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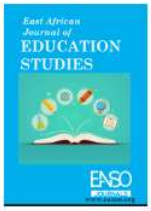

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Original Article

An Evaluation of Factors Affecting Student Achievement in Computer Studies on the Uganda Certificate of Education Examinations in Wakiso District, Uganda

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Keywords: *Student Achievement, Computer Studies, Uganda Certificate of Education, Examinations in Uganda.*

ABSTRACT

The study examined factors affecting student achievement in computer studies in the Uganda Certificate of Education Examinations (UCE). It was conducted in secondary schools across Katabi Sub-County, Wakiso District, Uganda. To achieve the study's purpose and objectives, a correlational design was adopted. Data were collected using a four-category Likert scale from 138 purposively selected student respondents across four secondary schools in Katabi Sub-County, Wakiso District. For the relationship between teacher qualification and student performance, the study found a moderate negative correlation ($r = -0.655$, $p = .001$). A moderate negative correlation ($r = -0.580$, $p = .001$) was found between teacher experience and student grades. Finally, the study found a moderate negative correlation ($r = -0.393$, $p = .001$) between the number of students per computer and student grades. These findings suggest that, beyond certain levels, these factors may not directly enhance student achievement, highlighting the need to consider other elements, such as teaching quality and resource utilisation, to improve student outcomes.

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INTRODUCTION

The integration of Computer Studies into the Uganda Certificate of Education (UCE) curriculum marks a transformative shift in the nation's pedagogical landscape. According to the National Curriculum Development Centre (Asuman et al., 2025), Information and Communication Technology (ICT) education has evolved from an elective vocational subject into a core competency essential to the digital economy. This shift was accelerated by the 2020 overhaul of the Lower Secondary Curriculum, which prioritises hands-on digital literacy to prepare students for modern research, innovation, and global employment. global employment (Veronica, Wilbrod, et al., 2025).

Despite significant government investments in teacher training, laboratory construction, and hardware procurement, student performance in Computer Studies remains a persistent challenge. While ICT use is positively correlated with academic success, substantial barriers, including high data costs and inconsistent power supply, continue to hinder progress. Furthermore, national statistics reveal a stark digital divide; for instance, as of 2022, only approximately 10% of secondary schools in some regions were considered adequately equipped with both computers and reliable internet access (Nafiu et al., 2024).

Contemporary literature underscores that student achievement depends not solely on the presence of technology but on the quality of human intervention. Recent correlational studies have established that teacher certification and professional experience are the most influential predictors of student success in national examinations (Kyambade et al., 2025). Specifically, certified teachers with specialised ICT training are significantly more likely to foster "digital readiness" among learners. Consequently, while policy frameworks such as the Uganda Digital Vision 2040 aim for universal inclusion, the immediate focus remains on bridging the teacher-qualification gap and reducing the high student-to-computer ratios that currently limit effective learning (Veronica, Muhammed, et al., 2025)

Purpose of the Study

The purpose of the study is to examine the relationships between teacher qualifications and students' achievement, teacher experience and students' achievement, and the student-computer ratio and students' achievement. Schools and their communities have always sought the best teachers they could find, believing that their students' success depends on it. Moreover, school facilities play a vital role in students' teaching and learning. Learning is shaped primarily by what students actually do rather than by intended pedagogical designs. As a result, learning outcomes may differ from those formally stated. Examining students' engagement with summative assessments, while considering the broader context in which tasks are completed, provides clearer insight into what students truly learn, including both intended and unintended outcomes (Fischer et al., 2024).

Problem Statement

In Wakiso District, student performance in secondary school computer studies remains worryingly low, with only 45% passing the O-level exams (Wakiso District Education Office, 2023). National data show that inadequate teacher qualifications significantly affect ICT achievement (Kayiwa & Mugisha, 2020). Notably, 60% of computer studies teachers lack formal ICT training, and 70% have less than three years of experience teaching the subject (Wakiso District Teacher Training Department, 2022). Additionally, resource limitations, such as the absence of fully equipped computer labs, limit practical skills development; more than half of the

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district's secondary schools lack sufficient ICT facilities (Kalangala & Nsubuga, 2021). These issues may collectively lead to poor student outcomes, highlighting the urgent need to investigate them.

