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Post-publication Analysis of Digital Culture and Education Journal (DCEJ) from 2009 to 2018

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**POST-PUBLICATION ANALYSIS OF DIGITAL CULTURE AND EDUCATION
JOURNAL (DCEJ) FROM 2009 TO 2018**

BY

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Abstract

This study analysed the trends and patterns of articles published in Digital Culture and Education Journal (DCEJ) from 2009 to 2018 covering a period of 10 years. Five bibliometric measures were used for the analysis: Year-wise productivity of articles; authorship pattern of articles; core authorship; degree of author collaboration; Institution and country affiliation of authors in DCEJ. The results revealed that a total of 108 articles were published and the year 2014 (Vol. 6) had the highest number of articles with 26 (24.07%). The most prolific authors was Fabian Schäfer with three (3) articles. Single authorships were the most productive with a total of 60 (55.56%) publications. The degree of collaboration was highest at 0.8 in Volume 10 (2018). Authorship emerged from 26 countries and authors from United States of America were the highest number with 68 (30.09%). Authorship affiliated to Universities had the highest number of 161 (71.24%) articles. The findings suggests that although collaborative research is common in DCEJ, there is need to encourage multidisciplinary collaborations. This is because of the high number of single authorship patterns identified in the study. The complex nature of DCEJ will require a mix of ideas with multidisciplinary collaborations. This may be achieved by creating awareness and proper indexing in reputable databases, which will encourage visibility and build interest in the journal. Also, some important authorship information were not given such as sex and affiliations. It is recommended that the editorial team should include and ensure that future researches comply with authors' guidelines for submission.

Keywords- Bibliometrics, Post publications, Digital Culture and Education, Multidisciplinary, Collaborations.

INTRODUCTION

The number of information resources users can access in this digital information age is enormous and these resources are readily available through the use of digital technologies as proposed by (Thomas, 2022). These digital technologies are easily accessible and are of keen interest to individuals, and the use of electronic tools, systems, devices and resources that generate and store or process data is becoming a mainstream activity. These mainstream activities are dependent on the culture and interactions of humans.

According to GDS Insight (2020), Digital culture may be described as a means to how technology and the internet shape the way we humans interact with each other. These interactions through digital technology, internet and different human cultures shape communications and plays a vital role in learning. These digital technologies fosters a nourishing influence on education which aims at imparting to the cultural and social heritage of people which is a major contribution to sustainable development in education as affirmed by the (United Nations, 2015).

Digital Education is innovative and applies digital tools and technologies in teaching and learning. According to (Raja, R. ; Nagasubramani, P. C., 2018), technology plays a great role in every area of life. With digital technologies, teaching and learning is far more interactive, convenient and memorable as individuals are able to identify, apply and evaluate information with ease, by so doing helps boost efficiency and productivity. This may imply that technology through the use of digital or Information and Communication Technologies (ICT) affects individuals positively giving rise to new values while transforming realities which are dependent on culture. A combination of Digital education and digital culture produces the field of digital culture and education.

The field of Digital Culture and Education may be developed through continuous scholarly research which will help improve and advance the learning scope of the discipline. This may be achieved by scholars in the discipline disseminating information through research publications in order to aid other researchers to critique, apply and further develop information in the field. Information gotten from research are rich and useful in teaching and learning as it offers solution to issues arising in the field of Digital Culture and Education. For these reasons, scholarly works which fall within the scope of Digital Culture and Education are published in the Digital Culture and Education Journal (DCEJ). DCEJ publishes one volume yearly and the number of articles are not fixed, but vary from year to year as presented in (Digital Culture and Education 2009). Post-publications gotten from the journal articles may be analyzed by studying the trends in the journal through bibliometric analysis.

Bibliometrics which was first used by Pritchard (1969) is an emerging area in the Library and Information Science profession which is the statistical analysis of publications can offer a clear insight on trends of articles published in the field of Digital Culture and Education by identifying the trends using certain measures that will help in identifying the different changes occurring in the field. This will guide and give researchers and publishers a clear knowledge of how to measure its productivity. The following Bibliometric measures will be used in line with the objectives within the period of study in DCEJ to reveal the following: Year-wise productivity of articles will reveal the total number of articles published in the journal on a yearly basis including the number of pages; Authorship pattern will reveal the productivity in the communication patterns of authors while indicating their level of collaborations;

Productivity of core authors will reveal the names and number contributions of core authors; Degree of author collaboration will reveal the ratio of the number of collaborative research papers to the total number of research papers in the discipline; Institution and country affiliation of authors will reveal the number of articles from the different institutions and countries of contributors in the journal.

