ANALYZING THE PROBLEMS OF SECONDARY SCHOOL EFFECTIVENESS:DO THEY HAVE ASSOCIATIONS WITH THE DIGITAL LEADERSHIP SKILLS OF PRINCIPALS?

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Abstract

The success of secondary education is critical to the development of success of society as itprepares youths for useful living and higher education. However, much emphasis has been placed on the narrow aspects of the effectiveness of secondary schools. The present study attempted to fill this gap by studying all the dimensions of secondary school effectiveness relationship between private ownership of schools and secondary school effectiveness and ascertaining the linkage with the digital leadership skills of principals. The descriptive survey research design was adopted for this study. The population of the study comprised all 294 public secondary schools in the three Education Zones in Cross River State. Stratified sampling was applied to select 150 public secondary schools as the sample for this study. A self-structured questionnaire titled "Digital Leadership Skills and Secondary School Effectiveness Questionnaire (DLSSSEQ) was used as the instrument for data collection. The questionnaire was validated by experts in Educational Management and Measurement and Evaluation at the University of Calabar. Reliability was determined using the Cronbach alpha approach for internal consistency. Descriptive statistics was used to answer the research questions while Repeated measures Multiple Linear Regression analysis was used to test the hypothesis at a .05 level of significance. Results indicate that the extent of secondary school effectiveness in Cross River State islow. It was apparent from the result that principals in the State do not have adequate digital leadership skills. The analysis further indicated that digital leadership skills contribute significantly to secondary effectiveness in Cross River State. The study has practical implications for the Ministry of Education to develop principals on digital leadership skills. This will help them to maintain the effectiveness secondary schools in the State.

Keywords*: Effectiveness, school effectiveness, digital leadership, secondary education, dimensions of school effectiveness, digital leadership skills*

Introduction

The effectiveness of an education system is a necessary condition for the social, technological, political, and economic growth, progress, and advancement of any society. This is because no nation can attain any meaningful growth and development without a functional school system. It is a globally held notion that the success of any economy hinges on the performance of the education system. The realization of this structural symbiosis between education and societal development has propelled the restructuring of education systems for maximum performance by developing countries across the globe (Ismaya, Sutrisno, Darmawan, Jahroni&Kholis, 2023; Mtotywa, Seabi, Manqele, Ngwenya&Moetsi, 2024). The need for an effective

education system in Nigeria is very glaring, given her quest to be at the frontline of the best economies in Africa. Secondary education occupies a very strategic position in the development of Nigeria because they are designed to prepare young people for functional living in society and higher learning (Federal Republic of Nigeria, 2014). This establishes the fact that the effectiveness of the secondary school system in Cross River State can reposition the State for a sustainable future, where youths can imbibe moral values for a peaceful existence, have functional skills to engage in productive ventures, and acquire the requisite aptitude for higher learning.

The overall goals of the secondary school system in Nigeria are to prepare individuals for higher education and functional living in society (Federal Republic of Nigeria, 2014). By these laudable goals, secondary school students should be able to transit to higher institutions and acquire basic functional knowledge, vocational skills, abilities, competencies, values, and morals that can make them functional in society. Unfortunately, the rising trend of youths without vocational skills for useful living in Nigeria, the high rate of moral turpitude among Nigerian youths, the rising tendency of youths participation in all forms of social vices in almost all parts of Nigeria, the increasing trend of indiscipline among secondary school students, and the high rate of failure in internal and external examinations among secondary school students in the Nigerian society have clearly shown the level of ineffectiveness of secondary education in Nigeria.

The ineffectiveness of secondary education in Nigeria has been an enduring educational ill that has not been maximally subdued. For instance, Omoregie (2005) lamented that the products of today's secondary system can neither live in society usefully nor move into higher institutions without their parents' aid or forgery. Gbenu (2012) also complained that the state of secondary education in Nigeria largely explains the high level of underdevelopment or low rate of development in the country. Kotirde and Yunos (2015) also noted that secondary education is not living up to expectations in discharging their obligations and that this has led to all manner of youth-related problems in Nigeria. Ojo (2019) observed that secondary education in Nigeria is riddled with crises of various dimensions and magnitude all of which combine to suggest that the system is at crossroads. It has also been reported recently that secondary education in Nigeria is plagued with numerous issues ranging from the proliferation of unqualified teachers, poor teaching and learning facilities, poor learning environment, and poor monitoring of the teaching and learning processes, among others (Sule, 2020).

