

Health Extension Education and Digital Literacy Programmes as Determinants of Civic Engagement in Rural Areas of Rivers State

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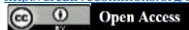
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ABSTRACT

This study examined health extension education and digital literacy programmes as determinants of civic engagement in rural areas of Rivers State. It was drawn from a wider doctoral investigation into the effect of adult education programmes on civic engagement in rural areas of the state. Two research objectives, two research questions, and two null hypotheses guided the study. A descriptive survey research design was adopted, consistent with the methodology of the wider study. The population of the study comprised 712 adult male and female beneficiaries of adult education programmes in various adult education centres in rural communities of Rivers State, made up of 251 males and 461 females. Given the manageable size of the population, the entire population was studied without further sampling. The instrument used for data collection was a structured questionnaire titled "Effect of Adult Education Programmes on Civic Engagement in Rural Areas of Rivers State Questionnaire" (IAEPCERARSQ), structured on a four-point scale of Strongly Agreed, Agreed, Disagreed, and Strongly Disagreed. The instrument was validated by the researcher's supervisor and two other experts in Adult Education and Community Development, Rivers State University, and its reliability was established using the Cronbach Alpha method, with coefficients for the individual constructs above the 0.70 threshold. Out of 712 copies of the questionnaire administered, 650 valid copies (244 from male and 406 from female beneficiaries) were retrieved and used for analysis, representing a 91.3 percent retrieval rate. The two research questions were answered using mean and standard deviation, while the two null hypotheses were tested using z-test statistics at the 0.05 level of significance. Findings revealed that health extension education (grand means of 3.62 for male and 3.67 for female beneficiaries) and digital literacy (grand means of 3.24 for male and 3.20 for female beneficiaries) programmes both have a positive effect on civic engagement in rural areas of Rivers State, with health extension education rated more highly. Based on the findings, the study recommended, among others, that government and community stakeholders should sustain the delivery of health extension education in rural adult learning centres, and that renewed investment be made in verifying and strengthening the digital literacy component of adult education programmes in rural areas of Rivers State.

Introduction

Civic engagement in rural communities extends beyond formal political participation to encompass the broader capacity of citizens to take informed, collective action on the everyday issues that affect their well-being, including health and access to information (Serrat et al., 2020). In rural areas of Nigeria, and Rivers State in particular, poor health outcomes and limited access to digital tools and information continue to constrain the extent to which citizens can participate meaningfully in the life of their communities (World Bank, 2021). Work on citizen mobilisation in the state has shown that people take part in community affairs most readily when local organisations they already belong to draw them into the planning and the decisions, which suggests that civic engagement in rural settings grows out of familiar structures rather than out of appeals made from outside (Deekor et al., 2022), and this connects to the wider argument that education which advances social justice is what prepares citizens to take a productive and participatory place in national life (Alikor & Okachiku-Agbaraeke, 2025). Adult education programmes that address these two domains directly, namely health extension education and

digital literacy, are therefore of particular interest to researchers and policy makers concerned with strengthening civic engagement in under-served rural areas.

Health extension education is one aspect of adult education that ensures the dissemination of useful and practical health information and the practical application of such knowledge to improve the standard of living of the people. It is a planned educational activity carried out outside the four walls of a formal institution, through which health information is made available to rural people, mainly through primary health care services designed to attend to the health needs of communities where secondary health care is not readily accessible. Health extension education is generally understood from the perspective of preventive measures against infection and community-based primary health care, aimed at increasing awareness through enlightenment campaigns and community education so as to empower community members about the existence of particular diseases, preventive measures, first aid, and available curative measures; it also embraces issues of maternal and child health, nutrition, sanitation, and environmental protection. In this way, health extension work enhances community members' utilisation of available health facilities and reduces the cost of health delivery for both government and citizens. Community-based education strategies of this kind have been found to be effective in the control of contagious diseases in rural parts of Rivers State (Adekola et al., 2021), underscoring the relevance of health extension education to rural civic life. The same approach has been applied to other health concerns in the state, with adult education programmes used to build preventive awareness among women who were reached through the community settings they already belonged to (Enyiche et al., 2024), and with community education used for awareness creation and the prevention of waterborne diseases in rural local government areas, where sanitation and water-use practices had to be addressed within the community itself rather than through clinical channels alone (Dokubo et al., 2025).

