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Contextualising STEM Learning: The GLOCALISE Approach and Web Repository

Contextualiser l'Apprentissage STEM : l'Approche GLOCALISE et le Référentiel Web

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Abstract

The consequences of failing Science, Technology, Engineering and Mathematics (STEM) subjects have led students and parents to seek for shortcuts to pass the subjects. These failures have effectually tolled Nigeria's human capital. In finding a solution to this quagmire, questions such as: can learning STEM ever evolve from fearful to fun-full? how can the fears be regenerated to fun? what are the expectations of learning fun-fully? Can digital platforms be made available to support learning fun-fully? These questions among others served as the foundational purpose of this study. A mixed method research design was employed to examine STEM students and teachers' reaction towards using contextualised instructional approach "Glocalise". The researcher generated and provided answers to two major research purposes. Multistage sampling technique was employed in selecting 11 secondary schools; 40 teachers; and 127 students. A validated researchers-designed questionnaire with a reliability value of 0.84 was used as the research instrument. The GLOCALISE web repository link

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https://sites.google.com/view/projectglocalise/home was created for students and teachers' open access. The outcome of this study indicated that unlike the conventional approach, the Glocalise instructional approach provided ease of content retention and empowers students' cultural orientation in learning STEM by bridging the gap from abstraction to concretisation. Thus, recommending that with Glocalise, the fear and panic for STEM subjects among students could be doused, and the practice of contracting machinery for examination by parents could be easily halted. While also learning sciences in a fun and self-paced way with the GLOCALISE repository.

***Keywords*:** GLOCALISE, STEM Education, Contextualisation, Activity-based learning, Inquiry-based learning, Problem-solving

Résumé

Les conséquences de l'échec dans les matières Scientifiques, Technologiques, Techniques et Mathématiques (STEM) ont conduit les élèves et les parents à chercher des raccourcis pour réussir ces matières. Ces échecs ont effectivement eu un impact sur le capital humain du Nigeria Pour trouver une solution à ce bourbier, il faut se poser des questions telles que : l'apprentissage des STEM peut-il passer de la peur à l'amusement? comment les peurs peuvent-elles être transformées en amusement? quelles sont les attentes en matière d'apprentissage ludique? Des plateformes numériques peuvent-elles être mises à disposition pour soutenir l'apprentissage ludique ?Ces questions, entre autres, ont servi de base à cette étude. Une conception de recherche mixte a été utilisée pour examiner la réaction des étudiants et des enseignants en STEM à l'utilisation de l'approche pédagogique contextualisée "Glocalise". Le chercheur a généré et fourni des réponses à deux objectifs majeurs de la recherche. Une technique d'échantillonnage à plusieurs niveaux a été utilisée pour sélectionner 11 écoles secondaires, 40 enseignants et 127 étudiants. Un questionnaire validé conçu par les chercheurs avec une valeur de fiabilité de 0,84 a été utilisé comme instrument de recherche. Le lien du référentiel web GLOCALISE https://sites.google.com/view/projectglocalise/home a été créé pour un accès libre des étudiants et des enseignants. Les résultats de cette étude ont indiqué que contrairement à l'approche conventionnelle, l'approche pédagogique Glocalise facilitait la rétention du contenu et renforçait l'orientation culturelle des étudiants dans l'apprentissage des STEM en comblant le fossé entre l'abstraction et la concrétisation. Ainsi, cette étude recommande que grâce à Glocalise, la peur et la panique pour les matières STEM chez les étudiants pourraient être atténuées, et la pratique de recourir à des moyens détournés pour les examens par les parents pourrait être facilement stoppée.

Tout en apprenant également les sciences de manière ludique et autonome avec le référentiel GLOCALISE.

Mots-clés **:** GLOCALISE, Éducation STEM ; Contextualisation ; Apprentissage basé sur l'activité ; Apprentissage par l'investigation ; Résolution de problèmes.

