Article title: Distance Education Research in South Africa: A Longitudinal Study into the Research Levels of ODL Journal Articles

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Distance Education Research in South Africa: A Longitudinal Study into the Research Levels of ODL Journal Articles

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Abstract

The academic field of distance education is a relatively new and dynamic field. The measure of an academic field lies in the richness and depth of its published research. The University of South Africa is the oldest open distance learning higher education institute in the world. Owing to its status internationally as the leader of distance education, it is prudent to analyse and reflect on the research outputs published by South African academics, particularly regarding the levels of research. This paper follows from the research published by Roberts, which analysed South African distance learning research levels and sublevels from articles published between 2011 and 2015. This is a longitudinal study that analyses and compares the research trends for the five-year periods from 2010 to 2014 and 2015 to 2019. The data were obtained from the Scopus and SABINET databases, using the same search criteria employed by Roberts. The levels of research publications were analysed according to the open distance learning research framework of Zawacki-Richter and are presented through descriptive statistics. The results indicate that although the number of published open distance learning research articles has more than doubled, the research levels have not shown any significant change.

Keywords: distance education, ODL, online learning, research trends, South Africa

Introduction

As a relatively new academic field, distance education (DE) research has grown substantially since the early 1980s. Initially, the field attracted a fair amount of criticism owing to its lack of theoretical frameworks and poor research methodologies (Bernard et al. 2004; Perraton 2000). In order to deal with these concerns and to provide a framework to analyse the levels of open distance learning (ODL) research, Zawacki-Richter (2009) developed a framework to classify three mayor levels of ODL research and their respective fifteen sublevels. This framework was developed through an extensive literature review, followed by an international Delphi study. This framework is widely regarded as a sound basis for classifying the levels and sublevels of DE

research. The three levels of research classification are the macro, meso and micro levels. The macro level refers to research carried out on DE systems and theories, the meso level refers to institutional research on management, organisation and technology, and the micro level focuses on teaching and learning in DE (Zawacki-Richter 2009).

Roberts (2016) found that South African authors contributed very little at the macro level, particularly with regard to developing theoretical approaches to DE relevant to developing countries. South African research was disproportionately high at the micro level with many articles revolving around the themes of learner characteristics as well as perceptions of lecturers and students to the various aspects of DE.

In 2013, the South African Department of Higher Education and Training (DHET) approved the white paper on post-school education (DHET 2017). Before 2013, DE was provided solely by the University of South Africa (Unisa), but provision in the white paper was made for all higher education institutions (HEIs) to offer DE. This resulted in new DE programmes being offered by many of the 26 public and private universities in South Africa coming on board with DE offerings. In the light of the expansion of DE beyond the confines of Unisa, ODL researchers from other HEIs started contributing more extensively to the ODL research platform.

For this reason, it is significant to reassess the ODL research publication levels and sublevels since the publication of Roberts (2016), and to assess whether there were any changes to see if they are contextually relevant, particularly as a result of the stronger move towards online education. Leading from this, the following research question is dealt with in this paper.

- How have the research levels and sublevels in South African ODL research publications developed from the five-year period 2010–2014 to the five-year period 2015–2019?

Literature Review: Research Areas in Distance Education

Because of the criticism of early ODL research, as referred to by Perraton (2000) and Bernard et al. (2004), Zawacki-Richter (2009) developed a categorisation of DE research into three levels and 15 research areas (sublevels) within these three levels. Table 1 gives a summary of the Zawacki-Richter (2009) ODL research framework.

