

Teachers' digital competency in using digital lesson content for teaching and learning in secondary schools in Zanzibar

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Abstract. Teachers' digital competence has been emphasised for improving quality education at all levels worldwide. In Zanzibar, the educational policy adopted digital lesson content (DLC) for teaching and learning in ordinary secondary schools. The study investigated the teachers' digital competence and factors that affect their use of DLCs for teaching and learning. One fifty-four (154) secondary school teachers from Wete district were given 5-point Likert Scale questionnaires. Inferential and descriptive statistics were used to analyse the collected data with the help of SPSS version 25. The study found that the teachers' digital competence is high for using it in teaching and learning. Also, it was observed that the digital competence of the teachers was significantly associated with their attitude and in-service training. The paper concludes that using DLCs in third-world countries takes work. However, it is possible if the government and private sectors, such as NGOs, invest seriously in secondary school levels. Also, it recommends that responsible leaders distribute digital devices and plan regular in-service training for teachers on integrating DLCs at secondary schools to cope with the global vision of 2025. Last, the paper recommends further study considering a large sample size of secondary schools in Zanzibar through random sampling techniques.

Keywords: digital lesson contents · digital competence

1 Introduction

The concept of teachers' digital competence in using digital lesson content has been emphasised worldwide. In this context, the digital competence of the teacher refers to the situation where the teacher can integrate DLCs while teaching and learning to improve students' learning abilities. This is because pedagogical digital competence is essential for effective teaching and learning processes [23, 32]. A study by Cattaneo et al. [6] in Switzerland observed that digital competence

is essential for integrating teaching and learning. It is noted that teachers' digital competence does not only involve knowledge and skills, but it involves the ability to meet complex demands such as instructional materials, knowledge of the subject matter, communication skills, teaching styles, assessing students and ability to integrate into the classroom situation [9]. Due to the improvement of science and technology, education policy and curriculum may adapt to changes to compete in the global economy. Teachers' digital competence is compulsory because it is among the primary agents of integrating new curricula. In order to improve the quality of education, our education system needs to transform the way of teaching from non-digital to digital.

1.1 An overview on using digital lesson contents for teaching and learning

Teachers' digital competence in using DLCs as curriculum materials is an inevitable issue for improving better and more effective teaching and learning [14, 21]. In various countries such as Spain, Switzerland and Nigeria, the digital competence of the teachers has been taken as a significant variable for supporting students through a variety of teaching styles when using DLCs to motivate students in the teaching and learning process [6, 12, 18]. This implies that effective teaching and learning through DLCs depends on the teachers' digital competence in integrating it into education. Therefore, there is a need to investigate their level of competence in order to support them and motivate students in the teaching and learning process.

Despite its significance, the digital competence of the teacher faces many challenges in various countries for example, in Australia, Europe, Indonesia South Africa and Ethiopia, the central issue of teachers' digital competence is hindered by a shortage of training, teachers' readiness, as well as poor teaching strategies and techniques [7, 9, 22, 31]. This indicates that teachers' digital competence is a serious challenge, and it needs more consideration. Therefore, this paper intends to contribute to knowing the level of digital competence and factors that affect secondary school teachers when applying technologies in education in our country.

In Tanzania's mainland, there are various factors that affect secondary school teachers' integration of digital technology into their teaching and learning process. For example, Ndibalema [20] found that teachers need to gain a better pedagogical competence towards using ICT for teaching and learning due to a lack of readiness, poor training and poor professional support from school management. Likewise, Gilbert et al. [11] found that secondary school teachers had low teaching techniques caused by a lack of training in using digital lessons for the teaching and learning process. This shows that the teachers' digital competence is a challenge that needs more consideration for supporting teachers in the teaching and learning process to attain the expected learning needs and quality education. Therefore, this paper was interested in investigating teachers' digital competence in using DLCs for teaching and learning in ordinary secondary schools in Zanzibar.

Various initiatives have been done to support the teachers' digital competence in using DLCs in the teaching and learning process to improve the quality of education outside Tanzania. For example, the European Commission recognised the importance of life-long learning and identified common teachers' level of competence framework known as DigCompEdu [28]. In Spain, educational policies have made evident efforts to introduce ICT in schools to provide internet access to every student and every school to adapt to the role of technologies in the 21st century [19].