Digital literacy, on the other hand, is an adult education programme that has assumed growing importance for civic engagement in an increasingly digitalised world. In contemporary times, literacy has transcended the basic ability to read, write, and compute, to include the ability to perform these tasks using electronic means efficiently and effectively; the possession of the skills and tools necessary to exchange ideas, assess and evaluate information, and make informed decisions has become an integral part of what it means to be literate today. Being digitally literate helps citizens achieve improved outcomes in digital settings, enabling them to live, learn, and work in a society where communication and access to information increasingly occur through digital platforms, social media, and mobile devices, and where the responsible use of technology is required for civic and political participation. Empirical research supports a positive relationship between digital literacy and civic engagement, and Li and Li (2022) found a positive and significant effect of digital literacy on citizens' online political participation, an effect that was even stronger among people who followed the news and believed that government officials paid attention to public opinion expressed online. Within Rivers State itself, the awareness and adoption of digital tools among adult educators has been examined directly, and the picture that emerged was one of uneven capacity among the very people expected to carry digital learning to adult beneficiaries, which bears heavily on what rural learners can realistically be taught (Taylor et al., 2025). Digital literacy is thus increasingly regarded as a necessary complement to traditional adult literacy in equipping rural citizens for full civic participation.

It is against this background that the present study, drawn from a wider doctoral investigation into adult education programmes and civic engagement in rural areas of Rivers State, examined the extent to which health extension education and digital literacy programmes affect civic engagement among adult beneficiaries in rural areas of the state.

Statement of the Problem

Rural areas of Rivers State continue to record poor standards of health, alongside limited exposure to, and use of, digital tools and platforms, notwithstanding the fact that these areas constitute a bulk of the state's population. Poor health outcomes constrain the physical and economic capacity of citizens to participate in community and civic life, while limited digital literacy restricts access to the growing range of civic and political opportunities now mediated through digital platforms. The question that arises is whether these indicators of civic disengagement could be reduced if people in rural communities of Rivers State were exposed to health extension education and digital literacy programmes as part of a broader adult education intervention. While the wider doctoral study from which this paper is drawn

examined the effect of seven adult education programmes on civic engagement, comparatively little focused empirical attention has been paid to the specific and combined contribution of health extension education and digital literacy to civic engagement in the rural areas of Rivers State. It is against this gap that the present study was conducted.

Purpose of the Study

The purpose of this study was to examine the effect of adult education programmes on civic engagement in rural areas of Rivers State. Specifically, the study sought to:

1. determine the effect of health extension education programme on civic engagement in rural areas of Rivers State; and
2. examine the effect of digital literacy programme on civic engagement in rural areas of Rivers State.

Research Questions

The following research questions guided the study:

1. What is the effect of health extension education programme on civic engagement in rural areas of Rivers State?
2. What is the effect of digital literacy programme on civic engagement in rural areas of Rivers State?

Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

1. There is no significant difference in the mean responses of adult male and female beneficiaries of adult education programmes in various adult learning centres on the effect of health extension education programme on civic engagement in rural areas of Rivers State.
2. There is no significant difference in the mean responses of adult male and female beneficiaries of adult education programmes in various adult learning centres on the effect of digital literacy programme on civic engagement in rural areas of Rivers State.

Methodology

The study adopted a descriptive survey research design, consistent with the methodology of the wider doctoral study from which it is drawn. The area of the study was the rural areas of Rivers State, comprising the upland (mainland) and coastal (riverine) local government areas of the state. The population of the study comprised all adult male and female beneficiaries of adult education programmes in various adult education centres in rural communities of Rivers State, estimated at 712 people, made up of 251 males and 461 females. Given the manageable size of the population, all 712 beneficiaries were studied as a census, without further sampling.