The following are some similar bibliometric studies. (Tyagi & Bharadwaj, 2021) studied the trends of growth in contributions published in *Tulsi Prajna* during the period 2016 to 2020. The analysis showed that 121 papers were published in journal during the period of study. 2019 (49 articles, 40.5%) had the maximum number of publications, while the minimum was in the year 2017 (12 articles, 9.9%). A total of 121 articles were published with the annual average growth rate of 24.5%. It was revealed that the highest number of papers published as under the category of article were 112 (92.6%), while 9 (7.4%) papers were published under the editorial material category. The highest proportion of papers were by single authors (79.3%), followed by papers with 2 authors (20.7%). The degree of collaboration was 0.21. From the results it was revealed that during the study period, most authors contributed their papers single. Acarya Mahaprajna was the most prolific authors with 7.44% of total number of publications.

Warriach & Ahmad (2011) aimed to analyze *Pakistan Journal of Library and Information Science (PJLIS)*. A total of 111 publications from 11 issues of *PJLIS* were published during 1995 to 2010. Single-authored papers comprised the highest percentage of 99 (89.19%) papers. The maximum number of 54 (48.65%) papers, were from the University of the Punjab, Lahor followed by contributions from the University of Karachi with eight (7.21%) papers. Most of the authors, 93 (72.09%), worked in Pakistani institutions. Majority of the papers 59 (53.13%) that published in *PJLIS* were research articles. The second highest number of 19 (17.12%) papers were essays followed by biographies with 9 (8.11%) paper. The maximum number of 78 (70.27%) papers, were in English language. Length of page of majority of the papers, 67 (60.35%) fell under the range of 1 to 10 pages. The highest number of 16 (14.41%) papers appeared in 1997 (Vol. 3 of *PJLIS*).

Accordingly, Shafiullah, Khaparde & Alhamdi (2015) carried out a bibliometric study on *The Electronic Library Journal* from 2010 to 2014. Five volumes containing 30 issues and a total number of 259 articles were analysed. The bibliographic details of each article such as type of article, number of article in each issue, number of citation in each issue, authorship patterns, publications date and the name of journals cited were collected, and analysed. The results revealed that the highest number of 57 articles was published in 2010. About 78% of the contributions were categorised as research studied followed by case study. The average length of articles published in the journal was 15.5pages. Single authors had the highest number of articles (43.883%) followed by joint authors with (26.895%).

This bibliometric study on *DCEJ* will reveal a relative influence of clustered articles published in the journal while reflecting on similarities in topics in the field of Digital Culture and Education. In carrying out bibliometric studies, an initial consideration is by obtaining representative samples of articles. Before considering, it is important to ensure that no bibliometric analysis has been performed earlier and that only recent articles require investigation.

AIM / OBJECTIVES OF THE STUDY

The aim of this study is to find out the total number of publications in DCEJ using selected bibliometric measures in order to detect trends in DCEJ over a 10 year period from 2009 to 2018. In the course of research, the study will assess the researches available to Digital Culture and Education.

The study is designed to meet the following objectives:

- To study the Year-wise productivity of articles published in DCEJ.
- To analyze the authorship pattern of articles published in DCEJ
- To determine the core authors in DCEJ
- To determine the degree of author collaboration In DCEJ.
- To determine the Institution and country affiliation of authors in DCEJ.

DATA AND METHODOLOGY

The data for the study was retrieved online from volumes of DCEJ from 2009 to 2018 which contained 10 volumes with a total number of 108 research articles published within the ten (10) years period of study. The bibliographic details were collected for each article such as title of the articles, number of authors, institutional affiliations and addresses and page number were recorded and the following complete count methods were followed to derive the results:

1. Year-wise productivity = Total Count of individual articles and pages published in a volume per year in DCEJ.
2. Authorship pattern = Total count of articles with single, two, three, four and five and above authors in a volume per year in DCEJ.
3. Productivity of Core Authors = Total counts of names of authors with highest number of articles within the 10 year period of study in DCEJ.
4. Degree of collaboration = the ratio of the total count of collaborative authors (two, three, four and five and above authors) research papers in a volume per year to the total counts of number of research papers in a volume per year in during the period of study in DCEJ. Furthermore, the degree of collaboration (DC) of the contributors is obtained by applying the (Subramanyam, 1983) formula

$$DC = \frac{NM}{NM + NS}$$

Where: DC= 'Degree of collaboration'; NM = 'number of multiple authored papers'; and NS = 'Single authored papers'.

- 5 Country and institution of affiliation = Total count of country and institution affiliation of authors that have published in DCEJ during the period of study. The data was analyzed to meet the objectives as afore mentioned above.

The journal is freely downloadable and MS Excel® was used to carry out the analysis which aided the counting.

