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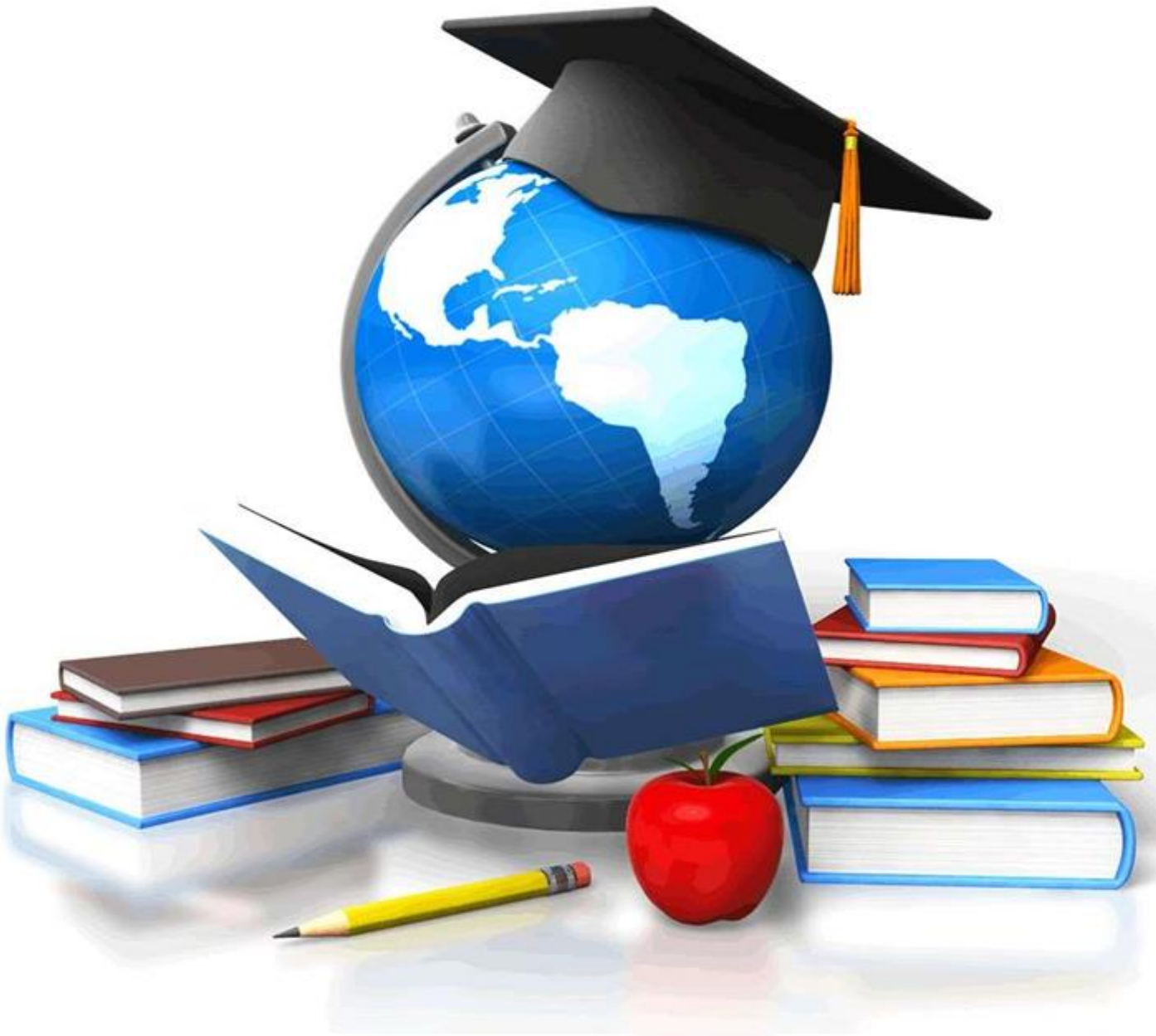

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ICT Usage by Heads of SHSS in Administration and Management of Senior High Schools (SHSS) in the Tamale Metro of Ghana

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Abstract

Purpose: This study investigated heads of SHSs use of ICT in administration and management of Senior High Schools in the Tamale Metropolitan Assembly of Ghana.

Methodology: The study used embedded mixed methods design with a target population of 66. Using simple random sampling technique, four schools were selected from the eight public Senior High Schools in the Tamale Metropolis. The sample consisted of four heads, 12 assistant heads and 44 teachers. The heads and assistant heads were sampled using purposive sampling technique.

Findings: The study found that there were adequate ICT resources for heads of SHSs to use in school administration and management. The study also found that heads of SHSs have positive attitudes and perceptions towards using ICT resources in managing the schools. They however, lacked enough skills to efficiently use the ICT resources. Frequent power outages, maintenance costs, low ICT literacy levels were some of the challenges that influenced ICT integration in the schools.

Unique Contribution to Theory, Policy and Practice: The study recommended that the Ministry of Education (MOE) in conjunction with the Ghana Education Service (GES) should come up with tailor-made ICT integration programs to impart relevant skills, knowledge and attitude on heads of SHSs and teachers.

Keywords: *Administration, Management, ICT resources, accessibility, computer literacy level, internet connectivity.*

Background and Problem Statement

Information and Communication Technology (ICT) and for that matter digitalization has permeated society and as a result the focus is now on school leaders in their leadership and use of digitalization of their school activities and management in schools (Lindqvist & Petterson, 2019, OECD, 2020 & Voogt, et al, 2017). The use of ICT has grown into becoming a game changer in the management of schools. Adu and Olatundun (2013) maintain that numerous significant variations have transpired in recent past in worldwide education systems and this will require tutors and school leaders to advance and improve their ICT know-how. Some of these changes are due in part to changes in government policies relating to the use of ICT in schools. Others are due in part to advancements in pedagogical practices.

The influx of digital technologies in educational settings has impacted the roles and responsibilities of school leaders in numerous ways. ICT has triggered demands for systematic changes in schools. Inevitably school leaders and teachers feel the pressure to change and must find ways of implementing and sustaining technological innovation. This is in agreement with Lindqvist and Petterson's (2019) finding that school leaders see the importance of digitization for preparing and supporting students for the future.

