

EXAMINING SUCCESS RATES OF TEACHER STUDENTS: AN ACTIVITY THEORY ANALYSIS

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ABSTRACT

Although much research has focused on the success and drop-out rates of full-time university students in South Africa, there are few studies that have focused on the success rates of teachers in teacher development programmes. The purpose of this study was to explore the success and drop-out rates of 691 teachers who were students of an Advanced Certificate in Education (ACE). The study utilised a mixed methods approach with the qualitative data being used to interpret and make sense of the quantitative data. Data were generated from student records, questionnaires and interviews. The findings revealed that success rates differed by gender and enrolment purpose (re-training or upgrading), with most of the female underqualified teachers being unable to complete the programme within the minimum time. An activity theory analysis identified various internal contradictions in the system, such as a mixed mode programme run within the same timetabling as full-time students, and demands of teaching duties coinciding with demands of student learning. The study recommends that Institutions of Higher Education (HEIs) that offer part-time programmes for full-time teachers should take greater care in designing their calendars, so that it alleviates instead of tightening the constraints under which teachers work. Greater support to at-risk students is required, which could include the option of extending the programme delivery over more than two years.

Keywords: mixed mode programme, throughput rate, activity theory, gender, re-training, upgrading, teacher professional development, Advanced Certificate in Education (ACE)

1. INTRODUCTION

The improvement of teacher quality in South Africa has received much attention and there have been many interventions to try to solve the problem. There has been little success in this regard, which may be because of the sheer force of the numerous changes that have taken place in the educational setting over the past 20 years. In-service teacher education has been particularly affected by the series of shutdowns, reconfigurations, mergers, curriculum revisions and other transformation exercises carried out in South Africa since 1994. More than two decades ago, the National Education Policy Investigation (NEPI) reported that the greatest teacher education challenge was that of in-service teacher provision (NEPI 1993).

Adler (1997, 93) identifies the variation in the teacher preparation amongst the different races as an apartheid inheritance. She points out that most teachers were trained in racially segregated colleges of education, which were academically isolated and ineffective, thus producing 'enormous variation in teacher qualifications'. Most (not all) of these colleges were seen to be producing teachers of poor quality, resulting in widespread education problems (NEPI 1993; Rogan 2007). The closure or merger of teacher training colleges by the government in the 1990s included those that offered in-service teacher training, effectively making it harder for many of the college graduates to attain a qualification beyond what they had obtained at the colleges. Since then, the most common approach to upgrading teachers' qualifications has been via the Advanced Certificate in Education (ACE), offered by many universities and described by the Council for Higher Education (CHE) as the most critical programme within in-service teacher education (CHE 2010). The CHE also noted that despite being central to achieving improvements sought by the education system, the ACE programme carried tensions arising from 'simultaneous demands of access to higher education, re-skilling and up-skilling' (CHE 2010, 5). This assessment of the challenges associated with the ACE programmes suggests that the ACE programme focused on too many outcomes that could not be achieved. Teachers who need re-training have different needs from those who need upgrading. Underqualified teachers have not completed any formal teacher qualifications beyond their initial teacher training and, hence, need more attention and support than those fully qualified teachers who want to change their teaching specialisation.

In-service programmes offered by Higher Education Institutions (HEIs) also require that the in-service teacher is registered as a student at the HEI. Such formal programmes have to fit into the university system and participants in programmes are hence simultaneously teachers and students. I use the phrase 'teacher students' to indicate the duality of the roles taken on by participants in such programmes. In this study I explore some of the tensions inherent in the ACE programme by focusing on one cohort of the programme. Accordingly, the purpose of this study was to examine the success rate of a group of 691 teacher students enrolled in an ACE programme

in KwaZulu-Natal (KZN). In particular, the study will show that most of the female underqualified teachers in the programme could not pass within minimum time.

2. LITERATURE REVIEW

Before 1994 in South Africa, teacher education was largely provided by numerous colleges of education, and by the late 1980s there were 111 teacher training colleges. However, many of these colleges were closed down or merged with other institutions, and by the year 1994 only 23 remained. There were also a few universities that offered four-year teacher training programmes (Matric plus four years or M+4) before 1994. Most of the colleges offered three-year (Matric plus three years or M+3) qualifications, with a few exceptions. As noted by the CHE (2010, 71):

[A]s late as 2000 the majority of student teachers were still enrolled at the former colleges of education. The IPET [initial professional education of teachers] preparation was segregated in that former black colleges offered a three-year DE (Diploma in Education) while former white colleges (together with some HOR and HOD colleges and one ex-homeland institution, the Giyani College of Education) offered a four-year HDE.