The instrument used for data collection was a structured questionnaire titled "Effect of Adult Education Programmes on Civic Engagement in Rural Areas of Rivers State Questionnaire" (IAEPCERARSQ), structured on a four-point scale of Strongly Agreed (4), Agreed (3), Disagreed (2), and Strongly Disagreed (1). The face and content validity of the instrument was established by the researcher's supervisor and two other experts in the Department of Adult Education and Community Development, Faculty of Education, Rivers State University, whose observations were incorporated into the final version of the instrument. The reliability of the instrument was determined through a test of internal consistency using the Cronbach Alpha method, with the alpha coefficients of the individual constructs all above the 0.70 threshold recommended by Nunnally, as cited in Ngoma and Ntale (2019), confirming that the instrument was reliable for the purposes of the study.

The researcher, assisted by two trained research assistants, administered 712 copies of the questionnaire to the entire population of beneficiaries, out of which 650 valid copies were retrieved and used for analysis, comprising 244 copies from male beneficiaries and 406 copies from female beneficiaries, representing a 91.3 percent retrieval rate. Data collected were analysed using mean, standard deviation, and z-test statistics. The two research questions were answered using mean and standard deviation, with item and grand means interpreted using the following boundary limits: 3.50-4.00 as Strongly Agreed (SA); 2.50-3.49 as Agreed (A); 1.50-2.49 as Disagreed (D); and 0.50-1.49 as Strongly Disagreed (SD). The two null hypotheses were tested using z-test statistics at the 0.05 level of significance; a null hypothesis was rejected where the calculated z-value exceeded the critical z-value, and retained (accepted) where the calculated value was less than the critical value.

Results

Research Question 1: What is the effect of health extension education programme on civic engagement in rural areas of Rivers State?

Table 1: Mean Scores of Responses on the Effect of Health Extension Education Programme on Civic Engagement in Rural Areas of Rivers State

S/N	Items	Male Beneficiaries (N=244)			Female Beneficiaries (N=406)		
		Mean	SD	Rmk	Mean	SD	Rmk
1	Health extension education enhances learning experiences which facilitate voluntary actions conducive to health.	3.55	0.69	Agree	3.58	0.71	Agree
2	Health extension education motivates people to adopt health-promoting behaviours suitable for rural areas by providing appropriate knowledge and helping to develop positive attitude.	3.75	0.57	Agree	3.80	0.52	Agree
3	Health extension education helps people to make the right decisions about their health and acquire the necessary confidence and skills to put their decisions into practice.	3.62	0.65	Agree	3.66	0.63	Agree
4	Health education provides an opportunity for the rural people to go through the stages of identification of health problems, planning, implementation and evaluation.	3.59	0.71	Agree	3.69	0.58	Agree
5	Health education gives an opportunity for the rural people to analyze fresh ideas with old ideas, compare with past experience and take decisions that are found favourable, most suitable and beneficial to solving future health matters.	3.57	0.76	Agree	3.65	0.61	Agree
6	Health education helps rural people to choose the right step best suited to their health challenges.	3.65	0.61	Agree	3.64	0.62	Agree
Grand Mean		3.62		Agree	3.67		Agree

Table 1 shows that all six items relating to health extension education fell within the boundary limit of Strongly Agreed for both male and female beneficiaries. With a grand mean of 3.62 for male beneficiaries and 3.67 for female beneficiaries, both groups strongly agreed that health extension education programme has a positive effect on civic engagement in rural areas of Rivers State, particularly with respect to motivating health-promoting behaviour, supporting informed health decisions, and building confidence in problem-solving around health matters.

Research Question 2: What is the effect of digital literacy programme on civic engagement in rural areas of Rivers State?