In Tanzania, the ICT policy 2007 emphasises the need for DLCs for teaching and learning to improve education delivery and outcomes to reach Tanzania Vision 2025 [29]. This policy addresses the strategic use of ICT in teaching, learning, administration, and management. Also, the Tanzanian government introduced policies like the National Research and Development Policy in 2010 and Big Results Now in 2014 in favour of ICT. However, such initiatives have faced different challenges, particularly in teachers' digital competence to integrate it in the classroom situation due to limited skills [15]. This implies that the teachers' digital competence in using DLCs is significant and essential but a complex issue for teachers to integrate into the classroom. Lack of professional development through in-service training and a clear framework is a major factor affecting teachers' competence to integrate it effectively.

In Zanzibar, the education policy emphasises using digital technologies to improve the quality of education, and the government distributed smart TVs, projects, and computers in Unguja and Pemba. Also, it has trained teachers for six months, two days per week, about using technology for teaching and learning in Mathematics, Science and English subjects [1, 24]. This revealed a need to investigate the teachers' digital competence in using DLCs for teaching and learning. Therefore, this study was interested in whether secondary school teachers can integrate DLCs for teaching in ordinary secondary schools in Zanzibar.

1.2 Research questions

1. What is the teachers' digital competence in using DLCs for teaching ordinary secondary schools?
2. What are the effects of teachers' in-service training, age, education qualification, attitude and working experience on the teachers' digital competence when using DLCs for teaching?

2 Theoretical framework

This study was guided by the European Digital Competence Framework for Educators (DigCompEdu), which identifies 22 specific digital competencies organised in six areas (figure 1).

Area 1: Professional engagement, area 2: digital resources, area 3: teaching and learning, area 4: assessment, area 5: empowered learning and area 6: facilitating learners' competence [23]. The core of the DigCompEdu framework

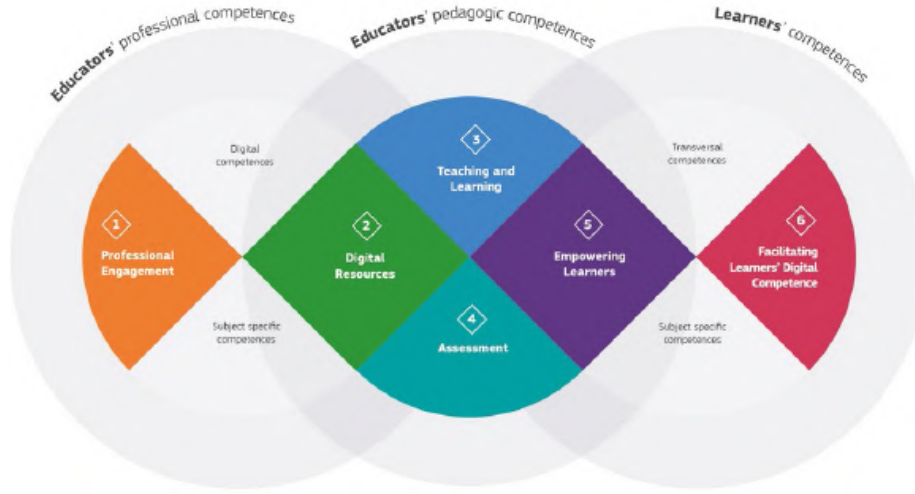


Fig. 1. Digital competence of the teachers on using DLCs (adapted from [28]).

is defined by area 2-5. Together with these areas, it explains educators' digital pedagogical competence. In digital competence, educators/teachers must foster efficient, inclusive and innovative teaching and learning strategies. Areas 1, 2 and 3 are anchored in the stage characteristics of any teaching process, whether supported by technologies or not. The competencies listed in these areas give details on how to make efficient and innovative use of digital technologies when planning (area 2), implementing (area 3) and assessing (area 4), teaching and learning (area 5), all of which acknowledge the potential of digital technologies for learner-centred teaching and learning strategies. This area is similar to areas 2, 3, and 4 in that it contains a set of guiding principles relevant to and complementary to the competence specified in these areas. Areas 2, 3, and 4 are essential for this study to determine teachers' digital competence in using DLCs to enhance teaching and learning to secondary school students.