Introduction

In an average Nigerian students' heart is the fear for Science, Technology, Engineering and Mathematics subjects (STEM). In fact, the mere mention of science sparks panics in their circle. Also, the shame of failure for both teachers and students remains one of the causes of unending examination malpractice during internal and external examinations. Consequent to this fear, most Nigerian parents spend humongous amount yearly to provide extra classes to their ward(s), while some other parents will rather employ a "machinery" to write their ward's examination. All these are done to rescue the student to scale through failing STEM subjects. The consequence of these bad actions keeps contributing to the currently experienced situation in Nigeria.

Unfortunately, the consequence of the fear leading to the provision of shortcuts to pass the subjects has effectively created multiples of quack professionals, and wreck Nigeria's human capital. In finding a solution to this quagmire, questions such as: can learning STEM ever evolve from fearful to fun-ful? Can teachers change students' mindset towards STEM to be an exciting experience? How should students' learning be designed? What are the expectations of learning funfully? Can a contextualised digital platform be developed to make learning STEM accessible to all? These questions among others served as the foundational purpose for this study.

As reflected in Nigeria's National Policy of Education, the Nigerian educational system is categorised into three promotional levels: basic education; post-basic and career development (PBECD); and tertiary education. Basic education comprises early child care development education (ECCDE), pre-primary education, primary education, and

junior secondary education. The PBECD consists of senior secondary education, technical and vocational education and training (TVET). The tertiary education includes university education, teacher education, technology education, and innovation enterprise institutions (Federal Republic of Nigeria, FRN, 2014). It is important to emphasise that at each level; students are expected to achieve different objectives and goals. Important among these objectives as stated in Nigeria's educational goal is the development of appropriate skills, mental, physical and social abilities and competencies to empower Nigerians to live in and contribute positively to the society. The question is, how does a Nigerian contribute positively if not nurtured to acquire the 21st century knowledge and skills? While differences are observed across how the skills are categorised or interpreted, commonalities do exist. The common skills across most studies include critical, creative, collaborative, communication, caring and thinking skills (Hashim, 2021).

Empirical evidence abounds on the relationship that exists between 21st century skills and STEM education. STEM as a subject in Nigeria include: Physics, Chemistry, Biology, Mathematics, Computer Studies/Information Technology, Basic Science and Technology, and Introductory Technology. STEM describes an embodiment of intellectual and practical endeavour encompassing the systematic study of the behavioural and structural pattern of the natural and physical world by way of observation, experimentation and manipulation to better human existence. The subjects of STEM seek to advance logical understanding and provide reasonable explanations of occurrences which have occurred, occurring and/or will occur. By implication, this means that the understanding of the learning of STEM is sensitive and strongly required for ease of human existence. This recognition has prompted stakeholders in developed countries to start changing STEM curriculum to capture these 21st century skills in order to prepare students for a newer and future life (Alismail & McGuire, 2015). Regrettably, the last reviewed curriculum in Nigeria was approved in 2013, and implemented in 2014. This means Nigeria still runs the same curriculum in the last 7 years.

Studies in the last five years provide an understandable trend into how STEM has evolved and the results of different approaches employed in teaching the subjects in Nigeria. Among many others is the study of Abanikannda (2016) who triangulated the studying of Chemistry with newer learning approaches and tools. The researcher asserted that newer learning approaches such as multimedia and hypermedia aided instruction is beneficial as it engages students' interest, and encourages them to collaborate, enquire, and to explore effectively, far beyond the bounds of school. Despite the outcome of the study and wide adoption of digital tools in some Nigerian schools, the performance of students in Chemistry remains unimproved (WAEC, 2017, 2019). Also, the compulsory subject nature of Biology as a STEM subject in Nigerian schools has ranked it as the most enrolled STEM subject (WAEC Report, 2018). The subject equally enjoys low academic performance. Evidence regarding this include the studies of Abimbola (2013), and Abanikannda (2018) who have continually drawn attention to the grave consequences of constant decline in Biology performance. Abimbola (2013) and Ndioho (2017) analysed that within two decades; 1991 to 2011, there was no significant rise in Biology performance. Within the 2 decades, the performance never rose above 60%, until 2016 when the performance rose to 75%. Since then, it has continued to decline (WAEC, 2019). This greatly indicates that there are imminent issues characterised with STEM teaching and learning in Nigeria.

