UMT Education Review (UER)
Volume 9 Issue 1, Spring 2026
ISSN$_{(P)}$: 2616-9738, ISSN$_{(E)}$: 2616-9746
Homepage: https://journals.umt.edu.pk/index.php/uer



Title:	**Stakeholder Engagement in Upscaling of Digital Literacy Programmes in Public Primary Schools in Elgeyo Marakwet County, Kenya**
Author (s):	Barsulai Kipkorir Titus, Pamela Ochieng, and Joyce W. Gikandi
Affiliation (s):	Mount Kenya University, Thika, Kenya.
DOI:	https://doi.org/10.32350/uer.91.04
History:	Received: March 22, 2026, Revised: April 07, 2026, Accepted: April 22, 2026, Published: June 16, 2026
Citation:	Titus, B. K., Ochieng, P., & Gikandi, J. W. (2026). Stakeholder engagement in upscaling of digital literacy programmes in public primary schools in Elgeyo Marakwet County, Kenya. *UMT Education Review*, *9*(1), 98–117. https://doi.org/10.32350/uer.91.04
Copyright:	© The Authors
Licensing:	This article is open access and is distributed under the terms of Creative Commons Attribution 4.0 International License
Conflict of Interest:	Author(s) declared no conflict of interest

A publication of
Department of Education, School of Social Sciences and Humanities
University of Management and Technology, Lahore, Pakistan

Stakeholder Engagement in Upscaling of Digital Literacy Programmes in Public Primary Schools in Elgeyo Marakwet County, Kenya

Barsulai K Titus*, Pamela Ochieng, and Joyce W. Gikandi

Department of Educational Management and Curriculum Studies, Mount Kenya University, Kenya

Abstract

The current study examines how stakeholder involvement affects the upscaling of Digital Literacy Programmes (DLPs) in public primary schools in Elgeyo Marakwet County, Kenya. The use of the Competency-Based Curriculum (CBC) and the introduction of digital technology in primary education have set a new learning direction in Kenya. This study is based on the theories of Administrative Management Theory (Fayol, 1916) and the Technology Acceptance Model (TAM) (Davis, 1989). The study used a concurrent triangulation mixed-methods design. The accessible population consisted of 120,929 people, representing 345 public primary schools. These included the Board of Management (BOM) chairpersons, head teachers, teachers, learners, and Quality Assurance and Standards Officers (QASOs) in Elgeyo Marakwet County. A sample of 384 learners (Grades 6, 7, and 8), 307 teachers, 28 BOM chairpersons, and 28 head teachers was selected using Yamane's (1967) formula. Purposive sampling was used to obtain all four QASOs. BOM chairpersons, head teachers, and QASOs were administered the semi-structured interview guides, and teachers and learners were administered structured questionnaires. Thematic analysis was used to analyse the qualitative data, while the quantitative data were analysed using descriptive and inferential statistics (Pearson's correlation and hierarchical multiple regression) via SPSS (Version 23). The results showed that although the DLP policy and financing have improved, there are still challenges in teachers' ICT acceptance and learners' access to digital devices. The results also showed that the upscaling outcomes of DLP were statistically positive and significant. Further, they were positively predicted by stakeholder engagement ($\beta = 0.125$, $p < 0.05$, $R^2 = 0.765$). The findings offer the relevant evidence base for MIM to take necessary actions to overcome implementation gaps and enhance the governance of digital literacy.

*Corresponding Author: barmakenya@gmail.com

***Keywords*:** digital literacy programme, competency-based curriculum, institutional management strategies, stakeholder engagement, primary education, Kenya

Introduction

Information and Communication Technology (ICT) has been identified as one of the key drivers of socioeconomic development in Kenya's Vision 2030. Hence, the Integration of ICT through the Competency-based Curriculum (CBC) in education has been encouraged. Digital literacy is achieved through enhanced digital infrastructure and a positive attitude by teachers towards technology-enhanced pedagogy (Wambua et al., 2023). However, the adoption of Digital Literacy Programmes (DLPs) in primary schools still remains limited due to a lack of infrastructure, lack of teacher training, and lack of access to digital devices for learners (Ferri et al., 2020).

The implementation of DLP has been inconsistent among schools in Elgeyo Marakwet County, Kenya. Schools have not fully implemented the system mostly because of the high ratio of students to computers, the flow of electricity, internet connectivity, and maintenance problems. These barriers have not been sufficiently addressed in the literature, especially in underserved counties in primary schools. Management strategies at the institutional level, such as the allocation of resources, teacher recruitment and retention, and teacher's professional development play a vital role in filling these gaps (Kozanoglu & Abedin, 2021; Statti & Torres, 2020).

