

A BIBLIOMETRIC PROFILE OF RESEARCH AT THE UNIVERSITY OF ZULULAND



Produced by:

The Centre for Research on Science and Technology (CREST)

14 December 2009



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CONTENTS

INTRODUCTION..... i

EXECUTIVE SUMMARY..... ii

1. DATA COLLECTION AND METHODOLOGY 1

2. SUMMARY STATISTICS 3

3. UNIZULU AUTHORS AND THEIR ARTICLE OUTPUT 4

4. SCIENTIFIC FIELDS..... 10

5. JOURNALS 15

6. POSTGRADUATE STUDENT PROFILE 19

INTRODUCTION

This profile of research at University of Zululand (UNIZULU) was produced by the Centre for Research on Science and Technology (CREST)¹ at Stellenbosch University under a commission by the HEQC. It is important to emphasize that CREST does not claim that this profile presents a complete picture of research production at UNIZULU. The profile is based on scientific and scholarly papers published in peer-reviewed journals – locally and overseas. It does not take into account other forms of scientific publication (books, chapters in books, conference proceedings or research reports). It also does not take into account other forms of dissemination (presentations at conferences) and does not analyse other forms of innovation products (patents, licenses, spin-off companies, and so on). We have included in this report an analysis of post-graduate students at the University.

Having said this, articles in peer reviewed journals are consistently rated by scientists as one of the most, if not the most important indicator of scientific expertise. Bibliometric analysis, and especially citation analysis, also allows one to assess other forms of scientific “performance”, such as degree of international recognition and scientific collaboration.

But the fact remains that publication patterns – also of journal articles – are field specific. Scholars in the Arts and Humanities typically publish more books and chapters in books. Scholars in ICT publish extensively in conference proceedings and scientist working in more applied or “mode 2” environments tend to publish more technical and contract reports.

The same applies to co-authorship and citation behaviour. It is a well-established fact that scientists in the Health and Life sciences co-author more than scientists in most other fields. Scientists working in Chemistry, Life Sciences and most Health Sciences also tend to cite other works more.

All of these field-specific differences need to be taken into consideration when reading the data and statistics presented in this report.

¹ The main compiler of this bibliometric report is Nelius Boshoff, with input from Johann Mouton. The data set of publication output was produced by the SAK team at CREST (Annemarie Visagie and Astrid Valentine with initial input by Derick van Niekerk).

EXECUTIVE SUMMARY

Overall research output

The article output of UNIZULU shows multiple peaks with the highest peak occurring in 2002 when more than 70 article equivalents were produced. Thereafter the output sharply declined to only about 40 equivalents in 2004 before increasing again. In the most recent year (2008) a total of 56 article equivalents were recorded.

The mean number of article equivalents per author has been steadily declining (from about 1.2 in 1990 to 0.74 in 2008). This being said, the actual number of both UNIZULU article equivalents and UNIZULU authors has increased over the total period.

In 2007 UNIZULU ranked 17th out of all 23 universities (in terms of DoE journal publication figures) and produced 1% of the national output.

Broadening the base of research (publication) participation

The participation of UNIZULU authors in publishing articles has steadily increased from about 20 authors in 1990 to about 50 in recent years. However, it remains the case that only a relatively small number of UNIZULU authors are responsible for the total production of article equivalents. For the period 1990-2008, the top 10% of UNIZULU authors produced, on average, 13.29 article equivalents and over this period they generated 54% of the UNIZULU article output. In fact, the 30% most productive authors produced 80% of the total article output. Moreover, in 2005-2008 the 5 most productive authors produced 20% of all article output during that period.

Gender, race and age demographics, and faculty affiliation

As far as gender is concerned, there has been an overall increase in female authors. In 2005-2008 about 28% of authors were female, compared to 10% in 1990-1992. The share of article equivalents produced by female authors has also increased. In 2005-2008, it was about 27%, compared to 11% in 1990-1992. The 2005-2008 figure for UNIZULU is above the national average where approximately 22% of all article equivalents are currently being produced by women.

The trends over time reveal that the UNIZULU author profile has changed from 82% of white authors in the early 1990s to about 41% of white authors in the most recent period. Particularly the share of African authors has increased over the 19-year period (from 12% to 50%). However, the contribution of African authors to the overall article production in 2005-2008 is only 39% (which nevertheless is an improvement over the 29% for 1990-1992). These percentages are significantly higher than the national "average" where approximately 10% of all output is produced by black African authors (in 2007).

With regard to age, it appears that article publication at UNIZULU has increasingly become the activity of an ageing cohort of scientists. In 1990-1992, about 5% of all articles were produced by those in the age group of 50 and above. In 2005-2008, this proportion has increased to 53% (47% in the 50-59 age group and 8% in the 60+ age group). Similarly, the proportion of article equivalents produced by authors in the 30-39 age group has decreased from 53% in 1990-1992 to 9% in 2005-2008. This profile is more or less consistent with the national average where approximately 55% of all output is now produced by academics over the age of 50.

The Faculty of Arts and the Faculty of Science & Agriculture dominate research output at UNIZULU (respectively 44% and 46% of all output between 1990 and 2008 occurred in these two faculties).

Output by scientific field

Article output in the Social Sciences and Humanities & Arts account for 62% of the university's output over the entire period. The field of Humanities & Arts dominated output until 1993-1996 (when it accounted for 43% of all university research output). Since 1997-2000 the broad field of Natural Sciences (including Agricultural and Health Sciences) has taken the lead. In 2005-2008, for instance, the latter field was responsible for 38% of all output, compared with 26% in the Humanities and Arts. The field of Social Sciences has also improved its relative contribution over time (from 23% in 1990-1992 to 36% in 2005-2008).

Specific sub-field analyses revealed the following:

- The sub-fields of Physical Sciences and Other Earth Sciences are the most prominent in the broad field of Natural, Agricultural & Health Sciences. During 2005-2007 respectively 6.3% and 5.6% of all UNIZULU output was accounted for by these two sub-fields.
- The field of Other Earth Sciences (which excludes Water Resources, Limnology and Oceanography) has not always been prominent. In fact, in 1990-1992, the field of Water Resources, Limnology and Oceanography accounted for 4.9% of all UNIZULU's output, compared with only 0.7% for Other Earth sciences. We thus witness a relative growth in Other Earth Sciences over time (particularly in Biodiversity Conservation, which falls under Other Earth Sciences, and contributed 2.7% to the total university output in 2005-2008).
- The contribution of Physical Sciences, although still relatively prominent in 2005-2008 (5.6%), is however on the decline. Publication in this sub-field peaked in 1997-2000, when it contributed 11.2% to the total output. Since then it has started to decrease.
- Agricultural Sciences' contribution to the university's total article output is on the increase – respectively from 0.8% in 1990-1992 to 4.6% in 2005-2008.
- In Humanities & Arts the sub-fields of Language & Linguistics and Religion are the two single largest contributors to article output at UNIZULU. These two fields accounted for 14.4% and 7.1% of all article output in 2005-2008, with relatively high levels across the entire period.
- The most prominent trend to be observed in the Social Sciences is a decrease in the contribution of Education (from 8% in 1997-2000 to 2.8% in 2005-2008) and an increase in the contribution of Information & Library Science (from 3.1% in 1990-1992 to 14.2% in 2005-2008).

The 'top' journal overall is the *African Journal of Aquatic Science*, which accounts for about 3% of all UNIZULU article output, followed by *Alternation* and the *South African Journal of Libraries and Information Science*. Both latter journals also account for about 4% of the total UNIZULU article output. With the exception of two journals all journals in the "top 20" are South African.