This undesirable condition has culminated in the poor delivery of secondary education in Nigeria. Specifically, the aftermath of the ineffectiveness of secondary education in the State can be seen in the rising trend of social upheavals and restiveness among youths and the pronounced rate of poverty in the State (Nwakanma & Igbe (2020). School children cannot use their hands to do anything tangible for themselves, rather they prefer to be involved in cultism, armed robbery, and kidnapping. Cultism, which was a common practice in tertiary institutions, is now heard in almost all public secondary schools in the State. This buttresses the fact that secondary education in Cross River State is ineffective in attaining the predetermined goals of the secondary education system. This situation may be worse if nothing is done urgently to minimize this ugly trend. Effectiveness is attainable in the school system when the teaching process is of high-quality standard, students can maximize learning in the three domains of educational objectives, and facilities are adequately provided and properly accounted for by the administrators (Rodríguez, Rodado, Borrero& Parody, 2022). It also means that when teachers have the pedagogical competencies to deliver teaching and are committed to their instructional roles, students' learning, and progress are effectively monitored and evaluated to heighten the process of teaching and learning, and students are able to progress smoothly within the school system (Odigwe, 2019).

In specific terms, secondary education is effective when students can attain quality learning in the cognitive, affective, and psychomotor domains, all resources meant to drive quality teaching and learning processes are made adequately available in schools, the instructional processes are effectively monitored, and evaluated regularly to improve the process of teaching and learning, and when administrators have the needed technical skills to maintain effective administrative structure in secondary schools. Owan (2019) affirms that an effective secondary education system is one that has motivated teachers, positive students' academic performance, good relationships with the community, good leadership, an effective school climate, and one that attains set goals. An effective secondary school is further seen as being characterized by strong administrative leadership, high expectations, an orderly atmosphere, basic skills acquisition (the school's primary purpose), the capacity to divert school energy and resources to advance the school's basic purpose, and frequent monitoring of students' progress (Ajayi & Ekundayo, 2011).

It implies that the effectiveness of secondary education can be assessed from the input, process, and output dimensions. The input dimension of school effectiveness relates to the level at which secondary

education are able to meet the standard set for educational inputs in the secondary school system. These include such indices as teacher quality, school curriculum, school facilities, school-community relationship, learning environment, quality of instructional leadership, and student-teacher ratio (Emeribe&Ushie, 2020; Johnson, 2015). It is practically difficult for a school to be effective when the teaching personnel are unqualified, unmotivated, and cannot deliver effective instruction in the classroom. It is also obvious that schools with inadequate, dilapidated, and outmoded facilities will have difficulties delivering effective teaching and learning. Similarly, no school can deliver effective education when the school curriculum is incompatible with societal expectations and the school environment is unconducive for teaching and learning. Also, research has shown that schools with high student-teacher ratio and poor school-community relationship are likely to deliver poor quality and ineffective education (Barrett,Treves, Shmis&Ambasz, 2019).

Also, the process dimension of secondary education effectiveness relates to the ability of the schools to meet the expected standard in pedagogical practice which involves the actual teaching and learning process. It includes such measures as instructional delivery, instructional supervision, and students' assessment and evaluation. It may be difficult for schools to attain effectiveness when teachers cannot plan their lessons properly and deliver them effectively in the classroom, use modern instructional materials, evaluate students using appropriate methods, and monitor students' learning progress. It has also been reported that instructional supervision is a key index of an effective school system (Ayeni, 2012).Similarly, the output dimension relates to the ability of schools to meet the expected goals of education in terms of students' learning in the cognitive, affective, and psychomotor domains (students' academic achievement, the level of discipline, and their level of skills acquisition) (Ali, 2017; Jahanian&Noori, 2013). Research has affirmed that effective schools are characterized by strong instructional leadership, a strong instructional focus, teacher behaviors that convey high expectations, frequent monitoring of student achievement, a safe and orderly school, and a higher level of achievable outcomes in learning (Johnson, 2015).

