REVOLUTIONIZING TEACHING PEDAGOGY FOR KNOWLEDGE CONOMY THROUGH PROJECT BASED LEARNING

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Abstract

In the context of a fast changing world, Nations are increasingly recognizing that improving education is the best way to generate wealth, enhance health, and maintain peace. With the Nigerian educational system already burdened with low participation and learning achievements, educators and scholars alike are trying to figure out possible ways to revolutionize teaching and learning in order to ensure that students are socially in tune, emotionally intact, and cognitively engaged. This paper therefore examined Project Based Learning Approach as a paradigm shift in education and how it can improve teaching pedagogy for knowledge economy. In view of this, this paper overviewed project based learning as education beyond the classroom. It also presented traditional teaching approach versus project based learning, highlighting its educational implications. The paper further examined how project based learning can be used to improve teaching pedagogy in Nigeria educational system. Finally, the paper recommended that teachers should be encouraged to adopt PBL approach in delivering the lesson. Also, the use of PBL approach should be adopted and incorporated into the school curriculum

Keywords: Project Based Learning, PBL, Teaching, Learning, pedagogy, Education, Learners.

Introduction

Virtually everything in the 21st century is in a state of flux. No phenomenon has remained in its original state or form after a while. Everything over time has undergone certain degree of metamorphosis. While the various stages of change birth new life and human existence has in it experienced series of evolutions, yet there is no end in sight to this ever evolving world (Amannah & Adeyeye, 2018). The change concept implies that the right approaches are applied for any individual, group or organization that would bring about improvement. While all changes do not lead to improvement, all improvement requires change. The ability to develop, test and implement changes is essential for any individual, group or organization that wants to continuously improve. Amannah & Adeyeye (2018) asserts that "it is this approach to change that is known as a paradigm shift" (p.109).

The concept of paradigm shift offers that there is always a point when disciplines experience revolutions. At that point, the discipline enters a period of crisis characterized by a proliferation of compelling articulation; the willingness to try anything, the expression of explicit discontent, and the recourse to philosophy and to debate over fundamentals (Martins, 2008; Amannah & Adeyeye, 2018). In the end, the crisis is resolved by a revolutionary change in world view in which the now deficient paradigm is replaced by a newer one. This paradigm shift is the revolution that brings about change.

The school system in Nigeria, like in many other places, is a structured agent of socialization and nurturing of children and young adults into independent and dependable individuals. The school is charged with the responsibility of provide knowledge and education for the younger generation. However, one of the global challenges facing the school is that the traditional school model of passively learning facts and passing information out of context is no longer sufficient to prepare students to survive in today's world. Solving highly complex problems requires that students have both fundamental skills (reading, writing, and mathematics) and 21st century skills (teamwork, problem solving, research gathering, time management, information synthesizing, utilizing high technological tools).

In the international world especially learning in Europe, there is a tendency of research activities to increase the ability of students to explore new ideas. The research objectives are reviewed from various aspects of strengthening the needs of stakeholders, students, teachers, practitioners and professionals. With this combination of skills, students become directors and managers of their learning process, guided and mentored by a skilled teacher. The purpose of this study was therefore to ascertain the efficacy of Project Based Learning Approach as a Paradigm Shift in education and how it would improve teaching pedagogy for knowledge economy.

Project Based Learning: An Overview

Project-based learning (PBL) is a student-centered pedagogy that involves a dynamic classroom approach in which it is believed that students acquire a deeper knowledge through active exploration of real-world challenges and problems. Students learn about a subject by working for an extended period of time to investigate and respond to a complex question, challenge, or problem. It is a style of active and inquiry-based learning. PBL contrasts with paper-based, rote memorization, or teacher-led instruction that presents established facts or portrays a smooth path to knowledge by instead posing questions, problems or scenarios (Wikipedia, 2020). PBL comprises teaching methods that actively engage people in their own learning and in the real world. Active learning involves creating learning experiences differently so that students engage in exploration of the content and take responsibility for their own learning. Students reach explicit targets in different ways, which can result in increased student effort and a higher quality of work. PBL incorporates interesting and relevant topics, issues, and challenges; interaction with the teacher; and discussions and debates with peers, educators, and others into larger-scale projects with multiple learning targets and standards, and it usually involves technology and student presentations.

Project-based learning stages are almost identical to an inquiry, but it is more complex and detailed to examine the object of the problem. PBL suggested involving of students with research activities that enable them to recognize the variation and complexity of constructing knowledge in different disciplines. PBL involves students to be active and independent in addressing any issue (Krajcik & Blumenfeld, 2006). Students are invited to think critically, creatively, analytically and logically as problem solvers. They improved in innovative abilities, reasoning thinking and problem-solving. PBL involves students doing deeper inquiry, critical thinking and problem-solving. This activity is closely related to 21st-century skills including 4C consisting of Critical, Creative, Communication and Collaboration (Sipayung & Sani, 2018).

