# KNOWLEDGE GENERATION IN EDUCATIONAL RESEARCH: CASE OF SOUTH AFRICA UNIVERSITIES

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## Abstract

The objective of this study was to investigate forms of knowledge generation in educational research in South Africa in the periods 1995-1999 & 2000-2004. The study was a quantitative by approach. Data from the universities in Gauteng region (South Africa) was extracted from 2340 bound theses database. The results revealed that there are twelve sectors (forms) that have been identified for knowledge generation in educational research.

Key words: educational research, knowledge generation, postgraduate research, South Africa

#### Introduction

In the new millennium, factories, land tools and machinery no longer constitute the highest levels of wealth concentration (Carr & Hagel, 2008; Chisholm, 2004). Resourcefulness of people, their skills, and knowledge are increasingly critical to the world of economy, suggesting that human capital is becoming more important than physical capital. For this reason, education, especially higher education, has consequently become a major political priority (Pincus, 2006). On a global level, higher education is expected and believed to supply high level human resource for the labour market. Even more importantly, higher education is also entrusted with the responsibility of devising a well established and reliable research system. The motive being that there is a general agreement among scholars that research adds new knowledge, which has the potential of making the world a better place for all (Pincus, 2006; Francis, Hemson, Mphambukeli, & Quin, 2003). Early work in 2000 in particular has been an influence on this school of thought (The Task Force on Higher Education and Society, 2000). The authors suggest that "...one of the most powerful arguments for a public interest in higher education is the value to a country of a well developed system for research and generation of knowledge" (The Task Force on Higher Education and Society, 2000: 42). It added that "... this is of increasing importance within the emerging knowledge economy, allowing a country not only to generate new knowledge, but also to engage in scholarly and scientific commerce with other nations (The Task Force on Higher Education and Society, 2000: 42). This suggests that improving higher education research and keeping track of what is happening is in every country's interest. In South Africa, a recap of primary trends and issues in educational research has been brought together in significant publications as themes that have emerged over the past decade in education discussions (Ratele, 2006). These publications include; gender equity violence in schools, racial and class form, transformation, restructuring, change in policy landscape (Nelson Mandela Foundation, 2005). These studies also describe the plight and

unequal development of rural communities, rural families and communities. They also called for a reconsideration by the state with regards to its approach to rural livelihoods particularly in the provision of basic health care (Balfour, et al. 2007). Undisputedly, the above-mentioned publications provide a wealth of information for future directions in terms of research within the higher education system. However, there is a growing concern amongst academics that is gaining momentum that researchers at HEI, while forging new understandings and directions, reproduce research not responsive to global or national prerogatives (Moore, 2004). Another apprehension has to do with lack of emphasis and illumination of the fact that regional needs and historic events do impact on the kinds of research conducted in different regions and different eras (Moore, 2004). For instance, research in language issues in Lesotho may be predominantly on bilingual agendas, because there are basically only two languages in Lesotho, while the same kind of research in South Africa has a likelihood of dealing with issues of multilingualism because of the fact that South Africa is multilingual (Snowball & Wilson, 2006). Even, research within South Africa- has a likelihood of dealing with issues of multidisciplinary, because of the fact that provinces are multilingual (Seekings & Nattrass, 2006). This suggests that different provinces have different needs (Seekings & Nattrass, 2006).