The concerns of school effectiveness at the input and process levels are the standards of educational inputs meant to facilitate effective teaching and learning and the instructional process designed to maximize the goals of the school system. These two dimensions of secondary education effectiveness are referred to as classroom-level and school-level effectiveness (Ali, 2017; Ali, Sharma & Kannan, 2016). Similarly, the output dimension of school effectiveness, which is also called students' level and context level, is concerned with the level to which educational goals have been attained by the schools (Ali, Sharma &Kannan, 2016; Mbon, Ukpabio, Ekanem, Okon, Uko, Ngaji&Okon, 2020; Owan, 2019). These three dimensions of secondary education effectiveness cut across what must be put into the school system to facilitate effective teaching and learning, the process of utilizing the inputs in the system to produce the desired outputs, and the actual outputs realized from the teaching and learning process. Measures of secondary education effectiveness that do not include these three dimensions seem to be inadequate as they give a partial explanation of the effectiveness of the system which may be misleading. This partial approach has been the direction of previous studies on school effectiveness.

However, scholars have noted that it is difficult for school administrators to ensure the effectiveness of the school system in this modern era without effective digital leadership model drive the school system (Abdullah &Kadir, 2023; ZammitPulo, 2021).Zhong (2016) noted that the ways of leading schools have changed from traditional face-to-face administration to digital leadership and that the availability of increasing digital tools and resources requires school administrators to integrate technology to support digital-age learning and teaching. The researcher further stressed that school management does not only need to understand the importance of supporting communication and collaboration through technology but also needs to know practical strategies for supporting teaching and learning digitally (Haleem et al., 2022; Seeletso, 2022).Yusof, Yaakob and Ibrahim (2019) added that school leaders need to explore and master new knowledge and skills as well as be aware of the latest technology changes and that as technology leaders in schools, administrators must first master and be competent with technology. These scholars stressed further that, school leaders also need to master the knowledge and skills of other digital technologies such as interactive whiteboards (IWBs), document cameras, chrome books, cloud computing dan 3D contents for effective delivery of education in this digital age.Macatuno-Nocom (2019) submitted that digital education leaders no longer have a choice but to excel in visual as well as physical spaces, requiring them to acquire professional and technological competencies and that if leaders do not understand the trends in the digital community, then leaders are ill-prepared to harness the power of modern digital technologies.

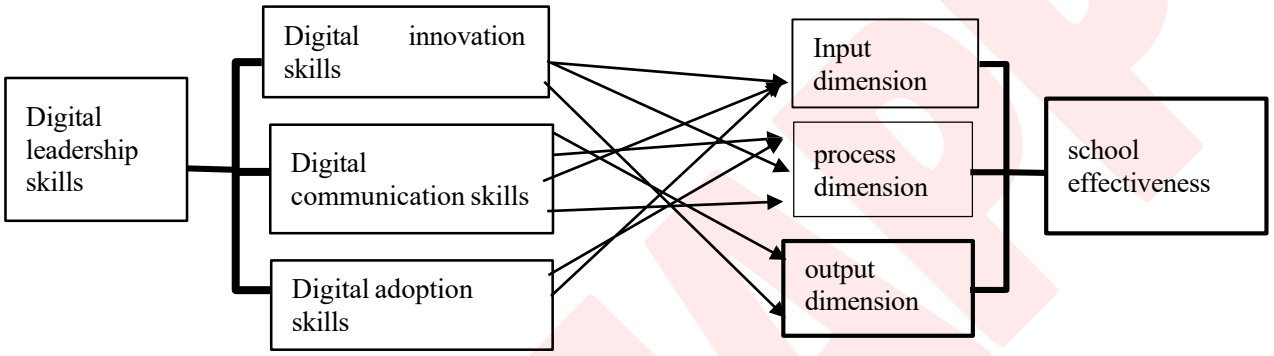
Digital leadership model involves all practices associated with the application of digital gadgets in school leadership to boost information dissemination and stakeholders' collaboration geared towards effective teaching and learning in school (Thangeni,2022). Digital leadership is also known as e-leadership or electronic leadership (Quddus, Nugroho, Hakim, Ritaudin, Nurhasanah, Suarsa ... &Sudargini, 2020). Digital leadership in education involves setting directions, influencing others, initiating and implementing sustainable change through the access of information, and establishing relationships in order to anticipate changes pivotal to institutional success in the future (Sheninger, 2019). Quddus, Nugroho, Hakim, Ritaudin, Nurhasanah, Suarsa ... and Sudargini (2020) maintained that a digital leader is someone who is able to utilize information technology to achieve common goals in an organization. Sheninger (2019)further submitted that the four pillars of digital leadership in education are communication, public relations, branding, and students' engagement/ learning.Cochrane, Antonczak, Guinibert and Mulrennan (2014) argued that institutional administrators in this 21st century education must develop pedagogy of shaping digital information landscape which will provide opportunities for the user-generated input to digital repositories, crowd-sourcing and social media, and the web to enable active forms of learning. Goon (2012) submitted that while effective leadership is extremely important in any system, it is even more imperative in all tertiary institutions to provide all leaders, faculty members and learners with a world-class education that would fit in today's digital era. This implies that digital leadership has implications on the performance of both tertiary institutions and academic staff in information era. Quddus, Nugroho, Hakim, Ritaudin, Nurhasanah, Suarsa ... and Sudargini (2020) noted that to enhance the quality of the teaching and learning process in educational institutions in this era, teachers must be permitted to use information technology at all levels of education. Research has shown that indicators of digital leadership model are innovation, effective communication, and adoption of digital tools (Tagscherer & Carbon, 2023).