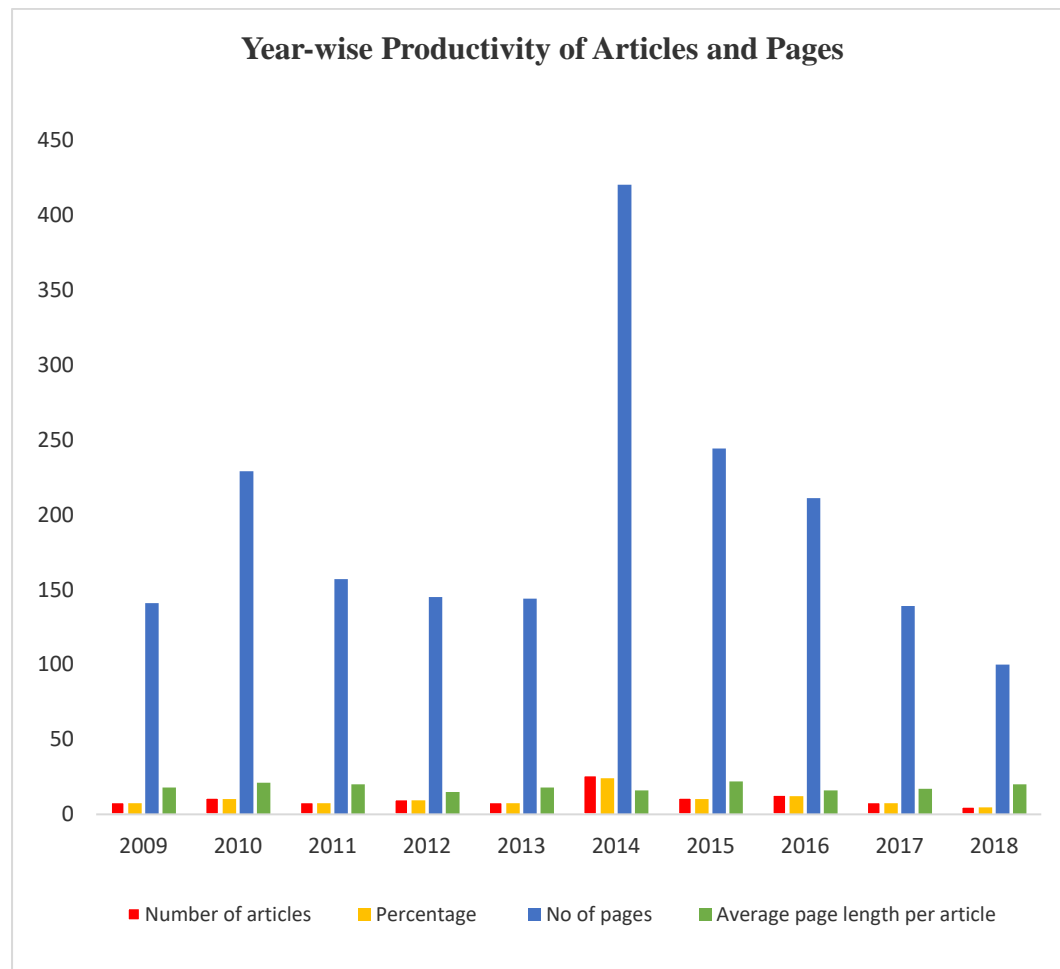
Results

After going through all the data and examining it, the author, has presented the results under different headings. The complete results of the analysis of DCEJ during the period of study from 2009 to 2018 are represented below:

Year-wise Productivity of Articles and Pages Published in DCEJ

Fig.1 shows the year-wise distribution of articles and number of pages per volume of DCEJ. The years 2009 to 2018 was used to represent volume 1 to 10. 108 articles were published within the period of study with a total number of 1,930 pages. The year 2014 had the highest number of articles and pages with 26 (24.07%) articles and a total number of 420 pages, followed by 2016 with 13 (12.04%) article and a total number of 211 pages. The years 2010 and 2015 both have 11 (10.19%) with a total number of 219 and 232 pages respectively. The year 2018 as compared with other years, had the least number of 5 articles with a total number of 100 pages. However, the highest average page length per article was in 2017 with an average of 22 pages followed by the years 2011 and 2018 both having an average page length of 20 pages. The year 2012 had the least number of average page length per article of 15. Within the study period, the page range of the articles published was between 15 to 22 pages.

Figure 1: Year-wise Productivity of Articles and Pages



Authorship Pattern

The authorship pattern of articles published in DCEJ over the 10 year period is revealed in Figures 2, while figure 3 shows the percentage authorship pattern. 2009 to 2018 was used to represent volume 1 to 10. The highest number of 60 (55.56%) articles were from single authors while the remaining number of 48 (44.44%) articles were collaborative in nature. The collaborative multiple authorship patterns are further analyzed to shed more light on the pattern of collaboration. Articles with two and three authors both had 16 (14.81%) followed by articles with four authors and above five authors' also both had 8 (7.41%) articles which were the minimum number. Likewise, studies on bibliometric analysis of Journal of Higher Education Management by (Antia-Obong; Casselden and Pickard, 2019) had similar results.