Table 1: Trends in distance education research

Research level	Scope	Sublevel
Macro	DE systems and theories	1. Access, equity and ethics
		2. Globalisation of education and cross-cultural aspects
		3. DE teaching systems and institutions
		4. Theories and models
		5. Research methods in DE and knowledge transfer
Meso	Management, organisation and technology	6. Management and organisation
		7. Costs and benefits
		8. Educational technology
		9. Innovation and change
		10. Professional development and faculty support
		11. Learner support services
		12. Quality assurance
Micro	Teaching and learning in DE	13 Instructional design
		14. Interaction and communication in learning communities
		15. Learner characteristics

Source: Zawacki-Richter (2009)

According to Roberts (2016), just over 67 per cent of South African authors, up to the year 2014, carried out research at micro level, just under 30 per cent of the articles were classified at the meso level and only 3 per cent focused on macro-level research topics. The top research areas for South African authors were instructional design, learner characteristics, and interaction and communication in learning communities. As shown in Table 1, these three research areas all fall under the micro level of research. Although the authors of this paper agree that research at this level is necessary and useful, they suggest that consideration be given to include more research at other levels. It is important for South African authors to establish themselves as important players in the international field, with particular reference to the elevation of DE in developing countries. According to the World Bank, over 50 per cent of all DE students worldwide hail from developing countries, and South Africa is classified as a developing country (Gauthier 2018). Developing countries have specific challenges which differ from first-world countries, particularly regarding access to technology, digital literacy skills and availability of broadband and a regular supply of electricity.

Methodology and Research Design

The research design for this paper is a content analysis of all South African authored ODL articles between 2010 and 2014 and between 2015 and 2019. Lee, Driscoll, and Nelson (2015) proposed that understanding certain trends and issues of topics and methods in a particular field of study is crucial to the advancement of research. Thematic content analysis is a useful approach to allow for the examination of certain patterns and trends that are present in textual data embedded within documentation under investigation (Elo et al. 2014; Krippendorff 2013).

The authors of this paper agreed that it would be important to delve into the trends of ODL research within the South African context, to project the state of ODL research and publication for the last five years (2015–2019) and to make a comparison with the research data for the previous five-year period (2010–2014). The data were collected in the form of published journal articles from the Scopus database of academic literature and from the South African Bibliographic and Information Network (SABINET).

The criteria used for the classification of an ODL article were that the following terms must appear in the title, keywords or abstract of the article: ODL, ODeL, DE, online learning, e-learning or m-learning. This is in line with the same inclusion criteria that were used by the Roberts (2016) research, making the analysis of pre- and post-2015 analyses comparable. The data were extrapolated from the above-mentioned databases, filtered and cleaned by the two researchers involved in writing this paper. The authors deemed that this approach is appropriate for the intent of this study. The authors relied on a set of *a priori* codes for the data set for analytical purposes. These codes were derived from the major research areas and trends within DE as reported by Zawacki-Richter (2009) (also see Table 1). A set of inclusion and exclusion criteria was applied to purposefully sort and select published papers from 2015 to 2019. This follows the same criteria that were used by Roberts (2016) for the compilation of the 2010–2014 database.

Study Sample

The data retrieved, cleaned and analysed for this study included published academic articles in accredited journals retrieved from the Scopus (Scopus 2020) and the SABINET (SABINET 2020) journal databases. In addition, the authors took notice that all major national and international DE journals were listed in these two information networks, and therefore deemed these two databases credible for use in the current research process. Once again, this is comparable to the research carried out by Roberts (2016) and allows for a comparison between the results of the pre- and post-2014 research results.

The selection of relevant academic articles from these databases was based on a set of search terms relevant to the ODL context already mentioned. Initially, the researchers managed to extrapolate a total number of 454 articles from these journal databases. After

that, the researchers used a set of inclusion and exclusion criteria to filter out papers that would be fit for purpose through adhering to the following list:

- only published journal articles (excluding editorials, books, book reviews, dissertations and theses) were used;
- articles were published in English only;
- only South African authors were included (inclusive of collaborative articles from other countries);
- articles had to be set within the context of an HEI in South Africa;
- articles had to be published between 2010 and 2014 (period 1) and between 2015 and 2019 (period 2); and
- the specific focus of the articles was on DE and online learning.

Following the above-mentioned process, the researchers selected a total number of 352 journal articles, which were then coded independently by the two researchers. Five duplicated journal articles that were reflected in both the SABINET and Scopus databases were removed from the data set. In addition, 31 articles were removed as they were not deemed by the authors to be ODL-related articles fitting the context of the inclusion criteria. After this process, the researchers selected a total number of 316 articles that were applied to the analytical process.