Studies have linked innovation to school effectiveness in different parts of the of the world (Arivayagan&Zaidatol, 2010; Blau & Presser, 2013;Gkorezis, 2016; Gonzales et al., 2024; Keane et al., 2020; Riveras-León &Tomàs-Folch, 2020). These studies only addressed school effectiveness partially from either the output perspectives in terms of students' learning outcomes, or from the input perspective focusing on teachers' effectiveness in the school system. Studies have also associated leadership innovation in schools with infrastructural provision and maintenance (Bariu, 2020; Kukali et al., 2018; Maponya, 2015; Mochama, 2017). Research has been recorded in the area of the relationship between innovative behaviour of principals and the teaching and learning process (Vermeulen et al., 2022; Yunus et al., 2019). Though these studies have addressed part of the problems of school effectiveness, they have not taken holistic measures of secondary school effectiveness in relation to principals' digital leadership model in the school system.

Similarly, in different studies, scholars have attempted to address issues bordering on the association between digital leadership practices adopted by principals and secondary school effectiveness, especially regarding effective communication. For instance, studies such as Zhong, (2016), Aldhafeeri&Alotaibi (2022), and Kyaw et al., 2019) have established the association between digital communication and school performance focusing on students' performance. Studies such as Zhong (2017), Blau & Shamir-Inbal (2017), and Calvet et al., (2019) have investigated the linkages between digital communication and teachers' effectiveness as well as collaborations among educational stakeholders. The effect of digital communication and school effectiveness especially the aspect of teaching and learning was established by different scholars around the globe (Liu et al., 2020; Kuusimäki et al., 2019). In the aspect of the application of digital tools in schools, many studies have established that there is an association between the application of digital tools and school effectiveness (Blau & Presser, 2013; Hussaini et al., 2020; Qosimjonovna, 2021; Selimi et al, 2020). All these empirical studies have only addressed the outcome dimension of school effectiveness which focuses on students' performance. There seem to be inadequate studies measuring school effectiveness takinginto consideration the three dimensions of secondary school effectiveness. The present research was designed to fill this gap.

This study is based on the principles of Evereth Rogers Innovation diffusion theory of 1962which explains how individuals, institutions and organizations adopt innovations and changes such as ideas, products, or services over time and how they ensure effective implementation of the change in the organization. Principals are responsible for managing emerging innovations in the school system through strategic planning, re-defining, re-structuring the school in line with current trend, clarifying the direction through effective communication, monitoring the process through adequate supervision, and motivating staff to enhance their effective performance of assigned roles. Research has indicated that for principals to ensure

the effectiveness of secondary schools in this age when every school system is driven towards full digitalization, they need digital leadership skills such as digital innovation skills, digital communication skills, and digital adoption skills (Abdullah &Kadir, 2023; Karakose et al., 2021; Navaridas-Nalda et al., 2020). It is also argued that when principals display adequate digital leadership acumen, they are able to what input mix is best for the school system, understand how to organize education process for maximum result, and what emerging skills students must possess to fit into modern society (Blau & Shamir-Inbal, 2017; Suharyati et a., 2024). The conceptual linkages between digital leadership competencies and school effectiveness as shown in the diagramme below explain the association between each measure of principals' digital leadership skills and each dimension of secondary school effectiveness.