On a similar note, the era that research is conducted has a tendency to mirror the typical concerns of that time. Ever since Africa countries gained independence from colonial rule for instance, language issues have taken centre stage in nearly every independent country (Robinson & Diaz, 2006). A strong yearning towards the elevation of indigenous languages to the same status of the language of the colonisers was in the sphere prominent in the immediate postcolonial eras (Robinson & Diaz, 2006). At the same time, issues of race, class, multiculturalism and ethnicity in relation to education were brought to the centre stage in educational research (Seekings & Nattrass, 2006). The above example evidence that major historic events have a bearing on the types of research conducted in areas affected by the events. During the apartheid era, education in South Africa was always segregated along racial lines (Snowball & Wilson, 2006). That system of governance ensured that Blacks were denied equal access to non-Black institutions in terms of quality education (Seekings & Nattrass, 2006). After 1994, the higher education system in South Africa has been undergoing transformation and will for the foreseeable future be under pressure to provide access and quality education for all the diverse people of South Africa. By the same token, in South Africa, the socio-political transformation of 1994, undoubtedly influenced knowledge production in the form of research in HEI (The Task Force on Higher Education and Society, 2000). Research acknowledges that there are links between the growth of mass higher education systems and the radical process of globalisation which include not only round-the clock, round-the-globe markets and new information technologies, but also revolutionary conceptions of time and space (The Task Force on Higher Education and Society, 2000). Massification of institutions is thus one of the major results of democracy within a global context and so is knowledge production as people are 'freer' and have a platform to research on issues that are of concern to them. In the processes of massification of higher education obviously student body becomes much more diverse as historically under-represented people have relatively access to higher education either as students or as staff members (Francis, et al., 2003).

#### Related Research

The conception of knowledge implies that knowledge "avoids" any attempt to define or limit it (Chisholm, 2004). Following this, any attempt to group, define, categorise, etc. knowledge will fail and not have any legitimacy outside the construction itself. Thus, we cannot identify true and universally valid knowledge categories. The conception of knowledge implies that knowledge is decoupled from morality, and has been interpreted as an argument

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for structuralism (Chisholm, 2004). Common to the literature mentioned is an emphasis on knowledge and knowledge generation as a key force in economic development. However, most knowledge generation processes will by definition be slower than the developmental demands in their environment. This has many causes. Firstly, there are individual constraints, due to limitations embedded in social structures and the social reality of the knowledge creators (Guimond, 2006). Individuals do not normally change their perception of the world very fast. Secondly, knowledge generation will be embedded in power structures, in cognitive frames, in traditions and culture and in institutional norms, in other words the social reality that make up the local practices of the knowledge creators (Guimond, 2006). This makes the study of these processes difficult. When knowledge creation is interwoven with many other social processes, it is difficult to distinguish between processes that lead to development of genuine new knowledge, knowledge diffusion, and knowledge imitations. However, the focus of this study goes beyond these more methodological difficulties. The researchers of this study suggest that there are other forms to knowledge creation, and that these can partly explain the problems we meet on a more practical level when trying to apply any approach.

# Main Purpose

Based on these contestations, the purpose of the current research is an exploratory analysis of issues and trends in Masters and Doctorate research in education in South Africa. The period researched ranged from 1995 to 2004 in universities in the Gauteng region, namely Tshwane University of Technology - TUT, University of Pretoria - UP, University of Johannesburg UJ and University of Witwatersrand (UW).

# Research Focus

The authors were particularly interested in the Gauteng region due to the fact that these universities though in the same region and within close proximity to each other, have different cultural and political heritages and thus exemplify the diversity in terms of research. The time frame chosen for this study was due to the fact that the study was part of Project for Postgraduate Education Research (PPER), a broader commissioned study in which the funders provided parameters of which the time frame was one.

# **Objectives of the Research**

#### Major Objective

The objective of this study was to investigate forms of knowledge generation in educational research in South Africa.

## Minor Objective

To identify sectoral analysis of postgraduate research production in Gauteng region in the periods 1995-1999 & 2000-2004.

# **Methodology of Research**

This study forms part of the 4<sup>th</sup> National progress report on the PPER in South Africa (1995-2004). It is nevertheless the first report that offers a preliminary study of data that is produced in HEIs in the Gauteng province. It uses the data gathered in 2007 and 2008 which

formed part of Phase 1 and 2 respectively. Initially, two universities were selected in Gauteng for the purpose of the study. The selection of the two universities was based on preconceived (and largely speculative) idea of the research output in education over the past decade in which the institutions were located. These factors (output, region and history) were selected to gather region specific information as well cover the breadth of research over a chronological period characterised by rapid change. Thus, the University of the Witwatersrand and the University of Johannesburg were selected in 2007 for Phase 1.

The Phase 2 added the University of Pretoria, Tshwane University of Technology, and Vaal University of Technology. The latter is not yet visited. Phase 2 also included follow-up visits to the University of the Witwatersrand and the University of Johannesburg where further holdings had been identified that were not part of the Phase 1 data development.