Morrison (2018) in his Masters' thesis on the topic, influence of information and communication technology resources on administration and management practices of selected Junior High Schools in Akosombo 'A' and 'B' circuits 'in the Asuogyaman District revealed that ICT resources were inadequate for the administration and management practices by headteachers. Also, it was concluded that headteachers did not fully utilise the ICT resources at their disposal in the administration and management practices of their schools.

Moreover, the commencement of ICT in education in Ghana has existed for almost a score of years. This was launched by the NPP government in 2008 on the principle of promoting ICT education to improve educational outcomes. Consequently, the Ministry of Education in Ghana launched the ICT Education Policy in 2008 as a way of addressing the ICT needs in education. Alongside this policy, is the Basic School Computerization policy which was created in 2011 to introduce computers and e-learning into the whole education structure (National Pre-Tertiary Education Curriculum Framework, 2018).

Therefore, in 2012, the Ministry of Education through RLG, an ICT company in Ghana introduced the "teacher laptop and ICT project" where teachers were trained in ICT. These teachers were provided with laptops to aid in research, teaching and learning across a diversity of subject areas. (Natia& Alhassan, 2015). On a notch higher scale, the 2018 curriculum developed by the National Council for Curriculum Development (NCCD) placed ICT on top of affairs in education in Ghana. The underpinnings of the 2018 curriculum summarise computer usage in schools as Information and Communications Technology will be used as a pedagogical tool for the implementation of the National Curriculum Change and Sustainable Development and partly in line with the ICT policy framework of the Ministry of Education (Ministry of Education, 2015).

Brazel (2003) asserts that it is incumbent upon every school principal to possess computing skills in the Twenty First Century. This confirms Baylor (2002) argument that high school head-teachers ought to make use of technology so that those they lead can mimic them.

In the Ghanaian context, much literature on ICT usage by school leaders delve more on basic school headteachers but not Heads of SHSs. The findings of Bariham et al., (2019), Morrison (2018), and Natia and Al-hassan (2015) have collectively agreed that there are insufficient ICT tools, low ICT knowledge, cost of ICT equipment in Basic Schools and hence will serve as a disincentive to headteachers at that level to fully utilize ICT in their administrative practices. Furthermore, as teachers in Ghana Education Service and Ghana Tertiary Education Commission (GTEC) the researchers have worked with school leaders both at the basic and Senior High Schools within Tamale Metropolitan Assembly and have observed the limited use of ICT by heads of SHSs in the administration and management. Even though, the schools do have well-equipped ICT infrastructure, the heads of SHSs seems to lack adequate technical know-how in using the available ICT resources in the administration and management of their schools. Hence, this study focuses on how Heads of SHSs use ICT in dispensing their daily administrative and managerial duties as school leaders in the Tamale Metro of Ghana.

Purpose of the study

The purpose of the study was to investigate the extent to which ICT usage by Heads of SHSs influence their administration and management of SHSs within the Tamale Metropolis.

Research Questions

The following research questions guided the study:

1. Which ICT resources are available for heads of SHSs to use in the administration and management practices of SHSs in the Tamale Metropolis?
2. How does the use of ICT resources influence the administration and management practices in the selected Senior High Schools?

Research Design

The embedded mixed method was adopted for the study. The researchers used the mixed method approach because both data complement each other and makes the research more rigorous.

Population, sample and sampling procedure

The target population for this study comprised of all Heads of SHSs, assistant heads and teachers in the Tamale Metropolitan Assembly. All the 4 heads of the SHSs, 12 assistant heads (3 representing each of the 4 SHSs) and 50 teachers was the target population for this study. A sample of 60 respondents were selected for the study.

According to the Northern Regional Education Directorate, there were eight (8) public Senior High Schools in the Tamale Metropolitan Assembly. In using simple random sampling, 4 public SHSs were selected for the study. The names of all the 8 schools were written on pieces of papers,

shuffled and put in a basket. Four people were asked to randomly pick one each. All the four schools randomly picked through this method formed part of the study. This technique provided an equal opportunity of being selected to participate in the study.

Purposive sampling was employed to select 4 school heads from each of the 4 sampled schools to answer both questionnaire and interviews questions for the study. Again, purposive sampling was used to select 12 assistant headmasters to answer both questionnaire and interviews for the study. These people by their status are better placed to provide credible information on the issues under study. The interview enabled the researchers to collect further information on critical issues that may require further clarification from the respondents. Also, from the target population of 66 teachers in the 4 sampled schools, the researchers randomly sampled 44 teachers (at least 11 teachers from each school) for the study.

Research Instruments

In this study, questionnaires and interviews were used to solicit information from respondents. The researchers chose questionnaire to collect data for this study because the use of questionnaire is free from the bias of the researchers. That is, answers were in the respondents' own words. The use of questionnaire allowed respondents to have adequate time to give well thought out answers (Kothari, 2004). However, the use of questionnaire also poses challenges such as uncooperativeness of respondents.

The questionnaire had two sections: section A and B. Section A focuses on background information of respondents such as sex, and age range of respondents. The section B solicited data on ICT usage in school administration and the availability of ICT resources, access to ICT infrastructure, challenges heads face in using ICT resources in school management.

In this study, the five points Likert scale questionnaires were designed with several items structured into response categories. Open-ended questions and closed-ended questions were used which enabled the participants to discuss the issues without their responses being restricted. Closed-ended questions included a variety of choices from which the respondents have to choose from.

Interview Guide for Heads and Assistant heads of SHSs

The Interviews offered the opportunity for the researchers to obtain clear data on specific issues in the study. In the view of Creswell (2014), interviews allow researchers to probe further for more detailed information from participants. On the other hand, an open-ended interview guide was employed to collect data from the 4 heads and the 12 assistant heads of SHSs. The interview data were transcribed and coded appropriately to ensure accuracy in data. However, a major disadvantage of interviewing as data collecting instrument is that it could be prone to subjectivity and bias on the part of the interviewer (Denzin & Lincoln, 2000, p.44).

