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Relating Perceived Innovative Learning Systems to Curriculum Delivery in Senior Secondary Schools in Ikwerre Local Government Area, Rivers State

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Abstract

This study investigated the relationship between perceived innovative learning systems and curriculum delivery in senior secondary schools in Ikwerre Local Government Area of Rivers State. Specifically, it evaluated the effect of innovative learning systems on teachers' efficiency in curriculum delivery, students' academic engagement, and the problems affecting their adoption in senior secondary schools. The study employed a descriptive survey research design. The population consisted of 13,171 respondents (12,413 students and 758 teachers) from sixteen public senior high schools. The researchers calculated a sample of 388 respondents using the Taro Yamane formula and selected them using stratified random sampling and simple random sampling techniques. Data were collected using a structured questionnaire named the Innovative Learning System and Curriculum Delivery Questionnaire (ILSCDQ). Specialists in Educational Management and Measurement and Evaluation subjected the tool to face and content validation to ensure its clarity and usefulness. Reliability was determined using Cronbach's alpha, yielding 0.79, indicating satisfactory internal consistency. The data were analysed using descriptive statistics (mean, standard deviation) and inferential statistics (simple linear regression) at a 0.05 level of significance. Findings demonstrated that innovative learning systems had a large beneficial effect on teachers' performance and a strong favourable influence on students' academic engagement in curriculum delivery. However, implementation of these systems is hampered by poor ICT infrastructure, inconsistent electrical supply, poor internet access, limited funding, shortage of digital devices, lack of suitable teacher training, and reluctance to change among instructors. The study finds that innovative learning methods improve curriculum delivery, but their effectiveness depends on proper infrastructure and teacher capacity development. Stakeholders were advised to strengthen the ICT infrastructure and offer continual professional development for instructors.

Keywords: Innovative Learning Systems, Curriculum Delivery, Teachers' Effectiveness, Students' Academic Engagement

Introduction

The extensive incorporation of technology in the classroom has transformed the face of teaching and learning, opening up new opportunities for educators to build creative teaching resources that schools now rely on to successfully deliver their curricula. Innovative learning systems, including blended learning, flipped classrooms, smart classrooms, digital learning platforms, inquiry-based learning, artificial intelligence-supported instruction, and multimedia teaching methodologies, improve teaching effectiveness and students' learning experiences. With growing need for learner-centred instruction, collaborative learning, electronic literacy, and enhanced academic achievement, the integration of these systems in secondary education has become a necessity. Research shows that innovative learning methods enhance classroom engagement, critical thinking, motivation and students' grasp of curricular materials (Davenport Hoyer et al., 2020). Similarly, the use of Information and Communication Technology (ICT) in secondary education has boosted curriculum implementation through individualised

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instruction, increased access to instructional resources, and improved communication between teachers and students (Msafiri et al., 2023). In Nigeria, there is an emerging trend toward innovative learning methods to enhance instructional delivery and learning results in secondary schools. The Constructivist Learning Theory, developed by Jean Piaget (Piaget, 1977) and further elaborated by Lev Vygotsky in 1978, provides a solid basis for an innovative learning method in education. The premise is that learners learn through active construction of information through contact, cooperation, involvement and discovery, rather than passive learning. Piaget was concerned with how we learn through experience, while Vygotsky was concerned with the importance of social interaction in learning. This theory is relevant to this study because innovative learning systems like digital learning platforms, multimedia instruction, collaborative learning tools, and smart classrooms foster active participation, independent learning, and effective curriculum delivery in senior secondary schools.

The successful implementation of novel learning systems largely relies on the teachers' ability to properly use modern instructional methods. Innovative learning systems have enhanced course preparation, instructional presentation, classroom administration, assessment methods, and learner participation. Umeodinka et al. (2023) discovered that the ineffective use of innovative instructional resources by teachers had a detrimental impact on the delivery of the curriculum in senior secondary schools in Southwest Nigeria. Dewi (2018) also stated that learning innovation has a good impact on the performance of educators and improves the quality of education. Likewise, Martin et al. (2019) observed that modern teaching strategies such as brainstorming boost teaching effectiveness and the students' learning experiences. Findings also indicate that flipped classroom and blended learning approaches enhanced students' academic achievement, retention, and engagement in learning (Egara & Mosimege, 2024). In Rivers State, Chukundah and Odibo (2026) observed that blended learning offers a more flexible and effective means of curriculum delivery in secondary schools. The results of these studies suggest that innovative learning systems are effective in improving the teaching process and the delivery of content.