Figure 2: Authorship Pattern

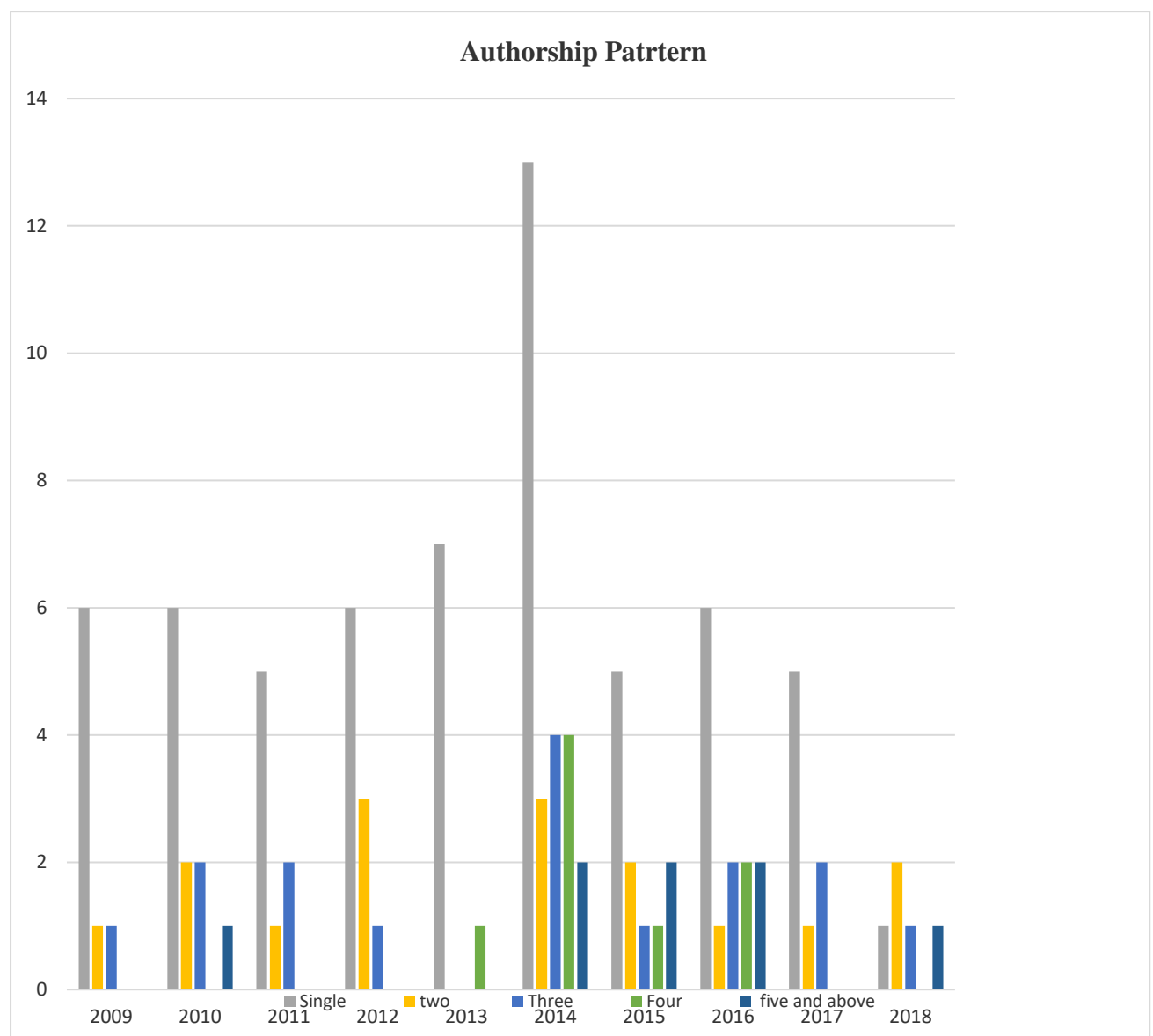