#### Sample and Data Collection

A non-probability sampling technique (purposive sample) was used for selecting participants. The first step in sampling was to systematically extract data that was relevant to the study in terms of its objectives (cf. the objectives of study). Data from the four <sup>1</sup>universities in Gauteng: UT, UP, UJ and UW were extracted from a database using the university names as search words. The current study used secondary data from the database established by the <sup>2</sup>PPER. This database comprised information about research in education done in eleven (11) universities in South Africa and the data was stored in Excel spreadsheets. It has an archive of over 2340 bound extracts. The bound extracts were made of sections that were copied, which included the title page and acknowledgements page. This helped to determine the gender of the author. It also included the abstract which would provide insight about the research process and the findings of the study. The methodology and the concluding chapter were the other sections that were copied helped in determining the trend on the choice of methodologies and data collection methods. All this information was transferred into an end-note database for consolidation, portability and user friendliness. The information captured into the database included year of publication, gender, title and key words. The identified frequencies from the theses were described and compared from institution to institution to describe what was prevalent.

#### **Results of the Research**

In Phase 1 a total of 949 (UJ- 659; Wits- 290) theses was captured and in Phase 2, an additional 157 (UJ- 47; UW- 110) theses was captured from the revisited institutions participating in Phase 1. The total number of theses captured to date in Phase 1 institutions is thus 1106. The Phase 2 consists of 330 (UP- 305; TUT- 25) new theses that was captured from institutions which had not been identified in Phase 1 activities. This makes the total number of theses captured in Gauteng region to date to 1436 (UJ- 706; UP-305; Wits-400; TUT-25) (cf. Figure 1). Noting that this figures do not take into account the Vaal University of Technology (VUT); this institution is to be visited in Gauteng region later as aforementioned. In comparing the National data of 3260 theses with the Gauteng data of 1436 theses, it is noted that Gauteng region has produced the majority of education theses. Despite that VUT data is not yet available and that University of South Africa (UNISA) is excluded from the analysis of this province, Gauteng still constitutes 44% of the theses that are produced in the country. This dominance could be influenced by a number of factors such as the establishment of the universities, the

<sup>1</sup> Tshwane University of Technology - TUT, University of Pretoria - UP, University of Johannesburg UJ and University of Witwatersrand (UW).

<sup>2</sup> Project for Postgraduate Education Research (PPER)

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establishment of education faculties within the universities, and the history of education research within the universities.

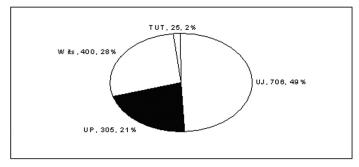


Figure 1: Number of education theses per institution in Gauteng.

Figure 1 shows that Tshwane University of Technology produced only 1.7% of the theses produced in Gauteng, while University of Pretoria and Wits shared approximately equal number of theses with 21% and 28% respectively. What is significant to note is that the University of Johannesburg produced almost 50% of the theses in the Gauteng Province. This is in contrast to previous assertion that the majority of research publication output is concentrated in five universities (University of Cape Town, University of Kwazulu Natal, UP, Stellenbosch University and UW) (Robinson & Diaz, 2006). However, research on HEIs focuses on all faculties not just education (Hemson, 2006). It is not yet known whether the five universities have been active in education research.

### Gauteng Year by Year Report: From 1995-1999 & 2000-2004 Periods

The analysis of year by year theses production provides a clear picture of progress for each institution over a ten year period. The data (cf. Figure 2) shows that UJ is the only institution that has been generally productive and has actively increased the production of their theses from the first six years as compared with other institutions. It is noted that TUT and UW produced a high number of theses between 2002 and 2003, however UJ continued to produce higher number of theses than the former two institutions (cf. Figure 2). UP data shows a decrease in research output from the second year to the last year of the study, when compared with the 1995 theses production.

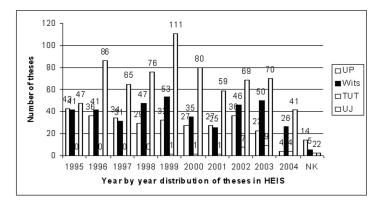


Figure 2: Gauteng theses on database produced year by year.