Distribution of output by journal category

Almost 50% of the university's total article output appears in South African journals that are not indexed by ISI. However, in the most recent past (2005-2008) about 46% of articles appeared in foreign ISI journals, which is less than the 54% in 1990-1992. Publication activity in international ISI journals seems to be growing (from 29% in 1990-1992 to 39% in 2005-2008).

Scientific co-authorship and collaboration

There is clear evidence of an increase in article co-authorship. The proportion of single-authored articles has declined from 68% in the period 1990-1992 to 32% in the most recent period (2005-2008). The fact that almost 70% of all papers produced in the most recent past involved some form of collaboration is a positive trend. Single-authored articles dominate in Humanities and Arts (85% of all output in 2005-2008). In all three broad fields the relative shares of single authorship are declining. The sharpest decrease occurred in the Social Sciences (from 74% in 1990-1992 to 36% in 2005-2008).

Post-graduation profile

In 2005 UNIZULU produced 40 Masters and 17 Doctoral graduates (the corresponding figures for Doctoral graduates in 2006 and 2007 are 31 and 20). Both Masters and Doctoral graduates are predominantly from the Social Sciences (26 and 11 in 2006). UNIZULU's production of Masters graduates as share of total national production in 2005 was only about 1%, with a similar share of 1% (in 2005) for its production of Doctoral graduates. Only in the Social Sciences is the figure marginally higher, where UNIZULU's share of Doctoral graduates comprised 3% of the national pool in 2005.

A BIBLIOMETRIC PROFILE OF RESEARCH AT UNIVERSITY OF ZULULAND (UNIZULU)

1. DATA COLLECTION AND METHODOLOGY

Two data sources were used to compile this bibliometric profile: (1) the research article submissions of the University of Zululand (UNIZULU) for the period 1990-2008, which were provided by the university's Research Directorate; and (2) the data records of peer-reviewed research articles in SA Knowledgebase (SAK)² at CREST. All article information received from UNIZULU was converted to Microsoft Access, where after these was integrated with existing article information from SAK. UNIZULU also provided CREST with an Excel file of current University staff (2005-2007), which included the gender, race and year of birth of staff.

The final (integrated) dataset contains altogether 1 132 articles for the period 1990-2008. This constitutes a total of 904.26 UNIZULU article equivalents for the same period. [An article equivalent is a fractional count that expresses an author's relative contribution to an article. For instance, if three researchers co-authored an article and only one author has a UNIZULU address, the institution received an article equivalent of 0.33. Where two of the three authors have a UNIZULU affiliation, the institution received an article equivalent of 0.66.]

In Table 1 we present a breakdown of figures from the different sources of article output. The first two columns report the annual figures (both article equivalents and articles) as they appear in the final (integrated) SAK dataset. The DoE figures in the next two columns are of two kinds. The first includes both article and non-article submissions. The second set of DoE figures involves the actual number of article equivalents recorded by the DoE (CREST has separate DoE figures per output type only as from 2004 onwards). The last two columns in Table 1 summarise the article submissions as they appear in the dataset provided by UNIZULU. The dataset reports summary figures by year of DoE submission and not by year of publication. The figures by submission year (from the dataset) are replicated in the second last column. However, since these figures include submissions as far back as the 1980s, the UNIZULU dataset was re-organised to calculate the actual number of articles per publication year. These are reported in the last column.

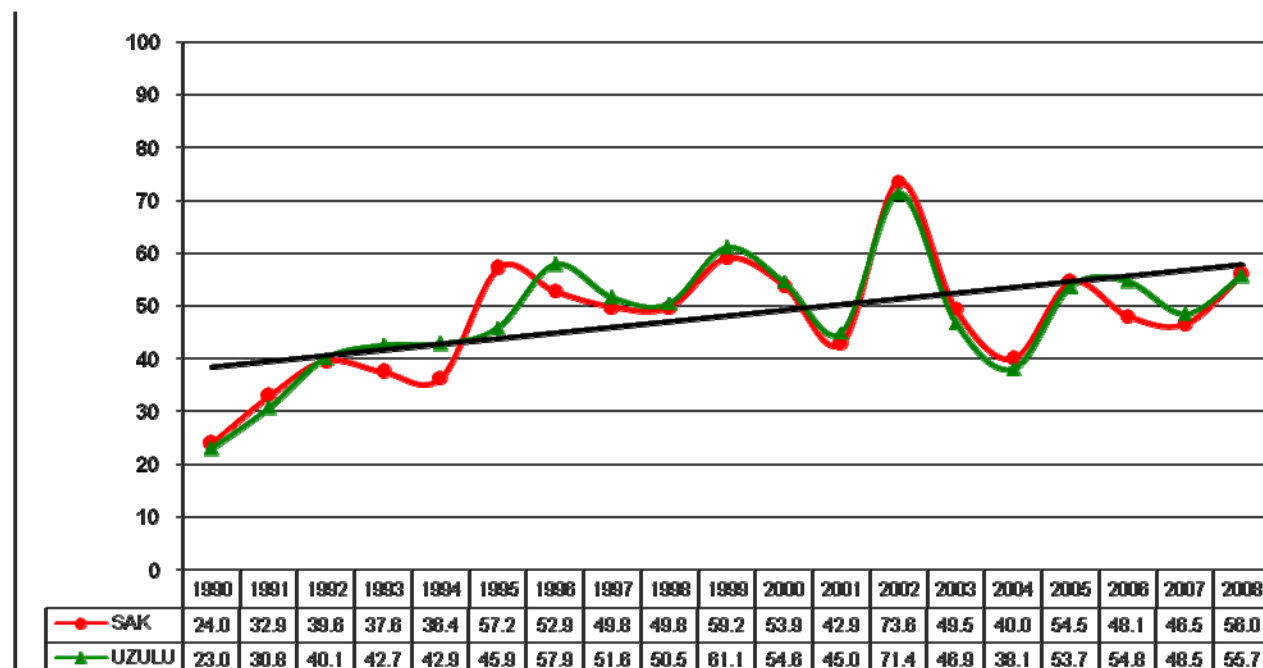
Figure 1 compares the UNIZULU article equivalents (last column in Table 1) with figures from the final SAK dataset (first column in Table 1). As can be seen in Figure 1, the two sets of figures for the total period 1990-2008 are highly consistent. The output figures show multiple peaks with the highest peak occurring in 2002 when more than 70 article equivalents were produced. Thereafter the output sharply declined to only about 40 equivalents in 2004 before increasing again. In the most recent year (2008) a total of 56 article equivalents were recorded.

² SAK is a database of public science in South Africa, developed by CREST. It collects bibliographic information (excluding citations) on articles with South African author addresses, which appeared in journals accredited by the DoE. Information on the article title, authorship, journal, publishing detail and keywords is captured from a variety of bibliographic indexes, including the *ISI Web of Science* and the *Index of South African Periodicals*. At present more than 135 000 articles are included in SAK, as from 1990 onwards. SAK not only covers articles produced by the South African higher education sector, but also articles by the science councils, national research facilities and government research organisations. The database also provides author-specific information by disaggregating the article output by selected demographic variables (gender, race, year of birth, highest qualification, areas of specialisation and institutional affiliation). The linking of these demographic data to the article authors is an on-going task. Since 1998 CREST has utilised a variety of sources, including its own national surveys, requests for demographic information from South African universities and science councils, as well as web searches, to add the demographic information of the authors of these articles. The more than 135 000 articles have been produced by more than 102 000 unique individual authors. Of these authors, the database currently contains some demographic information for approximately 45%.