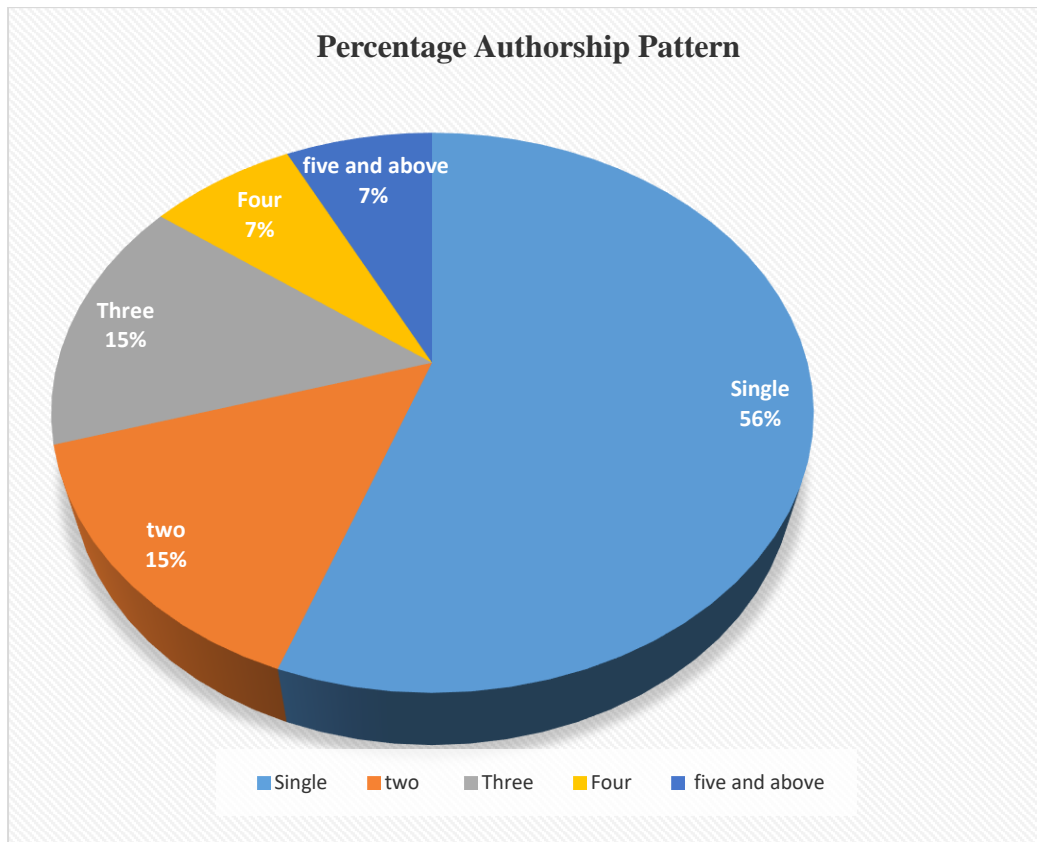


