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Winter 7-27-2022

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Khumalo, Amahle; Rajkoomar, Mogiveny; and Rajagopaul, Athena, "Skills of Subject Librarians for Digital Literacy Instruction in Academic Libraries" (2022). *Library Philosophy and Practice (e-journal)*. 7329. <https://digitalcommons.unl.edu/libphilprac/7329>

# Skills of Subject Librarians for Digital Literacy Instruction in Academic Libraries

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## **Abstract**

The evolution of internet and the widespread adoption of technology in academic libraries brings about new roles and responsibilities for subject librarians. Digital literacy instruction remains the indispensable service in academic libraries in the 21<sup>st</sup> century. This emphasises the necessity for subject librarians to possess relevant digital literacy skills. This article reports on the quantitative findings emanating from the explanatory sequential mixed methods study (2022) that investigated digital literacy instruction in academic libraries in the KwaZulu-Natal (KZN) region in South Africa. The quantitative findings were used to achieve the study's objective that sought to find out if subject librarians possess digital literacy skills necessary for digital literacy instruction in academic libraries in KwaZulu-Natal region, South Africa. The study adopted a census method and collected data from a total of 58 subject librarians from traditional universities and universities of technology in KZN region through an online survey. The findings revealed that subject librarians in academic libraries (KwaZulu-Natal region, South Africa) are competent in various digital literacy namely e-mailing skills, Word processing, PowerPoint, information

retrieval and blended learning. Further, the study revealed a significant lack of digital literacy skills related to library management system, knowledge of statistical software packages, *Microsoft Publisher*, *Microsoft Access*, Website design and copyright licensing.

**Keywords:** Digital literacy, Subject librarians, digital skills, academic libraries, ICTs

## **Introduction**

The modern society is witnessing a rapid growth of digital resources due to the continuous advancement of Information and Communications Technologies (ICTs). As a result of the rapid development of technology and the changes to digital information landscape, digital literacy is becoming an inevitable skill. Increasingly, digital literacy skill is seen as a vital element for survival in the digital information age. Thus, in the higher education sector, the use of digital resources is gaining momentum which ultimately demands for students to possess necessary digital literacy skills. The accessibility and the use of digital resources is dependent upon the acquisition of relevant digital literacy skills. In essence, this implies that digital literacy skills are a key requirement for students to function more effectively in a digital information society (Odede and Jiyane, 2019: 2). The shift of the information landscape from traditional to digital information resources calls for institutions of higher learning to introduce information literacy into their curriculum to equip students with the necessary skills to find, retrieve and evaluate information in the digital era (Odede and Jiyane, 2019: 3). Essentially, academic libraries are viewed as important organs of higher education institutions because of the key role that they play in educational system at large. Academic libraries are instrumental in students' digital literacy skills development and presented as obvious and well-equipped institutions for imparting digital literacy skills to the wider university community.

## **Research problem**

Digital literacy enables the integration of society's intellectual capital into sustainable development. The importance of digital literacy among students is recognized globally. Digital literacy enables individuals to access current information and provides various ways to use information to make appropriate decisions.

Although digital literacy is largely viewed as an essential skill and very critical for students in the digital age, it has been widely acknowledged that many first-year students coming to university still grapple with basic information literacy skills (Kajee and Balfour, 2011: 188). Most first-year students are not equipped with adequate literacy skills required to complete coursework as required by tertiary education. It has become a norm for those university students who are not well equipped with digital literacy to pay off other students to do their assignments (Kajee and Balfour, 2011: 195). The students' use of technology for educational purposes other than social networking is significantly low due to the lack of digital literacy skills (Eurostat, 2015). Therefore, this suggests the need for subject librarians in academic libraries to place the highest degree of importance on the acquisition of digital literacy skills. Subject librarians in academic libraries have always had an important role in the dissemination of information, application of knowledge and digital literacy skills' development through effective digital literacy programs. Given the principle that digital literacy is a survival skill among university students, this study examined digital literacy skills of subject librarians necessary for the successful implementation of digital literacy instruction in academic librarians in the KwaZulu-Natal region of South Africa.

### **Objective of the study**

The quantitative data was used address the following objective of the study:

- To find out if Subject Librarians possess digital literacy skills necessary for digital literacy instruction in academic libraries in KwaZulu-Natal.