To attribute comments to the interviewees, serial numbers were assigned to each of the transcripts. Heads of SHSs were assigned serial numbers H1 – H4 whiles Assistant heads were also assigned

serial numbers ASH1 – ASH12. Categorizing the interviewees in this manner helped to make discussion of the findings easier and it gives the reader an idea of the extent of participation of each participant in the research.

Validity of Instruments

The questionnaire items were developed based on the concepts, objectives and research questions. Face and content validity of the instruments were established by giving the prepared instruments to the researchers' colleagues. Comments from colleagues were used to effect the necessary corrections before the instrument was administered on participants. The researchers also conducted a pilot study of the instruments in Tamale Senior High School in the Sagnarigu Municipality.

Reliability of Instruments

To measure the reliability, test-retest method was used. The questionnaire was administered twice in one SHS from the target population. The aim was to detect inconsistencies and poorly worded questions. The pre-test proved helpful because respondents' comments helped in rewording some of the questions.

The Cronbach's Alpha formula was employed to scrutinize respondents' views and to explore the extent to which questions on the questionnaires were correlated. Cronbach's Alpha is an appropriate strategy to measure the internal consistency and reliability due to the fact that the higher the Cronbach's Alpha, the more the items relate among themselves.

From the pilot study, the questionnaire for heads of SHSs yielded an alpha of r=0.89 and that of the teachers produced an alpha of r=0.73 which were within acceptable standard and were employed to gather the data for the research. McMilllan and Schumacher (2010) concluded that a reliability coefficient alpha of 0.70 and closer to 1, means the more reliable the instrument is for a study.

The interview guide was also piloted on the heads and assistant heads of the selected school for the pilot study. The interactions between the researchers and the interviewees help in clarifying some of the questions that were previously unclear.

Also, to establish validity or trustworthiness of a qualitative data, Miles et al (2014) cited in Cannon (2017) outlined four key issues to examine, namely; credibility, transferability, confirmability and dependability. In order to establish the reliability of the qualitative data, triangulation, transferability and confirmability methods were used in this study.

Triangulation was used as a means of ensuring that the data provided by participants was authentic. This was possible because both questionnaire and interview guide collected almost the same data.

Transferability of research refers to the extent to which data interpretations and the findings of a qualitative study can be transferred into other contexts or settings (Cannon, 2017). In this study, transferability was achieved through rich, thick description of the settings, and the direct quotations from the interviews. Direct quotations and thick description of the data in a study provided an

appropriate grounds for, and test of the conclusions of a study (Maxwell, 2013) cited in Cannon (2017).

The investigators reflected on the data to determine whether there are potential biases that might negatively influence the findings of the study (Merriam, 2009). The researchers noted that issues such as age, gender, history, social status, culture, religion, and socioeconomic background could influence a researcher's interpretation of the findings of a study and the conclusions made. In order to eliminate personal biases from this study, the researchers recorded down all the interviews, which were later transcribed, and then interpreted within the context of the study. Portions of the draft report were sent to the interviewees for them to establish the veracity of the data and the interpretations.

Findings and Discussions

Research Question One:

What are the ICT resources available for heads of SHSs to use in the administration and management practices of Senior High Schools in the Tamale Metropolitan Assembly?

The research question sought to identify ICT resources available for heads of SHSs to use in the administration and management practices of the schools. Frequency counts and percentages were used to analyse the data. The results according to the heads of SHSs and teachers are presented in Table 1.

Table 1: Heads of SHSs' responses on availability of ICT resources for administration and management practices in Senior High Schools

ICT Resources	Highly Available		Available		Not Available	
	N	%	N	%	N	%
Computers	4	100	0	0	0	0
Scanner	3	75	0	0	1	25
Printers	4	100	0	0	0	0
Internet (WiFi)	0	0	0	0	4	100
Mobile phones	4	100	0	0	0	0
Projectors	1	25	0	0	3	75
Photocopier machines	4	100	0	0	0	0
Public Address System (PAS)	2	50	0	0	2	50

Source: Field data, (2023).

From the results in Table 1, four (100%) of the heads reported that computers, printers, mobile phones and photocopier machines were highly available in their schools for administrative and

management purposes. On the other hand, four (100%) of the heads indicated that internet connectivity (WiFi) was unavailable in their schools. From these results, the findings for research question one shows that there were adequate ICT resources to be used by heads of SHSs in the administration and management of the schools which is a contrast to (Morrison 2018) finding which indicated there were inadequate ICT resources for the management practices of schools in Ghana.

On the score of the availability of ICT resources for SHSs administration and management, some of the interviewees disclosed that:

> *Honestly, I am glad that we have sufficient ICT resources to champion the course of digitalization of school administration and management. However, the non-existence of internet (Wifi) and projectors in my school mars the full implementation of having ICT resources in SHSs* (H-3).
>
> *Even though, the ICT resources I have in this school are enough to run my administration and enhance management, I would love for us to have smart boards, tablets, digital interactive whiteboards in addition etc.* (H-1).
>
> *The ICT resources I have in this school are enough to manage the school as and when the need arises. But there is still room for improvement and addition because of wear and tear conditions.* (H-2)

The qualitative data agree with the quantitative findings that seem to suggest that there are adequate ICT resources for heads of SHSs to use in administration and management of SHSs. Even though all the interviewees agree that ICT resources are available in their various schools, their comments seek to assume that more and more ICT resources are required to replace the existing ones that have worn out. The findings also agree with the findings of Dankwa (1997) and Parthemore (2003) that some schools in Ghana can boast of computer laboratories and ICT resources to promote administration and management practices. On the part of the Assistant heads the data in Table 2 present their views.

Table 2: Assistant heads of SHSs' responses on availability of ICT resources for administration and management practices in Senior High Schools

ICT Resources	Highly Available		Available		Not Available	
	N	%	N	%	N	%
Computers	10	83	0	0	0	0
Scanner	1	8	9	75	2	17
Printers	12	100	0	0	0	0
Internet (WiFi)	0	0	0	0	12	100
Mobile phones	12	100	0	0	0	0
Projectors	0	0	0	0	12	100
Photocopier machines	2	17	0	0	10	83
Public Address System (PAS)	6	50	0	0	6	50

Source: Fieldwork data, (2023).