This model has been chosen to guide this study because it emphasises crucial issues to be considered in measuring teachers' digital competence standards towards using DLCs for the teaching and learning process. In this study, secondary school teachers acted as educators; therefore, the researcher prepared tools for measuring teachers' digital competence as identified by this model. This has given the researcher a picture of teachers' digital competence to integrate DLCs for teaching and learning.

3 Methodology

3.1 Research design

The case study design was used in this study because it needs in-depth information about the teachers' digital competence in using DLCs for teaching and

learning. Also, the case study allowed the researcher to investigate the issue in the natural setting [8]. Moreover, a case study is focused on the teachers' digital competence in using DLCs in teaching and learning in Zanzibar secondary schools.

3.2 Participants

One hundred and fifty-four (154) secondary school teachers were purposively selected from the six selected schools. The seventy-eight (78) were males and the rest seventy-six (76) were females. The researcher selected Wete District in Pemba-Zanzibar because secondary schools have been distributed Smart TVs, projectors and computers and they were trained through Zanzibar Improving Student Prospects Project [1]. The respondents were given one week to fill out the questionnaires before they were collected for analysis.

3.3 Research instrument and measures

A 5-point Likert Scale questionnaire was designed and distributed to respondents to accumulate enough information related to the study's objective. Also, this instrument makes it very easy to seek the teachers' digital competence in using DLCs for teaching and learning. In order to get the outcome variable related to the teachers' digital competence in using DLCs for teaching and learning, 23 Likert scale questions were asked. The scale ranged from 1=strongly disagree to 5 strongly agree. The mean composite score was computed from those 23 questions; the score was then dichotomised into (0=Low attitude, 1=High attitude), and the chi-square test of association was used to assess the factors associated with attitude. Those respondents who scored 4 or 5 were considered to have high digital competence, while those who scored less than four were regarded to have low digital competence. The independent variables of this study are the social demographic characteristics of the respondents, which include age in years, attendance in in-service training, years of using DLCs, teaching experience, and academic qualification. The overall digital competence was calculated by finding the mean value of all the questions per each Likert level as described by the following formula $mean = (q_1 + q_2 + q_3 + \dots + q_n)/n$. Eventually, those with a mean greater or equal to 3 were termed high digital competence, while those with a mean less than or equal to 2 were termed low digital competence level.

3.4 Validity and reliability

To ensure validity, questionnaires were evaluated in terms of their language, quality, and clearness for checking any contributions or duplications. To maintain validity, the questionnaire was created and shared with three other experts (two from The University of Dodoma and one from The State University of Zanzibar) to measure the content before it was administered to the participants. The experts' opinions were regarded to improve validity before going to the field. To

maintain the reliability of research instruments, participants from two schools were used to test tools (as pilots) before collecting data. Also, Cronbach's Alpha was used to test the internal consistency, and it was 0.74, which indicates that the questionnaire was reliable. The researcher considered all the research ethics, such as getting clearance from relevant authorities, consent, confidentiality, and participants' freedom before collecting data.

3.5 Data analysis procedure

The data were analysed by basic descriptive statistics (frequency, percentage, mean and standard deviation) through a t-test and inferential statistics through the chi-square test was used to test the association of the variables with the help of SPSS version 25. The basic descriptive statistics were used to describe the sample and the characteristics of the respondents.

4 Research findings

4.1 Digital competence of the teachers on using digital lesson contents (DLCs) for teaching and learning in secondary schools

The study investigated the teachers' digital competence in using DLCs in teaching and learning in secondary schools. Table 1 presents the teachers' responses on digital competence towards using DLCs in teaching in secondary schools. The table also contains the overall mean score of each domain. The results show that most teachers strongly agree (33.12%) on professional engagement. The mean value of 3.73 ± 1.23 shows that the teachers have a score above neutral.