The above excerpt explains why most underqualified teachers in the system are black. In KZN in the 1980s and early 1990s, upgrading opportunities for teachers to reach M+4 status were provided by some colleges of education such as Springfield College, Umlazi College for Further Education and Natal College of Education. Programmes were also run by the Centre for the Advancement of Science and Mathematics Education (CASME), an NGO that was affiliated to a local university. These institutions offered mainly distance education programmes known as the Further Diploma in Education (FDE), which allowed teachers to re-skill or upgrade themselves from their initial qualification in teaching. It is important to note that the delivery of programmes by these institutions was planned according to the teachers' responsibilities at school. Accordingly, the contact sessions, assignments, projects and examinations were timetabled to ensure that the teachers' responsibilities at school were not disrupted. When the education department started shutting down colleges in 1995, the three colleges in KZN (Springfield College, Natal College of Education and Umlazi College for Further Education) were merged into the South African College for Open Learning (SACOL) in 1998. Three years later, SACOL was merged into the University of South Africa (Unisa), as were other distance education providers such as the *South African College for Teacher Education* (SACTE). The CASME programmes were incorporated into the University of Natal, as UKZN was then called. These mergers affected the availability of upgrading opportunities for the many college graduates who were underqualified.

Paterson and Arends (2009) reported that the annual national graduate output from teacher colleges averaged about 25 000 between 1995 and 1998. Many of these college graduates have not improved their qualification levels beyond what they obtained at

colleges – in 2010, 21 800 teachers in KZN did not have a qualification higher than a three-year teaching diploma (Hugo, Wedekind and Wilson et. al 2010, 5). A three-year teaching qualification has a relative education qualification value (REQV) of 13. ACE qualification was designed for these underqualified teachers, allowing them to change their REQV from 13 to 14 on completion of the programme.

In addition to the demand for upgrading opportunities, the education sector has taken further strain with the numerous curriculum reform processes that necessitated the re-training of some teachers. For example, concern by the government about the poor skills in numeracy led to the introduction of the subject of Mathematical Literacy (ML) as a fundamental subject in the Grades 10 to 12 band. However, when ML was introduced in 2006, there were no ML teachers with formal qualifications to teach the subject. Consequently many universities offered ACE programmes – which were funded by the provincial or national departments of education – to teachers who wanted to reskill themselves as ML teachers. However universities were bound by their own rules and quality assurance processes, and the form of the training had to fit their models. The ACE programme under discussion in this article was made up of eight modules, consisting of six ML-specific modules and two generic modules. Four of the six modules were devoted to the development of pedagogic content knowledge skills in ML. The teachers attended classes where they were taught by tutors using specially prepared study guides that formed the core materials. The two generic modules focused on general professional development, students developing an understanding of policy, conditions of service and the roles of the educator (teacher), and utilised a distance education delivery mode. The main learning resources were study guides, which teachers worked through by themselves. This was supplemented by a series of discussion classes that provided guidance for the assignments and other assessment activities. This mixed mode part-time programme was offered at various centres throughout KZN.

There has been much research on professional development for teachers (Adler and Reed 2002; Peressini, Borko, Romagnano, Knuth and Willis 2004; Kriek and Grayson, 2009; Ono and Ferreira 2010; Bansilal and Rosenberg 2011), but these have looked at the successes of the programme with respect to improving teachers' knowledge and practice. Less attention has been paid to the success of the programmes in terms of the throughput and drop-out rates, which is the focus of this article. It is important to find out more about these trends since the drop-out rates have economic implications.

Tinto (2006, 1) remarks that student retention has been one of the most widely studied areas in higher education, which has led to a sophisticated 'understanding of the complex web of events that shape student leaving and persistence'. This statement holds true in South Africa as well, where much attention has recently been given to throughput and attrition rates for young full-time students at university, most notably the HSRC Human Pathways (Letseka 2007) which examined full-time student drop-out rates in seven selected HEIs. The study showed that most leavers left at the end of their first year or midway through their second year. The DoE study of the 2000 national

cohort (Scott, Yeld and Hendry 2007), showed that after five years only 50 per cent of first-time entering students in (contact) universities had graduated. In 2013 the CHE released their statistics concerning drop-out and success rates in HEIs, showing that for three-year degrees started in 2006, the rate of completion within minimum time was 29 per cent, rising to 56 per cent when considered over six years (CHE 2013, 60). The statistics in the report reveal higher participation rates and graduation rates of females as compared to males. For example, as a proportion of the enrolments in the HEIs in 2011, women formed 58 per cent as compared to 42 per cent for men (CHE 2013, 2). In terms of headcount of graduates of undergraduate degrees in 2011, females formed 59 per cent of the graduates while males formed 41 per cent. However, these studies did not provide statistics about differences in throughput graduation rates by males and females. Furthermore, no studies in South Africa have reported findings related to drop-out and success rate of teachers who are engaged as university students while still teaching (except for one related to this study – Bansilal 2012). The study reported in this article seeks to address these gaps.