Statement of the Problem

The effectiveness of a secondary school system is achieved when students are able to acquire learning in the affective, cognitive, and psychomotor domains, facilities are adequately provided to boost the teaching and learning, qualified and committed personnel are available, students' learning, and progress are effectively monitored and evaluated, and administrators have the needed technical skills to maintain the effective administrative structure of the schools. It is no longer news that public secondary schoolsare performing below the expected standard in Nigeria. This situation can be observed in Cross River State. Many public secondary schools have unqualified teaching and non-teaching personnel. Some secondary schools lack a conducive learning environment that can promote the delivery of 21st-century skills to students. Many public secondary schools lack qualified and committed teachers and do not have functional and adequate learning facilities that can promote effective teaching and learning. Students sit on broken chairs and overcrowded classrooms to receive lessons in many schools. Some of the schools are ill-equipped with poorly ventilated office spaces, and insufficient learning and recreational facilities. There are also dysfunctional libraries, dilapidated laboratories, and outmoded workshop facilities in almost all public secondary schools in the State.These inadequacies in secondary schools have resulted in poor-quality secondary education in the State, which seems to be responsible for the increasing rate of social upheavals and restiveness among youths and the pronounced rate of poverty in the State. All these inadequacies are pointers to the ineffectiveness of secondary schools in the State. It is obvious that managing schools for effectiveness in this twenty-first century involves adequate digital leadership skills on the part of school administrators. Based on this premise, this study sought to find out whether the ineffectiveness of secondary schools experienced everywhere in the country has an association with the digital leadership skills of principals.

Purpose of the Study

The general purpose of the study was to examine the digital leadership skills of principals andsecondary school effectiveness. Specifically, the study sought to find out:

1. The extent of secondary school effectiveness
2. The extent to which principals acquire digital leadership skills
3. The contribution of digital leadership skills of principals to secondary school effectiveness

Research Questions

One research questions were formulated to direct the study:

1. What is the extent of secondary school effectiveness in Cross River State?
2. To what extent do principals' acquire digital leadership skills?

Research Hypotheses

One hypothesis was formulated to direct the study:

The digital leadership skills of principals do not have any significant contributions to secondary school effectiveness

Methods

Philosophical stance, design, and participants

The study adopted the positivist research philosophical stance which is based on objective observation or measurement of the phenomenon under survey to provide objective estimates of the constructs in the variables studied quantitatively. Thus, this philosophical stance allowed the researcher to determine the extent of secondary effectiveness, the extent of digital competencies among principals, and the contributions of digital leadership skills and secondary school effectiveness. Following this philosophical foundation, the research design used for this study was the descriptive survey design. This design allowed for the quantitative description of the extent of secondary effectiveness, the extent of digital competencies among principals, and the contributions of digital leadership skills and secondary school effectiveness. The population of the study comprised all 294 secondary schools in the three Education Zones in Cross River State. 150 secondary schools were selected as sample for this study. Two research questions were posed in this study.

Measure, instrument, Validity, and reliability of the instrument

Three measures were examined in the study. These were the extent of secondary school effectiveness, the extent of digital leadership skills of principals, and the contribution of digital leadership skills of principals to secondary school effectiveness. A self-structured questionnaire titled "Digital Leadership Skills and Secondary School Effectiveness Questionnaire (DLSSSEQ). The researcher developed the instrument following the knowledge gathered from extensive literature. The instrument was self-designed by the researcher because of the unavailability of previously developed instruments in the context of this study. The instrument was designed using a modified four-point Likert scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE). The instrument was validated by experts in Educational Management and Measurement and Evaluation, at the University of Calabar. The internal consistency of the instrument was established using Cronbach reliability scale (.86 to .89).

Ethical considerations

The researcher used a complete validity approach to collect the data used for the study. This step was taken to control for possible bias in the study. The researcher did not collect ethical clearance because the Nigerian Code for Health Research Ethics (NCHRE) exempts survey research from receiving ethical clearance since it poses no major risk to participants filling out a questionnaire. This claim can be verified at https://bit.ly/3pK9ORh. All the participants gave written informed consent which indicated that they were all aware of the study and ready to be part of it. They were assured that their responses would be anonymized and de-identified before collating for privacy and security. The encoded information was kept on computers accessible only to the researchers and protected with a security system (strong password, antivirus software, and a firewall) to prevent unauthorised access to the collected data. The participants were adequately informed that their replies would be aggregated and published in a peer-reviewed journal.