The policies of Sub-Saharan African governments have increasingly focused on integrating digital literacy into primary school education. The national policy in South Africa requires digital literacy in all schools and aims to equip learners for a technology-driven future (Quaicoe & Pata, 2020). Greenfield (2009) showed that there have been significant changes in the way digital literacy is practiced in Ethiopia. Furthermore, digital technologies have the potential to promote 21st century skills including critical thinking and creativity. Likewise, digital spaces which allow for device-agnostic access to content can prolong learning beyond the physical classroom (Wittmann & Olivier, 2021). In this regional context, the role of stakeholder engagement in the upscaling of DLPs in public primary schools in Elgeyo Marakwet County, Kenya is explored in this research.

Objective

To determine the influence of stakeholder engagement on the upscaling

of DLPs in public primary schools in Elgeyo Marakwet County, Kenya.

Literature Review

Digital Literacy Programmes (DLPs): Global Perspective

There have been significant investments in international digital learning initiatives in primary schools, although not all have been successful. Governments around the world have invested in digital literacy to enhance teaching and learning with digital tools, such as the United Kingdom invested £2.5 billion in 2008-2009 (Nascimbeni & Vosloo, 2019). Similarly, the United States spends more than $410 million annually on integrating digital tools in schools. However, Gulbahar (2007) pointed out that this investment has not been met with substantial progress in actual DLP use in classrooms, which indicates that financial investment alone is not enough to cause pedagogical changes. The literature reflects this gap between investment and implementation, which is very relevant in the Kenyan context.

Omboto et al. (2022) acknowledged the educational and social value of good quality digital education content, drawing on examples of initiatives such as Sesame Street. In a randomized controlled trial, Rosenfeld et al. (2019) built upon this evidence and found that print concept acquisition, letter recognition, and phonics became significantly better with media-based literacy instruction. These results indicate that digital content, if used well, can lead to measurable learning gains, provided that stakeholder commitment to its use and additional system support are adequate.

Digital Literacy Programmes (DLPs): Kenyan Context

Digital literacy is a key pillar of Kenya's education transformation by CBC. In 2017, the Ministry of Education introduced the DLP, which aimed at equipping public primary schools with digital devices while enhancing teachers' skills in the use of ICT (Kenya Institute of Curriculum Development, 2018). Even with these efforts, the implementation has been inconsistent, especially in resource challenged counties like Elgeyo Marakwet. Murithi and Yoo (2021) discovered that the majority of primary school teachers are plagued by low confidence and competence in the use of ICT, thus negatively impacting the sustainability of DLP outcomes. Morara et al. (2020) also found that a lack of technical assistance, insufficient infrastructure, and a lack of financial resources are some of the major challenges to DLP scaling up. All these studies point to a similar

conclusion that both structural and human capital gaps are a limitation to DLP implementation in Kenya. Further, they can only be addressed through a coordinated multi-stakeholder effort and not through piecemeal policy responses.

Stakeholder Involvement in DLP Upscaling

The involvement of stakeholders is well known as an important enabler of implementing and scaling educational programmes. According to Ansu-Mensah et al. (2021), inclusive stakeholder engagement strengthens the legitimacy and sustainability of such programmes. In the DLP space, various actors – school leaders, educators, parents, community members, and government officials – perform unique and complementary functions that have a cumulative impact on the effectiveness of the programme. Specifically, Ochieng (2024) identified that structured stakeholder engagement strategies play a key role in the successful digital transformation of education, especially when organizational capacities are low. Power, legitimacy, and urgency can be used to prioritize stakeholders and there is a theoretical justification for doing so (Mitchell and Lee, 2019). This insight is relevant to DLP governance in Kenyan primary schools, especially where resources are limited and there is a need for strategic prioritization of stakeholder input.

Theoretical Framework

This study was guided by Administrative Management Theory (Fayol, 1916) and the Technology Acceptance Model (Davis, 1989).

Administrative Management Theory

Henri Fayol's Administrative Management Theory states that there are 14 principles of management that help to achieve the goals of an organization and ensure its efficiency, such as the division of labour, unity of command, coordination, and equity (Brunetti et al., 2020). The emphasis of Taylor's scientific management remains on operational efficiency, whilst Fayol's emphasis is on organizational structure, planning, and control, which is directly applicable to the institutional management of school-based programmes. From a theory of DLP implementation, this relates to two aspects of the study: the independent variable of the study (stakeholder engagement) and the central role of the head teacher as the key administrative coordinator for programme scalability. The principles of Fayol can be used to rationalize how school administrators can implement

a system of digital literacy to systematically organize staff roles and allow for teamwork and collaboration in delivering digital literacy.