Regarding curriculum and assessment, many respondents agree (45.45%). However, curriculum and assessment have a mean value of 3.50 ± 1.08 , meaning they rely above the neutral value. The majority of the respondents agree (47.40%) on the learning and teaching of digital lesson content. The mean value of 3.39 ± 1.07 shows that the average respondents replay above the neutral value. The findings also show that many respondents agree (37.66%) on the application of digital lesson content. The mean value of 3.54 ± 1.13 on the domain application shows that, generally, the respondents agree on the application of digital lesson contents. The findings also show that most teachers agree (38.96%) on empowering learning. The findings also show that the mean is 3.53 ± 1.17 , which means the respondents agree on facilitating learning. The findings show that most teachers agree (38.96%) on facilitating learning. The findings also show that the mean of 3.61 ± 1.16 means the respondents agree on facilitating learning.

Table 1: Digital competence of the teachers on using digital lesson contents (DLCs) in the teaching and learning in secondary schools.

Variable	Strongly disagree, N (%)	Disagree, N (%)	Neutral, N (%)	Agree, N (%)	Strongly agree, N (%)	Mean±Std
Professional engagement						
I apply learner-centred techniques with DLCs	18(11.69)	23(14.94)	21(13.64)	43(27.92)	49(31.82)	3.53±1.38
It supported collaborative knowledge development	16(10.39)	18(11.69)	23(14.94)	60(38.96)	37(24.03)	3.53±1.38
<i>Overall professional engagement</i>	10(6.49)	19(12.34)	24(15.58)	50(32.47)	51(33.12)	3.73±1.23
Curriculum and assessment						
I can use projectors/smart TVs for teaching	12(7.79)	23(14.94)	26(16.88)	49(31.82)	44(28.57)	3.58±1.26
Adequate skills to use DLC everywhere	16(10.39)	29(18.83)	34(22.08)	59(38.31)	16(10.39)	3.19±1.17
I can link the previous lesson to the current one	19(12.34)	33(21.43)	31(20.52)	47(30.52)	24(15.58)	3.16±1.27
I have skills to relate DLCs to real-life situations	14(9.09)	22(14.29)	31(20.13)	51(33.12)	36(23.38)	3.47±1.25
<i>Overall of curriculum & assessment</i>	8(5.19)	23(14.94)	30(19.48)	70(45.45)	23(14.94)	3.50±1.08
Pedagogical (teaching and learning)						
The use of appropriate techniques during teaching	14(9.09)	19(12.34)	26(16.88)	66(42.86)	29(18.83)	3.50±1.20
Using DLCs facilitates learner-centered learning	16(10.39)	27(17.53)	25(16.23)	65(42.21)	21(13.64)	3.31±1.21
I can integrate DLCs while teaching	16(10.39)	28(18.18)	32(20.78)	51(33.12)	27(17.53)	3.29±1.25
I can manage the classroom while using DLCs	14(9.09)	26(16.88)	23(14.94)	50(32.47)	41(26.62)	3.51±1.29
Ability to supervise group discussion while teaching	16(10.39)	27(17.53)	31(20.13)	54(35.06)	26(16.88)	3.31±1.24
I have enough confidence in using DLCs in teaching	25(16.23)	31(20.13)	28(18.18)	44(28.57)	26(16.88)	3.10±1.35
Ability to access and organise DLCs in teaching	14(9.09)	19(12.34)	31(20.13)	61(39.61)	29(18.83)	3.47±1.19
<i>Overall pedagogy (teaching & learning)</i>	9(5.84)	27(17.53)	29(18.83)	73(47.40)	16(10.39)	3.39±1.07
Application of digital skills						
Ability to choose DLCs for teaching descriptive writing	14(9.09)	19(12.34)	31(20.13)	61(39.61)	29(18.83)	3.56±1.21
I have specific knowledge of using DLCs	11(7.14)	22(14.29)	29(18.83)	54(35.06)	38(24.68)	3.43±1.31