Table 1: A comparison of article output produced by UNIZULU, 1990-2008

Year	SAK @ CREST		DoE		UNIZULU dataset	
	Total article equivalents	Total articles	All output submissions	Article equivalent submissions	Article equivalents (submission year)	Article equivalents (publication year)
1990	23.99	30	19.91	No information	19.16	22.99
1991	32.91	37	31.51	No information	31.41	30.83
1992	39.57	48	39.67	No information	39.42	40.08
1993	37.58	46	36.18	No information	32.90	42.74
1994	36.40	40	48.78	No information	48.65	42.90
1995	57.24	65	45.07	No information	45.07	45.90
1996	52.89	68	50.64	No information	50.62	57.87
1997	49.78	63	58.98	No information	58.98	51.64
1998	49.76	66	55.88	No information	50.32	50.49
1999	59.20	72	46.10	No information	45.60	61.11
2000	53.94	66	74.65	No information	73.65	54.55
2001	42.90	56	43.37	No information	43.67	44.95
2002	73.64	87	58.15	No information	58.15	71.35
2003	49.45	59	61.02	No information	62.02	46.92
2004	39.97	54	57.33	57.33	57.33	38.08
2005	54.52	70	44.27	44.27	44.27	53.74
2006	48.06	65	59.72	53.91	59.72	54.82
2007	46.45	65	46.65	44.98	46.65	48.48
2008	56.00	75	No information	No information	64.58	55.68
Total	904.26	1132	877.88		932.17	915.12

Figure 1: Annual breakdown of UNIZULU article equivalents – SAK figures and UNIZULU figures compared, 1990-2008



In the next section we present the analysis of the UNIZULU article data for the period 1990-2008. The analyses are based on three underlying data sets:

- A data set of 1 132 UNIZULU articles
- A data set of 366 UNIZULU authors (i.e. the authors who produced the 1 132 articles)
- A data set of 1 622 UNIZULU authorships³

2. SUMMARY STATISTICS

Table 2 presents the annual breakdown of the UNIZULU articles, together with the annual breakdown of the UNIZULU article equivalents for the period 1990-2008. The mean number of article equivalents per author has been steadily declining (from about 1.2 in 1990 to 0.74 in 2008). This being said, the actual number of both UNIZULU article equivalents and UNIZULU authors has been increasing over the total period. Specifically, the participation of UNIZULU authors in publishing articles has steadily increased from about 20 authors in 1990 to about 50 in recent years.

Table 2: Annual breakdown of UNIZULU research output and research productivity, 1990-2008

Publication year	Total UNIZULU articles (a)	Total UNIZULU article equivalents (b)	Number of UNIZULU authors responsible for articles (c)	Mean articles per author (a)/(c)	Mean article equivalents per author (b)/(c)
1990	30	23.99	20	1.50	1.20
1991	37	32.91	22	1.68	1.50
1992	48	39.57	37	1.30	1.07
1993	46	37.58	29	1.59	1.30
1994	40	36.40	30	1.33	1.21
1995	65	57.24	54	1.20	1.06
1996	68	52.89	53	1.28	1.00
1997	63	49.78	49	1.29	1.02
1998	66	49.76	54	1.22	0.92
1999	72	59.20	55	1.31	1.08
2000	66	53.94	54	1.22	1.00
2001	56	42.90	45	1.24	0.95
2002	87	73.64	74	1.18	1.00
2003	59	49.45	57	1.04	0.87
2004	54	39.97	50	1.08	0.80
2005	70	54.52	64	1.09	0.85
2006	65	48.06	60	1.08	0.80
2007	65	46.45	68	0.96	0.68
2008	75	56.00	76	0.99	0.74
Total	1132	904.26	366	3.09	2.47

The annual numbers of UNIZULU authors are not mutually exclusive. Thus, these numbers do not add to 366, which is the total number of UNIZULU authors for the period 1990-2008.

³ The 'article x author' combination uniquely defines each record in an authorship data set. In other words, the number of times that an article appears in the data set corresponds to the number of UNIZULU authors listed for that article. If an article has two UNIZULU authors, the article will appear twice in the authorship data set but each time in combination with a different author.

3. UNIZULU AUTHORS AND THEIR ARTICLE OUTPUT

One of the well-established “laws” in scientific publication (Lotka’s law) postulates that large proportions of authors produce relatively few article equivalents, with the bulk of production being carried by a small number of individuals. This is also true for UNIZULU. Table 3 indicates that for the period 1990-2008, the top 10% of UNIZULU authors produced, on average, 13.29 article equivalents and over this period they generated 54% of the UNIZULU article output. Moreover, the top 30% of productive authors produced 80% (i.e. 54% + 26%) of all article output. Thus, it remains the case that only a relatively small number of UNIZULU authors are responsible for the total production of article equivalents.

Table 3: UNIZULU author research productivity, 1990-2008 (percentile breakdown)

Percentile breakdown of authors	Number of authors	Article equivalents		
		Mean	Total sum	% distribution
91-100% (Top 10% of authors)	37	13.29	491.59	54%
71-90%	73	3.21	234.05	26%
51-70%	73	1.23	90.14	10%
31-50%	73	0.74	54.34	6%
11-30%	73	0.36	26.54	3%
1-10% (Bottom 10% of authors)	37	0.21	7.61	1%
Total	366	2.47	904.26	100%

Table 4 lists the 10 most productive authors at UNIZULU for the period 1990-2008 as well as the 5 most productive UNIZULU authors for the more recent period of 2005-2008. As can be seen, the names of 4 of the ‘top’ 10 authors for 2005-2008 also appear in the broader list for 1990-2008. The productive UNIZULU authors are almost exclusively located in the Faculty of Arts (the faculty accounts for seven of the 10 authors in 1990-2008, and all five authors in 2005-2008 are from this faculty). The top 5 authors’ share of output – in terms of total article equivalents – comprises almost 20% of the total UNIZULU article output for 2005-2008.

Table 4: Most productive UNIZULU authors, for the periods 1990-2008 & 2005-2008

	Surname	Initials	Department	Article equivalents	% of total
Year period: 1990-2008					
1	Meihuizen	JC	English	40.09	4.4%
2	Cyrus	DP	Zoology, Coastal Research Unit of Zululand	32.94	3.6%
3	Beesham	A	Mathematical Science	32.20	3.6%
4	Loubser	JA	Theology	32.00	3.5%
5	Jury	MR	Geography and Environmental Studies	28.28	3.1%
6	Dlamini	CRM	Law	28.00	3.1%
7	Ocholla	DN	Library and Information Science	19.49	2.2%
8	Moyo	CT	General Linguistics	17.70	2.0%
9	Edwards	SD	Psychology	17.57	1.9%
10	Hooper	MJ	English	15.00	1.7%
TOTAL ARTICLE EQUIVALENTS BY TOP 10 UNIZULU AUTHORS				263.27	29.1%
TOTAL ARTICLE EQUIVALENTS BY ALL 366 UNIZULU AUTHORS				904.26	100%
Year period: 2005-2008					
1	Meihuizen	JC	English	12.00	5.9%
2	Edwards	SD	Psychology	7.65	3.7%
3	Ocholla	DN	Library and Information Science	7.16	3.5%
4	Onyancha	OB	Library and Information Science	7.00	3.4%
5	Loubser	JA	Theology	7.00	3.4%
TOTAL ARTICLE EQUIVALENTS BY TOP 5 UNIZULU AUTHORS				40.81	19.9%
TOTAL ARTICLE EQUIVALENTS BY ALL 160 UNIZULU AUTHORS				205.03	100%

We subsequently examine the gender and race profiles of the UNIZULU authors. We do so in two ways: first, by focusing on the authors and their gender and race distribution, and second, by focusing on the distribution of article equivalents according to the gender and race classification of the authors.

