

Digital Technology Use: A Requirement for Nursery and Primary School Effectiveness

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Abstract

The study explores digital technology use, an essential tool for achieving nursery and primary school effectiveness. The stated goals and objectives of nursery and primary education necessitate a tool called digital technology use which could be harnessed to make teaching and learning more engaging and interesting to pupils. To curb ineffectiveness in the nursery and primary school, the study employs diffusion of innovation theory to examine digital technology use for effective instructional delivery. The study is hinged on Diffusion of Theory (DOT). The review highlights the critics of using digital technologies at the foundation level and suggests the way forward such as pupils should be monitored both at home and in the school as to the number of hours allowed for digital technology use, as this will help curb the lack of social interaction that too much dependent on technology use cause since this will enable self-assimilation and confidence in the nursery and primary school.

Keywords: Nursery and Primary Education, School Effectiveness, Digital Technology Use, Diffusion of Innovation Theory.

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Introduction

There is increasing awareness of the importance of education to the development of individuals and society. This has awakened people and nations and created a conscious effort to provide and acquire qualitative education. Nursery and primary education are very fundamental in the provision of functional knowledge, skills, thought, feelings, and actions which are considered necessary for all citizens, regardless of social status, vocation, or sex (Aguh & Olutola, 2023). Given this, the broad aims of nursery education within the overall objectives include inculcating social norms, the spirit of enquiry and creativity, through the exploration of nature, the environment, art, music and playing with toys, among others in the child and while the aim of primary education is giving the child opportunities for developing manipulative skills that will enable him to function effectively in the society within the limits of his capacity (Federal republic of Nigeria, 2013). To achieve these broad aims and objectives of nursery and primary education, digital technology use could be a veritable tool since most kids are already used to one form of technology or the other from home. This makes it more interesting and engaging when used in nursery and primary schools. However, making these kids develop digital literacy skills that will be needed to achieve school effectiveness at both levels of education.

Nursery and Primary Education

Nursery and primary education are the basic level of education that a child must pass through to acquire relevant knowledge and skills needed to survive in society. Also, nursery and primary education is a necessary type of education needed to be absorbed into secondary school. Pre-primary education is also another name for Nursery education in Nigeria (Federal Republic of Nigeria, 2013). The pre-primary and primary education in Nigeria is part of the government's efforts to uphold its commitments to the provision of fundamental education for everyone. It is at this early stage of learning that children are developed for higher academic exercises. The foundation of education of the child is preschool education which forms an integral part of his or her early education which may be formal or informal, usually given in an

educational institution to children aged 0 to 5+ prior to their entering primary school. This educational level of the child provides for the physical, motor, health, nutritional, intellectual, aesthetic, emotional and social development of the preschool child (Oniwon, 2015). If child education can provide these vital necessities which are essential in human life, it is therefore, could have an important and strong relationship with the school's effectiveness and pupils' performance at the primary level and perhaps at the secondary level (Ogenna, 2021). If a child gets a particular step wrong or did not even get it at all, it becomes a very big problem for such a child. This makes nursery education very essential for the overall development of the education sub-sector (Ogenna, 2021).

After nursery or pre-primary education, a child transits to primary education. This primary education is available for children from 6 to 11 years plus. It can also be perceived as the type of education provided for children to acquire fundamental knowledge, skills, thought, feelings and actions which are considered necessary for all citizens, regardless of social status, vocation or sex (Aguh & Olutola, 2023). The National Policy of Education stresses that primary education is the foundation upon which the rest of the education system is built, and it represents the first tier of the 6-3-3-4 system of education in Nigeria, which is designed to run for duration of six years. It represents the key to the success or failure of the entire national educational system (Federal Republic of Nigeria, 2013).

The goals of primary education are in seven folds including inculcating permanent literacy and numeracy, the ability to communicate effectively; laying a sound basis for scientific and reflective thinking; giving citizenship education as a basis for effective participation and contribution to the life of the society; moulding the character and develop sound attitude and morals in the child; developing in the child the ability to adopt to his changing environment; giving the child opportunities for developing manipulative skills that will enable him to function effectively in the society within the limits of his capacity; and also to provide the child with basic tools for further educational

advancement including preparation for trade and crafts of the locality (Federal Republic of Nigeria, 2013).