Study Objectives

- Examine the relationship between Teacher qualifications and student Achievement at O-level in computer studies examinations in Wakiso District.
- Establish the relationship between Teacher experience and student Achievement at O-level in the computer studies Examination in Wakiso district.
- Find out the relationship between the student-computer ratio at O-level in the computer studies Examination in Wakiso District.

Research Questions

- What is the relationship between Teacher qualifications and student Achievement in the O-level computer studies Examination in Wakiso District?
- What is the relationship between Teacher experience and student Achievement in the O-level computer studies Examination in Wakiso district?
- What is the relationship between the student–computer ratio at the O-level in the Computer Studies Examination in Wakiso District?

Hypothesis

1. There is no significant relationship between teacher qualification and student achievement in O-level computer studies in Wakiso District.
2. There is no significant relationship between teacher experience and student achievement in O-level computer studies in Wakiso District.

There is no significant relationship between student–computer ratio and student achievement in O-level computer studies in Wakiso District.

LITERATURE REVIEW

Teacher Qualifications and Student Achievement

Recent studies emphasise the importance of teacher qualifications in enhancing student achievement, especially in technology-related subjects. According to Mwangi and Kamau (2021), teachers with higher academic qualifications and specialised training in computer science significantly improve students' understanding and performance in computer studies. Their research found that qualified teachers are better equipped to implement innovative teaching strategies and use technological tools effectively, thereby improving examination outcomes. Similarly, Ahmed et al. (2022) highlight that ongoing professional development and certification are critical in equipping teachers with current pedagogical skills necessary for effective computer education.

In schools where resource constraints may limit teaching quality, teacher qualifications are crucial. Research by Nsubuga and Kato (2023) shows that enhancing teacher qualifications can directly boost student achievement in computer studies, supporting policies for teacher training and certification. Recent evidence also indicates a positive link between higher teacher qualifications and student performance in computer exams. Additionally, studies by Sewanyana et al. (2024) highlight the importance of not just formal qualifications but also the inclusion of digital literacy and pedagogical skills in teacher training programmes. They contend that teachers equipped with both technical and pedagogical expertise are better at engaging students and promoting critical thinking skills vital for success in computer studies at O-level. This points to the need for future policies to focus on comprehensive professional development that integrates content mastery with innovative teaching methods.

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Teacher Experience and Student Achievement

Recent educational research continues to highlight the importance of teacher experience in student success. Ochieng and Otieno (2020) discovered that teachers with more extensive experience in teaching computer studies often use more effective teaching methods, which lead to better student outcomes. Their research highlights that experienced teachers are better at integrating technology into their lessons and managing classroom interactions, creating a more engaging learning environment.

Furthermore, Okoth and Mutua (2024) argue that while experience contributes to improved student outcomes, it must be complemented by continuous professional development to adapt to evolving technological trends. In Wakiso District, where technological integration is still developing, experienced teachers could serve as catalysts for improving computer literacy and exam performance. However, recent research by Kizza et al. (2025) suggests that the benefits of experience plateau beyond a certain point, highlighting the importance of ongoing training to maximise its impact on student achievement.

Wambui (2022) emphasises that the quality of experience is as important as years of teaching. Teachers who regularly update their skills in technology and pedagogy generally have a greater positive impact on student achievement than those with many years of experience but little engagement in new practices. This underscores the need to promote a culture of ongoing learning among veteran teachers to maintain progress in student outcomes.

Student–Computer Ratio and Student Achievement in Computer Studies

Access to sufficient technological tools is crucial for effective computer education. The ratio of students to computers directly influences students' opportunity to gain practical skills and actively engage in computer activities. Ndegwa and Wainaina (2023) observe that a lower student–computer ratio correlates with greater student engagement and higher academic achievement in computing. Their findings suggest that when students have ample access to computers, they are more inclined to practise and enhance their digital skills, leading to better exam outcomes.