Reliability

For the purpose of inter-coder reliability, the two researchers, both with similar backgrounds in ODL research, participated in the coding of the data. These researchers familiarised themselves with the various papers related to the research areas and trends within DE according to Zawacki-Richter's framework (Zawacki-Richter and Naidu 2016; Zawacki-Richter, Bäcker, and Vogt 2009). Both researchers received the same data set and were responsible for their own subjective blind-coding process. The coding structure was divided into a two-level coding structure to initially indicate where the paper fits within the major categories (i.e. macro, meso, and micro), followed by their respective sublevels (i.e. theories and models, management and organisation, and learner characteristics).

After the application of a deductive form of coding, the researchers combined both their scores into one document to evaluate the inter-coder reliability using the Cohen's kappa (K) statistical measure (Cohen 1960). The Cohen's kappa coefficient is a statistical measure which concerns the inter-rater agreement between two coders regarding a data set which is qualitative and categorical in nature. Altman (1991) suggested that the level of agreement can be viewed as poor (< 0.20), fair (0.21 to 0.40), moderate (0.41 to 0.60), good (0.61 to 0.80) and very good (0.81 to 1.00). Tables 2 and 3 indicate the Cohen's kappa value for the inter-coder reliability for the coding of the main research levels and also the sublevels.

Table 2: Cohen's kappa values for inter-coder reliability for main research levels

Symmetric Measures					
		Value	Asymptotic Standard Error	Approximate T	Approximate Significance
Measure of agreement	Kappa	.862	.029	17.455	.000
N of valid cases		316			

Table 3: Cohen's kappa values for inter-coder reliability for sublevels

Symmetric Measures					
		Value	Asymptotic Standard Error	Approximate T	Approximate Significance
Measure of agreement	Kappa	.876	.021	35.997	.000
N of valid cases		315			

As shown in Tables 2 and 3, the reliability of raters A and B can therefore be considered acceptable and a very good standard, as the inter-rater agreement between the two coders were $K = 0.862$ for the main levels and $K = 0.876$ for the sublevels. In case of disagreements between the two coders, this was discussed and debated until a consensus was reached. This final form of the data set was used for the descriptive analysis of the data in this paper.

Delimitations

Data derived from secondary sources involving journal databases consisted of credible, accurate and updated information drawn from the Scopus and SABINET electronic databases. It should be noted that the researchers are aware that not all articles published within the South African context may be present within these sets.

Although the researchers ensured that the articles examined through the coding process were representative of the discipline of DE, it should be noted that there is always the possibility that other researchers could have a different interpretation of the criteria implemented in this study. One of the authors was a coder for both the data sets used for this study. The second author was not a coder for the data set for the period 2010–2014, therefore deliberations about the coding process were discussed extensively between the two authors. The other co-coder from the first data set (2010–2014) acted as the third coder in the 2015–2019 data set in case there were disputes.

An additional note concerns the reward and policy of the DHET (2015) accreditation of published papers. This process allows for the payment of research output rewards to the authors of these papers; therefore, academics are prone to publish their articles in only

the journals that appear in the DHET accredited list of journals. It should be noted that there is a possibility that some potential papers concerning the aim and objective of this research process were not included owing to papers being published in non-DHET accredited journals.

Data Analysis

The secondary data that were obtained through the above-mentioned methodology were consolidated into one database consisting of 316 articles for the period 2015 to 2019. In addition, for comparative purposes, the database that was used in Roberts' (2016) analysis of ODL research by South African authors was also used for the articles from 2010 to 2014 and this consisted of 142 articles.

The Statistical Package for Social Sciences (SPSS) was used for the analysis of the descriptive statistics related to the main research levels and sublevels according to the Zawacki-Richter (2009) framework. The results are presented in the form of frequency tables and graphs. Additional descriptive analyses have been provided regarding the number of South African authored ODL journal articles from each of the HEIs in South Africa, and a presentation of the most popular journals for publication.