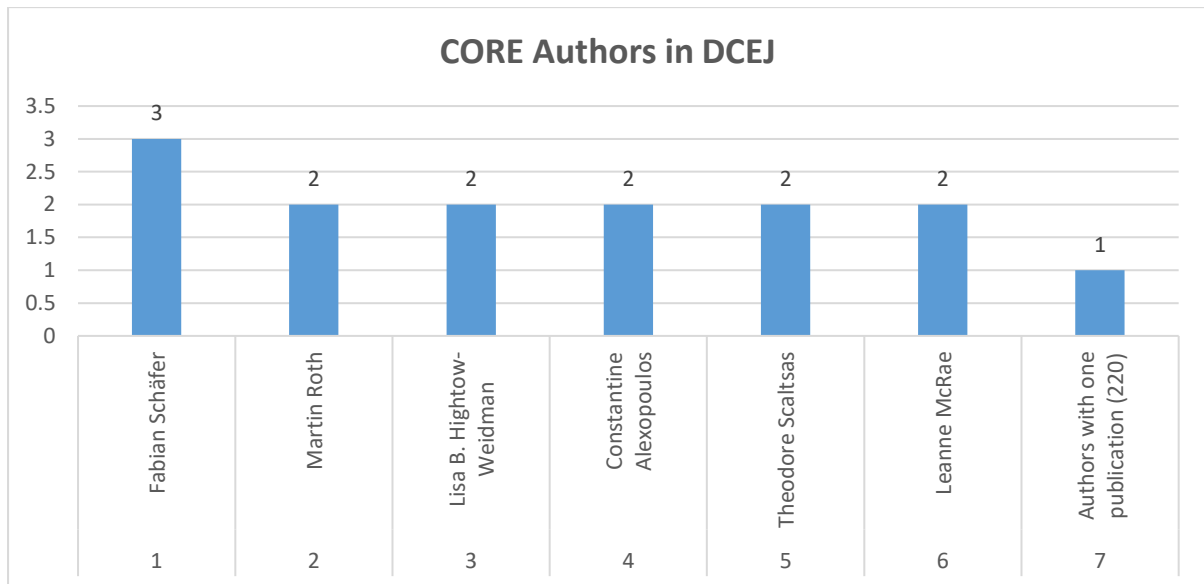
Figure 3: Percentage Authorship Pattern



Productivity of Core Authors

Fig. 4 shows that out of the 226 authors that published during the period of study in DCEJ, the authors with the most number of publications was Fabian Schäfer with 3 publications of which he was single author in one and co-author in the other two. Fabian Schafer studied Japanese Studies, Philosophy, and Journalism works at University of Leipzig and is presently a Professor at University of Erlangen-Nuremberg. Followed by Martin Roth, Lisa B. Hightow-Weidman, Constantine Alexopoulosb, Theodore Scaltsas and Leanne McRae with a total of two (2) publications each and all four authors were co-authors. Martin Roth works with Ritsumeikan University as an Associate Professor in Graduate School of Core Ethics and Frontier Sciences. Lisa B. Hightow-Weidman is a professor of Medicine and of health behaviour at UNC- Chapel Hill. She is in the department of infectious diseases, and a director at UNC Behavior and Technology Lab. She is also a Principal Investigator, iTech. Constantine Alexopoulosb is a researcher from the school of Philosophy, Psychology and Language Sciences. Theodore Scaltsas is a Professor emeritus of Ancient Philosophy. Leanne McRae is a Research Officer for the Department of Internet Studies and she is affiliated with Curtin University. These authors are from different research fields and this explains the multidisciplinary nature of the DCEJ. This may be an indication why majority of the authors have one (1) publication since the journal is not fixed to one discipline.

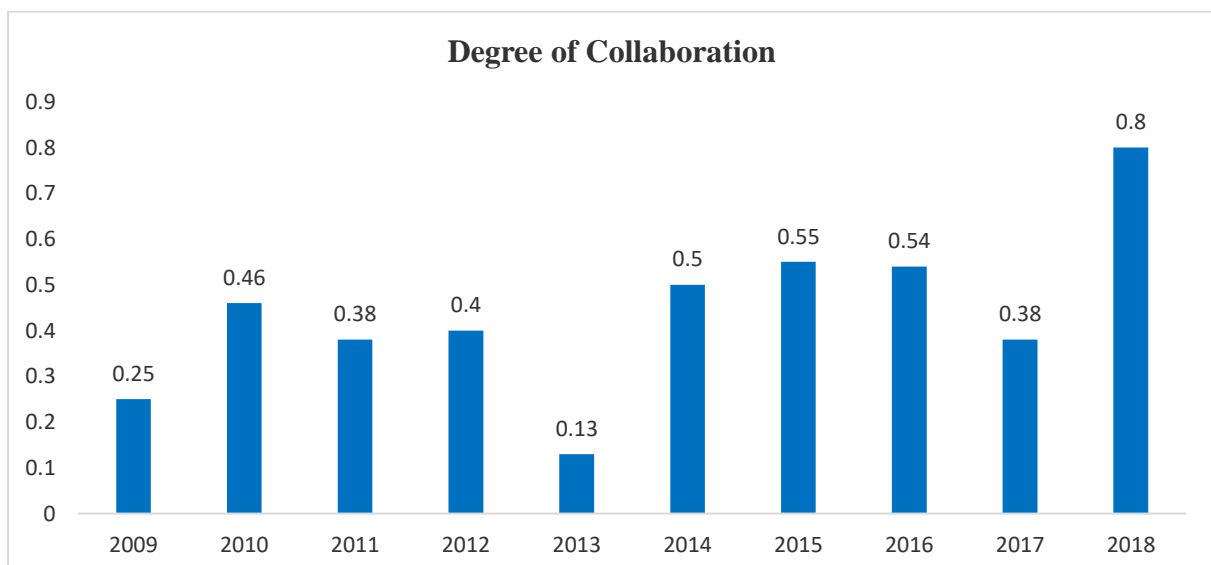
Figure 4: Core Authors in DCEJ



Degree of Collaboration in DCEJ

From the authorships pattern analysis as earlier explained above, the percentage of single authored papers was more than that of multi-authored papers. To determine the extent of collaborative research, the (Subramanyam's 1983) formula is applied as aforementioned in the methods. Fig. 5 shows that the degree of collaboration is highest at 0.8 in the year 2018 and lowest in at 0.13 in the year 2013. However, there are some fluctuations in degree of collaboration in the years with a mean value of 0.44 as also observed by (Khaparde & Pawar, 2013) (Kumar & Verma, 2021). But having degree of collaboration of 0.56 in DCEJ during the period of study may indicate that collaborative research is common within the Digital Culture and Education field.