In resource-limited settings, high student–to–computer ratios present substantial challenges. Kato et al. (2024) find that schools with lower ratios experience greater student engagement and achievement. Recent research also shows that investing in infrastructure to lower this ratio can significantly enhance student outcomes (Mutumba & Nabwire, 2025). Additionally, Otieno and Muga (2023) highlight that simply increasing the number of computers is not enough; they must also be functional and accessible during lessons. They emphasise that hardware availability alone is insufficient; regular maintenance, a reliable internet connection, and suitable software are equally crucial for maximising technological benefits. Addressing these issues comprehensively can foster a more effective learning environment and boost performance in computer studies.

METHODS AND MATERIAL

Research Design

The research used a correlational design to determine whether two variables were correlated. This means studying whether an increase or decrease in one variable corresponds to an increase or decrease in the other variable. According to Oso and Onen (2005), a correlational design determines the extent of an association between two or more paired, quantifiable variables. It collects data on two quantifiable variables from the same group of subjects and then compares their variation. It also provides a rigorous and replicable procedure for understanding relationships. More still, it determines whether and to what degree a relationship exists between quantifiable variables.

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Sampling

The sample comprised four teachers from four schools in Wakiso District. Specifically, two boarding schools and two-day schools were selected to represent the district's diverse characteristics, including differences in power supply, availability of trained computer teachers, laboratory facilities, and school type (urban/rural, day/boarding, co-educational/single-sex). The selection aimed to ensure the representativeness of the various school contexts in Wakiso, reflecting Ugandan secondary schools that offer computer studies at the O-level.

Instruments

The questionnaire comprised four sections: Demographics, Teacher Qualification, Teacher Experience, and Student-Computer Ratio. The researcher used this structured tool to collect quantitative data from teachers at selected schools, focusing on their qualifications, experience, and the student–computer ratio. This approach enabled efficient collection of a large number of responses and provided insights into teachers' perspectives on factors influencing student achievement. The responses were analysed to examine relationships between teacher qualifications, experience, the student–computer ratio, and student exam performance, enabling the researcher to identify potential patterns or associations that could impact learning outcomes in the district.

In addition to the questionnaire, a second data collection tool was used to gather information on student performance from the Uganda Certificate of Examination (UCE). The UCE is a national examination administered by the Uganda National Examination Board (UNEB) at the end of the four-year lower secondary education cycle in Uganda. It serves as a standardised assessment of students' mastery of the curriculum and is a key determinant of progression to upper secondary education and future opportunities. By analysing UCE results, the researcher was able to objectively measure student achievement and analyse its relationship with various teacher-related variables and school factors, providing a comprehensive understanding of the factors affecting student performance in the district.

Validity of Instruments

The investigating team developed the Questionnaire. The instrument was widely discussed with subject and research specialists, including Computer Studies teachers. In addition, Content Validity (CV) of the instrument was evaluated by assessing how adequately the items sampled for inclusion in the tool represent the domain of content addressed by the instrument (Waltz, Strickland, & Lenz, 2005). A panel of at least 4 content experts (Lynn, 1986) was asked to rate each scale item for its relevance to the underlying construct. The item ratings were on a 4-point ordinal scale: 1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant. Then, for each item, the Item Content Validity Index (I-CVI) was computed as the number of experts who rated 3 or 4 (dichotomising the ordinal scale into relevant and not relevant), divided by the total number of experts (Polit & Beck, 2006). The instrument's reliability was .78, and was therefore deemed acceptable (Lynn, 1986).

Reliability of Instruments

The reliability of the instruments was established through piloting in 2 A-Level Secondary schools in Wakiso District. Cronbach's reliability coefficient, or the Separation Reliability coefficient r, was estimated from the pilot results to assess the internal consistency of both the domains of interest within the instruments and the overall internal consistency of the instrument. Instrument domain or whole-instrument coefficients of 0.70 or higher were regarded as indicating reliable items (Lance, 2006). A meeting of the R&E working group discussed the pilot results, and adjustments were made accordingly.