Most teachers who take on further studies are generally older and have family responsibilities, which means that they have to juggle work and family demands while studying. For mature women students, the demands are greater as they generally assume a bigger responsibility for looking after the family. In South Africa, the 1999 October household survey reported that 42 per cent of all African households, namely, 2.7 million, are female-headed (Aliber 2003), showing that in single family households, it is mainly women who have to handle the responsibilities. Statistics (Stats SA 2013) also show that women carry a much larger load than men in looking after children. In terms of single-parent families, 39 per cent of children under 17 years live with their mother only, while only 4 per cent live with their father (Stats SA 2013). This demonstrates that the responsibilities of childcare in single parent families is mainly carried by females.

However, it seems that the responsibilities of employed women with domestic partners do not decrease substantially. Ball and Brewis (2008, 2) note that ‘research argues overwhelmingly that, when women enter paid employment, their male partners do not compensate for this by taking on a proportionate amount of household work and childcare’. Gender statistics in SA (Stats SA 2013, 40) report that employed women from all population groups are more likely to spend more time doing unpaid housework, caring for others and collecting fuel and water than their employed male counterparts. Among women, employed black African women spend the most time (266 minutes) doing unpaid housework.

Bhana and Pillay (2012) carried out a study with eight women working in a higher education institution in order to understand how inequitable gender relations contribute to women’s marginalised position in higher education. The authors found that the gendered arrangements in family and the work environment function in ways that are reproduced. The authors comment that policies in South Africa that seek to reverse gender equality and promote employment equity have led to a rising number of women

in higher education. However, although women are well represented in higher education, their research production outputs are low. The authors note that even though the roles of women traditionally aligned to cooking, cleaning and caring are weakening, there are still gendered tensions prevalent in the home. One participant, Sonali, described her responsibilities in contrast to her husband's (non)participation in domestic duties: '... you've got to cook the food ... you have got to clean the kitchen, you have got to sort the children ... the only thing I don't do is put the food in my husband's mouth' (Bhana and Pillay 2012, 82)

Bhana and Pillay's study (2012) also revealed examples of gendered practices within the academic environment. The participants shared their experiences of the gendered division of labour and gendered cultures prevalent in their working environment. Although gender relations are changing, the home and work environments produce unequal relations of power, which may sometimes be contested. The authors argue that women's ability to negotiate the demands of work and the division of labour arrangements at home depend on their ability to exercise power in these contexts (Bhana and Pillay 2012).

3. METHODOLOGY

Note that this is part of a larger study, aspects of which have been reported elsewhere (Bansilal 2012; Bansilal, Goba, Webb, James & Khuzwayo 2012; Brijlal 2014; Thembela, 2013). The study used a mixed method approach, in the form of an *embedded design*, where the researcher collects quantitative and qualitative data simultaneously, but one form of data plays a supporting role to the other form of data (Creswell 2008, 538). The participants were 691 teachers who were enrolled as a first cohort of ACE (ML) students at a local South African university. The quantitative data were used to identify trends with respect to the graduation and drop-out rates in terms of gender and the purpose of enrolment. In order to distinguish between those teachers who enrolled for upgrading purposes and those who did for re-training purposes, the prior qualifications were scrutinised where available (there were 112 teachers whose records were not available). Teachers who had only an REQV 13 or Matric-plus-3-year qualification were classified as enrolling for the upgrading purpose, while those teachers who had an REQV 14 or higher were deemed to be enrolled for re-training purposes.

Qualitative data (sourced from questionnaire and interview responses) were analysed to provide more insight into and support for the trends identified by the first layer of quantitative analysis. A questionnaire was administered to 150 teachers from three school districts, of whom 113 completed and returned these questionnaires. Eighteen teachers were interviewed to find out about their experiences of the programme. The participants in the interview were chosen by convenience sampling based on their availability for interviews.

The research questions under scrutiny are as follows: 1) What are the success rates of teacher students in the ACE- ML programme and how do these differ according to gender and enrolment? 2) How can any differences be explained? Note that the phrase ‘teacher students’ is intended to capture the fact that the teachers are also students at a university. Success rate refers to the proportion of teachers who completed the programme within the minimum time.

In this study the teachers were also students engaged in the activity of studying in an in-service programme offered by a university. The framework offered by activity theory emerged as a useful lens within which the differential success rates of subgroups in the cohort could be studied. Activity theory (Engstrom 2001) postulates that human activity cannot be understood or analysed without taking into account the context in which it occurs (Jonassen and Rohrer-Murphy 1999).

3.1. Framework: Elaboration of the activity system

The assumption underpinning activity theory (Engstrom 1987; 2001) is that human activity is socially situated and artefact mediated, and the unit of analysis must include the individual and the culturally defined context. Mediation is central to Engström’s model of activity theory. An activity system is composed of the object or goal of the activity, the tools used in the activity, the subjects involved in the activity, the rules governing the activity, the larger community within which the activity takes place, and the division of labour agreements between subjects of the community. Figure 1 depicts Engström’s model (1987) of an activity system.