Continued on next page

Table 1 – continued from previous page

Variable	Strongly disagree, N (%)	Disagree, N (%)	Neutral, N (%)	Agree, N (%)	Strongly agree, N (%)	Mean±Std
I have adequate basic skills in using DLCs	17(11.18)	24(15.79)	24(15.79)	51(33.55)	36(23.68)	3.43±1.26
<i>Overall application of digital skills</i>	7(4.55)	25(16.23)	32(20.78)	58(37.66)	32(20.78)	3.54±1.13
Empowering learning						
The use of DLCs supports students in learning	15(9.74)	24(15.58)	25(16.23)	57(37.01)	33(21.43)	3.54±1.27
I can integrate DLCs into different subjects	17(11.04)	20(12.99)	25(16.23)	49(31.82)	43(27.92)	3.53±1.32
I can measure to protect and secure using DLCs	16(10.39)	19(12.34)	30(19.48)	55(35.71)	34(22.08)	3.47±1.25
I understand the context and use of DLCs	11(7.14)	20(12.99)	31(20.13)	60(38.96)	32(20.78)	3.53±1.17
<i>Overall of empowering learning</i>	7(4.55)	26(16.88)	24(15.58)	60(38.96)	37(24.03)	3.61±1.16
Facilitate learners digital competence						
I attended in-services training on how to integrate DLCs	17(11.04)	28(18.18)	33(21.43)	45(29.22)	31(20.13)	3.29±1.28
I can select DLCs suited to needs and purposes	12(7.79)	21(13.64)	29(18.83)	56(36.36)	36(23.38)	3.54±1.21
Using DLCs improves my professional development	12(7.79)	23(14.94)	31(20.13)	51(33.12)	37(24.03)	3.51±1.23
Overall, facilitate learners' digital competence	7(4.55)	26(16.88)	24(15.58)	60(38.96)	37(24.03)	3.61±1.16

Figure 2 presents the categorised domains measuring the competence of the teachers in using digital lesson contents. The domains were categorised on the overall mean score, whereby those with a neutral mean and below were termed low, while those above the neutral value were termed high. All the domains, professional engagement, curriculum and assessment, teaching and learning, application of digital skills, empowering learners, and facilitating learners' majority, were observed to have a high value.

The mean score of the digital competence domains was calculated and categorised into two groups. Group one is of the ones who score below three, and they were termed as Low digital competence. These categories made up 40.26% of all of the respondents. The rest, 59.74%, was of high digital competence, with a value above three. This means that many respondents had high digital competence in using DLCs for teaching and learning. Only 40.26% have a low digital competence level in using DLCs for teaching and learning in secondary schools.

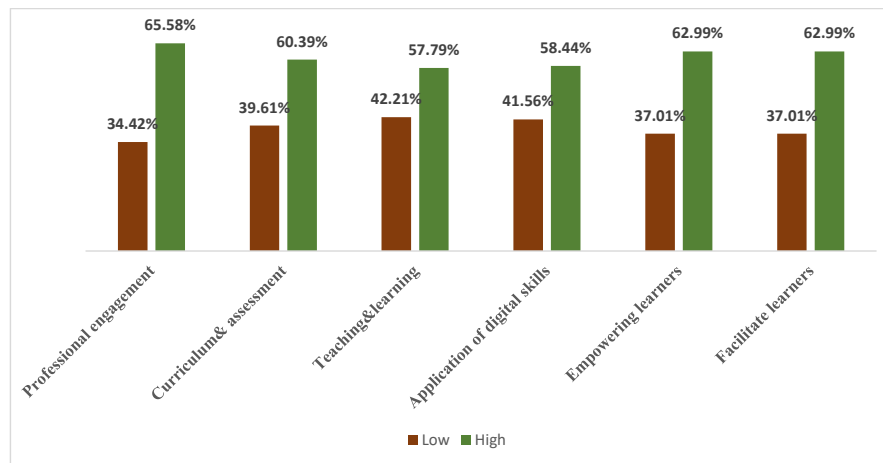


Fig. 2. Overall results on each domain about teachers' digital competence on using DLCs for teaching and learning.