In a Computer studies curriculum review conducted by Adedokun-Shittu et al., (2019) to torchlight the current practice and gaps in the curriculum in meeting 21st century standards, the researchers concluded that the curriculum is archaic and not commensurate with global best practice. With emphasis in the National Policy of Education (FRN, 2014), the Nigerian goal of education is strategically aimed at: effecting national development, while primarily concerned with inculcating national consciousness and national unity among the students; inculcating the right type of values and attitudes for the survival of the individual and the Nigerian society; training of the mind in the understanding of the world around; acquisition of appropriate skills, abilities, and competencies, both mental and physical as equipment for the individual to live in and contribute to the development of Nigeria (FRN, 2014). As beautiful as the lofty goal and

the purposes are, Nigerian education is still struggling to keep up the pace with international standards.

Researchers such as Seage and Türegün (2020) claimed that stakeholders' view towards STEM education as a tool is to prepare and empower students with skills for careers of now and the future. Hence, blended learning has come into focus, as it aims to provide these benefits to students. Although there is a general agreement that STEM is a necessary component of the curriculum, however, the practical implementation of STEM programs has seen a variety of forms, including standardization among STEM curricula. For example, Brown (2012) averred that the quality of STEM curriculum implementation depends largely upon funding. That is, schools with higher funding often have larger and more elaborate STEM programs and resources, thus, enabling them to succeed, compare to those with lower or no resources. Unfortunately, such equity issues are far too common in traditional education. To bridge this gap, contemporary, universal, flexible, and easy to adopt approaches are necessary to solve these issues, but in a contextual manner.

Furthermore, in providing succour to this STEM quagmire, this study conceptualised contextualization learning approach, tagged "GLOCALISE" to torchlight the existing practice. Indicatively, Fitzallen (2015) suggested that there are various ways in which teachers can associate STEM with students' everyday lives, both inside and outside the classroom, and creative approaches can be extremely effective in this regard, which enable students to approach science from fresh perspectives. Moreover, cross- curricular approaches to STEM teaching can be highly motivational for both teachers and students, this is however often constrained by national curricula, there is no requirement for subjects to be taught discretely, and they can be grouped or taught through projects.

Considering the essential value of culture, tradition and history in bringing STEM to life, our customs and everyday events could be cited to explain different STEM concepts. Like a baby's excitement at his first step towards walking? Students need to discover new things at each step in their learning. More to that, each discovery should be

impactful and lasting. To create such an impression, teachers should not just provide content but rather provide insightful clues and queries that will trigger students' critical thinking ability. This intellectual drill will not ignite, unless students are challenged with creative activities to solve real-life problems. As they learn, apply their skills to change our immediate environment for the better, our education becomes meaningfully outcome-based. Thus, both our students and teachers transform into innovative creators, not just graceful consumers.
Glocalise's approach aims at re-purposing teaching to be learner-centred through inquiry-based, contextualised and learner-engaging methods. Contextualised in the form of embracing cultural phenomenon and resources to triangulate concepts' understanding, especially within the context of the Nigerian educational system. Nigeria as a country is rich and diverse in culture, it is hoped that when its culture is explored and learning is put in the context of the learners, they will learn better. The subject focus of the project is STEM because it is a field that requires inquiry, creativity and collaboration. It demands learner-engagement through hands-on activities to ensure they gain insights into understanding scientific concepts, and revolutionising them into problem-solvers. This implies that pedagogical methods and practices in STEM should be creatively and flexibly developed to ensure that both students and teachers can collaborate on problem-solving and inquiry-based ventures thereby becoming not just consumers but creators of innovative practices and methodologies.