Results

Figure 1 shows the total number of ODL articles that was published in the specified databases over the two time periods, 2010 to 2014 and 2015 to 2019. For ease of reference these time periods will be called period 1 (2010–2014) and period 2 (2015–2019).

From Figure 1 it can be established that a total of 142 ODL articles written by South African authors were published in the period from 2010 to 2014 and that this number increased to 316 in the subsequent five-year period from 2015 to 2019. This is in line with the maturation of the academic field of ODL in South Africa and the exponential growth in research articles in this field. Figure 2 shows the growth of ODL research articles over the full period of 1988 to 2019.

The increase in the number of published articles may be owing to various factors. Firstly, as indicated earlier, the White Paper on post-school education in 2014 allowed all HEIs in South Africa to offer DE programmes, whereas before this date, Unisa was the sole provider of DE. In addition, many institutions started including ODL publications as part of their research mandate and staff were encouraged to publish in this field. Unisa expanded its Searchlight programme which provides mentorship and training to academic and administrative staff to assist them with ODL publications. In 2015, the International Council for Open and Distance Educations' biannual international conference was hosted by Unisa at the Sun City resort in South Africa, and this created a new sense of enthusiasm for ODL publications. All these factors may be

attributed to the increase in ODL-related research papers authored by South African academic staff.

Figure 1: Total number of ODL articles published in period 1 and period 2

The research question for this paper relates to the main research levels and sublevels of these ODL publications by South African authors. Table 4 shows the ranking of the South African articles according to Zawacki-Richter's framework for period 2.

Table 4 shows that the most popular level of ODL research in period 2 in South Africa remains the micro level, with 66 per cent of articles published falling into this category. This is consistent with Roberts' (2016) finding that 67 per cent of published articles in period 1 targeted this research level. During period 2, ODL published research at the meso level increased slightly from 30 per cent to 31 per cent and macro-level research remained consistent at just over 3 per cent. This indicates that there has been little change in the level of ODL research from South African authors from period 1 to period 2.

Table 4: Ranking of research main research levels and sublevels according to Zawacki-Richter's (2009) framework for period 2

Rank	Research area	Level	Frequency	%	Cum %
1	Instructional design	13	93	29.4	29.4
2	Learner characteristics	15	79	25.0	54.4
3	Interaction and communication in learning communities	14	35	11.1	65.5
4	Professional development and faculty support	10	33	10.4	75.9
5	Learner support services	11	18	5.7	81.6
6	Management and organisation	6	17	5.4	87.0
7	Innovation and change	9	13	4.1	91.1
8	Educational technology	8	11	3.5	94.6
9	Quality assurance	12	5	1.6	96.2
10	Access, equity and ethics	1	4	1.3	97.5
11	Distance teaching systems and institutions	3	4	1.3	98.8
12	Costs and benefits	7	2	0.6	99.4
13	Theories and models	4	1	0.3	99.7
14	Research methods in DE and knowledge transfer	5	1	0.3	100.0
15	Globalisation of education and cross-cultural aspects	2	0	0.0	100.0

Figure 2 indicates the frequencies of each research sublevel for both periods 1 and 2. In addition, Figure 3 shows the actual number of articles published in each of these periods.

The most published sublevel in period 2 is sublevel 13, instructional design (29.4%), followed by sublevel 15, learner characteristics (25%), and sublevel 14, interaction and communication in learning communities (11.1%). This follows the same trend as the publications in period 1, although sublevel 14 has recorded a definite drop in the number of publications. This could be because there were different coders for each period and their interpretations of the scope of the sublevel might differ slightly.

A noticeable increase in publication at sublevel 6 can be observed. In period 1, only 2.1 per cent of the articles were published on management and organisation, whereas this has increased to 5.4 per cent in period 2. This translates to an increase of 14 actual articles, from 3 articles in period 1 to 17 articles in period 2 (see Figure 3).