We also present in this section the distribution of article equivalents according to the age and the faculty distributions of the authors.

We need to point out though that we do not have complete information on gender, race and age. For that reason we also report the percentage of missing values (as “unknown” gender, race and age).

Gender

Table 5 presents the gender profile of the UNIZULU authors, and Table 6 the total article equivalents produced by the UNIZULU authors in terms of gender. There has been an overall increase in female authors. In 2005-2008 about 28% of authors were female, compared to 10% in 1990-1992.

The share of article equivalents produced by female authors has also increased (see Table 6). In 2005-2008, it was about 27%, compared to 11% in 1990-1992.

Race

The race breakdown – again in terms of authors and article equivalents – is presented in Tables 7 and 8. The trends over time reveal that the UNIZULU author profile has changed from 82% of white authors in the early 1990s to about 41% of white authors in the most recent period. Particularly the share of African authors has increased over the 19-year period (from 12% to 50%). However, the contribution of African authors to the overall article production in 2005-2008 is only 39% (which nevertheless is an improvement over the 29% for 1990-1992).

Age

With regard to age, it appears that article publication at UNIZULU has increasingly become the activity of an ageing cohort of scientists. In 1990-1992, about 5% of all articles were produced by those in the age group of 50 and above. In 2005-2008, this proportion has increased to 53% (47% in the 50-59 age group and 8% in the 60+ age group – Table 9). Similarly, the proportion of article equivalents produced by authors in the 30-39 age group has decreased from 53% in 1990-1992 to 9% in 2005-2008.

Faculty affiliation

As can be seen in Table 11, the faculties of Arts and Science & Agriculture dominate research output at UNIZULU (respectively 44% and 46% of all output between 1990 and 2008 occurred in these faculties). Some random fluctuations can be observed over time in these two faculties, in terms of both numbers of articles and relative shares.

Table 5: Distribution of UNIZULU authors, broken down by gender and by year-period

Publication year	Female		Male		Valid author total	Unknown gender		Grand author total
	Count	% of valid author total	Count	% of valid author total		Count	% of grand author total	
1990-1992	2	10%	18	90%	20	33	62%	53
1993-1996	6	16%	32	84%	38	68	64%	106
1997-2000	11	23%	37	77%	48	84	64%	132
2001-2004	16	27%	44	73%	60	75	56%	135
2005-2008	20	28%	51	72%	71	89	56%	160

Valid author total = Total number of authors, excluding authors of "unknown" gender.

Grand author total = Total number of authors, including authors of "unknown" gender.

Table 6: Distribution of UNIZULU article equivalents, broken down by author gender and by year-period

Publication year	Female		Male		Valid total	Unknown gender		Grand total
	Sum	% of valid total	Sum	% of valid total		Sum	% of grand total	
1990-1992	4.25	11%	33.16	89%	37.4	59.07	61%	96.48
1993-1996	12.23	17%	60.39	83%	72.6	111.49	61%	184.11
1997-2000	10.65	11%	88.12	89%	98.8	113.92	54%	212.69
2001-2004	16.09	14%	96.92	86%	113.0	92.95	45%	205.96
2005-2008	30.61	27%	83.54	73%	114.2	90.88	44%	205.03
1990-2008	73.83	17%	362.13	83%	436.0	468.30	52%	904.26

Sum = Sum of article equivalents

Valid total = Total sum of article equivalents, excluding those produced by authors of "unknown" gender.

Grand total = Total sum of article equivalents, including those produced by authors of "unknown" gender.

Table 7: Distribution of UNIZULU authors, broken down by race and by year-period

Publication year	African		Coloured		Indian		White		Valid author total	Unknown race		Grand author total
	Count	% of valid author total	Count	% of valid author total	Count	% of valid author total	Count	% of valid author total		Count	% of grand author total	
1990-1992	2	12%	0	0%	1	6%	14	82%	17	36	68%	53
1993-1996	11	33%	0	0%	1	3%	21	64%	33	73	69%	106
1997-2000	20	47%	0	0%	2	5%	21	49%	43	89	67%	132
2001-2004	26	49%	0	0%	3	6%	24	45%	53	82	61%	135
2005-2008	34	50%	0	0%	6	9%	28	41%	68	92	58%	160

Valid author total = Total number of authors, excluding authors of "unknown" race.

Grand author total = Total number of authors, including authors of "unknown" race.

Table 8: Distribution of UNIZULU article equivalents, broken down by author race and by year-period

Publication year	African		Coloured		Indian		White		Valid total	Unknown race		Grand total
	Sum	% of valid total	Sum	% of valid total	Sum	% of valid total	Sum	% of valid total		Sum	% of grand total	
1990-1992	10.50	29%	0.00	0%	2.58	7%	22.83	64%	35.91	60.57	63%	96.48
1993-1996	12.17	18%	0.00	0%	12.83	19%	41.61	62%	66.62	117.49	64%	184.11
1997-2000	35.59	38%	0.00	0%	9.87	10%	48.99	52%	94.45	118.23	56%	212.69
2001-2004	41.81	38%	0.00	0%	10.06	9%	57.47	53%	109.34	96.61	47%	205.96
2005-2008	42.88	39%	0.00	0%	15.75	14%	52.44	47%	111.07	93.96	46%	205.03
1990-2008	142.95	34%	0.00	0%	51.09	12%	223.35	54%	417.39	486.87	54%	904.26

Sum = Sum of article equivalents

Valid total = Total sum of article equivalents, excluding those produced by authors of "unknown" race.

Grand total = Total sum of article equivalents, including those produced by authors of "unknown" race.

Table 9: Distribution of UNIZULU article equivalents, broken down by author age group and by year-period

Publication year	< 30 years		30-39 years		40-49 years		50-59 years		60+ years		Valid total	Unknown age		Grand total
	Sum	% of valid total	Sum	% of valid total	Sum	% of valid total	Sum	% of valid total	Sum	% of valid total		Sum	% of grand total	
1990-1992	0.00	0%	12.91	53%	10.08	42%	1.25	5%	0.00	0%	24.24	72.24	75%	96.48
1993-1996	0.00	0%	11.12	19%	42.83	72%	5.78	10%	0.00	0%	59.73	124.38	68%	184.11
1997-2000	4.45	5%	7.50	9%	45.62	55%	25.49	31%	0.33	0%	83.39	129.30	61%	212.69
2001-2004	0.45	0%	7.69	8%	41.73	45%	39.59	43%	3.55	4%	93.01	112.94	55%	205.96
2005-2008	2.58	2%	10.29	9%	36.57	34%	50.89	47%	8.41	8%	108.74	96.29	47%	205.03
1990-2008	7.48	2%	49.51	13%	176.82	48%	123.00	33%	12.29	3%	369.11	535.16	59%	904.26

Sum = Sum of article equivalents

Valid total = Total sum of article equivalents, excluding those produced by authors of "unknown" age.

Grand total = Total sum of article equivalents, including those produced by authors of "unknown" age.