4.2 The effects of teachers' in-services training, age, education qualification, attitude and working experience on digital competence in using DLCs for teaching and learning process

The study's second objective was to determine the effect of in-service training, age, education qualification, working experience and attitude towards using DLCs for teaching and learning. A chi-square test was performed to measure the variables affecting the teachers' digital competence in using DLCs for teaching. Table 2 presents the findings of the factors associated with competence based on the chi-square test. From the results, it was observed that competence was significantly associated with in-service training of the respondents ($p=0.0016$) and attitude ($p<.0001$). Regarding in-service training of the teacher, among teachers with high competence, a large proportion were those who attended in-service training (72.37%). It was also observed that regarding the attitude of the teachers, among teachers with high competence large proportion had high attitude (98.88%).

5 Discussion

The study found that most teachers have a high digital competence in using DLCs in teaching and learning due to their high attitude and in-service training with use in the teaching and learning. The finding of the figure 2 shows that the significant proposition of 65.58% of secondary school teachers have high competence in using DLCs for professional engagement. These findings align with UNESCO ICT competence for teachers who insist on developing lesson plans

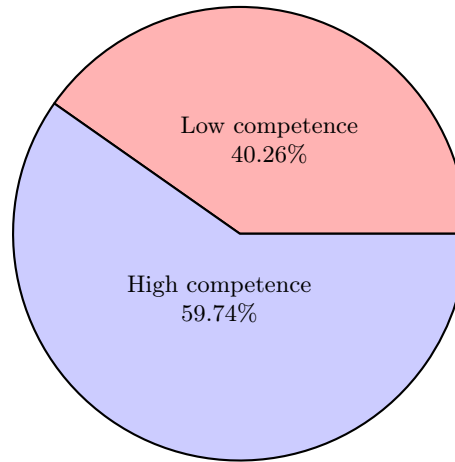


Fig. 3. Overall results about teachers' digital competence on using DLCs for teaching and learning in secondary schools.

that incorporate ICT-support students' activities to support students' acquisition of subject knowledge [28]. Also, the National curriculum framework states that teachers' standards should plan and teach well-structured lessons [27]. Furthermore, a study conducted in Malaysia by Tan and Kiflee [26] directed that teachers in secondary schools are responsible for preparing lesson plans for each lesson when teaching in the class. This implies that teachers with little knowledge of preparing lesson plans automatically make their students lack ability during teaching and learning. In contrast, the findings of the present study differ from those generated by the study conducted by Alanazi [4] in Saudi Arabia, which revealed that those teachers who do not prepare lesson plans while teaching and learning get a time cost during the lesson as well as their students who fail to show enough ability to understand the lesson. The study concludes that integrating DLCs in teaching and learning depends upon the teachers' digital competence in professional engagement and other domains, as identified in figure 2.

The finding of the figure 2 shows that the significant proposition of 60.39% of secondary school teachers have high competence in using DLCs for implementing curriculum and assessment in secondary schools. The findings also concur with the assertion of UNESCO [28] and national curriculum framework [27] state teachers' digital competence standard must have excellent knowledge of the curriculum standard for their subject and knowledge of standard assessment strategies. This indicates that serious actions are needed to improve teacher's digital competence in integrating DLCs in classroom situations. Also, these findings support the education policy of Zanzibar, 2006, which emphasises using DLCs for enhancing teaching and learning to achieve quality education for all. There-

Table 2. The effects of teachers' in-service training, age, education qualification, attitude and working experience on pedagogical competence in using DLCs for teaching and learning.

Variable	Low attitude, N (%)	High attitude, N (%)	Chi-square	P-value
Age in years			0.5272	0.4678
≤ 35	32 (43.24)	42 (56.76)		
36 and above	30 (37.50)	50 (62.50)		
In-services training			9.9491	0.0016
Not attended	41 (52.56)	37 (47.44)		
Attended	21 (27.63)	55 (72.37)		
Years of using digital lessons			0.2885	0.5912
≤ 5	33 (38.37)	53 (61.63)		
6 and above	29 (42.65)	39 (57.35)		
Teaching experience			0.0220	0.8821
≤ 10	25 (40.98)	36 (59.02)		
11 and above	37 (39.78)	56 (60.22)		
Academic qualification			1.5213	0.4674
Diploma	17 (33.33)	34 (66.67)		
Degree	28 (43.75)	36 (56.25)		
Masters	17 (43.59)	22 (56.41)		
Attitude			134.2813	<.0001
Low	61 (93.85)	4 (6.15)		
High	1 (1.12)	88 (98.88)		

fore, the paper concludes that the availability of digital devices, infrastructure, and in-service training may increase teachers' digital competence in teaching and learning.

