Scholarly Publisher
RS Global Sp. z O.O.
ISNI: 0000 0004 8495 2390

Dolna 17, Warsaw, Poland 00-773
Tel: +48 226 0 227 03
Email: editorial_office@rsglobal.pl

JOURNAL	International Journal of Innovative Technologies in Social Science
p-ISSN	2544-9338
e-ISSN	2544-9435
PUBLISHER	RS Global Sp. z O.O., Poland

ARTICLE TITLE	COMPUTER APPLICATIONS TECHNOLOGY TEACHING: A CASE OF SUPPORTING SECONDARY SCHOOL CURRICULUM IMPERATIVES
AUTHOR(S)	Bulelwa Makena, Primrose Zameka Yengwayo
ARTICLE INFO	Bulelwa Makena, Primrose Zameka Yengwayo. (2023) Computer Applications Technology Teaching: a Case of Supporting Secondary School Curriculum Imperatives. *International Journal of Innovative Technologies in Social Science*. 3(39). doi: 10.31435/rsglobal_ijitss/30092023/8028
DOI	https://doi.org/10.31435/rsglobal_ijitss/30092023/8028
RECEIVED	10 July 2023
ACCEPTED	20 August 2023
PUBLISHED	22 August 2023
LICENSE	This work is licensed under a **Creative Commons Attribution 4.0 International License.**

COMPUTER APPLICATIONS TECHNOLOGY TEACHING: A CASE OF SUPPORTING SECONDARY SCHOOL CURRICULUM IMPERATIVES

Bulelwa Makena
Lecturer, Research Interest- language Acquisition, Faculty of Education, Walter Sisulu University, Butterworth Campus, South Africa
ORCID ID: 0000-0001-7340-3001

Primrose Zameka Yengwayo
Lecturer, Faculty of Education, Research Interest-Digital Learning, Walter Sisulu University, Butterworth Campus, South Africa

DOI: https://doi.org/10.31435/rsglobal_ijitss/30092023/8028

ARTICLE INFO

Received 10 July 2023
Accepted 20 August 2023
Published 22 August 2023

KEYWORDS

Computer Skills, Digital Tools, Computer, Online, Applications, Technology.

ABSTRACT

The purpose of this study was to determine whether Computer Applications Technology secondary school teachers receive necessary support. Qualitative approach was chosen because it incites the most important meaning from participants and best suited for small samples. As case study embedded this investigation. A case study was used for this qualitative paper with an aim to investigate whether Computer Applications Technology teaching was supported to enhance secondary school curriculum imperatives. Three participants were selected purposively from a rurally located Eastern Cape Education District. To collect data, semi-structured interviews were used. Data were analysed thematically. Findings indicated that teachers do not receive necessary support on technology use, this caused by insufficient school funds to render trainings towards upskilling human resource for expected content knowledge. The paper recommends that school authorities need to support teachers and learners as CAT is one of the vital subjects underpinning school curriculum. In conclusion, school authorities is obliged to render support towards developed computer literacy skills.

Citation: Bulelwa Makena, Primrose Zameka Yengwayo. (2023) Computer Applications Technology Teaching: a Case of Supporting Secondary School Curriculum Imperatives. *International Journal of Innovative Technologies in Social Science*. 3(39). doi: 10.31435/rsglobal_ijitss/30092023/8028

Introduction.

The Covid-19 pandemic and subsequent school closure forced teachers towards online engagements to ensure that gaps are closed for all learning and teaching processes (Hodder, 2020). This was not an easy transition, as this success depended on both teachers and learners having computer literacy skills, knowledge of digital tools, and competencies for online teaching (Van Deursen, van Dijk, 2019). Additionally, there was a for teachers to adapt new pedagogical concepts and approaches of instruction for which they might not have received effective training and support on technology education imperatives (Bordbar, 2010). Teachers are expected to modify teaching practices leading to creativity. This has an advantage to preserve learner engagement, as the schooling environment has to display fertile ground to support effective learning (Blankley & Booyens, 2010).

Furter than that, teaching Computer Applications Technology (CAT) supports learners in learning computer skills that are a functional requirement in the fourth industrial revolution era. These computer skills enable them to use a wide range of digital programmes, which are essential in today's world (Kent, Laslo & Rafaeli, 2016). Thus, trained teachers are required to meet the needs of secondary school learners when teaching CAT. Hence, supporting CAT teachers would be beneficial. Consequently, it is for this reason that authors of this paper became intrigued to investigate whether CAT teachers receive the necessary support needed to capacitate teaching the subject in secondary schools (Bates, 2018).