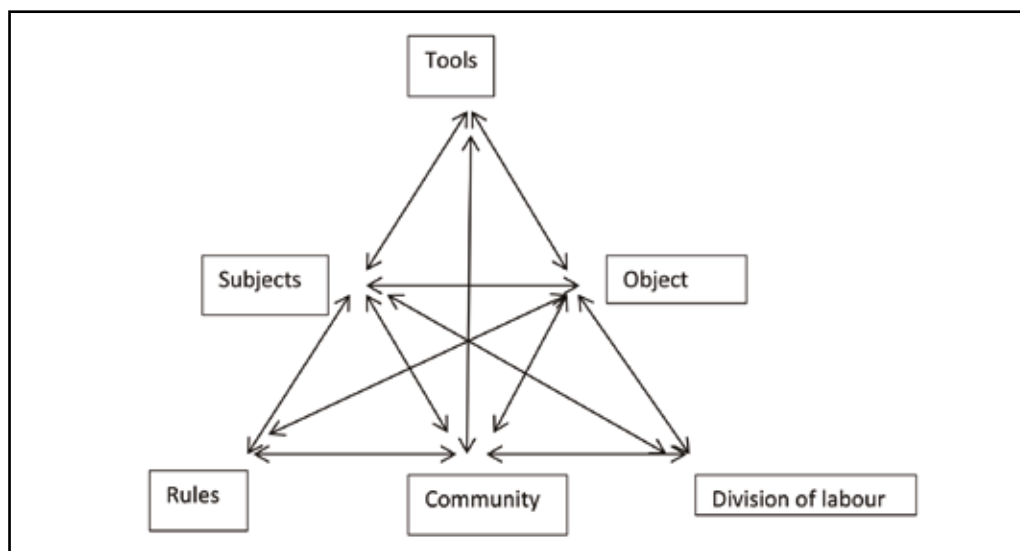


Figure 1: An activity system (reproduced from Engström 1987)

The diagram in Figure 1 represents the relationships amongst the components of the activity system. The system consists of the three constructs of subject, object and community, together with three processes of mediation (tools, rules and division of labour), which transform the nature of the contexts within people act. Tools are used by subjects to achieve the object. There should be rules which to govern the relationship between the subject and other members of the community that help achieve the object. There should be a division of labour between the members of the community in order to achieve the goals. The analysis, therefore, covers how these different elements contribute to the activity system. An important aspect of activity theory is the identification of the contradictions that emerge. Engström (2001) identifies the power of internal contradictions in the model as the driving force of change and development in activity systems. He emphasises that contradictions are different from problems or conflicts, and can be seen as structural tensions that have accumulated historically. Shekelle (2014) elaborates that the contradictions may initiate a search for their origins in the system and this may result in shifts and transformation between the elements of an activity system. The contradictions may be resolved or, in some cases, may lead to the object being redefined.

In this study the activity system is the teachers as students activity system; the subjects are the teachers who are the students enrolled in the ACE programme. The subjects could be the underqualified teacher or the fully qualified teacher who seeks to be re-trained to teach the subject ML. Consequently, although there is one object (namely, to complete the programme), there are two goals relating to the subjects. The goal of the underqualified teacher is to attain fully qualified status (REQV14), while the goal of the fully qualified teacher is to be re-trained to teach ML.

The tools required by the subjects to fulfil the goals include study material, textbooks, lectures, assignments and other assessments, discussion classes, tutorial sessions, lecture venues, and so on.

The subject belongs to a community that is governed and mediated by implicit and explicit rules, and there is also a division of labour agreement between members of the community. In effect, members of the community collaborate with each other to achieve the outcome of the activity system. There are three communities that can be identified in this activity system. Firstly, the university community of lecturers, tutors, administrators are depicted as facilitating the teachers' learning in the programme. Secondly, the family community is depicted as providing support and encouragement to the parent or sibling who is studying, while also expecting that the person does not neglect the family duties and responsibilities. The third community that intersects the system is that of the school community, which is depicted as providing help and support to the staff member who is studying while also expecting that school duties and responsibilities are not neglected.

There are rules that govern the relationship between the subject and the different communities. The rules of the university community include discussion class or lecture attendance, expected behaviour, timetables, fees payable and entrance criteria. Each

module of the programme was a 16 credit module, which is regulated by the National Qualifications Framework (NQF) as requiring 160 hours of notional time for study, irrespective of the mode of delivery (NCHE 2009). It is worth noting that the calendar and support structures of this university are designed around the needs of the typical young, full-time student. The part-time ACE programme consisted of modules delivered using a distance education mode and some that were delivered using contact sessions. The rules of the schools where teachers work regulate the term times and deadlines for assessments and other duties arising from their teaching responsibilities. The rules of the family regulate the relationship between parents and children and spouses and the extended family.

Division of labour is hierarchical amongst lecturer/ tutor/ teacher in the university community, where the lecturer lectures and the student learns. In the school community, labour is divided according to the relations between principal or school management and the teacher as well as the teacher and pupils. With the family community, the division of labour manifests in the teachers' role as parents to their children. It is expected that parents provide material comforts and emotional support to their children. Another division of labour process is that between domestic partners, which regulates how the domestic duties are shared.