Project Based Learning: Education beyond Classroom Information

Education and learning are often considered in terms of information: What information is most important for people to know? What are the best ways to transmit that information from one person (a teacher) to another (a student)? What are the best ways to represent and display information so that it is both understandable and learnable? (Resnick, 2000). This focus on information, however, is limiting and distorting. If students must become better thinkers and learners, the education pedagogy needs to move beyond the information-centric view of teaching and learning. Over the past 50 years, psychologists and educational researchers, building on the pioneering work of Jean Piaget have come to understand that learning is not a simple matter of information transmission. Teachers cannot simply pour information into the heads of learners. Rather, learning is an active process in which students' construct new understanding of the world around them through active exploration, experimentation, discussion, and reflection. More so, when students acquire information in a meaningful context and relate it to their prior knowledge and experiences, they can form connections between the new information and the prior knowledge to develop better, larger, and more linked conceptual understanding (Blumenfeld et al., 1991; Krajcik & Blumenfeld, 2006).

Bell (2010) points out that in a project based learning classroom, students are provided with a topic which they should develop through research or project work for their individual or group learning and teachers should monitor the project performed by students. Students, in this learning framework, are trained to be critical and responsible for their learning and this, for example, can be done through problem-solving activity. According to Kloppenburg and Baucus (2004), with this PBL, students will experience much more meaningful and interesting learning where they should accomplish the assigned project. Normally, students are given freedom to plan and manage their project and the end product including the process involved should be presented in the class. More importantly, Simpson (2010) asserts that with this approach, students "have the opportunity to construct their creative knowledge and demonstrate their creative thinking and skills through their project" (p. 44).

Active learners whose actions are self-initiated rather than commanded by the teacher or the system become strong in terms of intrinsic motivation and autonomy (Ushioda, 2003). Going by this, PBL can be said to be a pedagogy rooted in the progressive education movement, which advocates for more student centered and experiential approaches to education that support deeper learning through active

exploration of real-world problems and challenges (Peterson, 2012).

Traditional Approach Vs Project Based Learning: Educational Implications

The traditional approach is based on precise, well-defined problems and formal definitions exposed to students in a one way lecture format. Concepts are presented as fixed, well-structured entities that are interconnected by the teacher. As a general expression, the traditional approach is a three-step system of lecture, reading and homework, and testing (Angelides et al. 2006). Although students finish the courses with a good understanding of limited concepts, the specialization of the courses provides little opportunity to integrate concepts.

However, current educational theories such as constructivism theory does not align with this traditional teaching style as a standalone means to producing capable students (graduates). Instead, schools should provide students with an opportunity to construct their own knowledge landscapes. By empowering students to learn outside of classroom and developing contextual situations in which they can apply content, schools are much likelier to produce students who are capable of applying their knowledge in the real world and continue to build on it in the absence of teachers.

The educational foundation for PBL is based on the concept that students should not be passive recipients of knowledge. In this role, students may never be challenged to gain a deeper under- standing of what is said or to apply the content to a real situation (Gijselaers, 1996; Savery, 2006). Modern cognitive psychology describes learning as using a base knowledge to build new knowledge (Savery, 2006). Traditional lectures provide this base knowledge, but generally do not give students the opportunity to build upon it. Project-based learning (PBL) provides this opportunity by giving students an opportunity to synthesize knowledge into knowledge landscapes. By Implication, in PBL, students have a framework where they are presented with open-ended problem descriptions that lack certain pieces of pertinent information. To solve such problems, students are required to extend their knowledge through external resources. In this setting, learning is transformed from a receptive to a constructive process.

Additionally, PBL challenges students to connect theory with reality by presenting problems that arise in real life situations. Associating content with context, PBL is builds on the fundamental structure of memory. Specifically, when new knowledge is gained, it is placed into a network of related concepts called a semantic network. The manner in which semantic networks are organized determines how readily information can be recalled and applied (Gijselaers, 1996; Savery, 2006). By implication, Project-based learning teaches concepts through real problems, creating an association between theory and practice. This association enables students to better retrieve the pertinent theoretical knowledge when faced with real problems.

Finally, aside from learning processes, PBL also differs from traditional curricula in the role of the instructor. Normally, instructors are responsible for monitoring student progress and assessing solutions. Studies have shown, however, that expert performance is typically accompanied by self-monitoring (Gijselaers, 1996; Savery, 2006). Generally referred to as meta-cognition, self-monitoring skills include understanding how a problem is analyzed and being able to determine whether solutions make sense. Students who possess such skills tend to learn more quickly. The role of the instructor in PBL is to help

students develop these skills. By implication, presenting classes with open-ended problems that lack specific solution objectives, students are forced to create their own strategies and goals. As such, instructors become coaches as students attempt to reach these self-defined goals (Steinemann, 2003).

Revolutionizing Teaching Pedagogy for Knowledge Economy Using PBL

The educational planners and stakeholders need to fundamentally reorganize classrooms. Instead of a centralized control model (with one teacher delivering information to a roomful of students), a more entrepreneurial approach to learning should be adopted. Instead of dividing up the curriculum into separate disciplines (mathematics, science, social studies, language), the curriculum should focus on themes and projects that cut across disciplines, taking advantage of the rich connections between different domains of knowledge. (Resnick, 2000) asserts that "instead of dividing students according to age, the curriculum should encourage students of all ages to work together on projects, enabling them to learn from one another. Instead of dividing the day into hour-long slices of classes and lectures, the school should let students work on projects for extended periods of time, enabling them to follow through on the ideas that arise in the course of their work" (p.47).