Technology Acceptance Model (TAM)

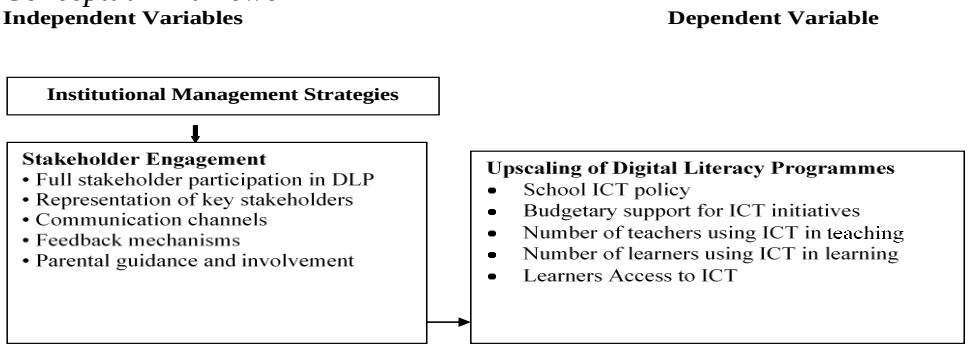
The Technology Acceptance Model (TAM) was developed by Davis (1989) and states that the perceived usefulness and ease of use is the primary factor behind technology adoption. TAM specifically refers to the link between the teachers' and learners' perceptions of DLP tools — that is, their usefulness and familiarity — and actual DLP upscaling results in this study. Venkatesh et al. (2003) expanded TAM to the Unified Theory of Acceptance and Use of Technology (UTAUT), adding social influences and facilitating conditions — factors that are highly relevant to DLP as they affect technology acceptance in the presence of administrative support and peer norms, among others. However, one of the accepted constraints of TAM is that it is an individualistic approach which downplays the social, organizational, and environmental influences on technology adoption. The individual-level limitation of this study, however, is partially overcome by combining TAM with Administrative Management Theory, which leads to a complementary dual-theory framework that covers both individual level dynamics of acceptance and organizational level conditions of governance necessary for the upscaling of DLP.

Conceptual Framework

Figure 1 illustrates the conceptual framework for this study, depicting the directional relationship between the independent variable (stakeholder engagement) and the dependent variable (upscaling of DLP).

Figure 1

Conceptual Framework



Methodology

In this study, a concurrent triangulation mixed-methods research design was used, based on a convergent parallel model of Creswell and Clark (2018) and Tashakkori and Teddlie (2010). This design can be used to collect and analyze quantitative data and qualitative data at the same time and then combine the results to gain a comprehensive understanding of the phenomenon being studied. The combination of both data strands also ensures the validity and reliability of the results due to methodological triangulation, in that neither one nor the other would provide a comprehensive picture of stakeholder involvement in DLP upscaling.

Target Population

Table 1 presents the target population for this study.

Table 1
Target Population of the Study

Respondents	Target Population
BOM Chairpersons	345
Head Teachers	345
Teachers	3,771
Learners	116,464
Quality Assurance and Standards Officers (QASOs)	4
Total	120,929

Note. Source: Elgeyo Marakwet County Education Office (2023)

Population and Sample Size

The sample size for non-learner respondents was calculated using Yamane's (1967) formula which resulted in 28 BOM chairpersons, 28 head teachers, and 307 teachers. For the learner stratum, Cochran (1977) formula was used with a precision of 0.05 and 95% confidence interval and a sample of 384 learners was obtained. All four QASOs responsible for monitoring DLP implementation were chosen using purposive sampling, due to their knowledge within their realm and because the subpopulation of QASOs is small.

Table 2
Sample Size and Sampling Technique

Categories	Population	Sample Size	Sampling Technique
BOM Chairpersons	345	28	Simple random sampling

Categories	Population	Sample Size	Sampling Technique
Head Teachers	345	28	Simple random sampling
Teachers	3,771	307	Simple random sampling
Learners	116,464	384	Simple random sampling
QASOs	4	4	Purposive sampling
Total	120,929	751	

Research Instruments

A semi-structured interview guide and a structured questionnaire were used. The questionnaire consisted of 25 items, each rated on a five-point Likert scale (1 = *Strongly Disagree* to 5 = *Strongly Agree*), and based on previously validated questionnaires in the field of digital literacy (Choudhary, 2024). To establish content validity, the instrument was reviewed by three academic supervisors for the alignment of the items with the constructs of the study and the feedback from them were used to modify the instrument. Exploratory factor analysis was also used as a further test of construct validity of the instrument which revealed items loaded on their respective constructs. The internal consistency of all subscales was adequate, with Cronbach's alpha values greater than the 0.70 level recommended by Nunnally (1978), indicating instrument reliability.