Contextualised learning approach is a learner-centred approach that has inquiry-based, learner engagement and learner-context as key elements (Adedokun-Shittu, et al., 2018). Learner-context, interchangeably used as student-context is an important aspect of learner-centred approach which encourages active participation of students in their own learning and emphasises situating learning in their immediate environment and their lived experiences. Numerous theories exist in promoting learner-context learning, among which are: Anchored instruction or situated Cognition learning, active learning model, discovery learning, constructivist approach, Cooperative/collaborative learning, connectivism and a host of others.

With the advent of technology, various networking and collaborative tools of learning are now being harnessed to support learning. Multiple formats of learning presentation such as visual, audio, pictorial, textual and animated resources can also be shared to support collaborative learning. All these theories have their own limitations and may not be isolated in all cases, but a meaningful combination and integration of them can produce a fruitful learning outcome in students (Adedokun-Shittu, et al., 2018). Bruner (1957) stressed that to instruct someone is not a matter of committing results to mind but to teach him to participate in the process of knowledge establishment. He emphasised that subjects should be taught not to produce little living libraries on the subject, but to get a student to think critically and constructively.

Scientists (past and present) observed phenomena and their surrounding environment before they came up with conclusions and formulated theories that became widely known and the premise for all we study in various fields today. It then baffles the mind why teachers teach students of contemporary times to study those theories but not study phenomena, draw conclusions, confirm or reject previous theories and come up with observations that can later metamorphose into theories. Global practices support finding new knowledge but the developing world is still stuck to regurgitating existing knowledge.

As a progressive nation, we can save our future generation from reinventing the wheel, only when we take a bold and giant step in creating knowledge too, rather than merely consuming knowledge created by others. This can start when we imbibe in our students the culture of observing, problem-solving, inquiring, cooperating on tasks, and coming up with their own answers and solutions to problems rather than being fed with old tales of the past formulated by geniuses of those times. It's high-time we created the geniuses of our own and future generation!

Research Questions

This study examined STEM students and teachers' reaction towards using contextualised instructional approach (Glocalise). Two major research questions were raised and answered. These included:

1. How do students react to the Glocalise instructional approach in learning STEM subjects?
2. What is the reaction of teachers to the Glocalise instructional approach in teaching STEM subjects?
3. What are the procedures involved in developing a Glocalise repository for aiding STEM in an in-class or distance learning?

Methodology

This study adopted a mixed research design, while targeting secondary school students and teachers in Nigeria. A multistage sampling technique was employed to select the sample size: the first stage included a stratified sampling technique to select 11 secondary schools across Kwara state, Nigeria; and the second stage employed a simple random sampling technique was employed to select 127 STEM students and 40 STEM teachers across the 11 sampled schools to serve as the participants for the study.

Three researchers-designed instruments were employed in this study: a contextualised lesson plan activity for each STEM subject; a reaction questionnaire with 2 sections. Section A of the instrument solicited for the demographic data of the respondents; Section B was interested in students' reaction to Glocalise approach. Section B was rated on a modified Likert Mode Scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) with weighted value of 4 to 1 in terms of scoring; and an interview guide to examine the teacher' reaction to Glocalise approach. In ascertaining the reliability coefficient of the questionnaire, Cronbach Alpha Coefficient was used to determine the internal consistency reliability of the instrument revealing a value of 0.84. The data collected were analysed using descriptive and inferential statistics with the use of Statistical Package for Social Sciences (SPSS) software version 24.0. Descriptive statistics and content analysis were used to answer the research questions.

With considerations for the ethical concerns of participants in this study, the researchers sought consent of the respondents and subsequently informed them about the study procedure and the

importance of the study. The study procedure included: the researchers trained all the teachers involved in the study with a validated training guide, thereafter the teachers taught the students with the Glocalise approach. The teachers used different environmental resources such as explaining the concept of projectile in Physics with local idioms, proverbs and games. The respondents were not compelled to respond to the instrument and voluntary participation was ensured. All the respondents were given a sense of autonomy, and anonymity, confidentiality and privacy of the respondents were maintained and considered. Data collected were treated with utmost confidentiality and anonymity.