Sublevel 10 remains a consistently important level for South African ODL publications, professional development, and faculty support. According to Figure 3, the actual number of articles published has increased from 15 in period 1 to 33 in period 2.

Figure 2: Comparison of period 1 and period 2 framework results by frequency

Learner support services (sublevel 11) has also remained a strong area for ODL publication in South Africa. There were 18 articles published in period 2 on this sublevel, compared to 8 articles in the previous period. It is concerning to note that the sublevels of technology and innovation have decreased from period 1 to period 2. With the advancements of online learning and the development of ICT-enhanced tools for learning, it would be prudent to ensure that research at these sublevels are prioritised.

Following on from the international trends (Zawacki-Richter, Bächer and Vogt 2009), the macro level of research displays the least number of ODL publications (see Figure 3). During period 1 there were only 3 published articles from the macro level, and this increased to 12 articles in period 2. Four articles on ODL theories and models (sublevel 3) were published in period 2 where there were no articles in the previous period. For the first time, South African articles were published on the sublevels of quality assurance (sublevel 4) and access, equity and ethics (sublevel 5).

Figure 3: Number of ODL publication in periods 1 and period 2

The next section investigates the journals in which the South African articles were published in both period 1 and period 2. Table 5 presents the acronyms for each of the journals in which the South African authors published their articles and Figure 4 shows the number of ODL articles published in each of these journals. In addition, Table 5 presents the countries in which these journals are published.

Table 5: Acronyms for journals

Acronym	Journal	Country of publication
AER	Africa Educational Review	South Africa
BJET	British Journal of Educational Technology	UK
DE	Distance Education	Australia
EJEL	Electronic Journal of e-Learning	UK
Gender and Behaviour	Gender and Behaviour	South Africa
HTS	Hervormde Teologiese Studies	South Africa
IRRODL	International Review of Research in Open and Distance Learning	Canada
Mousaion	Mousaion	South Africa

Acronym	Journal	Country of publication
New generation sciences	Journal for New Generation Sciences	South Africa
Progressio	South African Journal for Open and Distance Learning Practice	South Africa
SACJ	South African Computer Journal	South Africa
AJHPE	African Journal of Health Professions Education	South Africa
SAJE	South African Journal of Education	South Africa
SAJHE	South African Journal of Higher Education	South Africa
SAJIM	South African Journal of Information Management	South Africa
TOJDE	Turkish Online Journal of Distance Education	Turkey

Figure 4: Number of South African ODL articles by journal with four or more articles published.

Figure 4 shows the journals that have published the highest number of articles authored by South African academics. It only lists those journals with 4 or more publications in period 2 and accounts for 187 of the 316 articles that have been published in period 2. Only 51 out of these 187 (27%) articles from period 2 were published in international journals.

There has been an increase in the number of articles for all these journals, except for Progressio, which is a South African journal curated by Unisa. This is owing to the number of journal issues of Progressio decreasing from period 1 and period 2. The largest increase in journal articles are those that have been published in the International Review of Research in Open and Distributed Learning (IRRODL), which is a dedicated ODL journal, curated by the University of Athabasca in Canada. There has been a 65 per cent increase in journal articles by South African authors between period 1 and period 2, and after Progressio, IRRODL has the greatest number of published articles by South African authors.

During period 1 there were 19 publications in the Mediterranean Journal of Social Science (Roberts 2016). The DHET in South Africa removed this journal from their accredited list in 2016, which is the reason why there are no publications in period 2.

A notable increase can be seen in the new journals that have published South African ODL articles, many of which are in the fields of health, information science, engineering and computing. This shows that in addition to the traditional ODL journals, South African authors are now expanding their publication vehicles to also include other academic fields.

Figures 5 and 6 show the number of publications by South African authors from the various HEIs in South Africa and Table 6 provides a list of the acronyms used in the graphs for each of the HEIs in South Africa.