The semi-structured interview guide had 10 open-ended and probing questions, which were extracted from stakeholder engagement frameworks. Four strategies were used to ensure the trustworthiness of qualitative data: member checking (respondents checked back with researchers on transcripts and/or summary themes); thick description (researchers gave enough context for others to make judgements of transferability); audit trail (all decisions made during data collection and analysis were documented); and prolonged engagement (researcher maintained extended contact with the study site to develop understanding and reduce reactivity).

Ethical Considerations

The study received ethical approval from Mount Kenya University Institutional Research Ethics Committee (MKU-IREC). Written consent was obtained from all adult participants. Parental/guardian consent and learner assent was needed for participation. All participants were told that they could drop out of the study at any time but without penalty. All data were kept confidential and personally identifiable information was not shared. The study has been carried out according to the guidelines of NACOSTI in human subject's research.

Data Analysis

Qualitative data was analyzed through thematic analysis. Descriptive and inferential statistics including frequency and percentage, Pearson product-moment correlation, and hierarchical multiple linear regression analysis were used in analyzing quantitative data through SPSS (version 23).

To evaluate the strength and direction of the bivariate relationship between stakeholder engagement and DLP upscaling, Pearson correlation was calculated and interpreted based on the following conventions: $r = 1.0$ (perfect positive); $0.9 < r < 1.0$ (strong positive); $0.5 < r < 0.7$ (moderate positive); $0 < r < 0.5$ (weak positive) (Schober et al., 2018). To assess the distinct predictability of stakeholder engagement in calculating the variance of DLP upscaling, hierarchical multiple regression was used. Before analysis, regression assumptions such as linearity, normality of the residuals, and the lack of multicollinearity were checked.

The regression model used for this study is expressed as follows:

$$Y = \beta_0 + \beta_3 X_3 + \varepsilon \quad (1)$$

where Y = Upscaling of digital literacy programmes; β_0 = constant; β_3 = slope coefficient; X_3 = stakeholder engagement; ε = error term.

Results

Table 3

Response Rate

Category (Sample)	Frequency	Percentage (%)
BOM Chairpersons (*n*=28)	23	82
Head Teachers (*n*=28)	22	80
Teachers (*n*=307)	234	76
Learners (*n*=384)	307	80
QASOs (*n*=4)	4	100
Total (*n*=751)	590	79

A total of 751 instruments were administered, comprising 28 interview guides each for BOM chairpersons and head teachers, 307 questionnaires for teachers, 384 questionnaires for learners, and 4 interview guides for QASOs. The overall response rate of 590 (79%) exceeded the 50% threshold considered adequate for analysis (Mugenda, 2003), indicating that

the sample is sufficiently representative for drawing valid inferences about the target population.

Stakeholder Engagement and Upscaling of Digital Literacy Programmes

The study examined the influence of stakeholder engagement on the upscaling of DLPs in public primary schools in Elgeyo Marakwet County, Kenya. The findings are presented below in Table 4.

Table 4

Stakeholder Engagement and Upscaling of DLP

Statement	*f*/%	SA (5)	A (4)	U (3)	D (2)	SD (1)	*M*	*SD*
Stakeholders fully participate in DLP use and upscaling	*f*	70	87	46	18	13	3.7821	1.123
	%	29.9	37.2	19.7	7.7	5.6		
High level of key stakeholder representation in DLP	*f*	35	112	55	24	8	3.6068	0.976
	%	15.0	47.9	23.5	10.3	3.4		
Good communication channels for information flow	*f*	35	97	63	25	14	3.4872	1.061
	%	15.0	41.5	28.9	10.7	6.0		
School facilitates feedback mechanisms among stakeholders	*f*	33	99	49	25	28	3.3590	1.204
	%	14.1	42.3	20.9	10.7	12.0		
Adequate parental guidance to enhance DLP upscaling	*f*	53	78	43	29	31	3.3974	1.320
	%	22.6	33.3	18.4	12.4	13.2		

For all the five dimensions measured, the results show a fairly positive attitude towards the involvement of stakeholders in DLP processes. The mean score of active stakeholder participation in DLP use and upscaling was the highest (M = 3.7821, SD = 1.12308), with the majority of the respondents agreeing or strongly agreeing that stakeholders are involved in a meaningful way. This supports the assertion of Ochieng (2024) that structural measures to engage stakeholders positively influence digital transformation outcomes in education. The level of communication channels was rated moderate (M = 3.4872, SD = 1.06134), indicating that the information flow of the stakeholders was perceived as functional, but not regularly inclusive or timely. One QASO noted, “Good communication between the stakeholders is important, as the government provides schools

with e-resources, which are then used in class through technology, but are not optimized." (QASO1)