The results from Table 3 indicates that 12(100%) of the assistant heads reported that printers and mobile phones were highly available in their offices for administrative and management purposes. Twelve (100%) of the assistant heads also agreed with their heads that internet (WiFi) and projectors were not available in their offices for administrative and management purposes. To confirm the quantitative data, the interviewees also observed that:

> *The availability of the ICT resources you are asking for is just a mirage. They exist but their functionality is questionable.* (ASH-2)
>
> *I am revealing to you that we don't have photocopier machines and internet facility here. I rely on the general office to photocopy all documents for administrative purposes.* (ASH-5)
>
> *As you can see, all three assistant heads of this school have computers in our offices. But they are Cathode Ray Tube monitors, looking outmoded. Flat panel monitors with the latest version of software won't be a bad idea.* (ASH-12)

The interview extracts of the assistant heads seems to suggest that, they are not fully resourced with ICT tools and the few that exist does not function up to expectation. This finding confirms the findings of Bariham et al., (2019) which show that the roles of assistant heads are equally

important and hence requires all the necessary ICT resources that would enable them succeed in running their schools.

Teachers Responses on availability of ICT Resources for Administration and Management Practices of Senior High Schools

The researchers sought to establish the availability levels of ICT resources among the teachers. The findings are shown in Table 3.

Table 3: Teachers responses on availability of ICT resources for administration and management practices in Senior High Schools

ICT Resources	Highly Available		Available		Not Available	
	N	%	N	%	N	%
Computers	0	0	0	0	44	100
Scanner	0	0	0	0	44	100
Printers	0	0	0	0	44	100
Internet (WiFi)	0	0	0	0	44	100
Mobile phones	44	100	0	0	0	0
Projectors	0	0	0	0	44	100
Photocopier machines	0	0	0	0	44	100
Public Address System (PAS)	0	0	20	46	24	54

Source: Fieldwork data, (2023).

From the data in Table 3, 44(100%) of the teachers agreed that they had no computers, scanners, projectors, photocopiers, internet and printers to assist them in the management of their departments and subjects they teach. However, Gyeltehen (2021) is of the view that teachers are the engines that enhance the digitalization of school teaching and learning process. The implication of this finding is that, the unavailability of the equipment is discouraging effective integration of ICT in schools' administration according to Visscher (2003) and Tearle (2004), school administrators require facilitation with appropriate ICT tools and related infrastructure to optimize integration in their administrative duties. Again, 44(100%) of the teachers indicated that they had their personal mobile phones which they usually use to assist heads of SHSs in their administrative duties through communication and research. Twenty (46%) further agreed with the heads in Table 3 that public address systems were at their disposal during staff and Parents Association (P.A)

meetings to amplify their voices. This is in agreement to the findings of Loretta, Tim and Laurie (2011) that when ICT tools are made available to teachers, they are better placed to contribute tremendously to the general running of the day-to-day activities of the school. The optimism however is that, with the introduction of the government one laptop per teacher may bridge the computer deficiency gap.

Research Question Two:

To what extent does the use of ICT resources influence the administration and management practices in selected Senior High Schools in the Tamale Metropolitan Assembly?

This research question sought to find out the extent to which ICT resources influence the administration and management of Senior High Schools. The findings are presented in Table 4.

Table 4: Heads and Assist. Heads of SHSs' accessibility to ICT resources in the administration and management of Senior High Schools

Extent of accessibility	Heads		Assist. Heads	
	F	%	F	%
Never accessible	0	0	0	0
Less accessible	0	0	1	8
Moderately accessible	1	25	3	25
Highly accessible	3	75	8	67
Total	**4**	**100**	**12**	**100**

Source: Field data (2023)

Findings from this study reveals that (75%) of the heads of SHSs have full access to ICT resources for effective school administration and management. The implication of this result goes to confirm Plomp, Anderson, Law & Quale, (2009) assertion that access to ICT infrastructure and resources in secondary schools is a necessary condition to the integration of ICT in school administration. Linsqvist and Petterson (2019, p. 224) found that "Computers and other ICT-tools are necessary tools for teachers and students". On the other hand, 25% of the heads of SHSs disclosed to the researchers that they barely have access to ICT resources. This suggests that the ICT resources are available but may have technical challenges which prevents the heads from using them for their administrative duties. It is imperative to state however that, heads of SHSs rely on secretaries and clerical staff for administrative duties hence the inaccessibility of ICT resources does not grind

administrative activities to a halt (Afshari, et al., 2010). The interview extracts confirm the results from the quantitative data.

> *As the headmaster of my school, I am by virtue of my position enabled to have everything in the school. When it comes to these ICT gadgets they are just at my disposal. Even though, I have allowed the ICT instructor to be in-charge of its maintenance* (H-1).
>
> *In my office, as you can see, here is a computer, printer and telephone-whenever I want to speak or call my secretary, assistant head or bursar. So yes, I can confidently attest that, I have 100% access to ICT resources* (H-4).
>
> *I am the headmistress of this school. Access to any digital gadget is not a problem for me. I however, delegate most responsibilities to either my secretaries or the general office staff.* (H-2)

From the interview extracts, it can be deduced that heads of SHSs do have access to ICT resources for administration and management purposes. This is in contrasts to the findings of Mbatia (2019) which seeks to suggest that assistant heads have more access to ICT resources to perform their duties than heads of SHSs. Hence, this study has found that heads have enough ICT resources to aid them perform their duties.