Literature Review.

It is unsurprising that computers have become an integral part of teaching and learning as an ongoing process for skills building coupled with learner progression and global competence (Bates, 2018). Consequently, developing computer skills in the digital age would advantage both role players. As a result, attending trainings and workshops would be beneficial if the Department of Education (DoE) or any other organisation consistently offers such developmental programmes (Seufert, Guggemos & Sailer, 2021).

As argued by Hashim, Saharani, Zulkifli, Mokhtar and Yunus, (2019), CAT teachers have to obtain all the necessary support. This could be done by workshops and trainings conducted by either the DoE or non-governmental organisations. When teachers have attended workshops, they become equipped with new methods of teaching the subject. Learners as people who already have some information on using computers need teachers who are full of knowledge (Lara, Aljawarneh & Pamplona, 2020). If teachers are found not to have the necessary information there might be problems because some advantaged leaners already have access to the use of computers in their homes (Naile & Selesho, 2014).

However, Chiles (2012), suggests that there is a need for some planned processes on how implementation of CAT should be done in schools. Some motivation strategies for CAT teachers have to be put in place. Practical subjects like these need teachers to always have some acceptable attitudes that would also motivate love of learning CAT within learners' inner or self-enthusiasm. This means that all CAT teachers are expected to have the required skills and understanding of the subject for them to be in a better position to impart relevant subject content (Takamine, 2017).

Another motivating factor suggested by Bruer (2015) is that in each classroom where CAT is studied, there should be computers. This researcher also suggests that all teachers teaching CAT have to be provided with the obligatory tools of trade like Laptops and tablets. If teachers are subsidized with the necessary tools, they become efficient when planning without having to disturb learners in the computer laboratory. More than that, laptops are easy to carry and move around with. Moreover, these laptops have been reported by research to help teachers at networking with others to share knowledge. Ghazal, Hasan, Alshurideh, Alzoubi, Ahmad, Akbar, Al Kurdi & Akour (2021) highlighted that DoE has to ensure that teachers are skilfully equipped with computer literacy skills to solve problems that learners can face.

In relation to support mechanisms, teachers teaching CAT are advised to go an extra mile to move beyond procedures of teaching the subject, but instead have to network and form partnerships with other subjects relating to CAT. This statement is supported by Naile and Selesho (2014) who observed that most learners pass subjects that are related to CAT perfectly well. A good example of the subject that displayed satisfactory performance is Mathematics as this is also a practical subject. Government Publications (2008) is of the same view by noting that teachers teaching CAT are observed to have taught learners some applications, yet they are also expected to also capacitate such affected learners with some skills needed to apply computer literacy.

When partnerships have been well developed between CAT teachers and teachers of other relevant subjects, there would be collaboration and networking between groups of teachers who have the same view to achieve better results in the subjects they teach (Brits, 2013). This group of teachers for a subject in the same or relevant field of study then serve as a support group where partners are permitted chances to share their experiences, challenges, and also successes or strengths. Where challenges have been indicated, teachers are then advised to work collaboratively with one another to help identify the cause of the problem, then suggest possible solutions to the situation (Clayton, Blumberg & Anthony, 2018).

Therefore, teachers who offer CAT need to be trained and workshopped on different and new teaching approaches. These approaches also encompass the difficult language used in computer learning (Ali, Ahmed, Anum, Ghazal, Abbas, Khan, Alzoubi & Ahmad, 2021). Words and terms not familiarly used in other subjects learned need both teachers and learners to have full grasp of such terminologies. When such practices are put in place, spirits for those teachers who had developed some lowered motivation because of learners who do not perform well, are boosted. If CAT teachers have become motivated, learners would also be motivated. When this support mechanism has been put in place, there is great possibility for improved pass percentages in the learning of computer subjects (Zukan, & Aldulaimi, 2020).

