

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 teachers' digital competency 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 that were piloted were not included in the sample of the research instruments. To establish the 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. Quantitative data was analysed using the Statistical Package for Social Sciences (SPSS) software program version 28. The study also noted that teachers' capacity-building activities, including CEMASTEIA training, Re-tooling workshop, Virtual laboratory training, and training on the use of AI tools, had been conducted, but there was a need for regular training. The study further found that digitally competent teachers were more confident integrating digital tools in the classroom, navigating learners through a digital platform and Learning Management Systems (LMS) and creating interactive STEM learning

experiences. The study findings showed a low positive correlation of 0.281 between the adequacy of teachers' digital competency and the implementation of STEM subjects in public junior schools of Kitui County. Based on these inferential statistics, the study concluded that there was a weak positive correlation between teachers' digital competency and STEM implementation in public junior schools ($r = 0.281$). This implies that improvements in teachers' digital skills are associated with modest improvements in the implementation of STEM subjects; however, the influence is relatively limited. Therefore, while teacher competency is an important factor in determining STEM curriculum implementation, it is not significant and does not explain the reason for poor implementation of STEM in Kitui County of Kenya. Based on these findings, the study recommends that the government should develop a policy framework and manuals that will enhance teacher training capacity on digital resources in the teaching of STEM subjects. The need for a comprehensive approach that combines enhancement of teachers' digital competencies with improved infrastructural and administrative support to strengthen STEM implementation in schools is core.