From Table 5, it is evident that 67% of the assistant heads of the schools revealed that they have access to ICT resources for management purposes. Eight (8%) of the heads also confirmed that they moderately have access to ICT resources. Lindqvist and Pettersson (2019) observed that accessibility to technology is important for developing the organisation. In an interview session, the following data were generated to support the quantitative data:

> *I have unlimited access to computers that were provided by the Old Students Association. Just that the technical know-how to use these computers is my challenge.* (ASH-9)
>
> *All the devices in my office are working alright but even though some of them periodically breakdown. Perhaps with time, when we are able to fix them, I'll be able to use them again.* (ASH-4)

The evidence from the qualitative data from the assistant heads show that the assistant heads have access to ICT resources. However, they lack the know-how to use the resources to effectively manage the schools. Tulowitzki, Gerick and Eickelmann (2022) in their study found that there seems to be lack of ICT-related competencies among school leaders and teachers in Europe. Leadership requires ICT practical know-how in the 21st Century. Hence, the success and failure of running second-cycle institutions requires updated skills in using ICT resources (Afshari, 2012). From the data presented, it is evident that, assistant heads lack critical knowledge in using ICT resources, however, periodic in-service trainings can help fix this challenge. Tulowitzki, Gerick and Eickelmann (2022) who are of the opinion that training and professional development for

teachers and school principals should be considered. The assistant heads have disclosed that they have unlimited access to ICT resources, yet the comments indicate that their competence in fully incorporating it to make their work easy leaves much to be desired. It is in this respect that some school leaders discuss how the competencies needed to lead for digitalization are versatile and require a broad understanding of how organisational structures, practices and cultures work (Linsqvist & Petterson, 2019).

Teachers' accessibility of ICT resources for school administration and management

The researchers sought to establish whether ICT resources were accessible to teachers so as to perform various administrative tasks. The findings are shown in Table 5.

Table 5: Teachers' accessibility to ICT resources in the administration and management of Senior High Schools

Extent of accessibility	Frequency (f)	Percentage (%)
Never accessible	33	75
Less accessible	8	18
Moderately accessible	3	7
Highly accessible	0	0
Total	**44**	**100**

Source: Field data (2023)

From the results, 75% of the teachers indicated that they do not have access to ICT resources for administrative and managerial purposes. This confirms the non-availability of ICT resources to teachers in Table 5. However, 7% of the teachers declared they have moderate accessibility to ICT resources in their various schools for daily running of their academic and managerial activities. The implication of this result mirrors the findings of Tom (2017) that states that greater number of teachers in Kenya do not have access to ICT resources for teaching and learning as this could mar the smooth implementation and realization of school and educational goals.

Heads of SHSs use ICT in the administration and management of Senior High Schools

Maki (2008) stipulates that ICT integration plays a vital role in supporting efficient management and administration in the education sector. As such, the researchers sought to find out the administrative tasks carried out by heads using ICT resources as presented in Table 6.

Table 6: Heads of SHSs use of ICT in school administration and management of Senior High Schools

Administrative task	Strongly agree (%)	Agree (%)	Not sure (%)	Disagree (%)	Strongly Disagree (%)
Used in preparation of students' bursary payment schedule	90	0	0	10	0
Preparation of workers payroll	90	0	0	10	0
Maintenance of school records	80	0	0	20	0
Project PowerPoint presentations during meetings	60	0	0	20	20
Public Address System to amplify Voice during PA meetings	100	0	0	0	0
Teachers' salary Validation	100	0	0	0	0
Communication	100	0	0	0	0
Research enquiries	60	20	20	0	0

Source: Field data (2023)

From Table 6, 100% of the heads agreed that they use ICT resources such as public address system during meetings. This finding is supported by Lindqvist and Petterson (2019) when they indicated that ICT tools are used to facilitate meetings, not necessarily physical meetings, and platforms for information and dialogue. The results also indicates that 90% of the heads strongly agreed that they employ ICT resources in preparing students fee payment and workers payroll. Also, 60% of the heads reported that they conduct research enquiries and use power-point in presentations during meetings. The implication of this result is that ICT use has a greater influence on the administration and management of Senior High Schools. This is in support of Maki (2008) findings that ICT integration plays a vital role in supporting efficient management and administration in the education sector.

In addition to the quantitative data analysed, the heads were interviewed to solicit qualitative data to support the findings of the quantitative data.

> *The use of ICT resources in managing my school is phenomenal. In the preparation of schedules for bursaries, software like Microsoft Excel make it so simple for me*

to compile thousands of names of staff and students relative to the traditional means of paper work (H-4).

I very much use ICT resources in communication on daily basis because without them, I wouldn't know how to run this administration. Thank Allah for the emergence of the emails, smart phones and WhatsApp Messaging App, my communication to staff members has been made smoother (H-2).

The comments seem to suggest that ICT resources are significantly intertwined in school administration and management as all the heads confirmed that without ICT resources, the running of their schools will be challenged in many ways.

Assistant heads of SHSs use of ICT in the administration and management of Senior High Schools

The researchers sought to find out the administrative tasks that assistant heads of SHSs performed using ICT resources.

Table 7: Assistant heads of SHSs use of ICT in the administration and management of Senior High Schools

Administrative task	Strongly agree (%)	Agree (%)	Not sure (%)	Disagree (%)	Strongly Disagree (%)
Analysis of exam results	100	0	0	0	0
Student registration	100	0	0	0	0
Preparation of staff duty roster and time-table	100	0	0	0	0
Communication	100	0	0	0	0
Maintenance of financial records	100	0	0	0	0
Teachers' salary Validation	100	0	0	0	0
Research enquiries	100	0	0	0	0

Source: Field data (2023).

From the findings, all the assistant heads of SHSs use ICT resources to perform administrative related tasks at any given time. This is encouraging since they are enthusiastic about ICT integration and not only school administration but also teaching and learning in the backdrop of few ICT resources. The data in Table 7 shows that all of them use ICT resources for such

administrative task as student registration (100%), maintenance of financial records (100%) and examination analysis (100%). This shows that the use of ICT in school administration is a key determinant for the realization of desired outcomes and success in schools and hence it is viewed as critical by all education stakeholders. This is supported by the findings of Tulowitzki, Gerick and Eickelmann (2022, p. 148) as quoted "…it is not enough to think of digitization in schools as something that only affects the classroom, it is, in fact, of relevance for the entire organisation". The interviews of the assistant heads provided some evidence to support the quantitative data analyzed.