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Data Analysis

The data analysis was conducted in SPSS, a statistical software package that facilitated efficient computation and interpretation of the results. Initially, descriptive statistics, including means and standard deviations, were generated in SPSS to summarise the central tendencies and variability of the variables, namely student grades, teacher qualifications, teacher experience, and the student–computer ratio. This step provided a clear overview of the data distribution and helped identify any potential anomalies or patterns.

Before conducting the correlation analysis, the assumptions underlying Pearson's product-moment correlation were assessed in SPSS. The software's scatter plot function was used to assess the linearity of relationships between variables, ensuring the data met the necessary criteria for correlation analysis. The independence of observations was maintained through the sampling process. Although normality was not explicitly tested, visual inspection of the scatter plots in SPSS supported the assumption that the variables were approximately normally distributed, justifying the use of Pearson's correlation.

Subsequently, SPSS was used to compute Pearson correlation coefficients for each pair of variables: teacher qualification and student performance, teacher experience and student performance, and the student–computer ratio and student performance. The software provided the coefficients alongside significance levels (p-values), enabling an assessment of both the strength and statistical significance of the relationships.

RESULTS

Research question 1: What is the relationship between Teacher qualification and student performance in the O-level computer studies Exam in Wakiso District?

Table 1: Descriptive Statistics

	M	*SD*	*N*
Grade	3.88	2.25	134
Teacher Quality	8.13	1.12	134

Descriptive statistics for Student Grade and Teacher Qualification (TQ) were calculated based on a sample of 134 participants. The mean Student Grade was 3.88 (*SD* = 2.25), indicating variability in scores around the mean. The TQ variable had a mean of 8.13 (*SD* = 1.12), suggesting that TQ scores were more tightly clustered around the mean than Student Grade scores.

Hypothesis 1: What is the relationship between Teacher qualification and student performance in the O-level computer studies Exam in Wakiso District?

Table 2: Pearson Product-Moment Correlations of Students' Grade and Teacher Qualification

Scale (Ratio)	Student Performance [a]	Teacher Qualification [b]
Teacher Qualification Scale	1**	-.655 ***
Sig. (2-tailed)		.001

** Correlation is significant at the .05 level (2 – 2-tailed)

A Pearson correlation coefficient was computed to assess whether teacher qualifications are related to student performance. The test was conducted using an alpha of 05. The null hypothesis was that the relationship would be 0. The assumption of independence was met through random selection. The assumption of linearity was reasonably assessed using a scatter plot of the variables. The Pearson correlation between teacher qualifications and student performance is -.655,

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which is negative and interpreted as a moderate effect size (Cohen, 1988), and is statistically different from 0 (r = -.655, n = 134, p = .001). Thus, the null hypothesis that the correlation is zero was rejected at the 05 level of significance. There is a moderate negative correlation between teacher qualifications and students' performance. In practical terms, this suggests that higher teacher qualifications may not necessarily be associated with higher student performance.

Research question 2: What is the relationship between Teacher experience and student performance in O-level computer studies exams in Wakiso district?

Table 3: Descriptive Statistics

	M	*SD*	*N*
Grade	3.88	2.25	134
Teacher Experience	9.18	1.97	134

The table presents descriptive statistics for two variables: Grade and Teacher Quality (TQ). For the Grade variable, the mean was 3.88 (SD = 2.25) across 134 participants. This suggests that, on average, participants scored approximately 3.88, with variability reflected in the standard deviation. For the TQ variable, the mean was 8.13 (SD = 1.1), also based on 134 participants. These results indicate that TQ scores were generally higher than Grade scores and showed less variability among participants, as evidenced by the lower standard deviation. Overall, these statistics summarise the central tendency and dispersion of scores for both variables within the sample.

Hypothesis 2: What is the relationship between Teacher experience and student performance in O-level computer studies exams in Wakiso district?