Moreover, figure 2 shows that a large proportion of 57.79% of secondary school teachers have high digital competence in using DLCs for teaching and learning in secondary schools. It was expected that from the ICT competence standard for teachers in Tanzania, teachers should describe didactical teaching approaches and use of ICT to support learners' acquisition of school subject matter knowledge [30, p. 12]. Similarly, the UNESCO ICT competence standard for teachers emphasises Knowledge Acquisition (KA) and Knowledge Deeping (KD). The teacher can integrate technologies, tools and digital content to support teaching through KA. In contrast, through KD, teachers use ICT to facilitate students to create, implement and monitor project plans and solve complex problems [28]. Teachers should use ICT technologies in various classroom situations, including computer laboratories and small group and individual activities, to ensure equitable treatment for all learners during teaching and learning. Therefore, findings revealed that the availability of teachers' digital competence encourages the use of DLCs in the teaching and learning process.

Furthermore, these findings align with a study by Manyengo [17] in Tanzania mainland who observed that some primary and secondary schools have techno-

logical devices such as desktop computers, smartphones, printers, photocopiers, projectors and televisions. Technological devices such as desktop computers, laptops, tablets and projectors are available in some secondary schools. This implies that the availability of technological devices, DLCs, and teachers' digital competence possibly enhances teaching and learning to secondary school students. However, a study conducted by Kalinga and Ndibalema [15], Ndibalema [20] in Tanzania mainland observed that teachers had a low level of competence regarding using DLCs as a means for teaching and learning. This implies that the teachers' digital competence is not an easy task for developing countries; therefore, government and private sectors should distribute digital devices and plan regular in-service training for secondary school teachers on how to use technology in education.

The findings from figure 2 show that a large proportion of 58.44% of secondary schools have high digital competence in applying DLCs as pedagogical tools for teaching and learning descriptive writing in secondary schools. This corroborates with UNESCO [28] stating that teachers must have basic hardware and hardware operations and productivity software, software presentation, browser communication and management applications. This indicates that the application of DLCs for teaching and learning determines teachers' ability in the software presentation and communication to support students in understanding the lesson. However, application of DLCs in secondary schools, a study conducted by Ndibalema [20] and Manyengo [17] in Tanzania mainland observed that some secondary schools had large numbers of students in the classroom, with adequate use of digital technology in the classrooms and adequate infrastructures thus making difficult for application of using digital lesson tools in the classroom situation. This implies that the government needs to consider these challenges by addressing teaching and learning problems in ordinary secondary schools using DLCs.

Figure 2 shows that a large proportion of 62.44% of secondary schools have high digital competence in empowering learners to use DLCs during teaching and learning. The findings align with ICT competence standards for teachers, stating that curriculum learning digital lesson contents suit diverse learning needs and support learner-centred teaching approach using ICT and digital lesson contents [30, p. 8]. This means a learner-centred teaching approach should be emphasised while using DLC for teaching and learning descriptive writing to address descriptive writing problems in secondary school students. The availability of DLCs encourages teachers to practice what they trained. Therefore, there is a need to design more DLCs that support a learner-centred approach to teaching and learning to secondary school students.

In addition, figure 2 shows that 62.99% of secondary schools have high digital competence to facilitate learners' digital competence. These findings support the ICT policy in education in Zanzibar, which focuses on broadening access to education and training opportunities. The actual situation in the field shows that the policy has been implemented for some secondary schools. Also, the notational curriculum framework for basic teacher education is expected to train

teachers through Continuous Professional Development (CPD) to reach competence standards [27]. However, a study conducted in Tanzania by Kalinga and Ndibalema [15], Manyengo [17] reveals that lack of professional development through pre-and in-service training leads to low teachers' digital competence in using DLCs in the teaching and learning process. This indicates that the government should allocate pre- and in-service training on integrating DLCs with special funds to improve its sustainability in secondary education. Therefore, this paper also implies that DLCs are possible if the government and private sectors, such as NGOs, invest in our secondary education.

