to what they were made to attempt (Baker 2005; Oliver and Reschly 2007). This also makes learners feel like they are failures and ruins their day, leaving them with feelings of discontent (Oliver and Reschly 2007).

Purposeful Engagement

The mathematics Grade R curriculum mandates that Grade R learners do purposeful activities all the time (DBE 2012). They are supposed to be engaged with programs that engineer school readiness by equipping them with logic developing pathways using age appropriate activities that stimulate their innate abilities to do mathematics (DBE 2011; Clements et al. 2008; Feza 2012; Graven and Heyd-Metzuyanim 2014; Graven 2015).

Further, it is critical that the five dimensions of numeracy and proficiency highlighted by Kilpatrick et al. (2001) considered crucial dispositions and adopted by Graven and Heyd-Metzuyanim (2014) guide practice. Schoenfeld and Kilpatrick (2008: 2) detailed these dispositions as “conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition.” Educators have to anchor their practices on the dispositions above as guideline imperatives in lining up activities. In this regard, educators have to provide the experiences and opportunities that stimulate acquisition of cognitive, social, emotional and self-regulation skills (DBE 2012; New Jersey Department of Education (NJDE) 2014; Graven and Heyd-Metzuyanim 2014; Graven 2015). Critical thinking can then be fostered in participatory activities where learners respond to questions and outlined problems, where they get opportunities to explore and present their experiences through model construction, drawing,

painting and verbal as well as written exposition and play (DBE 2011; Clements and Sarama 2012; Feza 2012; NJDE 2014; Graven and Heyd-Metzuyanim 2014).

Mathematics to be Play Based

The department of education urges that use of play in teaching Grade R mathematics as requirement (DBE 2011). However, this decision is heavily supported by research which shows that play is not to be taken as a relief from serious learning (Ginsburg et al. 2007) but that it gives chance for development of a multiplicity of skills such as social interaction, emotional self-control, and physical agility. Play gives opportunity for brilliant mathematical solutions to problems, creativity, cooperation and negotiation, which builds acumen for a fully functional and well-adjusted citizen grounded in the community (Ginsburg et al. 2007; Ginsburg et al. 2012; Graven and Heyd-Metzuyanim 2014).

CONCLUSION

The findings for this paper reveal that there are aspects of Grade R mathematics practices, which educators view as enabling cognitive development. These include activities such as demonstrations using manipulatives to teach counting, shapes and algebra consistent with research for early childhood learning. The educators also use play in song, action poetry, and games for teaching, which engenders enjoyment and stimulates interest in learning mathematics. In addition, educators utilise age appropriate activities. However there is compelling evidence, through the educators own admission that some of their other practices are a mismatch to curriculum expectations and are at variance with research insights. The practices of using age-inappropriate games, educator centred teaching, giving learners no options to select activities they prefer are among the practices that do not enhance mathematics learning. Some of the misalignments that may be the bedrock of the poor performance in mathematics often reflected in the annual national assessments every year and in international studies.

The misalignments revealed in this paper are a cause of concern and it is plausible to expect that these weaknesses in the education system needs revamping before South Africa can rea-

lise the excellence in mathematics it so aspires to. The paper calls for corrective programs, given the fact that research has unequivocally proven that when mathematics is not being taught well at Grade R level, the negative consequences reach as far as grade 12 and beyond. This raises the stakes for fighting for Grade R educator professional development as an urgent requirement to arrest the poor performance trends.

RECOMMENDATIONS

The paper recommends professional development to strengthen the practices that are not aligned with the curriculum expectations and research insights as viewed by the educators themselves such as using age-inappropriate games, educator centred teaching, and not giving learners' options to select activities they prefer. Only professional development can correct the practices of educators and make them in harmony with accepted practice.

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