Therefore, a successful nursery and primary school is made up of a variety of people who collaborate to accomplish the educational objectives of the institution, including pupils, caregivers/teachers, parents, and head teachers. It appears that the nursery and primary schools are not living up to expectations in the provision of qualitative education to the citizenry (Ajayi & Ekundayo, 2011).

School Effectiveness

Nursery and Primary school effectiveness in the context of this study refers to the ability of nursery and primary schools to achieve their predetermined goals and objectives (Ajayi & Ekundayo, 2011). However, a school must be very effective to achieve the general educational objectives therefore school effectiveness refers to the result of an institution using all school resources both material and human to achieve goals and meet shared objectives. School effectiveness is basically concerned with the proper functioning of schools and how this affects students' value formation and orientation together with outcomes and overall achievement (Reyolds, 2010). School effectiveness has been identified as one of the factors that aims toward the achievement of goals and objectives of the school be it nursery or primary education. It is also an educational environment that is comfortable and conducive to development and responsible to all stakeholders (Gunal & Demirtash, 2016). Effective schools serve as a major contribution to the immediate and lifetime success of students, thereby fostering student academic achievement and social development. Studies have shown that school factors matter a lot and contribute immensely to students' learning irrespective of their socioeconomic status or family background. An effective school is expected to add value to students' outcomes.

Factors Influencing School Effectiveness in Nursery and Primary Education

Many factors are extensively combined to make each school achieve its preset goals and objectives. The combined factors that could determine school effectiveness are a clear and positive philosophy, broad and balanced curriculum, strong school framework, meaningful assessment and reporting on student progress, school context and culture, conducive learning environment, parent and community involvement and student welfare system all factors that could contribute toward achieving school effectiveness both at nursery and primary level (IGNOU, 2007). Well clear, articulated and positive philosophy encompasses the defined goals and policies set out in school documents to guide the running activities of the whole school which should be consistently and frequently followed to align the operation of the school accordingly. This aim to help develop the full potential of each pupil intellectually, emotionally, socially, and physically. Also, curriculum provides a wide range of learning experiences within and beyond the school activities which could help the social and physical development of the pupils as well as their academic development (IGNOU, 2007). A school environment that is conducive, healthy and safe is very germane to effective teaching and learning and overall school effectiveness (Ihekoronye, 2020).

Personal visits by the researcher to some schools have shown that the learning environment has not been in good shape. In some cases, students sit on the ground to receive lessons. Many of the classrooms, laboratories, halls, libraries and office furniture are in a terrible state and in need of repairs. The learning environment seems to be very unconducive for teaching-learning activities. The availability of school physical facilities and the conduciveness of the school learning environment have also been said to be potent factors influencing school effectiveness (Owoeye, 2000). The quality and quantity of school facilities such as classrooms, offices, library, laboratories and the like enhance the quality of teaching and learning (Owoeye, 2000). Studies have also shown that parent and community presence in the school

activities and participation in committee events and other school activities all has positive effects on school effectiveness (Sammons *et al.*, 1995; Ajayi, 1999). An earlier survey on conducive school environment was conducted to know the effects of noise from building mechanical systems on elementary school student's achievement and the results showed that for the elementary school system tested, lower students reading comprehension scores were significantly related to higher background noise levels from building mechanical systems (Lauren & Wang, 2009). It was also demonstrated that school noise affects students' performance negatively. Meanwhile, findings further indicated that well-ventilated classrooms with air conditioning and decoration of classrooms did not enhance students' understanding, retention and sense of comfort. Based on the findings, it was recommended that teachers should ensure that their classes are well-lit to assist students' vision and ability to copy notes, and always make the classroom very conducive for students to feel relaxed, comfortable and participate more actively in the teaching-learning process. This can now be combination of teacher's effort and conduciveness of the classroom to enhance student's understanding and retention (Ihekoronye, 2020). Parent and community participation in nursery and primary education have been discovered to include individual, group, and civil organization participation in educational quality implementation and control (Mas, 2011). Research has shown that parent and community participation in nursery and primary school development encompasses support given by the school committee to school programs through participation in school development planning, controlling the course of the programs until evaluating the results, and cooperating to support the improvement of learning quality. The representation of community participation in education is made through the school committee (Sulistyorini, 2011).