Table 4: Pearson Product-Moment Correlations of Students' Grades and Teacher Experience

Scale (Ratio)	**Student Performance [a]**	**Teacher Experience [b]**
Teacher Experience scale	.1 **	-.580 ***
Sig. (2-tailed)		.001

** Correlation is significant at the .05 level (2- tailed)

A Pearson correlation coefficient was computed to determine if there is a relationship between teacher experience and student performance. The test was conducted using an alpha of 05. The null hypothesis was that the relationship would be 0. The assumption of independence was met via random selection. The assumption of linearity was reasonably assessed through a scatter plot of the variables. The Pearson correlation between teacher experience and student performance is -.580, which is negative, is interpreted as a moderate effect size (Cohen, 1988) and is statistically different from 0 (r = -.580, n = 134, p = .001). Since the null hypothesis (r = 0) was rejected, we can conclude that there is evidence of a meaningful negative association between students' grades and Teacher Teaching Experience. In practical terms, this suggests that longer teaching experiences may not translate into higher student performances.

Thus, the null hypothesis that the correlation is zero was rejected at the. 05 level of significance. There is a moderate negative correlation between teacher experience and students' performance.

Research question 3: What is the relationship between the student–computer ratio at O-level in the computer studies Exam in Wakiso District?

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Table 5: Descriptive Statistics

	M	*SD*	*N*
Grade	3.88	2.25	134
SCR	7.36	. 58	134

Table 5 presents the descriptive statistics for the variables examined in the study. The mean grade score was 3.88 (*SD* = 2.25) across 134 participants. Additionally, the mean Student Computer Ratio (SCR) score was 7.36 (*SD* = 0.58) in the same sample.

Hypothesis 3: What is the relationship between the student–computer ratio at O-level in the computer studies Exam in Wakiso District?

Table 6: Pearson Product-Moment Correlations of Students' Grades and Teacher Qualifications

Scale (Ratio)	Student Performance a	Student–computer ratio [b]
Student-computer ratio Scale	.1 **	-.393 ***
	Sig. (2-tailed)	.001

**Correlation is significant at the .05 level (2- tailed)

A Pearson correlation coefficient was computed to determine whether there is a relationship between the student–computer ratio and student performance. The test was conducted using an alpha of 05. The null hypothesis was that the relationship would be 0. The assumption of independence was met through random selection. The assumption of linearity was reasonably assessed using a scatter plot of the variables. The Pearson correlation between the student–computer ratio and student performance is -.393. This negative value is interpreted as a moderate effect size (Cohen, 1988) and is statistically significant (r = -.393, n = 134, p = .001). Thus, the null hypothesis that the correlation is zero was rejected at the 05 level of significance. There is a moderate negative correlation between the student–computer ratio and students' performance, meaning that a higher student–computer ratio may not be associated with higher student performance.

DISCUSSIONS

The study found a moderate negative correlation between teacher qualifications and student performance (r = -0.655, p = .001). This surprising result supports previous research indicating that higher formal qualifications do not necessarily lead to better student outcomes. For example, Chinyoka and Chabaya (2017) showed that, in some situations, teacher qualifications alone had limited influence on student achievement, highlighting the importance of practical teaching skills over formal credentials. Similarly, Darling-Hammond (2000) suggests that continuous professional development and teaching experience tend to have a bigger impact on student learning than initial qualifications. This implies that teaching quality depends not just on formal credentials but also on effective instructional practices and ongoing support.

Regarding the second research question about the relationship between teacher experience and student achievement, a moderate negative correlation was found (r = -0.580, p = .001). This supports earlier studies, such as Clotfelter et al. (2007), which suggest that more years of experience do not automatically lead to better student outcomes, especially if teachers do not engage in ongoing professional development. Moreover, Nye, Konstantopoulos, and Hedges (2004) argue that the effect of experience plateaus over time, and highly experienced teachers might become less effective without adopting new pedagogical approaches. These findings highlight the importance of continuous training and innovative practices to enhance teaching effectiveness, rather than relying solely on accumulated years of experience.

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Regarding the third research question- examining the link between the student–computer ratio and student performance- the results show a moderate negative correlation ($r = -0.393$, $p = .001$). This suggests that a lower student–computer ratio alone does not necessarily lead to higher student achievement. Although prior studies, such as Warschauer (2003), highlight that adequate access to technology is crucial for effective computer-based learning, particularly in resource-limited environments, and Chigona and Chetty (2007) demonstrate that lower student-to-computer ratios can boost engagement and achievement, these benefits depend on the broader educational context. Simply increasing computer availability or reducing ratios may not automatically improve outcomes unless coupled with effective teaching methods, curriculum integration, and student motivation. Thus, technological access, while important, is not the only factor affecting student success, emphasising the importance of comprehensive strategies for technology integration in education.