### **Research Question**

- Do Subject Librarians possess digital literacy skills necessary for digital literacy instruction in academic libraries in KwaZulu-Natal?

## **Literature review**

The following discussion of the literature review is guided by the objective of the study which sought to establish whether subject librarians possess digital literacy skills necessary for digital literacy instruction in academic libraries in KwaZulu-Natal (South African).

### *Skills of subject librarians for digital literacy instruction.*

The current information age places the highest degree of importance on the acquisition of digital literacy skills. As such, this indicates that digital literacy instruction is a critical service in academic libraries. Normally, subject librarians are seen as perfectly suited to carry out digital literacy instruction in academic libraries. However, digital literacy education requires strong pedagogical and digital literacy skills. In view of this, Hamad, Al-Fadel and Fakhouri (2021) highlighted the sense of urgency to evaluate digital literacy skills of subject librarians in academic libraries. On the other hand, Emiri (2015: 153) argues that it is very important for subject librarians to embrace the technologically driven era, which demands digital literacy skills and competencies.

In the present digital age, there is a growing need for digital literacy skills among Subject Librarians. The study by Hamad, Al-Fadel and Fakhouri (2021) established high levels of digital literacy skills among subject librarians in Jordan. In Africa, the similar findings were established by Baro, Obaro and Aduba (2019) who also revealed highest levels of digital literacy skills among subject librarians in academic libraries in Africa. Thus, in Nigeria, Tiemo (2019: 91) highlighted the need for more training for subject librarians to acquire digital literacy skills. The argument by Adeleke (2016: 1) implied that subject libraries require relevant digital literacy skills to successfully carry out digital literacy instruction. Although many studies evaluating digital literacy skills of subject libraries revealed high levels of digital literacy skills, there are other studies that found contradicting results, such being a study by Ayoku and Okafor (2015: 521). The authors highlighted a lack of digital literacy skills among subject librarians. A similar case was established by Khan and Bhatti (2017: 590) who also revealed very low digital literacy skills among subject librarians. As a result of low levels of digital literacy skills among subject librarians, the provision of relevant training workshops was emphasized. Ayoku and Okafor (2015: 521) stressed the importance for academic library management to provide digital literacy trainings for subject librarians. Khan and Bhatti (2017: 590) too emphasized the need for subject librarians to

attend digital literacy trainings and workshops, highlighting that the library management should organize training workshops on a regular basis. Nevertheless, Hamad, Al-Fadel and Fakhouri (2021) highlighted financial constraints as one of the major challenges that hinders the acquisition of digital literacy skills by subject librarians. As such, it was necessary for the current study to investigate whether subject librarians possess digital literacy skills relevant to digital literacy instruction in academic librarians.

## **Methods**

This paper reports the quantitative findings of the explanatory sequential mixed methods study which examined the extent to which subject librarians in academic libraries use information and communication technologies in digital literacy instruction.

The quantitative data was useful to achieve the objectives of the study. The quantitative findings were used to answer the following research question:

Do subject librarians possess digital literacy skills necessary for digital literacy instruction in academic libraries in KwaZulu-Natal, South Africa?

The target population of this study were subject librarians in academic libraries in traditional universities and universities of technology in the KwaZulu-Natal region of South Africa. There was a total of 58 subject librarians in traditional universities and universities of technology in KwaZulu-Natal thus a census method was adopted to collect data from all 58 participants through the online survey. However, prior to the actual data collection, the pretesting of the survey was made from librarians who did not form part of the sample.

## **Analysis and Major results**

Questions for the quantitative data were asked from the total 58 subject librarians and administered through the use of an electronic questionnaire.

After two months of quantitative data collection, 49 responses were received and considered for data analysis using *Statistical Package for the Social Sciences (SPSS)* version 27. The following statistical tests were utilized to analyse data:

- Descriptive statistics including means and standard deviations, where applicable. Frequencies are represented in tables or graphs.

- Chi-square goodness-of-fit-test: a univariate test, used on a categorical variable to test whether any of the response options are selected significantly more/less often than the others.
- Binomial test: tests whether a significant proportion of respondents select one of a possible two responses.
- One sample t-test: tests whether a mean score is significantly different from a scalar value.