When the data was divided over the first and second halves of the research period, the former half appears to be more productive than the latter half. The overall number of theses in the first and second half is 773 and 640 respectively. While, the number of theses decreased for three institutions in the second half of the research period, TUT increased the number of theses they produced (cf. Table 1).

# Table 1. Gauteng theses on database produced in the periods 1995-1999 & 2000-2004.

| Periods     | 1995 - 1999 | 2000 - 2004 | *NK    | Total     |
|-------------|-------------|-------------|--------|-----------|
| UP          | 174         | 117         | 14     | 305       |
| Wits<br>TUT | 213<br>1    | 182<br>22   | 5<br>2 | 400<br>25 |

\*NK - Not Known

## Gender and Race Profile over the Decade

The data revealed that over the entire decade, females (840) produced more research than males (551) in the three universities with the exception of TUT, where males dominated research production (cf. Table 2). Regarding the data on gender identification, the study used acknowledgement section in the theses and the names, which resulted to high subjectivity. Consequently, there were number of unknown (*Not Known- NK*) gender especially at UP and WITS. This could be because, researchers working on this data were unfamiliar with either English or Afrikaans names. Although, females are generally dominant in research, it could be interesting to know the dominant race amongst the genders.

| University   | Female | Male | NK | Total |
|--------------|--------|------|----|-------|
| Pretoria     | 190    | 87   | 28 | 305   |
| Wits         | 248    | 142  | 10 | 400   |
| Tshwane      | 5      | 18   | 2  | 25    |
| Johannesburg | 397    | 304  | 5  | 706   |
| Total        | 840    | 551  | 45 | 1436  |

The race issue has been dominant in post-apartheid period in relation to access to institution of higher learning. The enrolment of Black, Indians and Coloureds shows some increment since 1994. However, little information exists on the participation of these races in research in general and specifically in education. To capture the race of the researcher (thesis), the current study used Black, White, Indian and Coloured. For the identification of the researcher's race, acknowledgement section and the names were again used, with an acknowledgement of high subjectivity. While, capturing the race of the researcher, data capturers experienced challenges in determining Coloureds names as they were common with White names. Despite these challenges, the study deemed it important to identify the racial profile of the postgraduate education researchers. In Gauteng region, although not surprising, trend emerged whereby in almost all the universities, White students (722) are dominant researchers, with the exception of UJ where Black students are dominant. They have been followed by Black (598), then Indian (66), and lastly Coloured (21) students. Of importance is that data capturers could not identify

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the race of 28 researchers in different institutions. The data indicate that although UJ has a high number of Black students' researchers, however it also has a high number of White students (282) followed by Wits (229) and UP (205) with the least from TUT (6). The Indians and Coloureds are the least researchers in all four institutions respectively. The data shows that Tshwane University is dominated by Black researchers with no identified Indian and Coloured researchers.

### **Descriptions of Theses**

In line with National Research Foundation (NRF), two degrees, the Masters degree and the Doctoral degree, are included in the definition of postgraduate research for the current study. The data indicate a high number of Masters degrees produced in all Gauteng universities. However, the study did not differentiate between full thesis and half thesis. In the Gauteng region, there are 1201 Masters theses and 226 Doctoral theses on the database in total. The analysis of individual institution indicates that UJ (706) and Wits (400) universities have produced more theses as compared with UP (305) and TUT (25) universities respectively (cf. Table 3).

#### Table 3. Gauteng theses on database by degree.

| Degree    | UP  | Wits | TUT | UJ  | Total |
|-----------|-----|------|-----|-----|-------|
| Doctorate | 94  | 32   | 0   | 100 | 226   |
| Masters   | 207 | 366  | 25  | 603 | 1201  |
| NK        | 4   | 2    | 0   | 3   | 9     |
| Total     | 305 | 400  | 25  | 706 | 1436  |

Furthermore, the data clearly shows that UJ (100) and UP (94) have produced more Doctorate theses as compared with Wits (32) and TUT (0). It is worth mentioning that the latter institution is a merger of two Technikons, which is possibly the reason why they have not produced Doctorate theses within the period of the 1995-2004.