Table 10: Distribution of UNIZULU article equivalents, broken down by faculty and by year-period

Publication year	Arts		Commerce, Administration and Law		Education		Science and Agriculture		University administration		Valid total	Unknown		Grand total
	Sum	% of valid total	Sum	% of valid total	Sum	% of valid total	Sum	% of valid total	Sum	% of valid total		Sum	% of grand total	
1990-1992	50.75	53%	10.00	10%	3.50	4%	31.98	33%	0.00	0%	96.23	0.25	0%	96.48
1993-1996	91.67	50%	4.00	2%	6.33	3%	81.11	44%	0.00	0%	183.11	1.00	1%	184.11
1997-2000	68.92	32%	6.00	3%	13.33	6%	120.93	57%	3.50	2%	212.69	0.00	0%	212.69
2001-2004	89.01	43%	11.83	6%	6.00	3%	97.37	47%	1.75	1%	205.96	0.00	0%	205.96
2005-2008	94.33	46%	16.17	8%	6.41	3%	85.79	42%	2.33	1%	205.03	0.00	0%	205.03
1990-2008	394.67	44%	48.00	5%	35.57	4%	417.18	46%	7.58	1%	903.01	1.25	0%	904.26

4. SCIENTIFIC FIELDS

The Institute for Scientific Information (ISI) has a list of about 244 journal categories (e.g. Acoustics, Biophysics) and each ISI journal is assigned to any number of these categories. In most cases the ISI assigns a journal to a single category but there are many instances of journals being assigned to two or more categories. CREST has incorporated the ISI journal category information into SAK in order to develop a hierarchical scientific field classification framework that best summarises the South African article output data. The following tasks were performed to develop such a scientific field classification:

- (1) The ISI journal categories were linked to the ISI journals in SAK
- (2) Each South African journal (non-ISI) was assigned to at least one ISI journal category by a team of researchers

Tasks (1) and (2) resulted in more than 90% of the journals in SAK being linked to an ISI journal category.

- (3) The percentage distribution of SAK article output per journal category was produced. On the basis of these figures the ISI journal categories were grouped into 33 scientific fields ('level-3 categories'). The 33 categories, in turn, were grouped into a smaller number of 19 scientific fields ('level-2 categories'), which, in turn, have 5 broad underlying scientific fields ('level-1 categories').

For the purposes of the UNIZULU analysis, however, some adjustments to the framework were made to accommodate the size and shape of the UNIZULU output profile. *All 1 132 UNIZULU articles (i.e. 99%) have been linked to the scientific field classification framework.* Figure 2 presents the distribution of the total UNIZULU article output for the period 1990-2008 according to the broad scientific field classification of the journals in which the articles appeared. Article output in the Social Sciences and Humanities & Arts can explain 62% of the university's output over the entire period.

Table 11 disaggregates the figures in terms of 4-year periods. The field of Humanities & Arts has dominated until 1993-1996 (when it accounted for 43% of all university research output). Since 1997-2000 the broad field of Natural Sciences (including Agricultural and Health Sciences) has taken the lead. In 2005-2008, for instance, the latter field was responsible for 38% of all output, compared with 26% in the Humanities and Arts. The field of Social Sciences has also improved its relative contribution over time (from 23% in 1990-1992 to 36% in 2005-2008).

Table 12 gives a breakdown of the broad scientific fields in terms of sub-fields. The first two data columns report the total output, by field, for the entire period of 1990 to 2008 as well as the percentage contribution of each field to the total output. The remainder of the columns report similar figures for the different year-periods. The following observations can be made for each broad scientific field:

Natural, Agricultural & Health Sciences

- The sub-fields of Physical Sciences and Other Earth Sciences are the most prominent in the broad field of Natural, Agricultural & Health Sciences. During 2005-2007 respectively 6.3% and 5.6% of all UNIZULU output was accounted for by these two sub-fields.
- However, the field of Other Earth Sciences (which excludes Water Resources, Limnology and Oceanography) was not always that prominent. In fact, in 1990-1992, the field of Water Resources, Limnology and Oceanography accounted for 4.9% of all

UNIZULUs output, compared with only 0.7% for Other Earth sciences. We thus witness a relative growth in Other Earth Sciences over time (particularly in Biodiversity Conservation, which falls under Other Earth Sciences, and contributed 2.7% to the total university output in 2005-2008).

- The contribution of Physical Sciences, although still relatively prominent in 2005-2008 (5.6%), is however on the decline. Publication in this sub-field peaked in 1997-2000, when it contributed 11.2% to the total output. Since then it has started to decrease.
- Agricultural Sciences' contribution to the university's total article output is on the increase – respectively from 0.8% in 1990-1992 to 4.6% in 2005-2008.

Humanities & Arts

- In Humanities & Arts the sub-fields of Language & Linguistics and Religion are the two single largest contributors to article output at UNIZULU. They accounted for 14.4% and 7.1% of all article output in 2005-2008, with relatively high levels across the entire period.

Social Sciences

- The most prominent trends to be observed in the Social Sciences are the decrease in the contribution of Education (from 8% in 1997-2000 to 2.8% in 2005-2008) and the increase in the contribution of Information & Library Science (from 3.1% in 1990-1992 to 14.2% in 2005-2008).

It must be stressed that Table 12 reports fractional counts. This means that the total number of fractions produced by UNIZULU authors, in any period, is disaggregated in terms of the number of field categories of the journal in which the article appears. On the other hand, the use of unit counts will result in an article being fully counted in each journal field category. This means that in a unit count profile the number of articles per field will never add to the total number of articles but will always exceed that number. Fractional count profiles may differ from unit count profiles, for instance, in cases where journals in a particular field or sub-field are more interdisciplinary. For that reason unit or whole paper counts have also been calculated and are reported in Table 13. However, the trends that were observed in Table 12 (fractional counts) were also observed in Table 13 (whole paper counts).

Figure 2: Broad scientific field distribution of UNIZULU articles, for the period 1990-2008

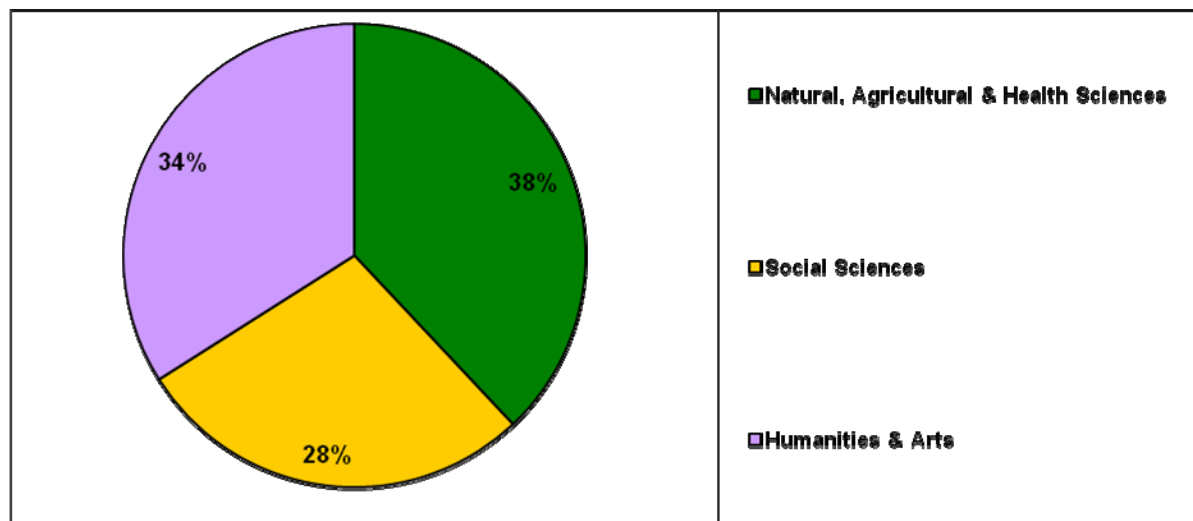


Table 11: Broad scientific field distribution of UNIZULU article output by 4-year periods (1990-2008)