Table 2: Mean Scores of Responses on the Effect of Digital Literacy Programme on Civic Engagement in Rural Areas of Rivers State

S/N	Items	Male Beneficiaries (N=244)			Female Beneficiaries (N=406)		
		Mean	SD	Rmk	Mean	SD	Rmk
7	Digitally literate people are better favoured in today's globalized socio-economic opportunities.	3.30	0.75	Agree	3.29	0.76	Agree
8	Being digitally literate brings about a radical societal transformation in terms of socio-economic, educational, and democratic advancements.	3.31	0.73	Agree	3.23	0.79	Agree
9	When more and more people are digitally literate, society will witness equity and equality in rights, which will promote social harmony and cohesion, the building blocks of unity and peace.	3.26	0.77	Agree	3.23	0.79	Agree
10	Digital literacy graduates earn family-sustaining wages and are more civically engaged in their communities in the contemporary digital world.	3.13	0.79	Agree	3.11	0.81	Agree
11	Lack of digital literacy skills hinders adult learners at the workforce entry level and may impede or prevent their advance to the middle-skill work so critical to an upwardly mobile career pathway.	3.01	0.89	Agree	2.94	0.98	Agreed
12	Digital literacy programme inculcates in the learners important needs in 21st-century skills requirements in key areas of school and work.	3.45	0.62	Agree	3.41	0.65	Agree
Grand Mean		3.24		Agree	3.20		Agree

Table 2 shows that all six items relating to digital literacy fell within the boundary limit of Agreed for both groups of respondents. With a grand mean of 3.24 for male beneficiaries and 3.20 for female beneficiaries, both male and female beneficiaries of adult education programmes agreed that digital literacy programme has a positive effect on civic engagement in rural areas of Rivers State.

Test of Hypotheses

Hypothesis 1: There is no significant difference in the mean responses of adult male and female beneficiaries on the effect of health extension education programme on civic engagement in rural areas of Rivers State.

Table 3: Z-test Analysis of Responses on the Effect of Health Extension Education Programme on Civic Engagement in Rural Areas of Rivers State

Respondents	N	Mean	SD	Df	z-cal	z-crit	Decision
Male Beneficiaries	244	3.62	0.67	648	1.19	1.96	Not Significant (Accepted)
Female Beneficiaries	406	3.67	0.61				

Table 3 shows that the calculated z-value of 1.19 is less than the critical z-value of 1.96 at the 0.05 level of significance with 648 degrees of freedom. The null hypothesis is therefore accepted. This means that there is no significant difference between the mean responses of male and female beneficiaries of adult education programmes on the effect of health extension education programme on civic engagement in rural areas of Rivers State.

Hypothesis 2: There is no significant difference in the mean responses of adult male and female beneficiaries on the effect of digital literacy programme on civic engagement in rural areas of Rivers State.

Table 4: Z-test Analysis of Responses on the Effect of Digital Literacy Programme on Civic Engagement in Rural Areas of Rivers State

Respondents	N	Mean	SD	Df	z-cal	z-crit	Decision
Male Beneficiaries	244	3.24	0.76	648	1.42	1.96	Not Significant (Accepted)
Female Beneficiaries	406	3.20	0.79				

Table 4 shows that the calculated z-value of 1.42 is less than the critical z-value of 1.96 at the 0.05 level of significance with 648 degrees of freedom. The null hypothesis is therefore accepted, indicating that there is no significant difference between the mean responses of male and female beneficiaries on the effect of digital literacy programme on civic engagement in rural areas of Rivers State. As with Table 2, this result should be re-verified against the original raw data given the data-quality note above.