The five dimensions were scored with the lowest mean score for feedback mechanisms (M = 3.3590, SD = 1.20415), which suggests that although there is a formal feedback structure, it was not perceived as sufficiently systematic and responsive. The relatively high standard deviation (1.204) indicates that there is a lot of variation in the respondents' experience of these mechanisms, indicating that they are not consistently implemented in all schools. A head teacher (HT1) commented that "The school management has provided access to digital literacy devices and training but there is a lack of feedback to see what is and is not working." (HT1)

This discovery aligns with Choudhary's (2024) assertion that solid feedback mechanisms are essential to the successful use of technology in education, allowing for timely program modifications to address new challenges. Parental involvement (M = 3.3974, SD = 1.320) was also named as a targeted area. A BOM Chairperson (BOM1) said, "There is a need for more training for parents on how to support their children's use of technology." (BOM1)

The findings overall show that although basic "stakeholder" structures are in place, there are significant gaps in performance with respect to communication, feedback, and parental capacity, which all offer leverage points to enhance DLP upscaling outcomes.

Inferential Statistics

Using the interpretive conventions of Schober et al. (2018), Pearson product-moment correlation analysis was performed to analyze its bivariate relationship with DLP upscaling. The results are shown below in Table 5.

Table 5

Pearson Correlation Showing Stakeholder Engagement and DLP Upscaling

	Upscaling of DLP	Stakeholder Engagement
Upscaling of DLP	-	
Stakeholder Engagement	.038***	-

Note. ***p < .001

The Pearson correlation coefficient of stakeholder engagement and DLP upscaling was $r = 0.038$ ($p < 0.01$), as presented in Table 5. This is a weak positive correlation based on effect size according to the interpretive framework of Schober et al. (2018) ($0 < r < 0.5$), however, the association is statistically significant at 0.01 level, indicating that this correlation would not likely occur by chance. This suggests that the more stakeholders are engaged, the more likely the results of DLP upscaling will improve, although the strength of the association in this sample is small. It is important to understand that the weak correlation coefficient must be put in the context of the multifaceted nature of DLP upscaling, which is dependent on a number of factors, such as infrastructure, funding, and national policy, in addition to stakeholder engagement. A more detailed picture of the predictive contribution of stakeholder engagement is conveyed by the regression analysis below.

Table 6

Multiple Regression Model Summary

R	R^2	Adjusted R^2	Std. Error
.872[a]	.765	.759	.35270

The coefficient of determination (R^2) = 0.765 indicates that the regression equation (stakeholder engagement as the predictor) accounts for 76.5% of the variation in the upscaling outcomes of DLP in public primary schools in Elgeyo Marakwet county. The Adjusted R^2 of 0.759 validates this explanatory power, which is not due to model complexity. The multiple correlation coefficient ($R = 0.872$) shows that there is a strong positive linear relationship between the model and the real value of the dependent variable, resulting in a strong predictive validity of the model.

Table 7

ANOVA Results

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	1746.127	5	10.598		
Residual	52.988	228	7.658	1.384	.000
Total	1799.115	233			

The results of ANOVA in Table 7 also confirm that overall, the regression model is statistically significant ($F = 1.384$, $p < 0.001$). This suggests that the regression model, which included stakeholder engagement

as a predictor of the outcome of DLP upscaling, is a much better fit to the data as compared to a model with only an intercept, thereby concluding that stakeholder engagement is a statistically significant determinant of DLP upscaling in public primary schools.

Table 8

Regression Coefficients

	B	*SE*	β	*t*	Sig.
(Constant)	.684	.232		2.948	.005
Stakeholder Engagement	.125	.044	-.109	-2.831	.006

The regression coefficient in Table 8 shows that stakeholder engagement is statistically significant and a positive predictor of DLP upscaling ($B = 0.125$, $SE = 0.044$, $\beta = -0.109$, $t = -2.831$, $p = 0.006 < 0.05$). This proves the null hypothesis (H_{03}) that stakeholder engagement does not significantly affect DLP upscaling at 95% confidence level. The positive score for B (0.125) suggests that for every one-unit increase in stakeholder engagement scores, the score for DLP upscaling outcomes also increased by 0.125, with the other factors remaining constant. The regression equation is

$$\mathbf{Y = 0.684 + 0.125X_3} \quad (2)$$

This confirms that when diverse stakeholders engage in a cohesive, multi-directional approach to DLP governance, it produces measurable and statistically significant improvements in DLP upscaling outcomes in public primary schools.