# **Description of Theses by Language**

Language of written theses: South Africa has been dominated by two languages prior 1994, which were also used in institutions of higher learning. Based on the Gauteng theses, these languages, namely English and Afrikaans, continue to be dominantly used for the writing of theses in the study period 1995-2004. The data show that in all Gauteng universities English is favourably used for the writing of theses (1148), while Afrikaans (288) is used in some universities (cf. Table 4). UW is the only institution that does not have a thesis written in Afrikaans, which is possibly shaped by the history of the institution, thus predominantly Whites.

#### Table 4. Gauteng theses on database by languages.

| Language  | UP  | Wits | TUT | UJ  | Total |
|-----------|-----|------|-----|-----|-------|
| English   | 194 | 400  | 22  | 532 | 1148  |
| Afrikaans | 111 | 0    | 3   | 174 | 288   |
| Total     | 305 | 400  | 25  | 706 | 1436  |

#### **Gauteng Database Analysis by Sector Definitions**

The following section focuses on the data produced on educational research during the period 1995 - 2004 within the different sectors in Gauteng region. Twelve sectors were identified. There were 81 (5.6%) theses, which could not identify the sector in where the postgraduate theses were conducted, and these were recorded as nil. Some of the sectors were not reported as they are numerically insignificant as the year by year break down showed there were no theses within those sectors.

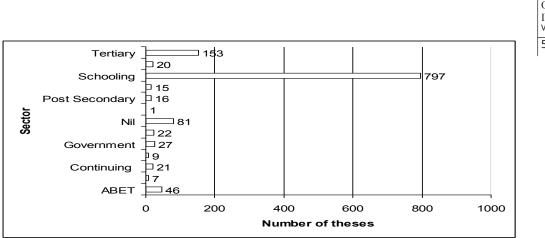
#### Sectoral Analysis of Postgraduate Research Production in Gauteng Region

The authors used the categories in the NRF report (Guimond, 2006). However, the researchers identified sectors not documented in the aforementioned report which shall be discuss later in this study. Table 5 shows the distribution of the educational sector per university in the Gauteng region. The analysis of the education postgraduate data shows that schooling has been the main focus of research in all four Gauteng universities. Johannesburg University has the highest number of theses in schooling followed by Wits and Pretoria respectively. Even though, Tshwane University has not produced many theses, but their main focus has also been on schooling. Tertiary and Adult Basic Education Training (ABET) followed schooling with high number of theses respectively. There has been researching focus on government and mixed (research across educational sectors) research respectively, with early childhood education as the least being researched.

| Sector           | UP  | Wits | TUT | UJ  | Total |
|------------------|-----|------|-----|-----|-------|
| ABET             | 10  | 17   | 0   | 19  | 46    |
| Civil Society    | 0   | 4    | 0   | 1   | 7     |
| Continuing Ed    | 0   | 10   | 0   | 10  | 21    |
| ECE              | 0   | 6    | 1   | 2   | 9     |
| Government       | 2   | 19   | 0   | 5   | 27    |
| Mixed            | 0   | 11   | 0   | 10  | 2     |
| Nil              | 3   | 38   | 0   | 40  | 81    |
| Parastatal       | 0   | 1    | 0   | 0   | 1     |
| Post Secondary   | 0   | 2    | 2   | 12  | 16    |
| Private Sector   | 2   | 6    | 0   | 7   | 15    |
| Schooling        | 134 | 185  | 15  | 463 | 797   |
| Service Provider | 5   | 13   | 0   | 2   | 20    |
| Tertiary         | 63  | 56   | 3   | 33  | 153   |

# Table 5. Disaggregation of theses on the Gauteng region per institution by sectors.

Figure 3 reveals that schooling and tertiary sectors are the most researched in the Gauteng region. When compared the 'national' data sets with the Gauteng regional sector trends, the region accounts for over 40% of each of the sectors researched 'nationally'.