Students' academic engagement still matters to meaningful learning since successful learning happens when students are actively involved in instructional activities. Innovative learning systems foster student participation, creativity, inquiry and cooperation by designing and delivering dynamic and engaging learning environments. Davenport Huyer et al. (2020) observed that digital learning platforms and inquiry-based learning improve students' interest and engagement in the classroom. Abubakar et al. (2024) have reported that technology-integrated teaching tools enhance students' attention span, retention and academic engagement. Nwobodo and Udoka (2025) found that students in Rivers State significantly utilised online educational materials, mobile applications, and internet-based learning platforms for academic objectives. In the same vein, Samson and Yango (2023) discovered that the use of learning management systems (LMS) greatly boosted students' participation and engagement in learning activities. Likewise, Odojin (2021) also reported that digital technologies excite students and enhance classroom involvement, but that excessive exposure to entertainment media can have a negative effect on academic participation. The results indicate that innovative learning methods promote students' attentiveness to classroom teaching and improve curriculum delivery in senior secondary schools.

Despite the benefits of innovative learning methods, there are certain problems that limit effective implementation of such in secondary schools, notably in Nigeria. Many schools continue to face the challenges of inadequate ICT infrastructure, unreliable electrical supply, weak internet access, insufficient budget, a shortage of digital devices, inadequate technical assistance, and limited teacher competence in integrating technology. Teachers' reluctance to adopt new ways of working and the limited chances they have for professional growth and development are the main obstacles to the implementation of ICT in schools, according to Msafiri et al. (2023). Also, Olagoke and Akande (2025) discovered that many teachers lack the practical and digital competences needed for effective instructional innovation. Likewise, Shibiru and Bekele (2024) found that the adoption of innovations in secondary education was hindered by the lack of resources and insufficient teacher training. Similarly, Rahmatika and Sulasmi (2025), Pratama et al. (2024) and Fuadi et al. (2025) reported that the integration of educational technologies in classroom instruction is adversely affected by inadequate infrastructure, unstable internet connectivity, insufficient teacher readiness and financial constraints. These architectural and technological constraints could pose challenges for the successful deployment of innovative learning systems in Ikwerre Local Government Area of Rivers State.

Thus, it is important to empirically examine the effect of novel learning technologies on curriculum delivery in the senior secondary schools in Ikwerre LGA of Rivers State.

Innovative learning systems such as digital resources, blended learning platforms and technology-enhanced instructional methodologies have been increasingly recognised as a critical element for better curriculum delivery in secondary education. Research has indicated that when these technologies are properly integrated, they can improve teaching efficacy, foster student engagement, and facilitate individualised learning. However, despite this acknowledgement, many senior secondary schools, particularly in developing settings, continue to rely primarily on traditional teacher-centred methods with little integration of new learning approaches.

Thus, the challenge is that curriculum delivery in many senior secondary schools in Ikwerre Local Government Area may not be optimally effective due to low adoption and implementation of innovative learning techniques. This raises questions regarding the extent to which these tools are being used and how restricted utilisation may affect teachers' instructional effectiveness and student involvement in learning. However, the exact role of innovative learning systems in curriculum delivery outcomes and the unique difficulties that inhibit their effective implementation in these schools are not well understood. The study therefore seeks to investigate the effect of innovative learning systems on curriculum delivery in senior secondary schools in Ikwerre Local Government Area, Rivers State.

This study aims to assess the effect of innovative learning technologies on curriculum delivery in senior secondary schools in Ikwerre Local Government Area, Rivers State. The objectives of the study are specifically to:

1. Examine the influence of innovative learning systems on teachers' efficiency in curriculum delivery in senior secondary schools in Ikwerre Local Government Area of Rivers State.
2. Determine the influence of innovative learning systems on students' academic engagement in curriculum delivery in senior secondary schools in Ikwerre Local Government Area, Rivers State.
3. Investigate the issues facing the deployment of innovative learning systems for successful curriculum delivery in senior secondary schools in Ikwerre Local Government Area, Rivers State.