Where possible, the findings are presented in graphs and tables.

### *Academic Library working experience*

In the online survey distributed to participants, descriptive data about participants' years of experience employed in the academic library and years of experience working as a subject librarian was gathered. In terms of academic library experience, 30 (61) participants had more than 15 years of experience in academic library, Twelve (12) of the 49 respondents (25%) had 10-15 years of experience in an academic library, six (12%) respondents had 5- <10 years of experience in an academic library whereas one (1) respondent is working in an academic library for the period of 1- <5 years as illustrated in the Figure 1 below:

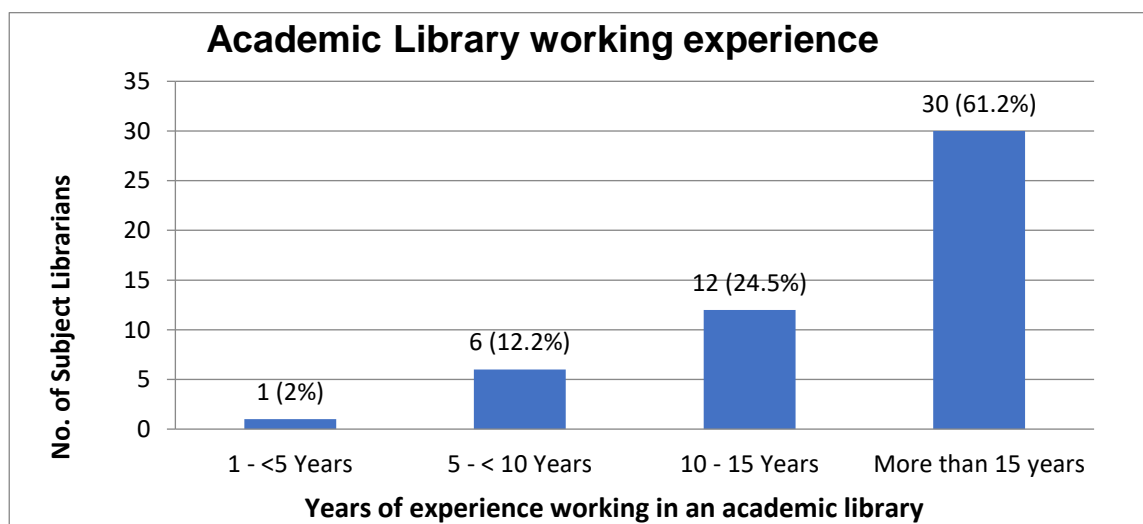


Figure 1: Years of experience working in an academic library

While the above-mentioned data demonstrated the possibility that majority of participants have extensive knowledge and skills required in the academic library setting; there was a difference between the participants' number of years working in the academic library space

and the number of years working as a subject librarian. In essence, the total number of years working in an academic library did not automatically reflect the same number of years working as a subject librarian. This was evident where out of 30 (61,2%) participants who worked in an academic library for over 15 years, only 19 (39%) participants reported that they have held the subject librarian position for more than 15 years. Furthermore, 18 (37%) participants reported to have held the position of a subject librarian for the period of 10-15 years. Ten (10) participants (20,4%) have been in the position of a subject librarian for the period of 5- <10 years, whereas 2 (4,1%) participants have worked as a subject librarian for 1- <5 years.

Certainly, surveying participants who have many years of experience in the field can be beneficial to yield rich results as they will provide responses based on their extensive experience and knowledge. Nonetheless, responses obtained from all participants for the purpose of this study was useful regardless of their number of years working in an academic library or holding a position of subject librarians.

#### *Digital Literacy instructional duties*

Digital literacy instruction is among the most important service that the academic library has to offer. In recent years, as further illustrated in the reviewed literature, digital literacy instruction falls within the responsibilities of subject librarians in academic libraries.

Hallam; Thomas and Beach (2018: 51) view digital literacy instruction as a critical foundation of academic libraries and higher education institutions as such. Respondents in this study acknowledge the importance of digital literacy in the digital era. The study revealed that 46 (94%) respondents agreed that digital literacy is important.