> *I perform lots of responsibilities using computers in running the school as the assistant head in charge of academic affairs. Student registration and the drawing of time-table for teaching and learning are some of my responsibilities.* (ASH-10)
>
> *Teacher salary validation, and admission of new students would have been very hectic without using ICT resources to replace the traditional means of paperwork all the time.* (ASH-1)
>
> *Communication with my superiors and the various housemasters using ICT has enabled me to solve injurious challenges in my school regarding issues concerning student dormitories and teachers' bungalows as the assistant head entrusted with domestic affairs.* (ASH-4)

From the interview excerpts, the assistant heads of the various SHSs use ICT in every endeavour to help manage the affairs of the SHSs. The study of Mwendwa (2017) also has it that assistant heads play a pivotal role in ensuring that key managerial responsibilities are performed. It can hence be deduced from the interview excerpts that ICT resources are entwined in school administration and management in the 21st Century (Brannigan, 2010).

Teachers' use of ICT Resources in Administration and management of Senior High Schools

Teachers play critical roles in the administration setting of Senior High Schools. As an upshot, the researchers investigated how often they use ICT resources in assisting in the administrative processes of their schools. The findings are shown in Table 8.

Table 8: Teachers' use of ICT in the administration and management of Senior High Schools

Administrative task	Strongly agree (%)	Agree (%)	Not sure (%)	Disagree (%)	Strongly disagree (%)
Maintenance of students' performance records	70	0	10	0	20
Preparation of Exam Time-table	100	0	0	0	0
Preparation of lesson notes	0	60	20	0	20
Report cards preparation	100	0	0	0	0
Communication with school leaders	100	0	0	0	0

Source: Field data (2023)

The findings revealed that the teachers (100%) strongly agree that they use ICT resources in report cards preparation, preparation of exam time-table and communication with school leaders. On the other hand, 60% of the teachers indicated they use ICT resources in the preparation of lesson notes. Lindqvist and Petterson (2019) found that school leaders share the view that, important aspects in developing teaching and learning through digitization involve supporting teachers' work, giving teachers the conditions to develop teaching. This is encouraging because the results indicate ICT resources are not available to teachers, yet they use their personal or borrowed devices to help headmasters run Senior High Schools. Gyeltshen (2021) is of the opinion that teachers are the engines that enhance the digitization of school teaching and learning process, however, the determination to implement ICT in the school curriculum and instructions lies in the hands of the school leaders as rigorous use of ICT in teaching and learning could be effective if school leaders provide the necessary support. This further implies that, if teachers were to be well resourced in ICT, the fate of our education would have changed pretty much.

Heads of SHSs' Literacy Level in using ICT in administration and management

Table 9 contains data showing heads of SHSs' computer literacy involving software programs that are used in everyday management of Senior High Schools.

Table 9: Heads of SHSs Literacy Level in using ICT in administration and management

Computer programs	None	Little	Moderate	High
Microsoft word	0	70	10	20
Microsoft Excel	0	80	10	10
PowerPoint	30	60	10	0
Email and Internet	20	60	20	0

Source: Field data (2023)

The results from Table 9 reveal that majority of heads had little computer literacy in Microsoft word (70%), Power-Point (60%) and email and internet (60%) and Microsoft excel (80%) and therefore cannot effectively implement ICT integration in school administration. It is also discouraging to note that 30% and 20% of the heads were illiterate as far as power-point and email and internet respectively are concerned. This agrees with Stuart (2009) and Afshari et al. (2010) whose findings revealed that although technology leadership responsibilities may have been assigned formally to school heads of SHSs, most of them do not have suitable training or background to feel confident in dealing with technology. In support of the results, some interviewees noted that:

> *I am a digital migrant. My exposure and experience to the use of these technologies isn't that good. Hence, I rely on the ICT instructors for assistance when the need arises.* (H-1
>
> *I love using Microsoft Word a lot. Just that I am not proficient in the application of many features in the software. I do engage the assistance of my secretary when I want to use certain commands.* (H-4)
>
> *I need serious training before I can confidently call myself ICT literate because I can't use Microsoft Excel satisfactorily. The administrative staff in the General Office gives me a helping hand when I need assistance in compiling data using Microsoft Excel.* (H-2)

The interview data suggest that more in-service training on the use of ICT resources in school administration is needed. The results of the two data sets means that a lot of work needs to be done to bring heads of SHSs par with the principals of the western world. This suggestion is in line with a suggestion raised by school leaders in Sweden as found by Lindqvist and Pettersson (2019, p.225) which indicate that school leaders should discuss more efficient school administration, which is expressed as "in supporting the development of teaching and learning, the school leaders provide examples of different methods for teachers teaching teachers", i.e. collegial learning. This also supported by Tulowitzki, Gerick and Eickelmann (2022) who are of the opinion that training

and professional development for teachers and school principals as well as the need to ensure that schools have access to technical solutions that are comprehensive and compatible with each other.

Assistant heads of SHSs' ICT Literacy Level in using resources in school administration and management

Table 10 contains data on assistant heads of SHSs' computer literacy in using software programs in everyday management of Senior High Schools.

Table 10: Assistant heads of SHSs' Literacy Level in using ICT in administration and management

Computer programs	None	Little	Moderate	High
Microsoft word	0	90	10	0
Microsoft Excel	80	10	10	0
PowerPoint	0	80	20	0
Email and Internet	0	70	30	0

Source: Field data (2023)

The results from Table10 indicates that 90% of the assistant heads of SHSs have little knowledge in using Microsoft Word. Whiles 80% of the assistant heads indicate they have little knowledge in Microsoft power-point. Eighty percent (80%) of the assistant heads also confirmed that they have no knowledge in using Microsoft Excel. The findings of the present study agree with the findings of Tulowitzki, Gerick and Eickelmann (2022) who found that there seem to be a lack of ICT-related competencies among school leaders and teachers. The study further noted that the interviewed principals who did feel somewhat competent had gained these competencies in a self-taught manner. When the assistant heads of SHSs were interviewed to ascertain the truth about the quantitative data the interviewees had these to say:

> *I like interacting with ICT resources but I'm handicapped when it comes to the specific question of using Microsoft suite applications. I rest solely on my hardworking secretary and the administrative staff in the general office for support. Perhaps, in-service training could bring us to speed with reality.* (ASH-3)

> *Microsoft Excel is one of the most challenging software I'd love to learn and use but the busy schedules of the work doesn't always promote that. There are classified information which I wouldn't want to disclose to a third person but due to my incapacitation in using Excel I always give such works to the ICT tutor to assist.* (ASH-5)

Even though the interview data paints a gloomy picture of the ICT literacy levels of the assistant heads, an interviewee thinks contrary to the majority views.