Table 6: Acronyms for South African HEIs

Acronym	Higher Education Institution
CPUT	Cape Peninsula University of Technology
CUT	Central University of Technology
DUT	Durban University of Technology
Fort Hare	University of Fort Hare
NMMU	Nelson Mandela Metropolitan University
North-West	North-West University
Sol Plaatje	Sol Plaatje University
SUN	Stellenbosch University
TUT	Tshwane University of Technology
UCT	University of Cape Town
UFS	University of the Free State

Acronym	Higher Education Institution
UJ	University of Johannesburg
UKZN	University of KwaZulu-Natal
Unisa	University of South Africa
UP	University of Pretoria
UWC	University of the Western Cape
Venda	University of Venda
VUT	Vaal University of Technology
Wits	University of the Witwatersrand
WSU	Walter Sisulu University
Zululand	University of Zululand
Other	Other HEIs

Figure 5 includes the articles authored by Unisa academics (39%) and excludes the Unisa articles. It clearly indicates the increase in articles published by other HEIs.

Figure 5: Total number of ODL articles published by South African authors

As shown in Figure 5, the HEI with the highest number of published articles in both period 1 and period 2 is Unisa. Unisa contributed 77 per cent of the articles in period 1 and 39 per cent in period 2. This can be explained by the opening of DE to all HEIs in 2014 and the move to online learning in many of these HEIs, resulting in ODL research publications increasing from HEIs other than Unisa. Figure 6 excludes Unisa publications.

Figure 6: Number of articles by South African HEIs (excluding Unisa)

Figure 6 excludes the number of Unisa articles and indicates that all the other HEIs showed a marked uptake in ODL research publications. Although Unisa is seen as the leading ODL institution within South Africa, it is important to observe which other HEIs are also publishing within the ODL space. It can be noted that North-West (25 publications), UKZN (17 publications) and CPUT (15 publications) follow on from Unisa in the total number of published ODL articles. Some HEIs published ODL articles for the first time in period 2 (NNMU, TUT, UFS, Fort Hare, Venda, Zululand and VUT), which is an indication of the growing interest and investment in DE by other South African HEIs.

Unisa is still the largest producer of ODL research in South Africa in terms of the number of articles, but their growth from period 1 to period 2 is far lower than the other HEIs.

Conclusion

Considering that a five-year period has surpassed since the previous study on research levels and trends in ODL publications (Roberts 2016), the most recent data found that within the following five-year period (2015–2019) there seems to have been no major shift towards the exploration and increased publication on the major overarching themes in accordance with Zawacki-Richter's (2009) framework. The data presented indicate that South African authors are prone to focus on micro-level publication processes and do not contribute extensively towards the meso and macro research levels. This is consistent with the findings of Roberts (2016). Although some authors do contribute

towards meso-level publications, it seems that some sublevels are falling behind. One such sublevel is the focus on cost and benefit procedures within the DE context.

Data in this study indicated that there still seems to be a lack of macro-level publication outputs within the recent five-year period, although there has been a marked increase in the number of these publications. This might be since macro-level research outputs are strongly related to higher overarching DE factors which are usually published by academics with great insight and experience within the DE context and South Africa still needs to develop more specialists in the field. Research processes at this level are usually seen as longitudinal and labour intensive in nature. It is therefore crucial that we focus on these research levels and areas to define the macro level within our own contextually relevant African perspective.

This study highlights the fact that other HEIs besides Unisa are increasingly focusing on ODL research. This allows the opportunity for the application, implementation, growth and research opportunities from various institutional perspectives when it comes to ODL research.

The research also highlights other areas that are noteworthy to South African academics. Only 27 per cent of the articles analysed in this study during period 2 were published in international journals. This is in line with the proliferation of articles published at the micro level, which although important in the South African context, could be perceived as not relevant to the international community. South Africa forms part of the developing countries in the world and as such it is important that our ODL research have a wider impact than just locally. The authors are of the opinion that publications in both South African and international journals are equally important and prospective ODL authors should consider targeting some of the international journals.

It is recommended that further research be carried out that includes published conference proceedings and book chapters to expand the database for analysing South African published ODL research. In addition, consideration should be given to the development of a context-specific ODL research framework for South Africa and other developing countries.

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