While subject librarians undertake various digital literacy instructional duties, Table 1 below reveals that 37 (75,5%) participants undertake advanced digital literacy instruction training for students at least once a month.



Table 1: Digital literacy duties

Digital literacy duties	Responses as Frequency (%)				
	Never	Less than once a month	At least once a month	At least once a week	At least once a day
Digital literacy instruction for students	1 (2.0)	4 (8.2)	<b>30</b> <b>(61.2)</b>	11 (22.4)	3 (6.1)
Subject –specific digital literacy instruction for students	0	4 (8.2%)	<b>31</b> <b>(63.3%)</b>	11 (22.4)	3 (6.1%)
Research support/consultations for students	0	5 (10.2%)	<b>19</b> <b>(54.3%)</b>	<b>16</b> <b>(33%)</b>	9 (18.4%)
Literature searches for students	0	0	<b>27</b> <b>(55.1%)</b>	15 (30.6%)	7 (14.29%)
Individual digital literacy training (students)	0	3 (6.1%)	<b>30</b> <b>(61.2%)</b>	13 (26.5%)	3 (6.1%)
Classroom digital literacy training (students)	0	4 (8.2%)	<b>35</b> <b>(71.4%)</b>	10 (20.4%)	0
Advanced digital literacy training (students)	0	2 (4.1%)	<b>37</b> <b>(75.5%)</b>	8 (16.3%)	2 (4.1%)
Online digital literacy training (students)	0	2 (4.1%)	<b>33</b> <b>(67.3%)</b>	11 (22.4%)	3 (6.1%)
Digital literacy promotion (students)	1 (2.0%)	4 (8.2%)	<b>36</b> <b>(73.5%)</b>	5 (10.2%)	3 (6.1%)

The Table 1 above implies that subject librarians are actively involved in digital literacy instruction. A significant number of participants reported that they carry out various digital literacy instruction at least once a month. It is evident from the table that digital literacy instruction duties that are carried out the most by subject librarians are: Research support and consultation for students; literature searches for all students; individual digital literacy trainings; online digital literacy training and subject-specific digital literacy instruction for students.

The digital literacy activities as discussed above prove that there has been an ongoing online presence in academic libraries where digital literacy instruction is carried out in various online platforms. This suggests that there is an increased adoption of E-learning as a remote teaching and learning method. In support of this, the current study investigated the involvement of subject librarians in online learning. Of 49 respondents who participated

in this study, 37 (76%) of them were involved in E-learning. Such involvement in e-learning was related to remote teaching and learning whereby other digital literacy activities were carried out through various online platforms. When respondents were asked to detail their involvement in online learning, the following Learning Management Systems appeared significantly: *Microsoft Teams*; *Moodle*; Blackboard eLearning; and visual learning environment (VLE). Therefore, this denotes that the adoption of technology and online tools in teaching and learning. Adopting e-learning for digital literacy instruction can contribute immensely towards students' digital literacy skills and can make digital literacy sessions more interactive and effective as many students are classified as 'digital natives'.

### *Skills and competencies of Subject Librarians*

In the contemporary era where exists the rapid technological transformation, the need for the development of digital literacy skills cannot be overemphasized. This rapid development of technology emphasises the need for academic libraries embark on the mission to develop students' digital literacy skills through digital literacy education programs. Nevertheless, the main source of digital literacy education in academic libraries is a qualified subject librarian. In essence, this means that librarians responsible for literacy education should be qualified and well equipped with digital skills and pedagogical skills relevant for digital literacy education. The digital transformation prompted Hamad, Al-Fadel and Fakhouri (2021) to stress the need to assess digital literacy skills and competencies of subject librarians. Therefore, this current study (Khumalo 2022) investigated digital skills of subject librarians in the current digital age. The study listed various digital literacy skills and asked respondents to indicate whether they agree on their importance. Figure 2 reveals a significant agreement among participants that it is very critical for subject librarians to possess digital literacy skills. Digital literacy skills that deemed as most important for subject librarians by respondents in this study were blended and online learning skills, referencing/citing skills, E-mailing skills, pedagogical skills, office application suit, metadata analysis, knowledge of reference tools, and copyright and licencing skills.