Results

This study was conducted to examine STEM students and teachers' reaction towards using contextualised instructional approach (Glocalise) through an actual classroom experiment and survey. The data collected were analysed using statistical mean, standard deviation, and content analysis approaches. Quantitatively, a benchmark of 2.50 was employed to ascertain science students' reaction to Glocalise instructional approach, indicating that a value less than 2.50 was regarded as negative, while value higher than 2.50 was regarded as positive. Results of the analysis is shown on Table 1 and interpreted as thus:

Research Question One: How do students react to the Glocalise instructional approach in learning STEM subjects?

Table 1: Students' Reaction to Learning STEM Using Glocalise Approach

S/N	Items	Mean	S. D.
1.	The idea of thinking globally and acting locally is new and innovative.	3.51	0.69
2.	Concretisation of Science concepts was easy because of the realistic examples cited in the course of the lessons.	3.24	0.72

S/N	Items	Mean	S. D.
3.	I developed more interest in learning the subject contents, because of the practical activities utilised in teaching the subject contents	3.35	0.85
4.	Using songs to capture lesson contents was makes the class entertaining	3.41	0.68
5.	When the instructor used my cultural proverbs to explain learning contents, I was amazed and I found the lesson comprehensible	3.21	0.84
6.	Employing my local games to conceptualise the subject contents make the concepts easy to learn	3.35	0.77
7.	The combination of visual, auditory and learning by doing that was involved in learning the subject contents empowers me in getting actively involved in the classroom.	3.49	0.67
8.	Boredom was easily eliminated because I was participatory in the learning activities	3.44	0.60
9.	With the Glocalise approach, I found my environmental resources as useful resources that can help in creating products.	3.35	0.66
10.	Contextualising Science subjects has empowered me with the capability of being able to evaluate life occurrences and relate them with subject contents	3.53	0.66
11.	Storytelling and tales that were used in learning concepts make the lesson interesting	3.20	0.84
12.	I didn't know the local resources found in my immediate environment could be used in learning the concepts taught	3.17	0.89
13.	Using the local situations to explain how concepts align to the topic taught make the lesson interesting	3.25	0.78
14.	Actively, I can relate different Science concepts to realistic life events and further to provide solutions to life problems such as product creation	3.09	0.86
15.	Using the cultural orientation in learning Science subjects helped me in bridging the gap from abstraction to concretization	3.24	0.87

S/N	Items	Mean	S. D.
16.	Contextualising the Science learning contents is not a waste of time	3.38	0.79
17.	As much as contextualisation could be a waste of time, I found it interesting and easy to use	3.48	0.64
18.	Contextualising Science concepts seems simple	3.46	0.64
19.	Learning with the contextualisation approach offers me a reality experience which simulate self-activity on my part.	3.21	0.78
20.	The Glocalise approach embraces independent learning.	3.27	0.77
21.	With the learning by doing feature of contextualisation, I found it easy to remember the concepts learnt.	3.46	0.70
22.	I look forward to the use of Glocalise in other subjects.	3.35	0.75
23.	The Glocalise approach logically covers various lesson contents.	3.16	0.86
24.	The concepts taught using Glocalise seems all-encompassing	3.19	0.80
25.	Getting integrated in the lesson activities was easy when learning with Glocalise compare to other approaches	3.06	0.90
	Grand Mean	**3.31**	