The results of this study showed that stakeholder engagement is descriptively valued and remains a statistically significant predictor of DLP upscaling in public primary schools in Elgeyo Marakwet county. Stakeholder participation ($M = 3.7821$) and key stakeholder representation ($M = 3.6068$) were the dimensions most positively perceived. While, feedback mechanisms ($M = 3.3590$) and parental involvement ($M = 3.3974$) were perceived as the dimensions most in need of improvement. The regression model was significant ($F = 1.384$, $p < 0.001$) and statistically, stakeholder engagement accounted for 76.5% of the variance in DLP upscaling ($R^2 = 0.765$). This research suggests that more intensive involvement of stakeholders – especially with greater communication, effective feedback mechanisms, and planned parental capacity-building – is

a high leverage point for improving DLP outcomes.

Discussion

The key result of this study indicates that in public primary schools in Elgeyo Marakwet county there is a statistically significant positive relationship between stakeholder engagement and DLP upscaling (B = 0.125, $p < 0.05$, $R^2 = 0.765$). This adds to the body of evidence that supports the literature on digital transformation in African education. It also aligns with Ochieng (2024) and Choudhary (2025), who both concluded that meaningful stakeholder engagement is a key enabler of digital educational transformation. This overall positive picture is tempered by the finding of the lowest mean score (M = 3.3590) for the feedback mechanisms. The results are in keeping with the critical view of Arnstein (1969) who warned that there is a danger of tokenistic participation by stakeholders as they appear to be involved but are not actually able to influence decision-making. The relatively low level of correlation (r = 0.038) further underlines this tension, as engagement structures are currently in place but the quality of these structures is not yet high enough to produce powerful, consistent DLP results throughout the school system.

Conflicting interests among stakeholders are cited as one of the key barriers to the rate and quality of governance processes, including DLPs (Raha et al., 2021). This insight is relevant in the context of Elgeyo Marakwet county where various stakeholders, including national QASO officers, local BOM chairpersons, and parents come with differing priorities, resources, and digital literacy levels to the DLP governance process. Eskerod (2020) also recognized that stakeholder engagement is time consuming and resource intensive and that it demands the coordination of many actors over a prolonged period of time. The take home message is that effective DLP governance structures should be created to ensure that the stakeholders participate in them for sustained periods of time, with regular communication cycles, accessible feedback systems, and investment in capacity building. This is especially true for parents, who are the least engaged in current DLP engagement efforts.

Viglia et al. (2019) suggested that digital transformation in education should be perceived as a common and collaborative effort which engages everyone in reconsidering the ways in which education is delivered. This principle is empirically verified in this study, with 76.5% of the variance in

DLP explained by stakeholder engagement, demonstrating that the upscaling of digital literacy is not a technological but a governance and relational challenge, which needs continued investment in human and institutional aspects of stakeholder collaboration.

This study shows that stakeholder engagement is statistically significant at p-value < 0.05, $B = 0.125$, $R^2 = 0.765$ and is a necessary determinant for DLP upscaling in public primary schools of Elgeyo Marakwet County, Kenya. Overall, engagement is good but there are strategic gaps in engagement that hinder the delivery of measurable programme outcomes, with feedback mechanisms ($M = 3.3590$) and parental involvement ($M = 3.3974$) being key areas of persistent weakness. The results confirm the dual theory model of the current study, namely the Administrative Management Theory and Technology Acceptance Model, which explain the conditions at the organizational and individual level conducive to DLP upscaling. The idea of developing context-specific sustainable solutions to encourage the institutionalization of digital competence in primary education is very promising but needs a conscious investment in the development of feedback structures, parents' capacities, and teachers' professional development. A sound, fair, and forward-looking practice of integrating ICT should be based on strong, multi-stakeholder governance.

Implications for Policy and Practice

The following recommendations are based on the results of this study:

- National level policies – such as standards for DLP implementation, including certification and training of teachers, ICT resource allocation benchmarks, and community engagement protocols – should be in place.
- Communication mechanisms with parents, teachers, administration, and community leaders need to be formalized and systemized in schools to facilitate inclusive communication and feedback in a timely manner.
- Targeted parental engagement programmes need to be developed and resourced to help parents to acquire the digital literacy skills and contextual knowledge necessary to actively engage in their learners' DLP participation at home.
- Feedback loops, inclusive of all the stakeholders, should be institutionalized to allow timely adjustments to the programme and

evidence-based decision-making.

Suggestions for Future Studies

Future studies should investigate the longitudinal association between DLP policies, stakeholder engagement mechanisms, and the degree of DLP adoption over several academic years with designs that would lend more causal inferences. Comparative studies at the county level would help to understand how stakeholder engagement impacts DLP upscaling outcomes which are moderated by contextual factors, such as available infrastructure, cultural norms, and local governance capacity in Kenya.

Author Contribution

Barsulai Kipkorir Titus: conceptualization, data curation, formal analysis, investigation, methodology, writing – original draft, writing – review & editing. **Pamela Ochieng:** supervision, writing – review & editing. **Joyce W. Gikandi:** supervision, writing – review & editing.