Digital Technology Use

Digital technologies can be described as electronic tools, systems, devices and resources that generate, store, or process data. They are

electronic devices designed to supplement classroom instruction. Development in information and communication technologies has brought about new digital tools that can be adopted and used in education. Digital transformation has become a prevailing trend in education in the contemporary period. This trend is not only prevalent in the tertiary system of education but also in secondary and early childhood education which includes nursery and primary education.

The introduction of new technology-assisted tools such as mobile devices, interactive whiteboard/ smart boards, Massive Open Online Courses (MOOCs), tablets, laptops, simulations, dynamic visualisations, hardware and software, digital cameras, programmable toys and virtual laboratories have altered education in schools and institutions:

Digital Technology Use in Nursery and Primary School Effectiveness

Children in nursery and primary schools are already being familiar with digital technology even before they are introduced to books (Brody, 2015). Both caregivers and pupils in the nursery and primary schools have been interacting with different forms of digital technology to facilitate teaching and learning process. The introduction of new technology-assisted learning tools such as mobile devices, smart boards, and MOOCs (tablets, laptops, simulations, dynamic visualisations, and virtual laboratories have altered education in pre-primary and primary schools (Egbule, 2010).

The introduction of new technology-assisted learning tools such as mobile devices, interactive whiteboard/ smart boards, Massive Open Online Courses (MOOCs), tablets, laptops, simulations, dynamic visualisations, hardware and software, digital cameras, programmable toys and virtual laboratories have altered education in schools. Different types of Information and Communication Technology (ICT) in education have been continuously linked to higher efficiency, higher productivity, and higher educational outcomes, including quality of cognitive, creative and innovative thinking (Kumari & Dubey, 2020).

With today's technological growth, caregivers must learn to utilize various gadgets, such as smartphones, tablets, computers, or educational videos, and also harness all available online resources to ensure that their materials are alive, engaging, and up to date to achieve school effectiveness. Technology is more than just playing video games and viewing animated films. The advantages are determined by how students and teachers use technology to improve education. When technology is used effectively for instructional reasons, the educational experience improves, and student's horizons widen and also become interested (Haleem *et al.*, 2022).

Nations' sustainable development 2030 agenda is to ensure inclusive and equitable quality education for all, in which digital technologies have emerged as indispensable tools to realise this goal which is school effectiveness. The recent global pandemic has further increased the adoption of digital technologies in education including pre-primary and primary education, thereby causing a paradigm shift in the entire education system. The application of digital technologies in elementary education has simplified teaching and learning for both teachers and students (Haleem, 2022).

Teaching needs the understanding of the use of relevant media and, most recently, the use of digital technologies. My personal experience about digital technology usage in learning by my two toddlers is wholesome. No matter this nonchalant attitude exhibited by my two toddlers, they always seem excited doing their homework so far technology usage is involved especially storytelling, the displays of their characters and the rhythms makes it interesting and engaging than just reading orally. Digital technology use in teaching and learning sort of create curiosity in pupils which makes them want to know and learn more which can invariably help to achieve school effectiveness especially in nursery and primary schools.

Benefits of Digital Technology Use in Nursery and Primary School

There are a lot of benefits that are inherent in the use of digital technologies for nursery and primary school effectiveness. Some of these benefits are identified as follows:

- encourages children to become independent learners more quickly and explore topics that interest them both at home and in school.
- support children's cognitive and emotional development, and the development of social and co-operative skills thereby making teaching at nursery and primary level innovative and interesting.
- assist in the emergence of early literacy and mathematical thinking for children such as using online academic apps to buttress teaching and learning done in the classroom.
- help the possibility that they can begin to develop digital technology capability and literacy as part of their early childhood education experiences.