Table 1 revealed students' reaction to learning Science using the contextualised learner-centred approach (Glocalise). Based on the benchmark of 2.50, all the items have mean values greater than the benchmark. This indicated that students agreed to all the items. Indicatively, the contextualisation approach in learning STEM subjects empowers students to evaluate life occurrences and relate them with subject contents; contextualisation is new and innovative; contextualisation is not a waste of time. Even if more time is required to be spent, it is still interesting and easy to use; the combination of visual, auditory and learning by doing empowers students to actively involved in the classroom; environmental resources are useful resources that can help in learning and creating products; learning by doing feature of contextualisation, makes content retention easy;

contextualising Science concepts is simple; cultural orientation in learning Science subjects helped in bridging the gap from abstraction to concretisation; using local games to conceptualise Science subject contents make the concepts easy to learn; contextualisation kills boredom; contextualising contents through songs makes the class entertaining; among others. In conclusion, the grand mean of 3.31>2.50 revealed that contextualised learner-centred approach was positively reacted to among Science students.

Research Question Two: What is the reaction of teachers to the Glocalise instructional approach in learning STEM subjects?

Qualitatively, a thematic approach was employed to analyse the data collected through an interview that was conducted among 40 STEM-focused teachers to ascertain their reaction to the contextualised learner-centred teaching approach.

Do you think teaching Science subjects with this method is appropriate?

Generally, Science educators claimed that they found the approach to be new, unconventional and unpopular. They asserted that the approach seemed unclear at the beginning, but along the line, they got integrated into the approach.

Having put the school's designated time and period into consideration, do you think the activity approach of this method can capture the lesson contents sufficiently?

Significant among the responses of the teachers, some Physics and Chemistry teachers elucidated that due to the nature of their subject, they found it easy to capture other subject contents that are related to the contents currently being taught in the classroom. *One Chemistry teacher says: "I can easily teach motion, force, and projectile in one singular class, because students can easily relate each concept to the other and solve problems relating to these concepts, compared to the conventional approach I am used to."*

While using the Glocalise approach, what is your assessment of students' active involvement in the lesson?

"…on the part of the student, I have never found my students exchanging ideas like this before. They were collaborating and seeking to find answers to valid self-generated questions, and it was amazing seeing them proffering solutions to these questions." This is one of the many positive responses from teachers that used this approach. Generally, teachers found the approach to be engaging and actively involve students in classroom activity."

With your vast experience in teaching Science subjects, do you think this approach would be better as a stand-alone or be an integrative approach to conventional approaches?

Most approaches are better when used together with other approach. Teaching is more concretise when a combination of approaches is employed, and Glocalise is no exception. *"The nature of Glocalise seems to include student-content method, play way method, inquiry method, and collaborative method. These are the ones I can remember now. When I explore the approach further, I am sure I will be able to use another approach with it."*

In comparison, what is your assessment of the Glocalise approach and other teaching approaches?

"Very good, but excellent when other approaches are employed with it. However, student and content centred approaches would be more precise with Glocalise than any other approach."

Does this approach provide an avenue for you as a teacher to conduct formative evaluation at all?

"…Yes! In fact, I found it easier than my previous approaches." From questions that are self-generated by the students, and students' ability to easily identify the environmental resources that are useful to the current contents being taught, the knowledge path can be easily drawn and formative evaluation is easily done.

Class control and management have been very important to Science learning, does the Glocalise approach give you better classroom control compared to your regular style?

"With students being collaboratively involved in the class activity, students were attentive and classroom pollution such as noise is reduced. However, teachers need to be cautious of how open the class is, and equally limit the level of student self-exploration."

Do you think this approach is suitable for all subjects or just Science subjects only?

Using this approach seems excellent for Science subjects, but it won't be bad to use it in other non-science subjects. *One Mathematics teacher averred that "Glocalise can easily be used in teaching commercial subjects, especially Business Study. Importantly, Market Structure could be taught using Glocalise to better explain the concept of market Structure."*

Having put students' individual characteristics in mind, does this approach provide the same learning pace to all?

All students were easily integrated in the classroom activity. *"I am amazed to see the script of one of my low-level learners scoring more than average score in the classroom test. This was shocking because I had advised the parent to seek special attention for the kid." This is amazing and I just want to use this approach in other subjects.*

Generally, this approach was widely accepted and STEM teachers have a positive reaction to Glocalise as an instructional approach.