Conflict of Interest

The author of the manuscript has no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

Data of this study will be provided by the corresponding author upon formal request.

Funding Details

No funding has been received for this research.

Generative AI Disclosure Statement

The authors did not use any type of generative artificial intelligence software for this research.

References

Abacioglu, C. S., Volman, M., & Fischer, A. H. (2020). Teachers' multicultural attitudes and perspective taking abilities as factors in culturally responsive teaching. *British Journal of Educational Psychology*, *90*(3), 736–752. https://doi.org/10.1111/bjep.12328

Adinda, D., & Mohib, N. (2020). Teaching and instructional design approaches to enhance students' self-directed learning in blended learning environments. *Electronic Journal of e-Learning*, *18*(2), 162–174. https://doi.org/10.34190/EJEL.20.18.2.005

Ansu-Mensah, P., Marfo, E. O., Awuah, L. S., & Amoako, K. O. (2021). Corporate social responsibility and stakeholder engagement in Ghana's mining sector: A case study of Newmont Ahafo mines. *International Journal of Corporate Social Responsibility*, *6*, Article e1.

https://doi.org/10.1186/s40991-020-00054-2

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, *35*(4), 216–224. https://doi.org/10.1080/01944363.1969.10248754

Bejaković, P., & Mrnjavac, Ž. (2020). The importance of digital literacy on the labour market. *Employee Relations*, *42*(4), 921–932. https://doi.org/10.1108/ER-07-2019-0274

Brunetti, F., Matt, D. T., Bonfanti, A., De Longhi, A., Pedrini, G., & Orzes, G. (2020). Digital transformation challenges: Strategies emerging from a multi-stakeholder approach. *The TQM Journal*, *32*(4), 697–724. https://doi.org/10.1108/TQM-12-2019-0309

Choudhary, H. (2024). Fostering digital equity: Evaluating impact of digital literacy training on internet outcomes in rural marginalised communities in India. *International Journal of Lifelong Education, 43*(5), 473–493. https://doi.org/10.1080/02601370.2024.2347327

Choudhary, H. (2025). From margins to mainstream: Paving the way to digital equity through digital literacy training programs. *Evaluation and Program Planning, 109*, Article e102533. https://doi.org/10.1016/j.evalprogplan.2024.102533

Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). John Wiley & Sons.

Creswell, J. W., & Clark, V. L. P. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008

Eskerod, P. (2020). A stakeholder perspective: Origins and core concepts. In D. D. Bergh (Ed.), *Oxford Research Encyclopedia of Business and Management*. Oxford Academics. https://doi.org/10.1093/acrefore/9780190224851.013.3

Fayol, H. (1916). *Administration industrielle et générale [General and industrial management]*. Dunod.

Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies*, *10*(4), Article 86. https://doi.org/10.3390/soc10040086

Goh, E., & Sigala, M. (2020). Integrating information and communication technologies (ICT) into classroom instruction: Teaching tips for hospitality educators from a diffusion of innovation approach. *Journal of Teaching in Travel & Tourism*, *20*(2), 156–165. https://doi.org/10.1080/15313220.2020.1740636

Greenfield, P. M. (2009). Technology and informal education: What is taught, what is learned. *Science*, *323*(5910), 69–71. https://doi.org/10.1126/science.1167190

Gülbahar, Y. (2007). Technology planning: A roadmap to successful technology integration in schools. *Computers & Education, 49*(4), 943–956. https://doi.org/10.1016/j.compedu.2005.12.002

Kenya Institute of Curriculum Development. (2017). *Basic education curriculum framework: Nurturing every learner's potential*. https://kicd.ac.ke/wp-content/uploads/2018/03/CURRICULUM-FRAMEWORK-FINAL-2017.pdf

Kozanoglu, D. C., & Abedin, B. (2021). Understanding the role of employees in digital transformation: Conceptualization of digital literacy of employees as a multi-dimensional organizational affordance. *Journal of Enterprise Information Management*, *34*(6), 1649–1672. https://doi.org/10.1108/JEIM-01-2020-0010

Mitchell, R. K., & Lee, J. H. (2019). Stakeholder identification and its importance in the value creating system of stakeholder work. In J. S. Harrison, J. B. Barney, R. E. Freeman, & R. A. Phillips (Eds.), *The Cambridge handbook of stakeholder theory* (pp. 53–73). Cambridge University Press. https://doi.org/10.1017/9781316595060.004

Morara, G. N, Makworo, E. O., & Abuya, T. K. (2020). Ranking challenges facing digital literacy programme in primary schools in Kisii County, Kenya. *International Journal of Research in Business and Social Science*, *9*(5), 302–306. https://doi.org/10.20525/ijrbs.v9i5.829

Mugenda, O. M., & Mugenda, A. G. (2003). *Research methods: Quantitative and qualitative approaches*. African Centre for Technology Studies.