Critics of using Digital Technology Use in Nursery and Primary School

Some of the critics of using digital technology for nursery and primary school effectiveness include;

- It lowers attention span of children since they are used to getting things fast and quickly as they can have their programmable toys and robots do things for them, they don't get bored because they always have something to entertain them. Technology moves fast, instant responses and instant gratification are impacting attention spans for young children and teenagers alike.
- It also leads to falling grades as kids and teenage spend more time on technology, playing games, watching cartoons as so on thereby neglecting their homework.
- It could also affect their social interaction as more time is spent in texting and writing than face to face interaction. Even when

children spend time together, they may spend more time texting or on their phones than actually being together.

Diffusion of Innovation Theory

The Diffusion of Innovation theory (DoI) was developed by Roger in 2003. The theory is a well-established empirical framework that conceptualises the process of innovation diffusion and can likewise be applied to the process of innovation adoption, specifically, to the adoption of digital technologies used in nursery and primary education (Jwaifell & Al- Mothana, 2013). It is worth noting that although various theoretical frameworks address the use of innovation, they all conceptualise the factors that affect the use or acceptance of the innovation. Rogers' Diffusion of Innovation Theory is adopted because it addresses not only the factors that affect the use of digital technologies but also the entire process, which is described in terms of five consecutive stages namely: Knowledge Stage; persuasion Stage; Decision Stage; Implementation Stage and Confirmation Stage.

- (1) The Knowledge Stage involves the acquisition of cognitive knowledge, during which the caregivers are exposed to the new technology, becomes aware of it, and seeks information about ways to use the technology efficiently to improve teaching and learning. The caregivers must possess a reasonable level of how-to knowledge before attempting to use the innovation independently.
- (2) The Persuasion Stage is emotion-focused, as it is at this phase that attitudes about the new technology are formed. At this stage, the caregiver experiences uncertainty and, as a result, may be influenced by social encouragement to use the innovative tool, as well as by peer-group members' favourable subjective assessments of the instrument.
- (3) The Decision Stage is when the caregiver decides whether to use or reject the use of the innovation, whereby the likelihood of choosing to use the digital technology increases with the number of prior opportunities to try it out. Majorly, the decision is affected

by three types of motives: personal desire, peer pressure, and/or pressure from an authority figure.

- (4) The Implementation Stage is when the caregiver uses the innovation and examines the outcomes. As a result, at this stage, users must receive feedback, as well as assistance and support, from those leading the transition, as this will help decrease uncertainty among the new users.
- (5) In the Confirmation Stage, the users of the technology reflectively examine the process and its outcomes, seeking confirmation for their decision as they consolidate their final attitudes.

Relevance of the Theory to the Study

The Diffusion of Innovation theory is especially appropriate and relevant to this study because it has proved successful in providing tools for revealing how why, and how fast an innovation like digital technology achieves its purposeful goals, especially in elementary education which is nursery and primary schools and educational policy (Dingfelder & Mandell, 2011). Also, the theory's underlying assumption that innovation is accepted through communication over time because of stakeholders' values and beliefs is relevant. Most recently, the theory was applied to examine the adoption and use of online proctored examinations during the COVID-19 pandemic and to the adoption of experiential learning via live-in-labs.

Conclusion

Nursery and primary education are a fundamental education which create a solid background for all other levels of education where knowledge, skills and habits are inculcated, evidences from several educational researches have suggested that it is a foundational level that inhibits cognitive, affective, academic and social skills which fosters school effectiveness as well as contributing in children confidence and esteem. Digital technology use could be a vibrant means and befitting guide to raising and educating children in nursery and primary schools because of its interesting and engaging nature which arouses curiosity and interest to explore more in children.