Recommendations

To improve student performance, focusing on ongoing professional development and practical teaching skills is crucial, rather than only prioritising formal qualifications or years of experience. Schools should provide continuous professional development, encourage innovative teaching methods, and support teachers' lifelong learning. While expanding access to technology and lowering student–computer ratios can increase engagement, these should be paired with proper curriculum integration, teacher support, and motivation strategies. A thorough approach that blends professional growth with efficient resource use will be most effective in achieving better educational outcomes.

Key Limitations

While this study provides valuable insights, several limitations should be noted. It primarily used quantitative data, which may overlook important factors affecting student achievement, such as motivation, parental involvement, and socio-economic status. The research was limited to schools in Wakiso District, so the results may not apply to other regions with different educational environments or resources. Data were collected through self-reports from teachers and administrators, which could introduce biases, such as social desirability, or inaccuracies in reporting qualifications, experience, or resources. Additionally, as a cross-sectional study, it offers a snapshot in time and cannot determine cause-and-effect relationships between teacher qualifications, experience, resource ratios, and student success. Long-term studies are needed to explore these relationships over time. Acknowledging these limitations helps interpret the findings accurately and guide future research.

CONCLUSION

This study analysed how teacher qualifications, experience, and student–computer ratio relate to student achievement in O-level computer studies in Wakiso District. The results indicated that while higher qualifications are linked to better student performance, the relationship is complex-higher qualifications do not always lead to higher grades. Teacher experience showed a nuanced effect: more experienced teachers did not necessarily lead to improved outcomes, suggesting that experience alone does not guarantee teaching success. Furthermore, an inverse correlation between the student–computer ratio and achievement was observed, suggesting that resource quality and accessibility are crucial to learning outcomes. Overall, these findings emphasise the need to consider factors such as teaching quality and infrastructure to enhance student performance effectively.

REFERENCES

Ahmed, S., Kisaali, R., & Mugisha, D. (2022). The impact of professional development on teachers' effectiveness in computer education. *Journal of Educational Technology*, 15(3), 45-60.

Article DOI: https://doi.org/10.37284/eajes.9.1.4405

Asuman, K., Madinah, N., Musa, M., & Bisaso, S. M. (2025). ICT Application as a Predictor for Implementation of New Lower Secondary School Curriculum in Selected Secondary Schools in Semuto Town Council, Nakaseke District, Uganda. *International Journal of Innovative Science and Research Technology*, 3028– 3036. https://doi.org/10.38124/ijisrt/25aug708

Cohen, J. (1988). Statistical Power Analysis for the Behavioural Sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Chigona, A., & Chetty, R. (n.d.). Teen mothers and schooling: lacunae and challenges. In *South African Journal of Education* (Vol. 28, pp. 261– 281). https://files.eric.ed.gov/fulltext/EJ1149989.pdf

Chinyoka, D., & Chabaya, O. (2017). Teacher qualifications and student achievement: A review of empirical evidence. *International Journal of Educational Management, 31*(4), 456-472. https://doi.org/10.1108/IJEM-02-2016-0012

Clotfelter, C. T., Ladd, H. F., Vigdor, J. L., & Wheeler, J. (2007). High school teacher qualifications and student achievement: A review of the evidence. *Journal of Educational and Behavioural Statistics, 32*(1), 1 34. https://doi.org/10.3102/1076998607309910

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Educational Policy Analysis Archives, 8*(1), 1-44. https://doi.org/10.14507/epaa.v8n1.200

Ndegwa, P., & Wainaina, J. (2023). Access to technology and academic achievement in Secondary schools. *Educational Review International*, 10(2), 67-85.