Research Question Three: What are the procedures involved in developing a Glocalise repository for aiding STEM in an in-class or distance learning?

Google sites was used to develop Glocalise. It contains the Homepage which links to Glocalise Videos, Activity sheets, tools, resources and

Audios. Every section has its content correlated with it. The homepage also entails Glocalise social media platforms, Facebook, Instagram and YouTube. The page url: https://sites.google.com/view/projectglocalise/home

Figure 1: Screenshot of the Glocalise Repository

Discussion of Study

This study examined STEM students and teachers' reaction towards using contextualised instructional approach (Glocalise) through an actual classroom experiment and survey. This study found that contextualisation approach in learning STEM subjects empowers students to evaluate life occurrences and relate them with subject contents. Unlike the conventional approach, the activity-based and involvement of environmental resources and culture aid students' understanding of STEM concepts. Glocalise approach provides ease of content retention and empowers students' cultural orientation in learning STEM by bridging the gap from abstraction to concretisation. This finding is supported by the earlier study of Fitzallen (2015), who provided insights to how cultural and environment resources could influence STEM learning. He concluded that contextualisation in

learning STEM will provide continuous understanding to students' daily life experiences. This outcome implies that Glocalise has the capability to provide students with the ability to relate different STEM concepts to every activity happening in their real environment.

This study also investigated STEM teachers' reaction to Glocalise instructional approach through a guided interview. Generally, teachers reacted positively to the Glocalise instructional approach. They claimed that Glocalise was new, unpopular, and unclear when they started using the approach, but they consequently got integrated into the approach. Teachers equally accented that Glocalise is encompassing, that is, different related concepts can be taught in a singular class, unlike the conventional scheduling approach. Also, this study provided insight into the existing practice and its consequences on students' academic performance. Importantly, Glocalise instructional approach evidently provided a paradigm shift to teachers' teaching activities and their classroom management role in the instructional process. Overall, this study supports the position of Adedokun-Shittu, et al., (2018) on contextualised learning approach. The researchers posited that learner-centred approaches encourages active participation of students in their own learning and emphasises situating learning in their immediate environment and their lived experiences. They concluded that this positive effect of contextualisation on students' learning will reflect on teachers' job responsibilities, thereby improving the instructional process, and ultimately affecting ease of achieving instructional objectives and goals.

Glocalise repository accessible at https://sites.google.com/view/projectglocalise/home gives teachers, learners and interested stakeholders free & open access to all Glocalise resources for teaching and learning in an in-class or distance learning.

Conclusion and Recommendation

This study concludes that Glocalise instructional approach has the capabilities of revolutionising the practice of reinventing the wheel of Nigerian STEM students being knowledge consumers only, rather than

knowledge creators too. Thereby, saving the next generation from the current educational quagmire. Imbibing our cultural and environment resources into the instructional process could remodel students into excellent observers, problem solvers, astute inquirer, and providers of contextual solutions to our own problems, rather than being fed with old tales of the past formulated by geniuses of those times. Glocalise instructional approach could create the geniuses of our now and future generation.

Based on the conclusion, this study recommends that contextualise and activity-based instructional approach should be adopted in STEM classes, as this will provide opportunity for students to associate STEM with their everyday life, both inside and outside the classroom, and creative approaches can be extremely effective in this regard, which enable students to approach science from fresh perspectives. Moreover, cross- curricular approaches to STEM teaching can be highly motivational for both teachers and students. Glocalise instructional approach can ultimately revolutionise the appalling STEM performance in Nigeria secondary schools. With Glocalise approach and the web repository, the fear and panic for STEM subjects among students could be doused, the practice of contracting machinery for examination by parents could be easily halted and learning sciences become fun-filled and self-paced. Consequently, corrupt practices that accrue from fear of sciences will be nipped in the bud.

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