Procedure for data collection and analysis

Copies of the questionnaire were administered to the respondents with the support of 3 research assistants who were recruited for data collection. The instruments were administered to principals and students who participated in the study. All the participants took part in the study voluntarily and were free to quit the exercise at any point. Three SS2 students and three teachers from the 150 schools were respondents in the study and their scores were entered for the school they represented. All the copies of the administered were recovered. There was no missing data as all the copies of the questionnaire were correctly filled. Descriptive statistics (simple percentages, mean, and standard deviation) were used to answer the research question, while population t-test was used to test the hypothesis. The decision rule was based on the criterion mean of 2.50. Thus, mean scores of items below 2.50 were regarded as Low Extent, while those above 2.50 were regarded as High Extent. The hypothesis was tested at a .05 level of significance.

Results

Research question: To what extent are secondary schools effective in Cross River State?
The responses to this research question are presented in Table 1.

Table1: Mean and standard deviation of responses on the extent of secondary school effectiveness in Cross River State

S/N	ITEMS	$\bar{X}$	SD	Decision
1	Teachers being always adequately prepared for classroom teaching	2.43	.641	Low extent
2	The school having adequate qualified teacher	2.41	.667	Low Extent
3	Teachersmissing their teaching periods	2.47	.334	Low Extent
4	Teachers having good relationships with students	2.01	.447	Low Extent
5	Curriculum offering being in line with current practices	1.97	.569	Low Extent
6	Classroom environment promoting good teaching and learning	2.42	.617	Low Extent
7	Teachers being enough for all subjects	2.41	.782	Low Extent
8	Classrooms being overcrowded	2.48	.682	Low Extent
9	Availability of teachers who can defend their qualifications	2.26	.592	Low Extent
10	Teachers being committed to their statutory duties	2.33	.447	Low Extent
11	Modern instructional materials being used to deliver lessons	2.39	.602	Low Extent
12	Availability of established standards for conducting examination	2.51	.486	High Extent
13	Students' evaluation being carried out effectively	2.44	.611	Low Extent
14	Teachers teaching withinstructional materials	2.47	.421	Low Extent
15	Checking of teachers' lesson notes as a daily exercise	2.39	.532	Low Extent
16	Teachers awarding scores to students objectively	2.46	.577	Low Extent
17	Teachers,going round to monitor what students do during instructional delivery.	2.51	.651	High Extent
18	Teachers marking students' assignments on time	2.45	.513	Low Extent
19	Teachers being able to improve their lesson contents based on current realities	2.44	.691	Low Extent
20	Regular checking of teachers' notes	2.53	.438	High Extent
21	Students always performing well in external examinations	2.46	.688	Low Extent
22	Students being able to perform well in terminal examinations	2.48	.453	Low Extent
23	Students always having poor performance on tests	2.43	.702	Low Extent
24	Students being very discipline in the classroom	1.90	.437	Low Extent
25	Having minimal issues with classroom management	2.44	.619	Low Extent
26	Students being obedient to school rules and regulation	2.05	.681	Low Extent
27	Students being very good in local craft	2.38	.502	Low Extent
28	Students being excellent in skills competition programmes	2.48	.490	Low Extent
29	Students having no difficulties in making handwork assignment	2.39	.429	Low Extent
30	Science students having no problems with laboratory experiments independently.	2.23	.701	Low Extent
	Average Mean & Std. Dev.	2.38	.566	Low Extent

The result of the analysis in Table 1 shows that only 3 items in all have mean scores above the criterion mean of 2.50, while 27 items have scores below the criterion mean of 2.50. Given that the average mean and standard deviation are 2.38 and 0.566, there is a high degree of acceptance among the respondents that the extent of secondary school effectiveness in Cross River State is low. However, though the overall effectiveness level of secondary schools in the State shows a low extent in areas such as teachers having good relationships with students, classroom environment promoting good teaching and learning, teachers being committed to their statutory duties, checking of teachers' lesson notes as a daily exercise, teachers,going round to monitor what students do during instructional delivery, teachers marking students' assignments on time, among others, the result also indicates that there are some areas in which secondary schools are not doing well in the State. These include such areas as the availability of established standards for conducting examinations, teachers,goingaround to monitor what students do during instructional delivery, and regular checking of

teachers' notes. Despite these positive perspectives, the result has shown that secondary schools are not doing well in Cross River State.