Fischer, J., Bearman, M., Boud, D., & Tai, J. (2024). How does assessment drive learning? A focus on students' development of evaluative judgement. *Assessment & Evaluation in Higher Education*, *49*(2), 233–245. https://doi.org/10.1080/02602938.2023.2206986

Kato, M., Wainaina, J., & Ndegwa, P. (2024). Infrastructure and student engagement in computer studies: A case study of resource allocation in Kenyan schools. *International Journal of Educational Resources*, 8(2), 112-128.

Kalangala, R., & Nsubuga, S. (2021). *Assessment of ICT Infrastructure in Secondary Schools in Wakiso District*. Uganda Educational Research Journal, 9(3), 78-89.

Kayiwa, J., & Mugisha, R. (2020). *Impact of Teacher Qualifications on Students' Academic Performance in ICT Subjects in Ugandan Secondary Schools*. Journal of Education and Practice, 11(12), 45-54.

Kizza, P., Mugisha, D., & Mutumba, S. (2025). Teacher experience and student achievement in digital literacy: A longitudinal analysis. *Journal of Education and Technology*, 20(1), 78-92.

Kyambade, M., Kisseka, R., & Namatovu, A. (2025). Blended learning models in Ugandan higher business education: Best practices and lessons learned. *Cogent Education*, *12*(1), 2545329. https://doi.org/10.1080/2331186X.2025.2545329

Lance, C. E. (2006). The measurement of internal consistency: Cronbach's alpha and beyond. *Journal of Experimental Education, 74*(3), 254- 272. https://doi.org/10.3200/JEXE.74.3.254-272

Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research, 35*(6), 382 385. https://doi.org/10.1097/00006199-198611000-00008

Article DOI: https://doi.org/10.37284/eajes.9.1.4405

Nsubuga, R., & Kato, S. (2023). Enhancing teacher qualifications for improved computer education outcomes. *Ugandan Journal of Educational Policy*, 5(1), 55-70.

Nye, B., Konstantopoulos, S., & Hedges, L. V. (2004). How large are teacher effects? *Educational Evaluation and Policy Analysis, 26*(3), 237 257. https://doi.org/10.3102/01623737026003237

Okoth, J., & Mutua, G. (2024). Continuous professional development and its effect on computer literacy among teachers. *Journal of Teacher Education*, 12(3), 101-117.

Otieno, R., & Muga, S. (2023). Infrastructure challenges and opportunities in Kenyan secondary schools' computer education. *Technology in Education Journal*, 14(4), 225-240.

Oso, W. Y., & Onen, D. (2005). *A general guide to writing research proposals and reports: A handbook for beginning researchers*. Makerere University Printery.

Polit, D. F., & Beck, C. T. (2006). The content validity index: Are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health, 29*(5), 375-383. https://doi.org/10.1002/nur.20147

Mwangi, J., & Kamau, D. (2021). Teacher qualifications and student performance in secondary school computer studies in Kenya. *African Journal of Education and Development*, 9(4), 233-249.

Nafiu, L., Julius, A., & Hadiijah, N. (2024). Digital Literacy and Educational Outcomes: A Case Study of Secondary Schools in Gulu. 3, 511–523.

Veronica, N., Muhammed, W., & University Research Repository Extension, M. (2025). *The Impact of Teacher Qualification on Student Performance: A Case Study of Public Secondary Schools in Kampala*. *4*, 234–244.

Veronica, N., Wilbrod, M., & Prudence, K. (2025). The Impact of ICT Integration in Ugandan Secondary Schools on Student Learning Outcomes. Case of Metropolitan International University. 4, 210–222.

Wakiso District Education Office. (2023). *Annual Education Performance Report*. Wakiso District.

Wakiso District Teacher Training Department. (2022). *Teacher Qualification and Experience Report*. Wakiso District.

Wambui, A. (2022). Experience versus engagement: Factors influencing teacher effectiveness in ICT education. *Journal of Educational Leadership*, 11(2), 89-105.

Wangui, S. (2020). The role of teacher experience in student achievement in digital literacy. *Kenyan Journal of Education*, 7(1), 44-58.

Waltz, C. F., Strickland, O. L., & Lenz, E. R. (2005). *Measurement in Nursing and Health Research* (3rd ed.). Springer Publishing.