Henceforth, Swartout (2013) contends that another support strategy towards teachers teaching CAT may be awarding learners who had shown some commitment and passed the subject in flowering percentages. Prize-giving ceremonies, as perceived by Choudhury and Pattnaik (2020) are noted of their encouraging characteristic. Even learners who had lowered performance at schools are motivated when they see their peers given awards. This motivating factor goes beyond motivating learners only. When teachers notice that learners have developed some interest and commitment in learning the subject, they also feel they are supported by learners, as a result those teachers begin to develop more love and dedication towards the subject because they have a feeling that they are not fighting the battle of studying CAT all alone.

As outlined by the Rijuan (2009), there is a need to offer great teacher- professional support and development. This is aimed at transforming teaching methods, as such, planting confidence. The ultimate and positive fruit is rooted focus on positive effect of ICT on teaching, learning and development of learner-skills (Schmid, Brianza & Petko, 2021).

Underpinning this study is the Activity Theory (Clemnensen & Katelynn, 2016). The theory perceives an activity as a system of human doing where subjects work on objects to acquire a desired outcome. This is a practise where a subject makes functional use of the tools, either external (e.g. a computer) or internal (e.g. a plan).

This practise entails practical approaches applied during learning-teaching environment. Educationally, this therefore implies that with learning through the use of online learning tools like computers, learners become exposed to critical thinking, problem solving and upgraded computer literacy skills needed in this digital world. Use of computers for learning can lead to probable careers (DoE, 2008).

Methods and Materials.

In this section, authors have detailed, acknowledged, and discussed the research methodology that served as the framework for this investigation, using the chosen research approach as a guiding principle (Fleming & Zegwaard, 2018). To make this study credible and transportable, it became necessary to justify each type of procedure used. The study employed a qualitative research methodology. This led to better chances of comprehending the case and actual circumstances at the study site as perceived by participants when expressing their real-life experiences.

Methodological Design.

As articulated by Bhandari (2022) a research approach that is qualitative in nature helps at discovering, thereby comprehending meaning from individual participants. This was the reason why this study got underpinned in a qualitative research approach. Further than that, it is this approach that assisted a lot at supplying rich and specified outline in relation to realities entangling digital learning strategies applied during the teaching of CAT in rural schools. This qualitative study used a case study design that helped to explore whether CAT teachers receive any support in teaching the subject in secondary schools (Creswell, 2015; Mckenney & Reeves, 2018).

Population and Sampling.

Three participants who were purposefully nominated for this qualitative investigation became sources of information as we engaged and interacted with them during this entire process, at different intervals and periods, pending their availability as they were full time employees in the research site identified. In addition to that, all the three participants displayed eagerness to take part in this investigation. This interest emanated after they were informed of ethical considerations that their

identities would be kept anonymous, thereby making use of untruthful names (Polonsky & Waller, 2019). These participants were perceived to be a relevant group because of the momentous years being allocated for computer-learning related subjects.

Research Instruments.

Semi-structured interviews were conducted. This type of questioning allowed chances for in-depth discussions. Posing a set of questions as outlined by the interview schedule, in an open-ended manner, helped both interviewees and the interviewers to vibrantly engage. Discussions that led to also asking follow up questions that were not primarily contained in the interview schedule helped at assembling rich data (Freedmam, 2014).

Discussions of Results.

Data analysis was done for this study. Similar rejoinders were merged, and thus, some themes emerged. Below is the discussion of findings in relation to the themes as revealed by the analysed data.

Teacher Exposure to Technology Use.

One of main findings concerns the support towards teaching of CAT in secondary schools. Participants complained that they were limited time for training on technology. This is confirmed by a response indicating that as CAT teachers they were experienced some encounters caused by dysfunctional learning and teaching online resources like computers readily available in computer laboratories. Be that as it may, the DoE has a vested responsibility of making sure that some lab technicians are made available to render mechanical services that may arise. As recommended by Matijevic (2014), it then becomes the task of the School Management Team (SMT) to generate a conducive environment to efficiently cater for the emergent culture of being exposed to the use of online learning resources.

Limited Teacher Training.

It came out as one of the findings that lack of advanced computer literacy skills in some teachers was caused by lack of trainings. If one is hindered by limited trained, this could lead to demotivation and lack of confidence while a teacher presents the lesson. When a teacher displays lack of confidence there could be challenges of learner dissatisfaction because of failure to deliver the required computer literacy schools. To lighten the circumstances, Fambaza (2012) contend that adequate training should be provided to those who offer CAT solely because there is a demand that learners be capacitated with the necessary technology skills. In addition to that, computer learning is no mean task because language and terminologies used need one to have been really trained on such language aspects and jargons (Prensky, 2001).