Methodology

This study used a descriptive survey design. The design was deemed appropriate since it enabled the systematic gathering of data from instructors and students in senior secondary schools to study the impact of innovative learning systems on curriculum delivery without influencing any variables. The study was conducted in Ikwerre Local Government Area of Rivers State, Nigeria, which was selected because of the existence of several public senior secondary schools where both traditional and innovative instructional approaches were being used.

The study population consisted of all the instructors and senior high school students in the sixteen public secondary schools in Ikwerre Local Government Area. The population was made up of about 12,413 pupils and 758 teachers from the records of the Rivers State Senior Secondary Schools Board, giving a total population of 13,171 responders. The stratified random sample technique was utilised, in which the population was divided into two groups, teachers and pupils, so that each category was fairly represented. The sample size was obtained using the Taro Yamane formula at a 0.05 level of significance. The overall sample size of 388 respondents was found to be statistically adequate. Simple random sampling was applied within each group after stratification, so that every teacher and student had an equal opportunity to be selected.

The instrument used for data collection was a structured questionnaire termed "Innovative Learning System and Curriculum Delivery Questionnaire (ILSCDQ)." The instrument was separated into sections for demographic data, innovative learning system use, teachers' efficacy, students' involvement, and implementation issues. Responses were measured on a four-point Likert scale with the following structure: Strongly Agree (4 points), Agree (3 points), Disagree (2 points), Strongly Disagree (1 point). The scaling mechanism ensured consistent scoring and enabled a quantitative examination of the responses. Experts in Educational Management and Measurement and Evaluation validated the instrument for its face and content validity. Their modifications and comments were integrated to improve the clarity, relevance and sufficiency of the instrument to satisfy the study objectives. The reliability of the

instrument was determined by a pilot study conducted in schools outside the study area. The data gathered from the pilot test were analysed using Cronbach's Alpha to establish the internal consistency, resulting in a reliability coefficient of 0.79.

The investigation was conducted in strict accordance with ethical considerations. Data collection was preceded by approval from the relevant educational authorities and school principals. All participants gave informed consent. Respondents were promised anonymity; their answers would be kept in absolute confidence, and no personal identifying information was obtained at any time. All collected information was used solely for academic study. Data were collected over a period of three weeks through the direct administration of questionnaires, with the assistance of qualified research assistants. A total of 388 copies of the questionnaire were distributed, of which 374 were correctly completed and returned, ensuring a high response rate and the dependability of the dataset. The collected data were analysed using descriptive statistics, such as the mean and standard deviation, to address the study objectives. The criterion for interpreting responses was a mean of 2.50. Hypothesis testing was carried out using regression at a 0.05 level of significance. Decisions about the hypotheses were made by comparing the p-value to 0.05.

Results

Table 1: Regression Analysis of the influence of innovative learning systems on teachers' effectiveness in curriculum delivery in senior secondary schools

Model	Variable	B	Std. Error	Beta	t	F	R	R ²	Adj. R ²	Sig.
1	innovative learning systems	1.001	0.003	0.998	301.830	91101.522	0.998	0.996	0.996	0.000
	Constant	0.012	0.011	—	1.104	—	—	—	—	0.270

Table 1 shows that innovative learning systems significantly influenced teachers' effectiveness in curriculum delivery in senior secondary schools ($R = 0.998$, $R^2 = 0.996$, $F = 91101.522$, $p = 0.000 < 0.05$). The regression coefficient ($\beta = 0.998$) indicates a very strong positive effect, implying that increased use of innovative learning systems improves teachers' effectiveness in curriculum delivery. The result further reveals that 99.6% of the variation in teachers' effectiveness was explained by innovative learning systems.