4. FINDINGS

4.1. Details of participants (subjects)

Most of the teachers (78%) were over 35 years with only 22 per cent of the group being 35 and below. In terms of race, the group was made up of 589 African, 93 Indian, five coloured and four white teachers. In terms of gender, the group was made up of 523 females and 168 males, hence females constituted 75 per cent of the cohort.

There were 289 teachers whose prior qualifications were at an REQV level of 13 and who were classified as enrolling for upgrading purposes, that is, to get a higher qualification. There were 290 teachers who were already at an REQV level of 14 and were taken as enrolling for re-training to learn more about the subject. There were 112 teachers whose records were missing and who, therefore, could not be classified into either of these two groups.

In the interviews, teachers were probed about the reasons for their enrolment. The data suggests that some of the upgrading group were so desperate for the upgrading opportunity that they registered for the programme even though they did not intend to teach the subject. One such participant, Teacher H, said that his initial specialisation was arts and culture in the primary school. By upgrading himself he was now able to teach mathematics at Grade 9 level. Teacher K said that his first qualification was in Biology and Physical Science. When asked why he had not enrolled for an ACE in

Physical Science, Mr K replied ‘I heard it later’ implying that he was already in the ACE (ML) programme when he heard about the DoE-funded ACE (Physical Science) programme being offered. When asked which ACE he would have selected if he were given the choice, Teacher K confirmed ‘I will have to do the physics one’. He has not taught any mathematics or ML, but continued teaching physical science, showing that he did the ACE training to improve his own qualification, and not to learn how to teach ML. Similarly, Teacher B said she was a life sciences teacher and wanted to upgrade her qualification so she enrolled for the programme even though she was not teaching ML, and did not have any intention of teaching the subject.

Teacher E, who enrolled for re-training purposes, was already on an REQV14 level. He explained that the reason he joined the programme was that he ‘wanted to know more about maths literacy and what’s it all about’. He said he was learning a lot because ‘it is different from pure maths ... and most of it is related to what is happening around us’. Teacher E found the work interesting and his performance in the ML modules was very good.

4.2. Achievement of goals

The ACE is a part-time qualification, which can be completed over a minimum time of two years. Success rates refer to the rate at which teachers completed the qualification within the stipulated period of two years. The data reveal that many teachers failed to complete the programme within the minimum time, and the success rates differed according to the gender of the various participants. Table 1 shows the number of students who graduated within two years, three years, were still in the system after three years, and the number who dropped out without completing the programme. These numbers are presented for the whole group and in terms of males and females.

Table 1: Breakdown of graduation and drop-out rates according to gender

Time to complete	Total graduated	% of total n=691	Females	% of original n=523	Males	% of original n=168
2 years	377	55	264	50	113	68
More than 2 years	141	20	121	23	20	12
Total graduated	518	75	385	73	133	80
Incomplete/drop-out	173	25	139	27	34	20

The information displayed in Table 1 is summarised visually by the bar graph in Figure 2.

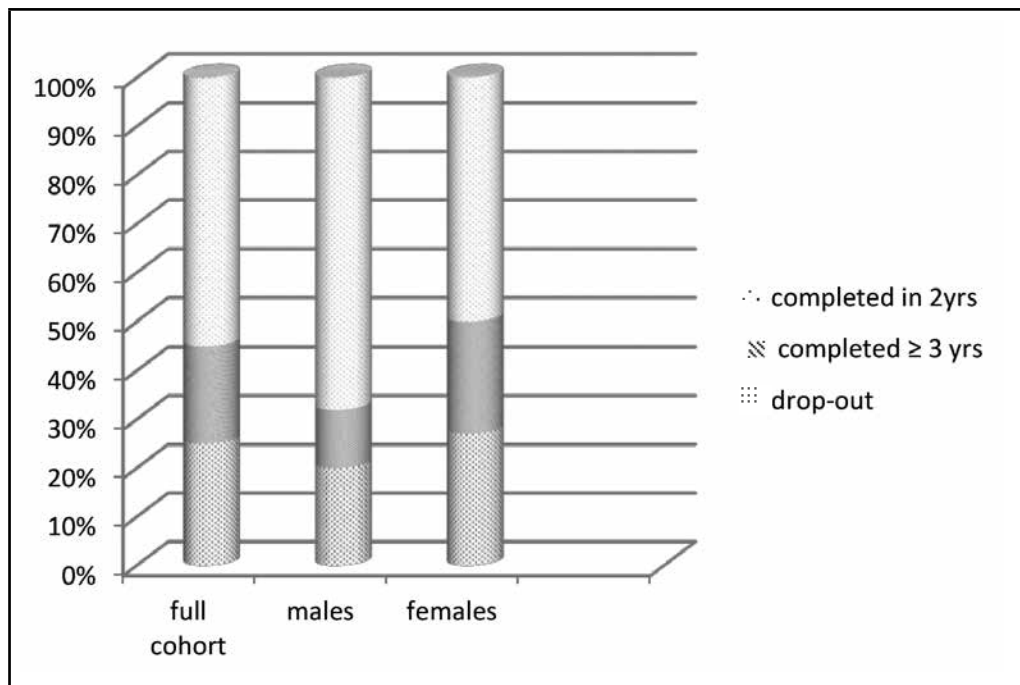


Figure 2: Completion rates differentiated by gender

This comparison reveals that in terms of graduation rates, 50 per cent of females and 68 per cent of males graduated in the expected time of two years. To find out whether these figures are statistically significant, a chi-square test for independence was conducted. The results indicated a significant correlation between gender and completion rate (within two years): Chi-square = 14.56 with a p -value of 0.000