Murithi, J., & Yoo, J. E. (2021). Teachers' use of ICT in implementing the competency-based curriculum in Kenyan public primary schools. *Innovation and Education, 3,* Article e5.

https://doi.org/10.1186/s42862-021-00012-0

Nascimbeni, F., & Vosloo, S. (2019). *Digital literacy for children: Exploring definitions and frameworks*. UNICEF Office of Research – Innocenti. https://www.unicef.org/innocenti/reports/digital-literacy-children-exploring-definitions-and-frameworks

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). McGraw-Hill.

Ochieng, M. (2024). *Enhancing digital transformation success in education through effective stakeholder engagement strategies* (Publication No. 31557292). ProQuest Dissertations & Theses.

Omboto, C. M., Kanga, A., & Njageh, A. R. K. (2022). Myth or reality: Digital Literacy Programme implementation in primary special schools in Nairobi, Kenya. *European Journal of Education*, *5*(2), 51–66.

Quaicoe, J. S., & Pata, K. (2020). The digital literacy and digital activity of teachers as the elements of the digital divide between basic schools in Ghana. *Education and Information Technologies*, *25*(5), 4077–4095. https://doi.org/10.1007/s10639-020-10120-8

Raha, A., Hajdini, I., & Windsperger, J. (2021). A multilateral stakeholder salience approach: An extension of the stakeholder identification and salience framework. *Industrial Marketing Management*, *97*, 1–9. https://doi.org/10.1016/j.indmarman.2021.06.008

Rosenfeld, E., Hu, Q., Sheridan, K., Golinkoff, R. M., Hirsh-Pasek, K., & Connell, G. (2019). Preschoolers' math and literacy learning from educational apps. *Developmental Psychology*, *55*(6), 1331–1344. https://doi.org/10.1037/dev0000706

Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. *Anesthesia & Analgesia*, *126*(5), 1763–1768. https://doi.org/10.1213/ANE.0000000000002864

Statti, A., & Torres, K. M. (2020). Digital literacy: The necessity of 21st century competencies. *Peabody Journal of Education*, *95*(1), 90–100. https://doi.org/10.1080/0161956X.2020.1711434

Tashakkori, A., & Teddlie, C. (Eds.). (2010). *SAGE handbook of mixed methods in social & behavioral research* (2nd ed.). SAGE Publications.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS*

Quarterly, *27*(3), 425–478. https://doi.org/10.2307/30036540

Viglia, G., Pera, R., & Bigné, E. (2018). The determinants of stakeholder engagement in digital platforms. *Journal of Business Research*, *89*, 404–410. https://doi.org/10.1016/j.jbusres.2017.12.029

Wambua, E., Kisirkoi, F., Maithya, P., & Njathi, S. N. (2023). School administrators' support for teachers' training and maintenance of digital literacy devices in the implementation of the Digital Literacy Programme in public primary schools in Kitui County, Kenya. *Journal of Education and Practice*, *7*(6), 46–75. https://doi.org/10.47941/jep.1504

Watson, R., Smart, P., & Macdonald, E. K. (2018). Harnessing difference: A capability-based approach to stakeholder diversity in environmental innovation. *Journal of Product Innovation Management*, *35*(2), 254–279. https://doi.org/10.1111/jpim.12461

Wittmann, G. E., & Olivier, J. (2021). The use of blended learning to inculcate self-directed learning in teacher professional development programmes. *The Independent Journal of Teaching and Learning*, *16*(2), 71–84. https://doi.org/10.38140/ijtl.v16i2.4927

Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.

Yurtseven Avci, Z., O'Dwyer, L. M., & Lawson, J. (2020). Designing effective professional development for technology integration in schools. *Journal of Computer Assisted Learning*, *36*(2), 160–177. https://doi.org/10.1111/jcal.12394

Zhang, J. (2023). Digital literacy of EFL teachers: The role of contextual factors. *Frontiers in Psychology*, *14*, Article 1153385. https://doi.org/10.3389/fpsyg.2023.1153385

Zhou, F., & Wu, Y. J. (2018). How humble leadership fosters employee innovation behavior: A two-way perspective on the leader–employee interaction. *Leadership & Organization Development Journal*, *39*(3), 375–387. https://doi.org/10.1108/LODJ-07-2017-0181

Zimmer, W. K., & Matthews, S. D. (2022). A virtual coaching model of professional development to increase teachers' digital learning competencies. *Teaching and Teacher Education*, *109*, Article e103544. https://doi.org/10.1016/j.tate.2021.103544