Table 2: Regression Analysis of the influence of innovative learning systems on students' academic engagement during curriculum delivery in senior secondary schools

Model	Variable	B	Std. Error	Beta	t	F	R	R ²	Adj. R ²	Sig.
1	innovative learning systems	0.819	0.029	0.823	27.976	782.647	0.823	0.678	0.677	0.000
	Constant	0.696	0.093		7.490					0.000

Table 2 reveals that innovative learning systems significantly influenced students' academic engagement during curriculum delivery in senior secondary schools ($R = 0.823$, $R^2 = 0.678$, $F = 782.647$, $p = 0.000 < 0.05$). The regression coefficient ($\beta = 0.823$) indicates a strong positive influence, showing that the use of innovative learning systems enhances students' academic engagement. The result also indicates that 67.8% of the variation in students' academic engagement was explained by innovative learning systems.

Table 3: Mean and Standard Deviation of the challenges affecting the implementation of innovative learning systems for effective curriculum delivery in senior secondary schools

S/N		SA(%)	A(%)	D(%)	SD(%)	Mean	Std	Remark
1	Inadequate ICT infrastructure affects the implementation of innovative learning systems in senior secondary schools.	145 (38.8)	139 (37.2)	42 (11.2)	48 (12.8)	3.02	1.00	Agree
2	Unstable electricity supply hinders the effective use of innovative learning systems during curriculum delivery.	130 (34.8)	153 (40.9)	56 (15.0)	35 (9.4)	3.01	0.93	Agree
3	Poor internet connectivity limits the integration of innovative learning systems in classroom instruction.	119 (31.8)	161 (43.0)	56 (15.0)	38 (10.2)	2.96	0.93	Agree
4	Insufficient funding affects the availability of technological resources needed for innovative learning systems.	129 (34.5)	149 (39.8)	57 (15.2)	39 (10.4)	2.98	0.96	Agree
5	Lack of digital devices such as computers, tablets, and projectors affects effective curriculum delivery.	141 (37.7)	143 (38.2)	51 (13.6)	39 (10.4)	3.03	0.97	Agree
6	Inadequate teacher training in technology integration affects the implementation of innovative learning systems.	132 (35.3)	146 (39.0)	61 (16.3)	35 (9.4)	3.00	0.95	Agree
8	Resistance to change among teachers affects the adoption of innovative learning systems for curriculum delivery.	125 (33.4)	153 (40.9)	59 (15.8)	37 (9.9)	2.98	0.94	Agree
Grand Mean						3.00	0.95	Agree

Table 3 reveals the challenges affecting the implementation of innovative learning systems for effective curriculum delivery in senior secondary schools. The respondents agreed that inadequate ICT infrastructure (M = 3.02, SD = 1.00), unstable electricity supply (M = 3.01, SD = 0.93), poor internet connectivity (M = 2.96, SD = 0.93), insufficient funding (M = 2.98, SD = 0.96), lack of digital devices (M = 3.03, SD = 0.97), inadequate teacher training in technology integration (M = 3.00, SD = 0.95), and resistance to change among teachers (M = 2.98, SD = 0.94) were major challenges affecting the implementation of innovative learning systems in senior secondary schools. The grand mean of 3.00 with a standard deviation of 0.95 indicates general agreement among respondents that these factors significantly hinder effective curriculum delivery through innovative learning systems.

Discussion

Table 1 shows that innovative learning systems significantly benefit teachers' performance in curriculum delivery in senior secondary schools. This demonstrates that the inclusion of novel teaching techniques boosts instructional delivery and enhances overall classroom performance among teachers. The result is in line with Dewi (2018), which showed that learning innovation has a significant and positive effect on the performance of educators and the quality of education in general. Similarly, current teaching approaches such as brainstorming and other interactive methods increase the effectiveness of teaching by making learning more interesting and participatory, as reported by Martin et al. (2019). Likewise, Egara and Mosimege (2024) observed that blended and flipped classroom methods boost educational results, learner engagement and retention, therefore indirectly enhancing teachers' efficacy in the delivery of the curriculum. This finding is in agreement with that of Chukundah and Odibo (2026), who found that blended learning provides more flexible and effective ways to deliver the curriculum in secondary schools in Rivers State in the Nigerian environment. The finding also serves to clarify the point made by Umeodinka et al. (2023) that ineffective use of instructional resources can have adverse effects on curriculum delivery. This means that the

usefulness of innovative learning systems depends not only on their availability, but also on the competent implementation of these systems in the practice of the educational process.