> *I developed interests in ICT usage at the dawn of this information age. Hence, I can confidently use Microsoft word, Microsoft Excel, Power point and Emails effectively without the aid of any expert. I think this is the moment when the government ought to invest much in training more school leaders in the use of ICT resources.* (ASH-7)

The ability of heads of SHSs to confidently use ICT resources is significant to the smooth running of the schools (Asiya et al., 2022). From the qualitative data, it is evident that majority of the heads of SHSs had low knowledge in using software applications i.e. Microsoft Word, Microsoft Excel, Emails and so on. However, under normal circumstance, heads of SHSs should understand word processing, how to construct a spreadsheet to solve financial problems, how to create and maintain files on a disk, how to use hardware available in their district, and how to use specific applications programs in use in their schools. The present study seems to agree with Gyeltshen (2021) who found that principals' technology leadership behaviour in Bhutan was moderate levels with a positive relationship to teachers' use of ICT.

Major ICT communication tools used by heads of SHSs to distribute information

The study sought to find out from heads of SHSs the communication tools used to share information to staff and other educational stakeholders.

Table 11: Major ICT communication tools used by heads of SHSs to distribute information

Communication tool	Strongly agree (%)	Agree (%)	Not sure (%)	Disagree (%)	Strongly Disagree (%)
Emails	20	10	60	10	0
Video and web conferencing	70	0	0	20	10
Telephone calls	80	20	0	0	0
SMS/Text Messaging	30	40	0	20	10
Instant Messaging Apps (Whatsapp/Facebook Messenger	100	0	0	0	0

Source: Field data (2023)

Results from Table 11 shows that 100% of the heads of SHSs employ instant messaging i.e. Whatsapp and Facebook Messenger to disseminate information. The heads of SHSs went further and indicated that, WhatsApp/Facebook messenger groups where major communique concerning the administration and management of the institution are put for the benefit of the staff members. Also, 80% of heads of SHSs strongly agreed that their major source of communication to staff is through telephone/mobile phone calls. Furthermore, 70% of the heads of SHSs also strongly agreed that they employ Video conferencing i.e. zoom calls. They explained their reasons as in emergency situations such as an outbreak of Covid-19 in 2020 they preferred Zoom cloud meetings via their smart phones. This is to a very large extent the success that instant messaging apps have over traditional emails. In support of the quantitative data, the following qualitative data was collected:

> *Most of the time I prefer to use Instant Messaging Apps i.e. Whatsapp and Facebook Messenger to share information to staff. We have Whatsapp groups for staff where I put vital information for us to discuss. But only unofficial information is put there.* (H-4)
>
> *During Covid-19, I used to organize staff meetings via Zoom. This enabled us to implement social distancing protocols by not meeting in person.* (H-3)

The study of Alejandro et al., (2019) reported that the use of technology will enable heads of SHSs transmit the importance of technology to both staff members and students. These interview results confirm the quantitative data about the major communication resources used by heads of SHSs in administration and management. In other words, for the heads of SHSs to be successful in their work life, they must be proficient in utilizing the computer to assist administrative and managerial functions. This present finding is supported by Tulowitzki, Gerick and Eickelmann (2022, p. 148) as follow:

> The findings enrich sour understanding of the complexities of school leadership in digital age. The findings show that it is not enough to think of digitization in schools as something that only affects the classroom, it is, in fact, of relevance for the entire organisation".

This implies that in this present era of digitization no organisation can make meaningful progress without the use of ICT.

Conclusions

Based on the research findings the following conclusions were made:

From the data analysed, it was found that that ICT resources were available for heads of SHSs to use in the administration and management of Senior High Schools within the Tamale Metropolitan Assembly of Ghana. However, these ICT resources were not enough for teachers' i.e heads of department and subject teachers to use for administration and management of the schools. It can therefore be concluded that the role teachers' play in ensuring success in the management of schools is very crucial which requires every teacher to get ICT resources needed for their inclusion

in the management process. Hence, it behoves on educational stakeholders i.e. government, PTA, philanthropist to provide enough digital resources to close the headmaster–teacher gap.

The research findings again indicated that, sampled Senior High Schools had computer laboratories which were all connected to the national grid to enhance ICT integration, the location of the computer laboratories and other ICT resources that were accessible to heads of SHSs and teachers. However, the schools lacked internet connectivity to support online learning; and a lack of school-based ICT policies to guide the integration of ICT in managing the school.

It was also observed that the schools had enough computers, projectors, TV sets, DVD players, digital content, and Smart Boards to help heads of SHSs in the management and administration procedure. Therefore, in terms of digital infrastructure, it can be concluded that the sampled schools were prepared for the integration of ICT in administration and management. Furthermore, the majority of heads of SHSs and teachers did not have ICT technical skills required for effective integration of ICT into the managerial processes of the schools. It can, therefore, be concluded that teachers and heads of SHSs were not technologically prepared for the application of ICT in the administration and management of Senior High Schools. Therefore, GES need to take steps to ensure that training workshops are organised to train heads and teachers to acquire the requisite skills in ICT.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The study found out that some heads of SHSs cannot adequately use ICT resources in the administration and management of their schools due to computer illiteracy. Therefore, it was recommended that training workshops should be organised by the Education Directorate in charge of supervision for the heads of SHSs on the use of the ICT resources to assist in the management of schools. Through this programme, heads would be equipped with the necessary skills to enable them administer and manage their schools properly.
2. The Ministry of Education and Ghana Education Service should take steps to ensure that all ICT laboratories in SHSs are connected to the internet to enable teachers, heads and students and clerical staff have access to internet and to enhance teaching and learning in the schools.

References

Adu, E. O. & Olatundun, S. A. (2013). *The use and management of ICT in schools: Strategies for school leaders,* European Centre for Research Training and Development UK (www.ea-journals.org).