The findings of the second objective show that the teachers' high digital competence is caused by a positive attitude and in-service training on integrating technology for teaching and learning in ordinary secondary schools. Thus, these factors influence teachers' positive attitudes and in-service training on using DLCs. In Zanzibar, one of the Educational policy statements was "EFA goals direct nations to enhance teachers status, morale and professionalism because teachers are essential players in promoting quality education in schools. . . .and teachers training program shall be innovative and flexible to accommodate changes" [24, p. 43]. This revealed that Zanzibar's education policy identified the necessity of using DLCs to improve the quality of education by training teachers to use them in education. Also, these findings align with the study conducted by Ghomi and Redecker [10] in Germany, which observed that teachers' experience and attitude are essential factors as they influence teachers in using digital lesson contents for teaching and learning. It revealed that teachers' attitudes are essential for encouraging him/her to use DLCs in teaching and learning descriptive writing [13]. Therefore, in-service training is needed for all secondary teachers to change their mindset towards using DLCs for teaching and learning in secondary schools.

In addition, the current study's findings are similar to the study conducted in Tanzania mainland by Ndibalema [20], which observed that in-service training should be emphasised in the teachers' colleges. According to UNESCO, effective integration of ICT in schools and classrooms can transform pedagogy and empower students to ensure the quality of education. UNESCO has developed an ICT competence framework for teachers to guide pre-and in-service teachers' training on using ICT across the education system [28]. Also, aligning teachers on using DLCs is vital for improving quality education [5]. This implies that in-service training has been affecting teachers' digital competence in terms of using DLCs for the teaching and learning process. Also, the Zanzibar ICT Policy expects to enable people to use the huge potential of ICT for teaching, learning, and self-empowerment [25, p. 9]. It gives the image that the Zanzibar government should emphasise using DLCs in teaching and learning through pre-services and in-services training for all secondary school teachers to improve quality and competitive education that fits in the 21st century.

Again, the study conducted in Nigeria by Adegbola [2] observed that teachers' digital competence was a key determinant of students' learning attitudes. Moreover, the study by Akman [3] in Ankara, Turkey, supported the idea that

teachers' ability in classroom management created a student-teacher relationship, leading students to improve their learning process. Also, a study conducted by Karolcik et al. [16] in the U.K. has shown that the availability of model examples of utilisation of available digital technologies, innovative approaches and expert teams are among the factors that affect teachers' digital competence in using DLCs for teaching. Moreover, a study conducted in Tanzania's mainland by Kalinga and Ndibalema [15] found that male teachers had more competence than female teachers. This implies that various factors may affect teachers' digital competence in using DLCs for teaching and learning in secondary schools. The paper concludes that in-service training and attitude are major factors that affect teachers' digital competence in using DLCs for teaching and learning in secondary schools in Zanzibar.

6 Conclusions and recommendations

This study investigated the teachers' digital competence in using DLCs for teaching in ordinary secondary schools in Zanzibar. It was found that most teachers have high digital competence caused by positive attitudes and in-service training on using DLCs for teaching and learning. Therefore, regular in-service training is needed to upgrade them and improve their attitude and confidence in using it in everyday teaching. Based on these findings, policymakers, curriculum developers, and other educational stakeholders should take serious action to improve the quality of educational practice. Therefore, there is a need for teachers to be aware and ready to implement curriculum changes in order to cope with the 21st century. Also, there is a need to develop and improve teachers' knowledge and skills to encourage their digital competence in using DLCs for teaching and learning in ordinary secondary schools. The paper suggests there is time to initiate regular and enough seminars and workshops on using DLCs to improve teachers' cognitive and digital competence for teaching and learning in secondary schools. This paper recommends that further study consider a large sample size of secondary schools in Zanzibar because this study used only schools where smart TVs, projectors and computers were available, and they were trained to use them. Last, the paper recommends further study using triangular methods such as questionnaires and observation to add value to the situation.

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