The results in Table 2 reveal that innovative learning methods have a favourable and significant effect on students' academic engagement in curriculum delivery in senior secondary schools. This shows that the use of technology in teaching positively affects the engagement, concentration and sustained participation of students in learning activities. This finding is consistent with Davenport Huyer et al. (2020), who found that digital learning platforms and inquiry-based teaching methodologies improve students' interest and engagement in the classroom. Similarly, Abubakar et al. (2024) showed that the incorporation of technology-based teaching materials enhances students' attention span, retention and general participation in learning processes. Furthermore, Samson and Yango (2023) revealed that Learning Management Systems positively impact students' involvement in academic activities. This further reinforces the usefulness of innovative learning systems in improving learner engagement. Similarly, Nwobodo and Udoka (2025) found that students utilise online learning resources, mobile applications and internet-based platforms in support of their academic work, hence demonstrating increased digital engagement by learners within the Nigerian environment. As observed by Odofin (2021), digital technologies generally increase students' motivation and engagement, while some students prefer to migrate to non-academic digital information, which can diminish their academic attention. There is a consistent positive pattern between creative learning systems and students' academic engagement. The first findings suggest that when innovative learning methods are effectively implemented and deliberately incorporated into classroom teaching, there are significant improvements in students' interest and active participation in curriculum delivery.

The Table 3 indicates that there are various interrelated issues that impede the effective implementation of innovative learning methods for curriculum delivery in senior secondary schools. Challenges include inadequate ICT infrastructure, unpredictable electrical supply, poor internet access, lack of finance, shortage of digital devices, inadequate teacher training in technology integration and reluctance to change among instructors. The result together means that the successful deployment of novel learning methods is restricted by infrastructural limits and human capacity-related concerns. This is consistent with Msafiri et al. (2023), who highlighted insufficient professional development opportunities and unwillingness to change and adapt as major barriers to the implementation of ICT in learning environments. Similarly, Olagoke and Akande (2025) revealed that many teachers lack the practical and digital competences to effectively innovate instruction, and this has a direct effect on the outcomes of implementation. Limited resources and inadequate teacher preparation continue to hinder the adoption of innovations in secondary education, according to Shibiru and Bekele (2024). Likewise, Fuadi et al. (2025), Rahmatika and Sulasmi (2025), and Pratama et al. (2024) found that integration of educational technologies in classroom instruction is hampered by lack of infrastructure, unstable internet connectivity, insufficient teacher readiness and financial constraints. These converging views corroborate the present finding that structural shortcomings and human capability gaps combine to frame the problems experienced in deploying new learning systems. Emerging evidence suggests that without proper infrastructural support and continuous teacher capacity development, the effective integration of novel learning methods into curriculum delivery is considerably hampered.

Conclusion

The study proved that innovative learning systems are very important in improving teachers' effectiveness and students' academic engagement in curriculum delivery in senior secondary schools. The results reveal that these systems, when properly integrated in classroom teaching, significantly enhance the effectiveness of teaching and motivate the active involvement of learners, hence improving the quality of teaching. However, despite promising results, adoption of novel learning systems is greatly hampered by infrastructural inadequacies, insufficient financing, dearth of technical assistance and lack of teacher preparedness. Taken together, these problems suggest that the performance of novel learning systems is strongly contingent on the availability of supportive learning environments and proper human capacity development.

Recommendations

1. Government and education stakeholders should prioritise ICT infrastructure, including the availability of internet, functional digital devices, and uninterrupted electricity supply in secondary schools.

2. Regular and sustained professional development programmes should be organised for teachers to strengthen their digital literacy and capacity for integrating innovative learning systems into classroom instruction.
3. Adequate funding should be allocated to schools specifically for the acquisition, maintenance, and upgrading of instructional technologies required for effective curriculum delivery.
4. School administrators should encourage positive attitudinal change among teachers by promoting awareness of the benefits of innovative learning systems and reducing resistance to technological adoption.
5. Technical support units should be established or strengthened within schools or local education authorities to provide continuous assistance for the maintenance and effective use of digital learning tools.
6. Policy interventions should focus on creating enabling environments that support the sustainable integration of innovative learning systems into secondary school curriculum delivery.

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