Afshari, M., Bakar, K., Luan, W., Samah, B., & Foo, F. (2010). Computer use by secondary school principals. *The Turkish Online Journal of Educational Technology, 9*(3), 8-25.

Afshari, J. (2012). The effect of perceptual-motor training on attention in the children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 6*(4), 1331–1336.

Alejandro. G., Jesus., A, John, J., (2019). Technologies frequently used by elementary principals. *Universal Journal of Educational Research, 7*(1), 95-105.

Asiya, S.A.H, Emmanuel, A., Fatima, A., Seda, S., Abdulrahman, M., (2022). Understanding pragmatic research. https://www.nottingham.ac.uk/helmopen/rlos/research-evidence-based-practice/designing-research/types-of-study/understanding-pragmatic-research/index.html.

Baylor, A. L. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? *Computers & Education, 39*(4), 395-414.

Brannigan, N. (2010). Enhancing leadership capacity in ICTs in Education through technology Enabled collaboration, Pedagogy for Technology Enhanced Learning. *The Turkish Online Journal of Educational Technology, 7* (4), 89-112.

Brazel, J. N. (2003). Role of Information and Communication Technology (ICT) in a good examination system. *American Journal of Educational Research, 3*(11), 1438-1443.

Cannon, T. (2017). How do we decide what we research? Retrieved on August 16, 2021 from: *http://www.issblog,l/2017/10/11/how-do-we-decide-what-we-resrearch.*

Creswell, J. W. (2014). *Research designs: qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: SAGE Publications.

Dankwa, W. A. (1997). Schoolnet: A catalyst for transforming education in Ghana. retrieved on December 8, 2021 from: *https://www.isoc.org/inet96/proceedings/c6/c6_1htm.*

Denzin, N. K. & Lincoln, Y. S. (Eds.). (2000). *Handbook of qualitative research* (2nd ed.).Thousand Oaks, CA: Sage.

Gyeltshen, L. (2021). Principals' technology leadership behaviour and teachers' use of information and communication technology (ICT) in Bhutan. *Suranaree Journal of Social Science (SJSS), 15*, 2, 125-135.

Kothari, C. R. (2004). *Research methodology: Methods and techniques* (2nd ed.). New Delhi: New Age International Publishers.

Lindqvist, M. H. & Petterson, F. (2019). Digitalization and school leadership: on the complexity of leading for digitalization in school. *Journal information and Learning Technology, 36*, 3, 218-230.

Loretta, D., Tim, G., & Laurie, H. E. (2011). One-to-one laptop teacher education: does involvement affect candidate technology skills and disposition? *Journal of Research on Technology in Education, 44(*2), 121-137.

Maki, C. (2008). Information and Communication Technology for Administration and Management for secondary schools in Cyprus. *Journal of Online Learning and Teaching, 4*(3), 55-60.

Maxwell, J. A. (2013). *Qualitative research design: An interactive approach.* Thousand Oaks, Calif: SAGE Publications.

Mbatia, G. M. (2014). *Factors influencing school principals' integration of ICT in administration of Public Secondary Schools in Githunguri Sub County, Kiambu County, Kenya (Master's thesis).* University of Nairobi.

McMillan, J. H., & Schumacher, S. (2010). *Research in education: Evidence based inquiry* (7th ed.). New York: Pearson Education Inc.

Merriam, S. (2009). *Qualitative research: A Guide to design and implementation.* San Francisco, CA: Jossey-Bass.

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A method source book* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Ministry of Education (2015). *ICT in education policy*. Accra: Ministry of Education.

Morrison, T. (2018). Influence of Information and Communication Technology resources on administration and management practices of selected Junior High Schools in Akosombo 'A' and 'B' Circuits in the Asuogyaman District (Master's thesis). University of Education, Winneba.

Mwendwa, B. (2017). Learning for sustainable development: integrating environmental education in curriculum of ordinary secondary schools in Tanzania. *Journal of Sustainability Education, 12.*

Natia, J. A., & Al-hassan, S. (2015). Promoting teaching and learning in Ghanaian Basic Schools through ICT. *International Journal of Education and Development using Information and Communication Technology (IJEDICT), 11*(2), 113-125.

National Pre-Tertiary Education Curriculum Framework, (2018). National pre-tertiary education curriculum framework report. Retrieved on September 23, 2021 from: https://nacca.gov.gh/wp-content/uploads/2019/04/National-Pre-tertiary-Education-Curriculum-Framework-final.pdf.

Organisation for Economic Cooperation and Development [OECD] (2020). *PISA 2018 results (Volume V)*: Effective policies, successful schools. PISA, OECD Publishing, Paris, doi:10.1787/ca768d40.en.

Parthemore, J. (2003). A secondary school computer laboratory in rural Brong Ahafo: A case study reflection on the future of secondary school computer literacy and computer base distance education in Ghana. Retrieved on December 17, 2021 from: *http://www.wess.edu.gh/lab/reports/papers.pdf.*

Plomp, T., Anderson, R. E., Law, N. & Quale A. (eds) (2009). *Cross-national information and communication technology policies and practices in education.* Greenwich: Information Age.

Stuart, L. M. & Remus, A. U. (2009). *School leaders ICT competence and championing innovations*. Computers and Education.

Tearle, P. (2004). *The Implementation of Information and Communications Technology* UK Secondary Schools. Final report. Exeter: University of Exeter. Tom, C. B. (2017). The extent of ICT integration in public secondary school management and the stakeholders' perception on the usefulness of the technology in Nairobi county Kenya. (Masters thesis). University of Nairobi, Kenya.

Tulowitzki, P., Gerick, J. & Eickelmann, B. (2022). The role of ICT For school leadership and management activities: an international comparison. *International Journal of Educational Management, 36*, 2, 133-151.

Visscher, A. (2003). Evaluation of the implementation use and effects of computerized management information systems in English secondary schools. *British Journal of Educational Technology*, *34*(3), 357-366.

Voogt, J., Knezek, G., Christensen, R. & Lai, K. W. (Eds) (2018*). Second handbook of information technology in primary and secondary education. Springer International Handbooks of Education*, Springer International Publishing, Dordrecht.