Research question: The extent to which principals acquire digital leadership skill?The responses to this research question are presented in Table 1.

Table1: Mean and standard deviation of responses on the extent of digital leadership skills of principals

S/N	ITEMS	X	SD	Decision
1	Sharing newpolicy framework with staff and students	2.51	.435	High extent
2	Imposition of change on teachers without consultation	2.42	.357	Low Extent
3	Sharinginnovative ideas with teachers in the schools	2.50	.823	High Extent
4	Uses democraticmeasures to drive the change process in the school	2.01	.628	Low Extent
5	Regular introduction of innovation in the school system	2.41	.778	Low Extent
6	Employing all channels of communication in the school	2.42	.561	Low Extent
7	Using interpersonal communication approach in the school	2.41	.490	Low Extent
8	Using informal communication links in school communication	2.56	.443	High Extent
9	Being open to all category of teachers in the school	2.34	.464	Low Extent
10	Using Social Media for school communication	2.50	.606	High Extent
11	Adopting E-learning models in the school	2.22	.791	Low Extent
12	Holding staff meeting through Zoom	2.01	.702	Low Extent
13	Storing records electronically	2.19	.723	Low Extent
14	Having WhatsApp's platform where teachers, principal and students can interact	2.47	.591	Low Extent
15	Availability of e-learning facilities	2.39	.733	Low Extent
	Average Mean & Std. Dev.	2.35	.608	Low Extent

The result of the analysis in Table 1 shows that only 4 items in all have mean scores above the criterion mean of 2.50, while 11 items have scores below the criterion mean of 2.50. Given that the average mean and standard deviation are 2.35 and 0.608, there is a high degree of acceptance among the respondents that the extent of digital leadership skills among principals in Cross River State is low. However, though the overall level of digital leadership skills among principals in the State is low, principals are good in the areas of sharing new policy framework with staff and students, sharing innovative ideas with teachers in the schools, and using informal communication links in school communication. However, the result indicates that principals in Cros River State have problems with digital leadership skills in the secondary school system.

Research hypothesis: The digital leadership skills of principals do not have any significant contributions to secondary school effectiveness. The result is presented Table 3.

TABLE3: Summary of Multiple Linear Regression analysis of the contribution of digital leadership skills of principals to secondary school effectiveness

Model SSEo	Sum of squares	Df	Mean square	F ratio	p–level	R	R^2	Adj R^2	S.E
Regression	15966.206	3	3193.241	236.852	.000[b]	.811[a]	.657	.655	3.672
Residual	8318.417	146	13.482						
Total	24284.623	149							
Model SSEi	Sum of squares	Df	Mean square	F ratio	p–level	R	R^2	Adj R^2	S.E
Regression	3012.806	3	602.561	225.519	.000[b]	.804[a]	.646	.643	1.635
Residual	1648.552	146	2.672						
Total	4661.358	149							
Model SSEp	Sum of squares	Df	Mean square	F ratio	p–level	R	R^2	Adj R^2	S.E

Regression	2344.642	3	468.928	82.540	.000[b]	.633[a]	.401	.396	2.384
Residual	3505.306	146	5.681						
Total	5849.949	149							
Model SSEo	Sum of squares	Df	Mean square	F ratio	p–level	R	R^2	Adj R^2	S.E
Regression	1020.136	3	204.027	40.942	.000[b]	.499[a]	.249	.243	2.232
Residual	3074.733	146	4.983						
Total	4094.870	149							

a. Predictor variables: (Constant),digital innovation skills, digital communication skills, digital adoption skills.

b. Criterion variables: Overall secondary school effectiveness (SSEo), Input dimensionof secondary school effectiveness (SSEi), Process dimension of secondary school effectiveness (SSEp), and Output dimension of secondary school effectiveness (SSEo)

The result in Table 3 shows that in overall, the analysis of variance in the regression output produced an F-ratio of 236.852 ($p< .05$), which is statistically significant at .05 probability level (critical $F_{[5, 617]} = 1.94$). This means that the predictor variables (digital innovation skills, digital communication skills, digital adoption skills) are jointly potent in significantly predicting the variance in the criterion variable (overall secondary school effectiveness). Specifically, the analysis variance in the regression output produced an F-ratio of 225.519 ($p< .05$) for input dimension of secondary school effectiveness, F-ratio of 82.540 ($p< .05$), for process dimension of secondary school effectiveness and F-ratio of 40.942 ($p< .05$) for output dimension of secondary school effectiveness. This implies the digital leadership skills of principals contributed significantly to the variance in secondary school effectiveness.