Scientific fields	1990-1992		1993-1996		1997-2000		2000-2004		2005-2008	
	Count	%	Count	%	Count	%	Count	%	Count	%
Natural, Agricultural & Health Sciences	25.66	27%	63.95	35%	94.95	45%	79.34	39%	78.21	38%
Humanities & Arts	48.33	50%	78.92	43%	57.51	27%	72.92	35%	53.08	26%
Social Sciences	22.49	23%	41.25	22%	60.22	28%	53.70	26%	73.75	36%
Total	96.48	100%	184.11	100%	212.69	100%	205.96	100%	205.03	100%

Table 12: Sub-field distribution (fractional paper counts) of UNIZULU article output by 4-year periods (1990-2008)

Scientific fields	Total period		1990-1992		1993-1996		1997-2000		2000-2004		2005-2008	
	Count	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Natural, Agricultural & Health Sciences	342.10	37.8%	25.66	26.6%	63.95	34.7%	94.95	44.6%	79.34	38.5%	78.21	38.1%
01. Agricultural sciences	26.06	2.9%	0.75	0.8%	3.58	1.9%	3.04	1.4%	9.33	4.5%	9.35	4.6%
02. Marine & freshwater biology	23.25	2.6%	3.25	3.4%	3.68	2.0%	9.33	4.4%	4.33	2.1%	2.66	1.3%
03. Other biological sciences	18.41	2.0%	3.42	3.5%	2.67	1.4%	5.55	2.6%	2.82	1.4%	3.96	1.9%
04. Chemical sciences	22.52	2.5%	0.25	0.3%	3.04	1.7%	2.82	1.3%	6.34	3.1%	10.08	4.9%
05. Water resources, limnology and oceanography	41.78	4.6%	4.75	4.9%	8.47	4.6%	12.08	5.7%	10.02	4.9%	6.46	3.2%
06. Other earth sciences	47.04	5.2%	0.67	0.7%	2.14	1.2%	20.30	9.5%	11.03	5.4%	12.90	6.3%
07. Mathematical sciences	17.92	2.0%	3.83	4.0%	7.50	4.1%	3.33	1.6%	2.17	1.1%	1.08	0.5%
08. Physical sciences	66.46	7.3%	1.58	1.6%	16.66	9.0%	23.83	11.2%	12.85	6.2%	11.54	5.6%
09. Engineering, ICT & technologies	23.27	2.6%	0.00	0.0%	3.53	1.9%	2.57	1.2%	8.72	4.2%	8.44	4.1%
10. Multidisciplinary sciences	11.86	1.3%	1.00	1.0%	1.00	0.5%	2.17	1.0%	2.33	1.1%	5.35	2.6%
11. Nursing	19.37	2.1%	0.00	0.0%	10.05	5.5%	5.33	2.5%	1.99	1.0%	2.00	1.0%
12. Other health sciences	24.15	2.7%	6.17	6.4%	1.62	0.9%	4.60	2.2%	7.40	3.6%	4.36	2.1%
Humanities & Arts	310.75	34.4%	48.33	50.1%	78.92	42.9%	57.51	27.0%	72.92	35.4%	53.08	25.9%
13. Language & linguistics	155.17	17.2%	15.50	16.1%	39.17	21.3%	30.26	14.2%	40.67	19.7%	29.58	14.4%
14. Law	26.83	3.0%	8.33	8.6%	2.00	1.1%	4.50	2.1%	11.00	5.3%	1.00	0.5%
15. Religion	75.25	8.3%	13.50	14.0%	24.50	13.3%	10.00	4.7%	12.75	6.2%	14.50	7.1%
16. Other humanities & arts	53.50	5.9%	11.00	11.4%	13.25	7.2%	12.75	6.0%	8.50	4.1%	8.00	3.9%
Social Sciences	251.41	27.8%	22.49	23.3%	41.25	22.4%	60.22	28.3%	53.70	26.1%	73.75	36.0%
17. Education	46.00	5.1%	1.75	1.8%	11.08	6.0%	17.08	8.0%	10.33	5.0%	5.75	2.8%
18. Information & library science	53.54	5.9%	3.00	3.1%	3.00	1.6%	5.83	2.7%	12.50	6.1%	29.21	14.2%
19. Psychology	21.94	2.4%	3.00	3.1%	0.75	0.4%	6.00	2.8%	5.95	2.9%	6.25	3.0%
20. Sociology & related studies	31.39	3.5%	4.42	4.6%	6.58	3.6%	5.83	2.7%	7.84	3.8%	6.72	3.3%
21. Sport sciences	29.11	3.2%	5.16	5.3%	4.25	2.3%	6.20	2.9%	6.84	3.3%	6.67	3.3%
22. Other social sciences	69.43	7.7%	5.17	5.4%	15.58	8.5%	19.28	9.1%	10.25	5.0%	19.15	9.3%
Total UNIZULU article equivalents	904.26	100.0%	96.48	100.0%	184.11	100.0%	212.69	100.0%	205.96	100.0%	205.03	100.0%

Table 13: Sub-field distribution (whole paper counts) of UNIZULU article output by 4-year periods (1990-2008)

Scientific fields	Total period		1990-1992		1993-1996		1997-2000		2000-2004		2005-2008	
	Count	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Natural, Agricultural & Health Sciences	537	47.4%	38	33.0%	95	43.4%	147	55.1%	122	47.7%	135	49.1%
01. Agricultural sciences	67	5.9%	3	2.6%	11	5.0%	7	2.6%	21	8.2%	25	9.1%
02. Marine & freshwater biology	80	7.1%	11	9.6%	15	6.8%	31	11.6%	14	5.5%	9	3.3%
03. Other biological sciences	41	3.6%	10	8.7%	5	2.3%	12	4.5%	6	2.3%	8	2.9%
04. Chemical sciences	61	5.4%	1	0.9%	10	4.6%	11	4.1%	14	5.5%	25	9.1%
05. Water resources, limnology and oceanography	100	8.8%	14	12.2%	18	8.2%	33	12.4%	22	8.6%	13	4.7%
06. Other earth sciences	125	11.0%	4	3.5%	10	4.6%	51	19.1%	27	10.5%	33	12.0%
07. Mathematical sciences	29	2.6%	5	4.3%	10	4.6%	5	1.9%	4	1.6%	5	1.8%
08. Physical sciences	122	10.8%	3	2.6%	23	10.5%	38	14.2%	26	10.2%	32	11.6%
09. Engineering, ICT & technologies	71	6.3%	0	0.0%	13	5.9%	10	3.7%	25	9.8%	23	8.4%
10. Multidisciplinary sciences	26	2.3%	5	4.3%	1	0.5%	5	1.9%	4	1.6%	11	4.0%
11. Nursing	27	2.4%	0	0.0%	17	7.8%	6	2.2%	2	0.8%	2	0.7%
12. Other health sciences	55	4.9%	13	11.3%	3	1.4%	10	3.7%	16	6.3%	13	4.7%
Humanities & Arts	342	30.2%	55	47.8%	88	40.2%	66	24.7%	78	30.5%	55	20.0%
13. Language & linguistics	198	17.5%	21	18.3%	52	23.7%	43	16.1%	49	19.1%	33	12.0%
14. Law	30	2.7%	10	8.7%	2	0.9%	5	1.9%	12	4.7%	1	0.4%
15. Religion	85	7.5%	15	13.0%	25	11.4%	11	4.1%	17	6.6%	17	6.2%
16. Other humanities & arts	65	5.7%	14	12.2%	17	7.8%	16	6.0%	9	3.5%	9	3.3%
Social Sciences	344	30.4%	34	29.6%	61	27.9%	83	31.1%	75	29.3%	91	33.1%
17. Education	93	8.2%	5	4.3%	24	11.0%	35	13.1%	20	7.8%	9	3.3%
18. Information & library science	84	7.4%	3	2.6%	3	1.4%	8	3.0%	24	9.4%	46	16.7%
19. Psychology	39	3.4%	5	4.3%	3	1.4%	11	4.1%	11	4.3%	9	3.3%
20. Sociology & related studies	56	4.9%	9	7.8%	11	5.0%	12	4.5%	13	5.1%	11	4.0%
21. Sport sciences	44	3.9%	8	7.0%	6	2.7%	10	3.7%	11	4.3%	9	3.3%
22. Other social sciences	125	11.0%	10	8.7%	28	12.8%	36	13.5%	18	7.0%	33	12.0%
Total UNIZULU articles	1132	100.0%	115	100.0%	219	100.0%	267	100.0%	256	100.0%	275	100.0%