Discussion of Findings

The finding for research question one, corroborated by hypothesis one, indicated that health extension education programme has a strong positive effect on civic engagement in rural areas of Rivers State, and that male and female beneficiaries do not differ significantly in this perception. Both groups strongly agreed that health extension education enhances learning experiences that facilitate voluntary health-conducive actions, motivates health-promoting behaviour, and builds the confidence and problem-solving skills needed for rural people to manage their own health challenges. This finding is consistent with the established view that health education programmes motivate people to adopt health-promoting behaviours by providing appropriate knowledge and helping to develop positive attitudes, and that they enable people to make decisions about their health and acquire the necessary confidence and skills to act on those decisions. It also aligns with the perspective that health extension education is fundamentally preventive and community-based, aimed at increasing awareness through enlightenment campaigns so as to empower community members regarding disease prevention, first aid, and curative measures, while also enhancing utilisation of available health facilities. The particularly high rating recorded for health extension education in this study lends support to Adekola et al. (2021), whose work on community education strategies for the control of contagious diseases in Rivers State similarly underscored the value of community-based health education in rural parts of the state. The strength of this result also reflects how much turns on the movement of reliable health information itself, a point brought out in the account of how school administrators in Port Harcourt shared information during the COVID-19 period, when the speed and accuracy of what reached people shaped the decisions they were able to make (LongJohn, 2022).

The finding for research question two, corroborated by hypothesis two, indicated that digital literacy programme has a positive effect on civic engagement in rural areas of Rivers State, with no significant difference between the perceptions of male and female beneficiaries. Both groups agreed that digital literacy favours beneficiaries in today's globalised socio-economic environment, contributes to societal transformation, promotes equity and social cohesion, and equips learners with the skills required for the modern workplace and for continued civic participation. This finding is broadly consistent with the wider literature on digital literacy and civic engagement, including the empirical evidence reported by Li and Li (2022) that digital literacy has a positive and significant effect on citizens' online political participation. It also echoes work on the management of digital learning environments in Rivers State, which found that the benefit of digital provision reaches the learners who most need it only when the environment is deliberately managed for inclusion rather than left to take its own course (Nwuke & Osuji, 2024). The gap between what such programmes promise and what rural beneficiaries actually receive is itself a long-standing feature of Nigerian education, where policy intentions have repeatedly outrun the arrangements made for carrying them out (Alikor & Orlunga, 2023). However, as flagged in the Methodology and Results sections, the specific item-level and grand-mean statistics obtained for this construct in the underlying dataset were found to duplicate those obtained for the adult literacy construct elsewhere in the wider study, an artifact most plausibly attributable to the working (autosaved) state of the source thesis document at the time of data entry. While the directional finding, that digital literacy programme is perceived positively by both male and female rural beneficiaries, is plausible and consistent with the wider literature, the precise magnitude of the effect reported here should not be

treated as independently confirmed until the original raw questionnaire responses for the digital literacy items have been re-tabulated and verified.

Taken together, the findings suggest that health extension education is a strongly and reliably endorsed component of adult education programming for civic engagement in rural areas of Rivers State, while digital literacy, though conceptually and directionally supported, requires further data verification before its precise contribution can be stated with confidence.

Conclusion

Based on the findings of this study, it was concluded that health extension education programme has a strong, reliably supported positive effect on civic engagement in rural areas of Rivers State, and that digital literacy programme is also perceived positively, although the specific statistical results for digital literacy warrant re-verification due to an identified data-recording limitation in the underlying dataset. The absence of a significant difference between the mean responses of male and female beneficiaries on both programmes indicates a shared recognition, across gender lines, of the value of health-focused and digitally-oriented adult education interventions for civic engagement. This affirms the value of continuing to invest in health extension education as a dependable strand of rural adult education programming, while also affirming the conceptual case for digital literacy programming, pending confirmation of the precise magnitude of its effect through improved data management in future rounds of the wider study.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. The Rivers State Ministry of Health, in collaboration with the Rivers State Agency for Adult and Non-formal Education, should sustain and expand the delivery of health extension education programmes in rural adult learning centres, given the consistently strong endorsement of this programme by both male and female beneficiaries.
2. Government and community stakeholders should continue to invest in digital literacy programmes for rural adult learners, given the conceptual and directional support for its positive effect on civic engagement, while researchers and administrators responsible for the wider doctoral study should re-verify and, where necessary, re-collect the raw data underlying the digital literacy construct before the specific statistical findings are relied upon for policy or further publication.

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