Discussion

The analysis of the first research question indicates that secondary schools in Cross River State are not effective in all the dimensions of school effectiveness. This supports earlier observations of researchers on the ineffectiveness of secondary schools. It agrees with Omoregie (2005) who lamented that the products of today's secondary system can neither live in society usefully nor move into higher institutions without their parents' aid or forgery. The present result is not different from what Gbenu (2012) complained that the state of secondary education in Nigeria largely explains the high level of underdevelopment or low rate of development in the country. This result also aligns withthe opinion of Kotirde and Yunos (2015) who pointed out that secondary education is not living up to expectations in discharging their obligations and that this has led to all manner of youth-related problems in Nigeria. The statement of Ojo (2019) that secondary education in Nigeria is riddled with crises of various dimensions and magnitude all of which combine to suggest that the system is at crossroads, is not far from what is realized in the present study.

The second research question also pointed to the fact that principals have issues with digital leadership skills in the secondary education system. This aligns with scholars who have stated that it is difficult for school administrators to ensure the effectiveness of the school system in this modern era without an effective digital leadership model to drive the school system (Abdullah &Kadir, 2023; ZammitPulo, 2021). Zhong (2016) also argued that the ways of leading schools have changed from traditional face-to-face administration to digital leadership and that the availability of increasing digital tools and resources requires school administrators to integrate technology to support digital-age learning and teaching. The present result supports the viewpoint of scholars who have stressed that school management does not only need to understand the importance of supporting communication and collaboration through technology but also needs to know practical strategies for supporting teaching and learning digitally (Haleem et al., 2022; Seeletso, 2022). The inadequate leadership skills of principals may be the reason they have difficulties maintaining an effective secondary school system in Cross River State.

The analysis of the hypothesis supports the result realized from the research questions that principals' digital leadership skills such as innovation, communication, and application of digital tools, contribute significantly to secondary school effectiveness generally, and in terms of input, process, and output

dimensions of school effectiveness. This agrees with the findings of different scholars (Studies have linked innovation to school effectiveness in different parts of the world (Arivayagan&Zaidatol, 2010; Blau & Presser, 2013; Gkorezis, 2016; Gonzales et al., 2024; Keane et al., 2020; Riveras-León &Tomàs-Folch, 2020) who have established in their different students that innovation has implications for the direct of school effectiveness. Apart from innovation, students have also established the association of skills of principals in communication and adoption of digital tools with school effectiveness (Aldhafeeri&Alotaibi, 2022; Blau & Presser, 2013; Hussaini et al., 2020; Kyaw et al., 2019); Qosimjonovna, 2021; Selimi et al, 2020; Zhong,2016). This result supports the principles of Evereth Rogers Innovation diffusion theory that leaders have to drive the change process in an organization for the organization to attain its goals. It implies that until principals have adequate digital leadership skills, they will have difficulties ensuring effectiveness in the education process in secondary schools.

Conclusion

The success of secondary schools is critical to the development of society. When secondary schools are ineffective, students turned out of the system becomes also ineffective in meeting their demands and expectations in society. It is also practical that students from an ineffective school system are a nuisance to society as they are prone to participating in all manner of social vices that may cause instability, insecurity, and social unrest. Principals can only be able to ensure effective teaching and learning in secondary schools in this modern era when possess adequate digital leadership skills that can enable them to drive the school system along the path of digitalization. Based on the findings of the study, it is concluded that the digital leadership skills of principals contribute to the effectiveness of secondary schools.

Recommendation

The findings have implications for developing principals' digital leadership competencies such as innovation skills, digital communication skills, and adoption of digital tools in the schools. This is because it will be difficult for principals to achieve effectiveness in the teaching and learning process in the digital age without adequate innovative skills to inject 21st century innovation into the system, adequate modern communications skills to interact with education stakeholders at any given time, and adequate skills to adopt digital gadgets in both teaching and learning, and administrative processes of the school system. Based on the conclusion of this study, it is recommended that Ministry of Education should map out strategies to increase the digital leadership competencies of principals. This can be done through professional workshop sessions, seminar programme, refresher courses and professional conferences.

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