The percentages do not add to 100% due to the multiple field classification of journals in which the articles appeared.

5. JOURNALS

Until 2003 the DoE recognised for subsidy-purposes only articles in approved South African journals and articles in journals that were indexed by the Institute for Scientific Information (ISI) in the USA. For most academics, getting an article published in an international ISI-recognised journal is viewed as the first prize in scientific publication. For the purposes of this analysis we distinguish between four mutually exclusive journal “index” categories:

- South African journals indexed by the ISI
- International (i.e. non-South African) journals indexed by the ISI
- South African journals not indexed by the ISI
- International (i.e. non-South African) journals not indexed by the ISI

According to Table 14, almost 50% of the university’s total article output appears in South African journals that are not indexed by ISI. However, in the most recent past (2005-2008) about 46% of articles appeared in foreign ISI journals, which is less than the 54% in 1990-1992. Publication activity in international ISI journals seems to be growing (from 29% in 1990-1992 to 39% in 2005-2008).

Table 14: UNIZULU pattern of article publication according to journal index, broken down by year-period, 1990-2008

Publication year	SA journal in ISI		Non-SA journal in ISI		SA journal not in ISI		Non-SA journal not in ISI		Total number of articles
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	
1990-1992	14	12%	33	29%	62	54%	6	5%	115
1993-1996	22	10%	63	29%	124	57%	10	5%	219
1997-2000	31	12%	99	37%	128	48%	9	3%	267
2001-2004	31	12%	104	41%	116	45%	5	2%	256
2005-2008	39	14%	106	39%	127	46%	3	1%	275
Total	137	12%	405	36%	557	49%	33	3%	1132

The 366 UNIZULU authors published their articles in 327 journals during the period 1990-2008. Table 15 gives the list of the top 20 journals in which the UNIZULU authors published.

The ‘top’ journal overall is the *African Journal of Aquatic Science*, which accounts for about 3% of all UNIZULU article output, followed by *Alternation* and the *South African Journal of Libraries and Information Science*. Both latter journals also account for about 4% of the total UNIZULU article output. With the exception of two journals (*Journal of Chemical Education* and *Nuclear Instruments and Methods in Physics Research B*) all journals in the “top 20” are South African.

Table 15: List of 20 top journals in which UNIZULU authors published, 1990-2008

Journal	Number of articles in journal	% of total
African Journal of Aquatic Science	36	3.2%
Alternation	35	3.1%
South African Journal of Libraries and Information Science	33	2.9%
Water SA	26	2.3%
Literator	23	2.0%
Curationis	23	2.0%
English Academy Review	19	1.7%
South African Journal for Research in Sport, Physical Education and Recreation	18	1.6%
South African Journal of Higher Education	17	1.5%
Nederduits Gereformeerde Teologiese Tydskrif	17	1.5%
South African Journal of Science	17	1.5%
South African Journal of Sports Medicine	16	1.4%
South African Geographical Journal	15	1.3%
Acta Criminologica	14	1.2%
English Studies in Africa	13	1.1%
Journal of Chemical Education	13	1.1%
South African Journal of African Languages	12	1.1%
South African Journal of Education	12	1.1%
Nuclear Instruments and Methods in Physics Research B	12	1.1%
Tydskrif vir Geesteswetenskappe	12	1.1%
Articles in 20 journals as % of total number of articles (1132) published by UNIZULU		33.8%

During the most recent period (2005-2008) the 3 top journals were as follows (the first accounting for 8% of the total article output for that period, and the next two for 5% and 3% respectively):

- *South African Journal of Libraries and Information Science*
- *Alternation*
- *Indilinga: African Journal of Indigenous Knowledge Systems*

Table 16 gives the top journals for the total period by broad scientific field. In the Humanities and Arts a single journal, *Alternation*, accounts for about 10% of the total output in that field. The same figure applies for the *South African Journal of Libraries and Information Science* in the case of the Social Sciences.

Table 16: List of top journals in which UNIZULU authors published, by broad scientific field, 1990-2008

Journal	Number of articles	% of field total
Natural Agricultural & Health Sciences		
African Journal of Aquatic Science	36	7%
Water SA	26	5%
Curationis	23	4%
South African Journal of Science	17	3%
South African Geographical Journal	15	3%
Total articles in field	537	
Humanities & Arts		
Alternation	35	10%
Literator	23	7%
English Academy Review	19	6%
Nederduits Gereformeerde Teologiese Tydskrif	17	5%
English Studies in Africa	13	4%
Total articles in field	342	
Social Sciences		
South African Journal of Libraries and Information Science	33	10%
English Academy Review	19	6%
South African Journal for Research in Sport, Physical Education and Recreation	18	5%
South African Journal of Higher Education	17	5%
South African Journal of Sports Medicine	16	5%
Total articles in field	344	

Note: Field totals are not mutually exclusive due to multiple field classification of journals.

Lastly, in Table 17, we present the UNIZULU article output in terms of patterns of co-authorship. There is clear evidence of an increase in article co-authorship. The proportion of single-authored articles has declined from 68% in the period 1990-1992 to 32% in the most recent period (2005-2008). The fact that almost 70% of all papers produced in the most recent past involved some form of collaboration is a positive trend. The current data set does not allow us to be more precise about the nature of the collaboration (whether it is within institution, national or international collaboration).

As can be seen in Table 18, single-authored articles dominate in Humanities and Arts (85% of all output in 2005-2008). In all three broad fields the relative shares of single authorship are declining. The sharpest decrease occurred in the Social Sciences (from 74% in 1990-1992 to 36% in 2005-2008).