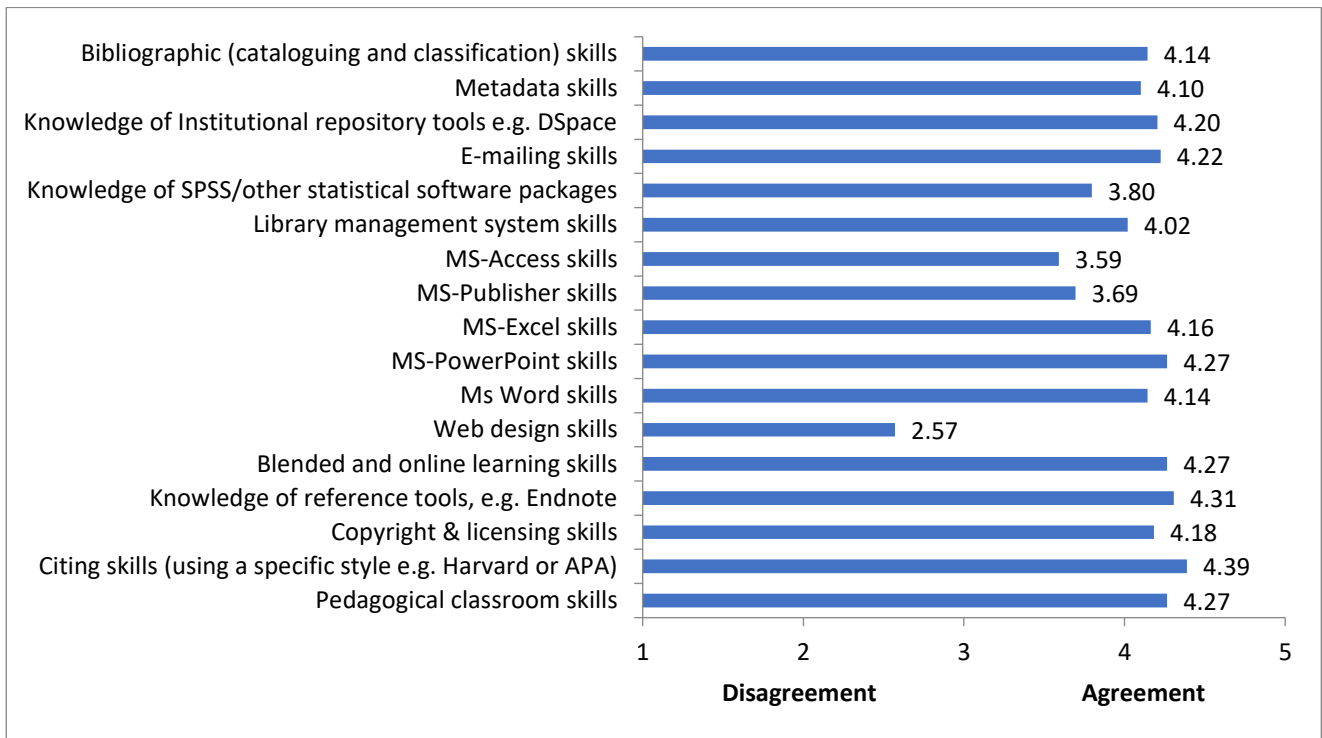


Figure 2: Digital literacy skills necessary for subject librarians

### *Digital skills competency levels*

The current technological age and the nature of work of subject librarians requires competency in various digital literacy skills. Therefore, respondents in this study were asked to rate their levels of competency in digital literacy skills. Figure 2 show an analysis of average competency scores as compared to central score of '3'- where the results greater than 3 means competency and results less than 3 means lack of competency. As revealed in Figure 3, all respondents rated their competency level to be very high in MS Word skills and e-mailing skills. The significant number of respondents rated themselves as competent in the following skills: *Microsoft PowerPoint*, citing skills, blended and online learning skills, knowledge of reference tools, *Microsoft Excel* skills, Knowledge of institutional repository and bibliographic skills. Figure 3 further reveals incompetency levels among respondents in the following digital literacy skills: Library management system, Knowledge of statistical software packages, *Microsoft Publisher*, *Microsoft Access*, and Website design.

