

This article is an extract of a PhD thesis that investigated the influence of digital resource integration and the implementation of Science, Technology, Engineering and Mathematics subjects in junior public schools in Kitui County, Kenya. Digital resources have gradually become important in enhancing curriculum implementation in all educational levels, and their integration plays a key role in implementing the STEM curriculum. The study investigated the influence of the adequacy of digital infrastructure and the implementation of STEM subjects in junior public schools in Kitui County, Kenya. The study was guided by the Technological Pedagogical Content Knowledge (TPCK) theory of digital integration by Mishra and Koehler (2006). The study adopted the embedded mixed-method research design. The study target population was 3661 junior school teachers, 1102 headteachers and 19 Sub-County Quality Assurance and Standards Officers (SCQASOs). A sample of 670 respondents, including 294 headteachers, 360 teachers and 16 SCQASOs was sampled. The researcher established face validity by ensuring that all questions and interview schedules were developed from the study objectives and relevant literature and content validity through piloting selected schools across the county by choosing participants with similar characteristics to the target population. Schools which were piloting were not included in the sample of the research instruments. To establish reliability of the research instruments the researcher used the test–retest method. The questionnaires were administered to the pilot group of respondents drawn from public junior schools outside the main study sample. After a two-week interval, the same instrument was re-administered to the same respondents. The two sets of scores were correlated using Pearson’s Product Moment Correlation Coefficient to determine the stability of the instrument over time. A reliability coefficient of 0.81 for the headteachers’ questionnaire and 0.84 for the teachers’ questionnaire. The overall reliability coefficient for the instrument was 0.83. Data was collected by use of structured questionnaires for headteachers and teachers, while interview schedules were used to collect data from Sub-county Quality Assurance and Standards Officers. Data was presented in descriptive statistics such as frequencies, tables, percentages, graphs, means and Standard deviation. Quantitative data was analysed aided by Statistical Package for Social Sciences (SPSS) software program version 28. Qualitative data from open-ended questions, opinions and interviews were analysed using the content analysis technique. The findings from interviews were reported and transcribed into themes and presented in narrations and direct quotes. A Pearson product-moment correlation was conducted to examine the relationship between independent and dependent variables, while regression was used to test the hypothesis. The study findings showed that mobile phones and tablets were relatively available but science laboratories, ICT laboratories, smart boards, interactive boards, reliable internet connectivity and standby power systems were found to be inadequate. While

some schools had access to basic digital tools, such as mobile devices and tablets, the general state of these infrastructures in the majority of the public junior schools was inadequate for the successful implementation of STEM subjects. The study findings showed a strong positive correlation of 0.702 between the adequacy of digital infrastructures and the implementation of STEM subjects in public junior schools of Kitui County. The study therefore concluded that STEM subjects are not well implemented in junior schools of failures and inadequate digital infrastructures in the majority of junior schools. The study recommends that the Ministry of Education should priorities construction of key STEM infrastructures, that includes Science laboratories, ICT labs, technology workshops in schools, to facilitate proper CBE curriculum implementation, the government should develop a policy on school digital resource sharing so that schools can use labs and workshops in other institutions to solve the existing infrastructure gaps in their schools.