Even at the level of the individual modules, the performance of female teachers was often lower than that of their male counterparts. T-tests indicated significant differences in five modules with the p -values ranging from 0.03 to 0.00. In terms of completing over a longer period of time, the percentage of females graduating in three years was found to be 23 per cent of the original female cohort as compared to 12 per cent of the original male cohort, suggesting a greater propensity for perseverance amongst the female teachers.

The data also revealed differences in success rates between the upgrading and re-training groups. The difference in the completion rates for the two groups is reflected in Table 2.

Table 2: Breakdown of graduation and drop-out rates according to enrolment purpose

Purpose	Original number	Graduated in 2 years	Took more than 2 years to graduate	Drop-out
Upgrading	289 (100%)	126 (44%)	66 (23%)	97 (33%)
Re-training	290 (100%)	216 (74%)	34 (12%)	40 (14%)

The rate of completion within two years for the upgrading group was 44 per cent while for those who were re-training the rate was much higher at 74 per cent. The re-training group also had a lower drop-out rate. A chi-square test for independence was carried out and indicated a significant correlation between enrolment purpose and rates of completion within minimum time (Chi-square = 84.98 with a p -value of 0.00).

Performance in modules was also differentiated according to the teachers' enrolment purpose. The mean of each group for each module was examined and it was found that the mean for the upgrading group was lower than that for re-training group for each of the eight modules. T-tests show that these differences are statistically significant at $p=0.00$ for all the modules.

The results discussed so far suggest that the success rates were significantly different when the factors of gender and enrolment purpose were taken into account. Going further, in Table 3, I now disaggregate the two factors of gender and enrolment purpose, noting that there were 112 students whose enrolment purpose was unknown.

Table 3: Breakdown of graduation and drop-out rates according to enrolment purpose and gender

	Upgrading, Male, n=82	Upgrading, female, n=207	Re-training, male, n=66	Re-training, female, n=224
Completed within 2yrs	48 (59%)	78 (37%)	53 (80%)	163 (73%)
Completed over a longer time	12 (15%)	54 (26%)	7 (11%)	27 (12%)
Drop-out	22 (27%)	75 (36%)	6 (9%)	34 (15%)

Using the figures from Table 3, the three-way ratios showing the percentage of the group who completed within two years, completed over a longer period, or dropped out are presented below.

Re-training male: 80:11:9
 Re-training female: 73:12:15
 Upgrading male: 59:15:27
 Upgrading female: 37:26:36

When the two groups are further broken down by gender, a wider divergence is now evident: the two-year completion rate for a re-training male was 80 per cent as compared to an upgrading female which was 37 per cent, showing that a re-training male was more than twice as likely to complete in minimum time when compared to an upgrading female. In terms of completing over a longer period, 11 per cent of the re-training male students completed the programme in three or more years, while the corresponding percentage for the upgrading females was 26 per cent. Seventy per cent of the graduates from the upgrading female group did not complete in minimum time, showing that the upgrading female subgroup was the most persistent of all four subgroups.

What this data reveals clearly is that the females who joined the programme for upgrading purposes struggled the most, with the lowest completion-within-minimum-time rate. They were also the group with the largest drop-out rate, but conversely, were also the most persistent. I now briefly present results from the interviews and questionnaire responses to provide insight into the teachers' struggles in achieving their goals.

4.3. Challenges faced by teachers in the programme

Some struggles related to the distance teachers had to travel to get to a learning centre. The following written questionnaire responses to the question that asked for comments about how the programme could be improved, from Teachers C, D and E, suggest that the centres should have been closer.

Teacher C: have contact sessions nearby

Teacher D: increase the number of centres

Teacher E: teachers should stay where they study

Teachers H and K in their interviews noted similarly that the learning centres were too far away.

Teacher K: I think it not their nearest venue. Some people find it difficult to travel to come here and find places to stay, they are not comfortable with that.

Teacher H: ... prefer block sessions because I am far away, it is difficult to come one day on Saturday.

The lecture venues form part of the tools and artefacts that are meant to promote achievement of the goals, but in certain cases the location of the centres made it harder for the teachers to meet their responsibilities.

Some of the teachers' struggles can also be seen as emanating from contradictions between the division of labour agreements present in the different communities to which they belonged. For some teachers, teaching responsibilities impacted on the time they required for their studying. Teacher K in the interview said that finding sufficient time

was a challenge because their school responsibilities could not be neglected in favour of the programme demands.