Way Forward

Having identified digital technology use in nursery and primary school effectiveness and the inherent challenges that could affect the pupils, it is therefore recommended that;

- Children should be monitored both at home and in school as to the number of hours allowed for digital technology use, this will curb obesity and lack of sleep and also curb the lack of social interaction that too much dependent on technology use causes.
- It is also recommended that children should only be allowed when academic and social skills works are to be done on their tablets or phones.
- Children should not be allowed to technology use always in order to inculcate the habit of waiting and patience, this will curb the low attention span that most children develop with digital technology use.

References

- Ajayi, I. A. & Haastrup, T. E. (2011). Factors Determining the Effectiveness of Secondary Schools in Nigeria. *Anthropologist*, 13(1): 33-38
- Aguilera-Hermida, A. P., Quiroga-Garza, A., & Gómez-Mendoza, S. (2021) Comparison of students' use and acceptance of emergency online learning due to COVID-19 in the USA, Mexico, Peru, and Turkey. *EduInf Technol* 26, 6823–6845. <https://doi.org/10.1007/s10639-021-10473-8>
- Al-Rahmi, A. M., Al-Rahmi, W. M. & Alturki, U. (2022). Acceptance of mobile technologies and M-learning by university students: An empirical investigation in higher education. *Education and Information Technologies*, 1–22. <https://doi.org/10.1007/s10639-022-10934-8>
- Brody, J. (2015). *Screen Addiction Is Taking a Toll on Children* - The New York Times, https://well.blogs.nytimes.com/2015/07/06/screen-addiction-is-taking-a-toll-on-children/?_r=0.
- Dingfelder, H. E. & Mandell, D. S. (2011). Bridging the research-to-practice gap in autism intervention: An application of diffusion of innovation theory. *Journal of autism and developmental disorders* 41, 5, 597-609.
- Evelyn Oniwon, H.O. (2015). An Examination of the Role of Nursery Education on Primary School Pupils in Nigeria. *Journal of Education and Practice*. Vol. 6, 21

- Federal Republic of Nigeria, (2013). *National policy on education*. NERDC, 2013.
- Godwins E.O, (2021).Problems of Classroom Management on Early Childhood Education in Enugu North Local Government Area of Enugu State Nigeria. *IDOSR Journal of Experimental Sciences* 6(1), 71-78.
- Gunal, Y. & Demirtash, R. N. (2016). A pathway to educational accountability: The relationship between effective school characteristics and student achievement. *Universal Journal of Educational Research*, 4(9), 2049-2054.
- Haleem, A., Javaid, M., Qadri, M. A. & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers* 3.
- IGNOU, (2007). *BLOCK 2 The learner, MES-013: Learning, Learner and development*. New Delhi: IGNOU.
- Justina, C. A, & Adekunle T. O. (2023). Examining the Challenges of Early Childhood Education in Nigeria *Indonesian Journal of Educational Research and Technology* 3(2), 91-96.
- Lauren, M. R. & Wang, M. L. (2009). *Effects of noise from building mechanical systems on elementary school students' achievement*. Lincoln: University of Nebraska Press.
- Lee, Y., Hsieh, Y. C. & Hsu, C. N. (2011). Adding innovation diffusion theory to the technology acceptance model: Supporting employees' intentions to use e-learning systems. *Journal of Educational Technology & Society* 14, no. 4, 124-137.
- Mas, S. R. (2011). Partisipasi Masyarakat dan Orang Tua dalam Penyelenggaraan Pendidikan. *Jurnal Manajemen Pendidikan*, 23(3), 298 -304.
- Owoeye J.S. (2000). The Effect of Interaction of Location, Facilities and Class Size on Academic Achievement of Secondary School Students in Ekiti State, Nigeria. *Ph.D. Thesis, Unpublished*. Ibadan: University of Ibadan.
- Reynolds, D. (2010). School Effectiveness in Developed Societies. *The International Encyclopaedia of Education*. 269-273.
- Sammons, P., Hillman J., Mortimore P. (1995). *Key Characteristics of Effective Schools: A Review of School Effectiveness Research*. London: Institute of Education.
- Sulistiyorini. S. (2011). Peran Serta Masyarakat dalam Pengembangan Sekolah Dasar. *Jurnal Pendidikan dan Pembelajaran*, 19(2), 180-187.