Table 17: UNIZULU pattern of article co-authorship, broken down by 4-year period

Publication date	Articles with a single author		Articles with two authors		Articles with three authors		Articles with four authors		Articles with five or more authors		Total number of articles
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	
1990-1992	78	67.8%	19	16.5%	7	6.1%	7	6.1%	4	3.5%	115
1993-1996	148	67.6%	41	18.7%	15	6.8%	10	4.6%	5	2.3%	219
1997-2000	142	53.2%	62	23.2%	37	13.9%	8	3.0%	18	6.7%	267
2001-2004	109	42.6%	63	24.6%	46	18.0%	17	6.6%	21	8.2%	256
2005-2008	89	32.4%	85	30.9%	40	14.5%	27	9.8%	34	12.4%	275
Total	566	50.0%	270	23.9%	145	12.8%	69	6.1%	82	7.2%	1132

Table 18: Share of single-authored articles by broad field, broken down by 4-year period

Publication date	% single authored articles in Natural, Agricultural & Health Sciences	% single authored articles in Humanities & Arts	% single authored articles in Social Sciences
1990-1992	32%	95%	74%
1993-1996	38%	97%	75%
1997-2000	27%	94%	76%
2001-2004	14%	91%	45%
2005-2008	7%	85%	36%

6. POSTGRADUATE STUDENT PROFILE⁴

Our profile of post-graduate students at the University of Zululand focuses on the following areas:

- Graduates (Masters and Doctoral students) [Tables 19-21]
- First enrolments (Masters and Doctoral students) [Tables 22-24]
- Total enrolments (Masters and Doctoral students) [Tables 25-27]
- South Africa students as proportion of the national post-graduate student body [Tables 28-31]

Table 19: Headcount of Masters & Doctoral graduates at UNIZULU, 1995-2005

	Year										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Masters Graduates	15	15	8	32	38	25	33	59	49	36	40
Doctoral Graduates	2	1	1	6	7	17	14	21	12	29	17

Table 20: Headcount of Masters graduates at UNIZULU by broad field, 2000-2005

Broad field	Year					
	2000	2001	2002	2003	2004	2005
Natural and Agricultural Sciences	2	4	2	3	4	8
Health Sciences	7	2	3	4	5	2
Humanities	4	5	8	8	4	8
Social Sciences	14	22	46	34	23	26

Note: Due to multiple field classification the figures per field are not necessarily mutually exclusive and should therefore not be added.

Table 21: Headcount of Doctoral graduates at UNIZULU by broad field, 2000-2005

Broad field	Year					
	2000	2001	2002	2003	2004	2005
Natural and Agricultural Sciences	0	1	2	0	0	2
Health Sciences	1	2	0	1	3	1
Humanities	3	4	10	4	6	3
Social Sciences	13	7	9	7	20	11

Note: Due to multiple field classification the figures per field are not necessarily mutually exclusive and should therefore not be added.

Table 22: Headcount of Masters & Doctoral first enrolments at UNIZULU, 2000-2005

	Year					
	2000	2001	2002	2003	2004	2005
Masters First Enrolments	279	255	366	344	331	288
Doctoral First Enrolments	71	74	104	97	95	100

⁴ The source of this appendix is a profile of postgraduate education recently completed by CREST, under commission of the CHE. The data source is the micro data in the HEMIS database of the DoE.

Table 23: Headcount of Masters first enrolments at UNIZULU by broad field, 2000-2005

Broad field	Year					
	2000	2001	2002	2003	2004	2005
Natural and Agricultural Sciences	29	17	12	22	24	27
Health Sciences	28	28	59	28	20	21
Humanities	35	35	39	64	42	35
Social Sciences	195	177	256	232	247	208

Note: Due to multiple field classification the figures per field are not necessarily mutually exclusive and should therefore not be added.

Table 24: Headcount of Doctoral first enrolments at UNIZULU by broad field, 2000-2005

Broad field	Year					
	2000	2001	2002	2003	2004	2005
Natural and Agricultural Sciences	5	12	8	6	6	17
Health Sciences	7	5	5	6	5	5
Humanities	13	22	29	25	26	20
Social Sciences	46	37	62	61	58	58

Note: Due to multiple field classification the figures per field are not necessarily mutually exclusive and should therefore not be added.

Table 25: Headcount of total Masters & Doctoral enrolments (first enrolments, on-going and graduating) at UNIZULU, 2000-2005

	Year					
	2000	2001	2002	2003	2004	2005
Masters Enrolments	320	326	438	432	460	427
Doctoral Enrolments	89	102	122	128	151	143

Table 26: Headcount of total Masters enrolments (first enrolments, on-going and graduating) at UNIZULU by broad field, 2000-2005

Broad field	Year					
	2000	2001	2002	2003	2004	2005
Natural and Agricultural Sciences	36	25	18	28	34	47
Health Sciences	32	37	63	39	31	29
Humanities	41	42	49	71	59	50
Social Sciences	219	225	308	296	339	305

Note: Due to multiple field classification the figures per field are not necessarily mutually exclusive and should therefore not be added.

Table 27: Headcount of total Doctoral enrolments (first enrolments, on-going and graduating) at UNIZULU by broad field, 2000-2005

Broad field	Year					
	2000	2001	2002	2003	2004	2005
Natural and Agricultural Sciences	8	13	9	10	10	17
Health Sciences	9	11	7	8	12	9
Humanities	15	24	34	33	40	28
Social Sciences	59	56	72	78	89	89

Note: Due to multiple field classification the figures per field are not necessarily mutually exclusive and should therefore not be added.

Table 28: Postgraduate graduates at UNIZULU as % of all students nationally, by qualification type (1995 to 2005)

	Year										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Graduates in Postgraduate Diplomas/Certificates as % of national	1%	0%	0%	1%	1%	0%	0%	0%	1%	0%	3%
Graduates in Honours Degrees as % of national	1%	1%	0%	1%	2%	1%	1%	1%	1%	1%	0%
Graduates in Masters Degrees as % of national	0%	0%	0%	1%	1%	0%	1%	1%	1%	0%	1%
Graduates in Doctoral Degrees as % of national	0%	0%	0%	1%	1%	2%	2%	2%	1%	3%	1%

Table 29: Postgraduate graduates at UNIZULU as % of all students nationally, by qualification type and broad field (2000 and 2005)

	Natural & Agricultural Sciences		Engineering Sciences & Technologies		Health Sciences		Humanities		Social Sciences	
	2000	2005	2000	2005	2000	2005	2000	2005	2000	2005
Graduates in Postgraduate Diplomas/Certificates as % of national	3%	5%	0%	0%	0%	0%	1%	1%	0%	4%
Graduates in Honours Degrees as % of national	1%	1%	0%	0%	0%	3%	3%	1%	1%	0%
Graduates in Masters Degrees as % of national	0%	1%	0%	0%	1%	0%	0%	1%	0%	1%
Graduates in Doctoral Degrees as % of national	0%	1%	0%	0%	1%	1%	2%	1%	5%	3%

Table 30: Postgraduate first enrolments at UNIZULU as % of all students nationally, by qualification type (2000 to 2005)

	2000	2001	2002	2003	2004	2005
First enrolments in Postgraduate Diplomas/Certificates as % of national	1%	0%	2%	0%	3%	4%
First enrolments in Honours Degrees as % of national	1%	1%	1%	1%	1%	1%
First enrolments in Masters Degrees as % of national	2%	2%	2%	2%	2%	2%
First enrolments in Doctoral Degrees as % of national	4%	3%	4%	4%	3%	4%

Table 31: Postgraduate first enrolments at UNIZULU as % of all students nationally, by qualification type and broad field (2000 and 2005)

	Natural & Agricultural Sciences		Engineering Sciences & Technologies		Health Sciences		Humanities		Social Sciences	
	2000	2005	2000	2005	2000	2005	2000	2005	2000	2005
First enrolments in Postgraduate Diplomas/Certificates as % of national	7%	2%	0%	0%	0%	0%	0%	1%	1%	6%
First enrolments in Honours Degrees as % of national	1%	2%	0%	0%	2%	3%	5%	3%	1%	0%
First enrolments in Masters Degrees as % of national	2%	1%	0%	0%	1%	1%	1%	1%	3%	2%
First enrolments in Doctoral Degrees as % of national	1%	2%	0%	0%	3%	2%	3%	4%	6%	5%