Teacher K: I think the way it [the programme] was organized, it needs a lot of time because it involves some research we have to conduct whilst we are in school. We are hard pressed. It needs a time, the problem is time ... Because that thing takes our time, we have to divert from other things, during the process some people don't come for the block session because of the time.

Teacher K implies that the assignments took up a lot of school time and some teachers found it difficult to attend the block sessions. Attending the contact sessions meant that the teachers fell behind with their school work. Teacher 6 in her written questionnaire response suggested that their school workload seemed to increase during the times of attendance for the sessions:

Teacher F: we have more work to catch up at school during times of attendance.

Teacher A noted in her interview:

Teacher A: The work was too demanding and especially as an educator I felt that there was no time to do anything besides focus on getting the marking done and completing all the activities for my studies. I feel that if given the opportunity again, I would prefer to have worked during my holidays rather than go through the stress we went through.

Teacher A attempted to capture the stress she experienced in trying to carry out her teaching duties while attending to the activities that were required for the module assessment.

On a similar note, Teacher H said in his interview that it was impossible to do justice to both their studies and their teaching duties. In the third term of the year it became even more problematic because their 'school duties such as continuous assessment and marking and extracurricular duties' made it impossible to find the necessary time to devote to their studies.

There were also contradictions emanating from competing division of labour agreements in the family community and the university community. Teachers J and L in the questionnaire response wrote about not feeling good about staying away from home:

Teacher J: we spend all the holiday at UKZN. I think this is not good for us as parents.

Teacher L: to be away from home for so long is not good

4.4. Particular challenges experienced by the female teacher student

In the interviews, teachers were asked for their perceptions about why women performed worse than men. Teacher G shared her experiences of studying while teaching, which resonate strongly with the description given by Sonali, a participant in Bhana and

Pillay's study (2012) that explored how women in higher education negotiated home and work:

Teacher G: ... although your family may support you and say yes you must study, it doesn't mean that they will take away some of your duties. You have to still see to your husband, he is expecting a plate of food when he comes home, you still have to see to your children and to your house.

Teacher I explained that perhaps the studying was the only thing that was optional for some women, so when their duties got too demanding, they chose to give up on studying:

Teacher I : I think that ladies have more work to do at home and others they are married and they have to look after their children, take care of their husbands, take care of schoolwork and this one becomes more and they decide to drop because they can't cope.

Teacher S spoke similarly about the extra load carried by women in the family:

Teacher S: Ladies have too much work at home, like me as well, because you have to be a full-time teacher, mother, parent and you have to do your housework and you do not have enough time to focus on your studies ... [unlike the men] because they are doing nothing and then just have to read the newspapers.

Thus Teacher S's experience is that as a female teacher student she carries much more responsibility than the males. Teacher T commented that females carried a larger workload in general not only as ACE ML students:

Teacher T: I think it is normal [that females perform lower than males] not in maths only maybe because of the load we carry when we are adults you see, we have a lot of work to do than men. So I think it's a matter of time. Maybe we only can spend a little time on school work.

These comments reveal that the family responsibilities of female teachers are not reduced when they take on the additional task of studying and they have to find ways to juggle their various duties. Hence the division of labour agreements in the family community act against the fulfilment of their responsibilities as students.

5. DISCUSSION

The results show that 45 per cent of the teacher students could not complete the programme within minimum time, and needed more than one attempt at some modules before they could pass. The activity system analysis indicated problems with the university tools, specifically with the provision of accessible learning centres. Many teachers cited the fact that the centres were located too far from where they were. For these part-time teachers, travelling to centres took up a lot of time and caused upheavals in other areas of their lives. For in-service programmes to work better, institutions should find ways to offer more support, such as using sites closer to where teachers work so that travel times can be minimised. The optimal solution is for teacher support to be provided at

school level so that teachers can make use of learning opportunities while engaged in the task of teaching.

Engström (2001) suggests that contradictions play a key role as the driving force of change and development in activity systems, and hence such contradictions can help identify how the systems for in-service teacher provision could be improved. Some of the teachers' struggles can be attributed to the contradictions between the rules and regulations governing the university community and that governing the school community where teachers work. The university rules regulate the timetabling of the contact sessions, assessment and examinations within the mainstream timetabling, which is designed around the needs of the full-time undergraduate student. In the interviews, some teachers indicated that they found it impossible to juggle their school duties and study requirements. One reason the participants struggled to cope was that it was not possible to fit in the minimum time that was required (notional time per module). Each 16-credit module requires 160 hours of notional time. This means that two modules would require teachers to fit in 320 hours of additional time in their work schedules. Most of the teaching and assessment at the university occurs during the four months between February and May in the first semester, or from July to October in the second semester. However, for the teachers, these periods coincide with the times during which teachers are most busy with their school teaching and assessment duties. Studying two modules requires an additional 80 hours or more per month, which translates into an additional 20 hours a week, which is impossible for a teacher to find during the peak school teaching periods.