# Figure 3: Sector trends for theses over 10 year study period.

# **Description of Theses with a Post-secondary Focus**

The first five years in the ten year study period revealed significant interest in the research conducted in the post-secondary sector than in the latter years. Thirteen out of sixteen (81%) theses focused on this sector was conducted in the first five years. The heightened interest in the post-secondary education immediately after democracy might have to do with restructuring higher education by the government during this period.

# **Description of Theses with Tertiary Focus**

The analysis of Figure 4 shows a consistent interest in tertiary education over the ten year period with a peak in the second year of study (1996) and the last, but one year of study (2003). However, there was a drastic change of interest in postgraduate research within the tertiary sector in 2004. When comparing the 'national' and the Gauteng regional graphs on tertiary sector as a focus, they follow the same pattern.

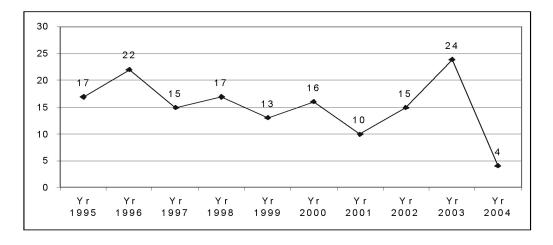


Figure 4: Theses pertaining to tertiary focus.

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#### Description of Theses with Schooling as a Focus

Schooling is the most researched sector by far. It constitutes 74% (887) of the total sectors 1196. This is understandably so as the postgraduate theses are in education and are mostly conducted by practicing teachers. Also, the period of study was marked by policy changes in education after 1994. The postgraduate theses on schooling sector varied in the issues researched, for example 191 theses focused on leadership and management topics, 142 focused on curriculum in which 30 paid attention to policy matters and 4 on democracy. The next section addressed description of theses with the private sector as a focus. Only 3 theses focused on civil society sector. These theses covered areas such as training needs for national land committee, rural groups and workshops for managers of policy services. There were 14 theses focusing on private sector on the Gauteng data base. The postgraduate studies tackle issues such as 'spiritual fulfillment in the corporate world', and the 'impact of fire walk as a learning intervention.' The description of theses with 'service providers' as a focus was also considered. The regional data base had 20 theses focusing on service provider as a sector. The 20 theses focusing on this sector are evenly distributed over the ten year period of the study with approximately 2 theses per year except in the year 2000, there were 6 and in 2004 none. Some of the areas researched in this sector included 'the role played by the Assembly of God Church in the development of the Ndengeza Community in Rural Giyani' and 'environmental education offered by Delta Environmental Centre.' Additionally, theses with Adult Basic Education and Training (ABET) as a focus was addressed. There were 46 theses in the Gauteng region pertaining to ABET. The results are similar to the analysis of the national data set. In fact, Gauteng region accounts for 71% (46) of the 'national' theses (65) within the ABET sector. This is evident in the year 1999 where research interest in this area peaked at 11 theses in the region, while the 'national' peaked at 13 theses. The distribution of the theses within the ABET sector in the Gauteng region is shaped as a bell curve known as normal distribution.

Theses with focusing on Early Childhood Education (ECE) was next. The number of theses within the ECE sector is negligible. Only 9 theses out of 1436 dealt with issues in the National qualification Framework (NQF) level 1. It was observed that five out of ten years in the study period there was no (0) theses that dealt with ECE. This empirical evidence supports the outcry in education that ECE is a neglected area of focus, while Matric issues preoccupies most people in education (e.g. Department of Education - DoE). Lastly, the researchers addressed theses with government as a focus. Each year within the ten year study period, there was at least 1 thesis in the Gauteng region that focused on the government sector unlike in the other unpopular sectors where in some years there was no thesis focused on them. There were 26 theses focusing on the government sector in the Gauteng region within the study period.