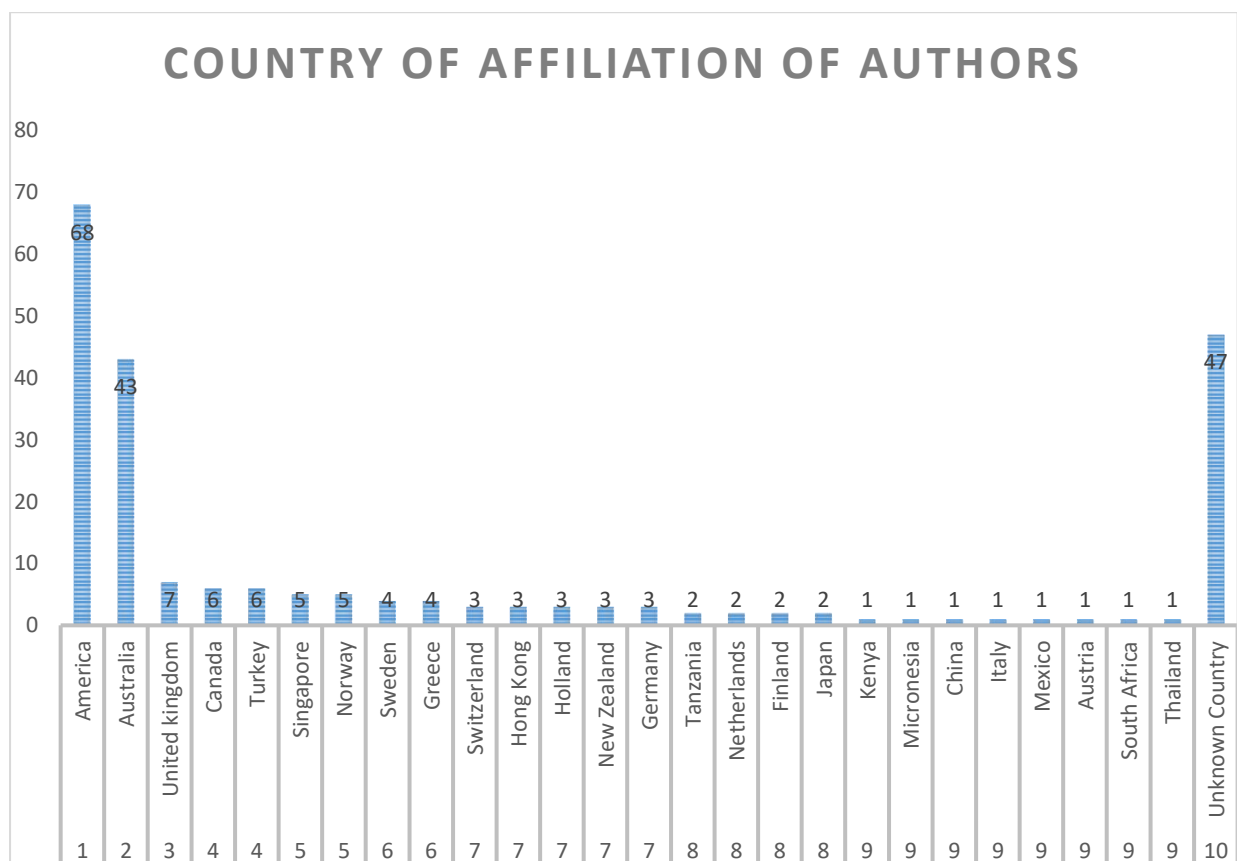
Figure 5: Degree of collaboration



COUNTRY OF AFFILIATION OF AUTHORS IN DCEJ

Figure 6 reveals that articles emerged from 26 countries while “authors with unknown country of affiliation are grouped under “unknown country”. The writer’s decision was based on the geographical distribution of the paper and affiliation of all the authors. Authorships from United States of America were the highest number with a total of 68 (30.09%) authors, followed by Australia with 43 (19.03) authors and United Kingdom with 7 (3.10%) authors. Authorships with unknown country of affiliation were 47 (20.80%) authors. Figure 6 shows that DCEJ is visible to a wide audience which may be responsible for increase in number of articles published. This may be because the journal is indexed in known databases thus, making the journal international as proposed by (Hjorland, 2011)