The analysis also revealed contradictions arising from the division of labour demands of the university community and the demands of the family community, as revealed from the interviews. The family responsibilities that are accorded to mature students relate to domestic duties, caring for children and other dependants. Family members' expectations of women are even more demanding. Statistics (Stats SA 2013) show that women carry a much larger load than men in carrying out household duties. Stats SA reported that, on average, employed African women spent more than twice as much time per day doing unpaid housework as employed African men (Stats SA 2013). The related figure for Indian women is that they spent more than three times as much time doing household duties as compared to the Indian male. Responsibilities related to meeting the needs of their children also seem to fall on the shoulders of mothers. In terms of single parent families. It was reported that 39 per cent of children aged 0 to 17 years live with their mother only, while only 4 per cent live with their father only (Stats SA 2013). This demonstrates that the responsibilities of childcare in single-parent families are mainly carried by women. These statistics may help explain why only 50 per cent of the female students graduated in minimum time as compared to 68 per cent of their male counterparts. The struggles of women in entering higher education have been a focus in a study of eight women by Bhana and Pillay (2012). The authors found that the division of labour in the home was organised in gendered patterns, with women taking on the domestic duties of cooking, childcare and cleaning. Bhana and Pillay argue that,

although gender relations are changing, the division of labour in home environments is still largely organised according to gender. Bhana and Pillay (2012, 93) argue that attempts to ‘promote women’s agency and equality of opportunity in higher education ... will stumble without parallel attempts to undo the social environments through which women’s roles in relation to household and care arrangements are positioned within the broader social context’.

The data from this study also revealed that participants who enrolled for upgrading purposes were significantly less successful than those who had enrolled for re-training purposes. The differential success rates between the upgrading and re-training groups may be attributed to differences in academic preparation, that is, in the nature of their experiences in the previous institutions. With the upgrading group, their highest qualification was their teacher training college diploma (REQV 13) which, for most of the group was at least 15 years ago. The re-training group, on the other hand, had already achieved success at a level higher than a college qualification, so their further studies at an HEI would have provided a more adequate preparation for the current activity.

The differences in success rate of the upgrading and re-training group may also be explained as differences between the objects of the two groups. With the upgrading group, the object was to attain fully qualified status and, from the interviews, it emerged that many in this group did not intend to teach the subject of ML. Hence this upgrading group were not as motivated to master the content as the group whose object was to re-train as an ML teacher. A tracer study on teachers from one district in an ACE: ML programme five years after commencement, found that of the 92 teachers who had enrolled on the programme only 24 had passed and were actually teaching the subject (Bansilal et al. 2012). That is, although teachers enrolled in a programme designed to train them to teach the subject, less than three-quarters did not complete and teach the subject – representing a very poor return on the investment made by the government. It is important that authorities ensure that teachers who enrol in sponsored programme such as the one in this study, are matched more rigorously to the department needs.

6. CONCLUSION

The study reported in this article traced the success rates of practising teachers who were students in an ACE programme. Only 55 per cent of the group completed the programme in the minimum time of two years. It was found that gender and level of prior qualification affected the probability of completion within minimum time, with the female underqualified teachers having a success rate of only 37 per cent. Overall, the study suggests that many of these teacher students required more support than was available in the modules. It seems that it was unrealistic to expect these teacher students to cope with the workload. It is suggested that there should be a system that identifies at-risk part-time students, just as there is for full-time students, and that the at-risk teachers be provided with more support and be given the choice of completing the programme over three instead of over two years.

Contradictions were identified in the division of labour elements arising from the communities of university, family and school. It was reported that female teachers carry many duties associated with their roles as caregivers and parents, and these impacted on the time they had available for study.

Contradictions also emerged between the university rules for full-time students and the school rules that regulate the teachers' conduct. The rules from the two communities are contradictory, proving impossible for teacher students to abide by both sets of rules. These teacher students may have been set up for failure because the authorities did not take their restrictions into account and programmes were set up around the university calendar and not around the teachers' needs. Universities that are not set up for distance education or part-time programmes should ensure that their timetables are centred around student needs, as opposed to timetabling arranged around the convenience of full-time students' activities. Furthermore, it is recommended that teachers who are engaged in professional development studies such as the ACE or ACT, which carry a credit weighting of 1200 hours or more, should have their teaching responsibilities reduced during the time of their studies.

Contradictions that emerged in the differential objects of upgrading versus re-training strongly suggesting that these two objects should be redefined, and that different in-service programmes should be created with each object in mind. Teacher development programmes that have upgrading as the object need to have a different focus and content that is suited for people who want to be upgraded. These programmes would require rigorous attention to subject matter content. On the other hand, in-service programmes serving the object of re-training should be designed for teachers who have already specialised and are fully qualified. Programmes for re-training would require explicit focus on developing pedagogical content knowledge. Teachers who are underqualified and want to be re-trained, should then complete both the upgrading and re-training programmes.

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