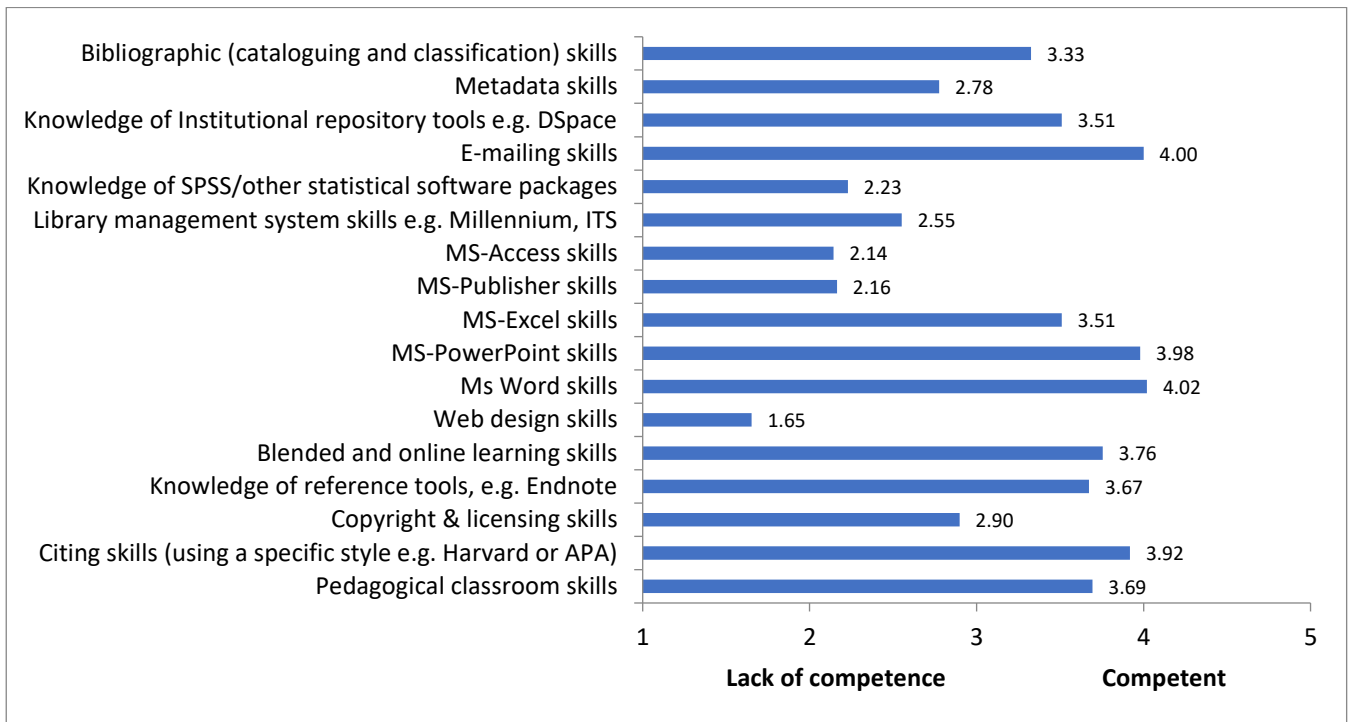


Figure 3: Subject librarians' competency levels in various digital literacy skills

### *Necessary digital literacy skills*

In addition to all digital literacy skills that are important for subject librarians to possess, all respondents to this study felt that it is also critical for subject librarians to be competent in the following additional skills: Problem solving, decision-making, management skills, marketing and advocacy, knowledge of copyright licensing, information retrieval and evaluation, communication and liaison skills, and critical thinking skills. Tinmaz, Fanea-Ivanovici and Baber (2022: 2) assert that critical thinking skills are an important human ability to make informed judgements about the information gathered, taking care of the legitimacy and breath of digital resources.

## **Discussion**

### *Digital literacy instructional activities*

The evolution of technology brings various developments in an academic library space such as the manner through which information is made available to users and the manner through which the day-to-day library duties are carried out. Traditionally, subject librarians are known as pioneers for reference services and user education. However, in the digital age, the perusal of literature suggests that there have been significant changes in the

traditional roles of subject librarians. Chanetsa and Ngulube (2016: 163) pointed to the advancement of technology and made an argument that the profession of subject librarianship has changed significantly over the years. These authors concluded that information literacy instruction among others is one of the notable responsibilities of subject librarians in the digital age.