Moreover, it seems there is a need for DoE to take note of capacity building mechanisms for teachers to be professionally well equipped, this has an added advantage to make all affected in the process to have inner motivation. The study findings are in line with Fuchs (2020) who observed that limited workshops to improve digital learning strategies on teachers may have some negativity in the learning process, thereby leading to a decline in learner academic performance. As indicated by Schiølin (2020), platforms for online learning be conducted in technological environments that are supportive for all.

Conclusions.

As indicated by the findings of this study that some fundamental challenges regarding support towards CAT teachers in the secondary schools, for further studies one could identify some strategies that are motivational to help upgrade all users, both learners and teachers. It is therefore recommended by this study that it is worth an investment that all CAT teachers to receive professional training as a vital need for proficient support. The paper thereby concludes by defining some critical aspect for CAT teachers to have access in platforms open for upgrading skills necessary to align with the digital sphere.

Acknowledgements.

Without the Almighty' s glory as our rock of strength throughout all life accomplishments, it would have really impossible to have drafted and written this little piece of task to its final stages. We are highly indebted to relay our sincerest gratitude to the Research Directorate of the institution where we are employed, Walter Sisulu University. Their unwavering motivation and capacitation to be always and forever prepared to fund publications of our manuscripts, is greatly applauded. To have managed to obtain valuable data discussed as findings of this investigation, we appreciate the research participants for their essential and huge role to have agreed to engage vibrantly and open-endedly when interviews were administered.

REFERENCES

1. Ali, N. Ahmed, A., Anum, L., Ghazal, T., Abbas, S., Khan, M., Alzoubi, H. and Ahmad, A.,. Modelling Supply Chain Information Collaboration Empowered with Machine Learning Technique. *Intelligent Automation & Soft Computing*, 30, no 1 (2021): 243-257. DOI:10.32604/iasc.2021.01898.
2. Bates, A., *Teaching in a digital age: guidelines for designing teaching and learning for a digital age.* (2018). Tony Bates Associates Ltd, London.
3. Bhandari, P. *An introduction to qualitative research*. (2022). Downloaded from https://www.scribbr.com/methodology/qualitative-research/#:-text=Qualitat...itative.
4. Blankley, W. O. and Booyens, I.,. Building a knowledge economy in South Africa. *South African Journal of Science*, 6, no 106 (2010): 11-12.
5. Bordbar, F,. English teacher attitude towards Computer –assisted language learning. *International Journal of language Studies*, 4, no 3 (2010): 179-188.
6. Bruer, T. Research based for improved classroom learning. *Evidence Speaks Report*, 1, no 9 (2015): 1-5.
7. Chiles, M,. *The state of IT education in South Africa schools*. Institute of Information Technology Professionals – South Africa. (2012) Available at <: htt://www.iitpsa.org.za/the-state-of-it-education-in-south-african-schools/.
8. Choudhury. S, and Pattnaik S. Emerging themes in e-learning: a review from the stakeholders' perspective. *Computer Education*,14, no 4 (2020): 1–20.
9. Clayton, K. E., Blumberg, F. C., and Anthony, J. A.,. Linkages between course status, perceived course value, and students' preferences for traditional versus non-traditional learning environments. *Computers & Education*, 1, no 25 (2018): 175–181.
10. Clemmensen, T., Kaptelinin, V. and Nardik, B. Making HCI theory work: An analysis of the use of activity theory in HCI research. *Behaviour and Information Technology*, 35, no 8 (2016): 608–627.
11. Creswell, J. W. *Research design: Qualitative approaches* (2nd ed.) (2015). Thousand Oaks, CA: Sage Publications.
12. Fambaza, T. *The experience of teachers in teaching Computer Applications Technology at the Further Education and Training* (2012). Durban: University of KwaZulu-Natal.
13. Fleming, J. and Zegwaard K. E. Methodologies, methods and ethical considerations for conducting research in work-integrated learning. *International journal of work-integrated learning, Special Issue*, 19, no 3 (2018): 205-213.
14. Freedmam, D. A. *Sampling* (2014). Available at [http://www.stat.berkeley.edu/~census/sample.pdf].
15. Fuchs, C.. The Utopian Internet, Computing, Communication, and Concrete Utopias: Reading William Morris, Peter Kropotkin, Ursula, K. Le Guin, and P.M. in the Light of Digital Socialism. tripleC Commun. Capital Crit., 18 (2020): 146–186.
16. Ghazal, T., Hasan, M., Alshurideh M., Alzoubi, H., Ahmad, M., Akbar, S., Al Kurdi, B. and Akour, I. *IoT for Smart Cities: Machine Learning Approaches in Smart Healthcare-A Review, Future Internet*, 13 (2021): 218. https://doi.org/10.3390/fi13080218.
17. Government Publications. *National Curriculum Statement. Grades 10 -12. Learning Computer Applications Technology guidelines* (2008). Cape Town: Department of Education.
18. Hashim, H., Saharani, M., Zulkifli, N., Mokhtar, M. and Yunus, M. Conception of Innovative Teaching Methodologies among Lecturers at Selected Polytechnics in Malaysia. *Creative Education*, 10, (2019): 874-881. doi: 10.4236/ce.2019.105065.
19. Hodder, A. New Technology, Work and Employment in the era of COVID-19: Reflecting on legacies of research. *New Technol. Work Employ*, 35, (2020): 262–275.
20. Kent, C., Laslo, E., and Rafaeli, S. Interactivity in online discussions and learning outcomes. *Computers & Education*, 97, (2016): 116-128. https://doi.org/10.1016/j.compedu.2016.03.002.
21. Lara, J. A., Aljawarneh, S., and Pamplona, S.,. Special issue on the current trends in E-learning Assessment. *Journal of Computing in Higher Education*, 32, no 1 (2020): 1-8.