### **Discussion of Research**

With regards to the objectives of the study, the focus was to give an account of the main demographic categories of postgraduate education research in Gauteng region. The Gauteng province has four universities and two universities of technologies namely University of Pretoria (UP), South Africa (UNISA), Witwatersrand (Wits), Johannesburg (UJ), Tshwane (TUT) and Vaal (VUT) respectively. Although, UNISA is part of Gauteng province, it excluded in this Gauteng region study due to postgraduate education research that is conducted both nationally and internationally. Consequently, it is analysed as a stand alone institution. In addition, VUT is not yet part of the sample because, based on their website, it was noted that education did not feature in their department/schools. Based on this information, it was excluded from the study. In December 2008 the current study identified that VUT has some education theses and decided that it will be visited within the first semester in 2009 as part of Phase 3 data gathering. Taking

into consideration the number of Gauteng regions' theses, if some theses are found at VUT this will increase the number of theses in this region. Although, this region has produced a high number of theses, however there is a glaring disparity in the number of theses produced by the universities and universities of technology. The data shows that learning/teaching practice (266) are highly researched. This could be because of the concerns about the standards of and intentions to improve teaching and learning in the classroom. The management (232) and curriculum (206) have also been prioritised, possibly because of the concerns with school management and the implementation of the curriculum in the schools. The perceptions seem to be that improving school management might influence school success. It is of interest that HIV/AIDS seems not to have been the priority of research taking into consideration the serious emphasis on teaching about HIV/AIDS in schools (cf. Figure 5) (Stern, Frohna & Gruppen, 2005). This also goes with language issues as aforementioned (cf. results) which have caused contention and debates in relation to the use of African languages as part of medium of instruction.

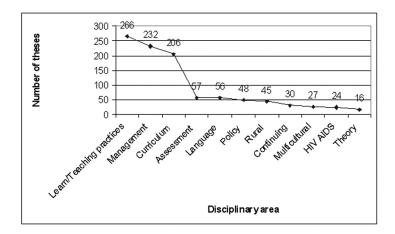


Figure 5: These pertaining to disciplinary area in Gauteng (part 1).

The second part of disciplinary area indicated that special needs/inclusive education (89) and community (53) research have received high attention. Although schooling and learning/ teaching practice have dominated research areas, however this data indicate that early childhood education has not receive much research attention (cf. Figure 6). Values and law/legislation have received less research attention respectively.

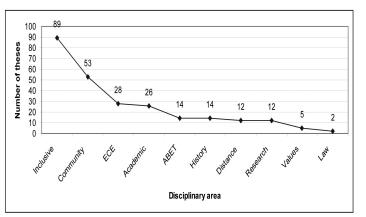
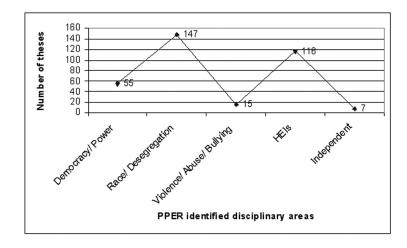


Figure 6: Disciplinary areas of theses produced in Gauteng.

In addition to research areas that are identified by NRF, other research areas have emerged from this data (see Figure 7). The data shows that high numbers of theses are produced on race/ desegregation (147) and higher education institutions (116), which could be influenced by the transitional period in South African society and in institutions of higher learning. Of interest is that when issues on democracy and violence have been debated in education, however only 55 and 15 theses are written on these topics respectively.



# Figure 7: Disciplinary area identified by PPER (Gauteng).

There are 20 theses in the Gauteng region within the study period which focused on continuing education. These theses dealt with a wide range of in-service and workplace related training such as developing teachers in the internet to form virtual communities of practice. Disaggregation of theses over the ten year study period showed that there were theses focusing on continuing education in the first two years.

## Conclusion

The results revealed that there are twelve sectors (forms) that have been identified for knowledge generation in educational research. This study has aimed to show that knowledge generation is unsatisfying. Working with the aim of developing new knowledge in practice quickly reveals that the process of knowledge development is interwoven with many other social processes. Our argument is that the knowledge generation at the present stage in development is not able to sort between work processes. This limits the perspective when we try to enhance workplace development and innovation. Hence, knowledge generation is a common approach in all theories, they are probably not as consistent and mutually compatible as it might seem. Furthermore, the contextual dimension in knowledge development has to be taken into account, that is, we need to do more research into what happens in the transformation processes in different contexts. We need to, in our developmental work, aim at understanding knowledge generation in other ways.

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