Figure 6: Country of Affiliation of Authors

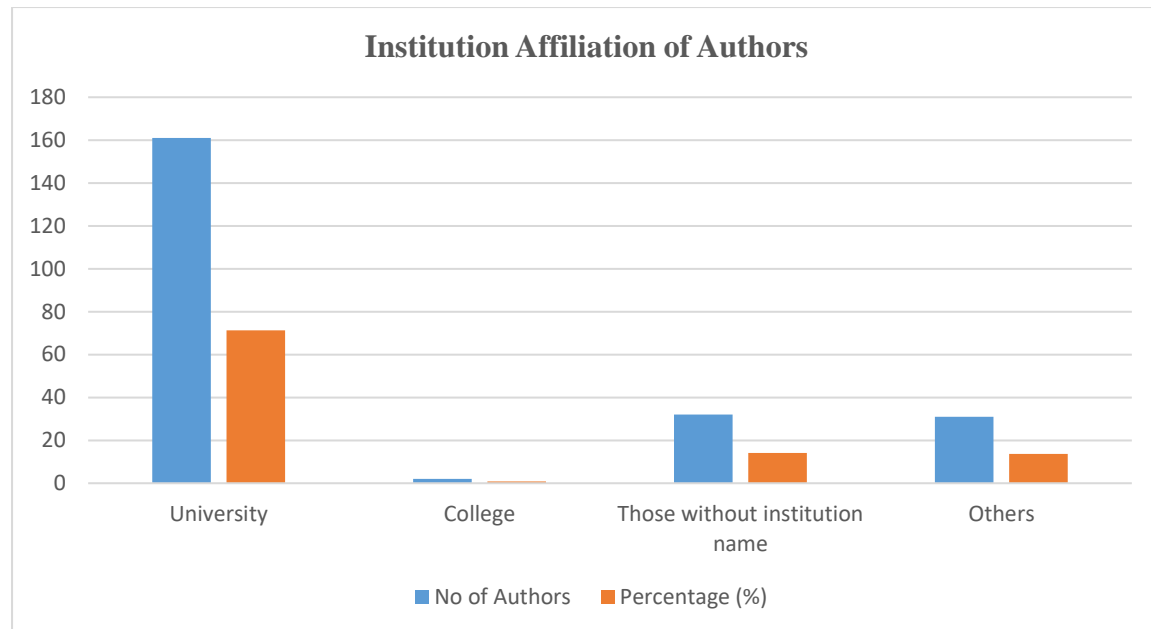


Institution of Affiliation of Authors

Authors who published in DCEJ were linked to Universities, Colleges, institutions and private bodies. Table 6 and Figure 7 reveals that from the 226 authors that published in DCEJ, majority of the authors were affiliated to Universities with a total of 161 (71.24%) authors followed by 2 (0.88%) authors from Colleges. Those with no institution name were 32 (14.16%) authors. The least number of 31(13.72%) authors were from institutions and private organizations which were referred to as others. This reflects that articles within the field are concentrated by authors

affiliated to Universities. This may be because of the research nature of University scholar in the field as proposed by (Brika et al, 2021).

Figure 7: Institution of Affiliation of Authors in DCEJ



Conclusion and Recommendations

The use of bibliometrics in any discipline is a key instrument in studying trends of articles published in journals. In this single journal study of DCEJ, five (5) objectives were analysed to reveal the characteristics of the journal which will be of great use to librarians to aid in their collection development processes in the field of Digital Culture and Education librarianship. A total of 108 research articles were published in DCEJ during the study period containing ten volumes. The findings revealed the following:

1. The year 2014 (Vol. 6) had the highest number of 26 (24.07%) articles and within the study period, the page range of articles published was between 15 to 22 pages.
2. The most prolific author was Fabian Schäfer with three (3) articles, followed by Martin Roth, Lisa B. Hightow-Weidman, Constantine Alexopoulos, Theodore Scaltsas and Leanne McRae with two (2) articles each.
3. Single authorship where the most productive with a total of 60 (55.56%) publications.
4. The degree of collaboration was highest at 0.8 in Volume 10 (2018) and lowest in at 0.13 in Volume 5 (2013). Although there were some fluctuations in degree of collaboration in the volumes, the degree of collaboration of 0.56 across the ten (10) years in DCEJ indicates that collaborative research is common within the Digital Culture and Education field.
5. Authors emerged from 26 countries although some countries of affiliation of authors were not given. Authors from United States of America were the highest number with

68 (30.09%) authors, followed by Australia with 43 authors (19.03%) authors and United Kingdom with 7 (3.10%) Authors. Authors with unknown country of Affiliation were 47 (20.80%) authors.

6. Authorships affiliated to Universities were the highest number with 161 (71.24%) authors

The findings suggests that although collaborative research is common in DCEJ, there is need to encourage multidisciplinary collaborations. This is because of the high number of single authorship patterns identified in the study and the complex nature of Digital Culture and Education will require a mix of ideas with multidisciplinary collaborations. In addition from the findings, the collaborative patterns suggests that the journal still needs to boost awareness by proper indexing in reputable databases, which will encourage visibility of the journal and build interest in the journal thereby encouraging multidisciplinary collaborations. Also, based on the findings, some important author's information were not given. Author's information such as sex and present affiliations in future researches should be properly given and this should be included in authors' guidelines for submission.

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