22. Lippman, P. Designing collaborative space for schools. *The education digest*: (2015) 39-44.
23. Matijevic, M. Learning in the environment: new media and learning for the future. *Libellarium*, 7, no 1 (2014): 93-103.
24. Mckenney, S. and Reeves, T. L. *Conducting educational design research* (2018). New York: Routledge.
25. Naile, L. and Selesho, J. The role of leadership in employee motivation. *Mediterranean Journal of Social Science*, 5, no 3 (2014): 75-82.
26. Polonsky, M. J. and Waller, D. S.. 'Ethical Considerations' in Polonsky and Waller. *Designing and Managing a Research Project: A Business Learners Guide* (2019): 53- 75.
27. Prensky, M. Digital natives, digital immigrants part 1. *On Horizon* 9, no 5 (2001): 1-6. https://doi.org/10.1108/10748120110424843.
28. Rijuan, L. *Problems encountered with the teaching of Computer Applications Technology and Information Technology at Senior Secondary school level: A managerial approach* (2009). The Central University of Technology: Free State.
29. RSA, DoE. *National Curriculum Statement Grades 10-12*. Pretoria: Department of Education (2003). Available at <: http://www.iti.gov.eg/.
30. Schiølin, K. Revolutionary dreams: Future essentialism and the sociotechnical imaginary of the fourth industrial revolution in Denmark. *Social. Studies Science*, 50 (2020): 542–566.
31. Schmid, M., Brianza, E. and Petko, D. Self-reported technological pedagogical content knowledge (TPACK) of pre-service teachers in relation to digital technology use in lesson plans. *Computers in Human Behavior* (2021): 115, 106586. https://doi.org/10.1016/j.chb.2020.106586.
32. Seufert, S., Guggemos, J., and Sailer, M. Technology-related knowledge, skills, and attitudes of pre-and in-service teachers: The current situation and emerging trends. *Computers in Human Behavior* (2021): 115, 106552. https://doi.org/10.1016/j.chb.2020.106552.
33. Swartout, S. K. *The Impact of Computer Applications on the Development of Students' Literacy Skills*. (2013) Education Masters.
34. Takamine, K. Michelle D. miller: Minds online: Teaching effectively with technology. *Higher Education*, 73 (2017): 789–791.
35. Van Deursen A. J., and Van Dijk J. A. The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media Soc* 21, no 2 (2019): 354–375. https://doi.org/10.1177/1461444818797082.
36. Zukan, S., and Aldulaimi, S. H.The Influence Of Grade Expectation And Student Motivation For Academic Performance, *International Journal of Scientific & Technology Research*, 9, no 1 (2020): 4405- 4415.