The current study revealed that the current roles of subject librarians are inclusive of digital literacy activities, mainly as a result of widespread use of information and communication technologies in institutions of higher learning. The study found that subject librarians perform various digital literacy roles such as digital literacy instruction, literature search and research support. These findings confirm the findings of Chanetsa and Ngulube (2016) who made revelations that research support was one of the activities mainly performed by subject librarians.

### *Digital literacy skills*

With academic libraries embracing technological developments, the effectiveness of subject librarians in various digital activities relies on the acquisition of relevant digital literacy skills. This acquisition of digital skills is further emphasized by Okeji, Tralagba and Obi (2020: 312) whom pointed out that the new set of skills are required for subject librarians to survive in the digital era. Okeji, Tralagba and Obi (2020: 312) highlighted the need for librarians to be highly competent in digital literacy skills that will enable them to develop, manage and evaluate digital content thereby allowing them to increase their relevance and effectiveness in the 21<sup>st</sup> century.

Thus, in this current study, the importance of digital literacy skills among subject librarians in the digital era was highly emphasized. The study asserted that subject librarian's ability to adopt blended learning to carry out digital literacy activities is very important. It was identified that the most important digital literacy skills among subject librarians are that of sending emails, pedagogical skills, copyright licensing, knowledge of referencing tools, metadata analysis, and information retrieval skills. While respondents to this study prided themselves on their level of competence in various digital literacy skills, the study identified areas of improvement. The study found that respondents were competent in *Microsoft word*, *Microsoft PowerPoint*, e-mailing skills, citing skills and knowledge of referencing tools. These findings support that of Emiri (2017) who found e-mailing skills to be the most

prominent digital literacy skills among subject librarians. Similar findings were noted from the study by Mulat and Natarajan (2020) that discussed digital literacy skills of librarians of Jimma University in Ethiopia. Their study revealed that e-mailing skills were the major digital literacy skills among librarians. Mulat and Natarajan (2020: 9) noted that 92.23% of respondents in their study were knowledgeable and competent in MS-Office and the use of internet. In the same vein, librarians in the study of Okeji, Tralagba and Obi (2020) rated their e-mailing skills among others as very high.

Nevertheless, this current study revealed a significant level of incompetency among respondents in the library management system, Knowledge of statistical software packages, and website design. In 2015, Ayoku and Okafor (2015) revealed a similar case where librarians were lacking knowledge of and skills related to database management, and they lacked web design skills. These findings were further confirmed by Okeji, Tralagba and Obi (2020) who also found a lack of library website design skills and librarians were not able to apply modern technologies into library services. Overall, respondents to this current study rated themselves as competent in various digital literacy skills, however, a significant lack of many other related digital literacy skills was identified as discussed above.

## **Conclusion**

Subject Librarians remain the important elements of academic libraries notwithstanding the continuous changes in the career of subject librarianship, as a result of evolution of technology. The current digital age suggests the need for a continuous development of subject librarians' digital literacy skills to enable them to remain relevant in the era of technology. Based on the findings, this study concludes that subject librarians in academic libraries in KwaZulu-Natal region of South Africa are competent in various digital literacy skills such as e-mailing skills, Word processor, PowerPoint, information retrieval and blended learning. Furthermore, the study concludes that there is a significant lack of digital literacy skills related to library management system, knowledge of statistical software packages, MS Publisher, MS Access, website design and copyright licensing. It also emerged from the study that subject librarians are involved in e-learning through the utilization of various Learning Management Systems such as MS Teams, Moodle, and Blackboard. As such, there is significant online presence among subject librarians in academic libraries in the KZN region (South Africa).

This study supports the argument by Okeji, Tralagba and Obi (2020: 326) that there is an urgent need for the new set of digital skills that will prepare subject librarians “for living and working in a complex digital information environment.” Hence, this study recommends that subject librarians be proactive to develop their digital skills through attending digital literacy training workshops and collaborating with various relevant stakeholders for digital literacy instruction.

## **Funding**

This research was funded by South Africa’s National Research Foundation (NRF).

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