Most education reform initiatives appear to assume that learning takes place only in classroom, lab, or lecture hall. However, schools are only one part of a broader learning ecosystem. In the digital age, learning must become a day long and lifelong experience. As technology continues to quicken the pace of change in all parts of our lives, learning to become a better learner is far more important than learning to multiply fractions or memorizing the capitals of the world.

There is the need to transform curricula so that the students become the center of attraction in the classroom. National education initiatives should aim to improve learning opportunities not only in schools, but also in homes, community centers, museums, and workplaces. One way of achieving this feat is by inculcating project based learning into the school curriculum. In project-based learning, students are allowed to engage in real, meaningful problems that are important to them and that are similar to what scientists, mathematicians, writers, and historians do. Krajcik & Blumenfeld (2006) are of the view that "a project-based classroom allows students to investigate questions, propose hypotheses and explanations, discuss their ideas, challenge the ideas of others, and try out new ideas" (p.1).

Project Based Learning: A Change in the Nigerian Educational System

The short break away from school due to the pandemic has unmasked substantial inequities in the Nigerian educational sector. As such, private and public sectors are tirelessly working to salvage the situation. As government, school leaders and other stake holders determine the safest and best approach for the school system, whether it is students learning remotely, in person with social-distancing requirements, or through a hybrid model, one thing is certain: School will look different.

While educators and young people forge ahead into this new normal, skills like adaptability, creativity, and collaboration are critical as they navigate challenges that lie

ahead. These skills are reflective of the core beliefs and values stipulated in the National Policy on Education. One of the best options to meet these demands in the education system is through adoption of project-based learning (PBL); an approach that ensures students develop high rigor and experience as well as high relevance by solving problems or completing tasks in a remote or face-to-face environment.

With PBL inculcated into the Nigerian education curriculum as a teaching pedagogy, teachers and learners can gain autonomy and set goals and parameters for their work beyond the confines of the original curriculum guidelines.PBL approach which see the learner as an active person, not just a rote memorizer of facts or input receiver but one who also engages in constructing knowledge will improve students' active participation in the teaching and learning processes thereby enhancing student's overall performance. Through this, whole of the learners' heart, body, senses and brain are involved.

More to this is the fact that when students are challenged to get to work in solving real-life problems, the whole world becomes a classroom. In project-based learning, students work in groups to solve challenging problems that are authentic, curriculum-based, and often interdisciplinary. Learners decide how to approach a problem and what activities to pursue. They gather information from a variety of sources and synthesize, analyze, and derive knowledge from it. Their learning is inherently valuable because it's connected to something real and involves adult skills such as collaboration and reflection. At the end, students demonstrate their newly acquired knowledge and are judged by how much they've learned and how well they communicate it. Throughout this process, the teacher's role in the classroom becomes to guide and advice, rather than to direct, pass information, and/or manage student work.

One of the major advantages of project work is that it makes school more like real life. It's an in depth investigation of a real-world topic worthy of student's attention and effort. PBL is not just a way of learning; it's a way of working together. If students learn to take responsibility for their own learning, they will form the basis for the way they will work with others in their adult lives. By bringing real-life context and technology to the curriculum through a PBL approach, students are encouraged to become independent workers, critical thinkers, and lifelong learners. This way, students become constructive problem solvers and not passive learners. Additionally, teaching and learning becomes student-driven and teacher-facilitated learners pursue knowledge by asking questions that have piqued their natural curiosity. It can be said that Project based Learning improves students' learning outcome as well as influence students' development of skills and for self reliance (Bagheri et al, 2013).

Conclusion

With the Nigerian education system already burdened with low participation and learning achievements, educators and scholars alike are trying to figure out possible ways to revolutionize teaching and learning in order to ensure that students are socially in tune, emotionally intact, and cognitively engaged. This paper therefore examined Project Based Learning approach as a paradigm shift in education and how it can improve teaching pedagogy. The paper overviewed project based learning as education beyond the classroom. It also presented traditional teaching approach versus project based learning, highlighting its educational implications. The paper further examined how project based

learning can be used to improve teaching pedagogy for knowledge economy in Nigeria education system. Finally, the paper made some recommendations that are imperative for the successful adoption and implementation of PBL approach in teaching and learning.

Recommendations

From the foregoing discussions, the following recommendations have been made:

1. The federal government through the ministry of education should encourage teachers to adopt PBL approach in delivering the lesson. This is because when properly used, it will enhance the overall interest and achievement of students.
2. The use of PBL approach should be adopted by curriculum planners, educationists and other stake holders as a learning approach and should be incorporated into the curriculum as a pedagogical approach for active learning among students.
3. Students should be provided with a challenging problem or question that involves multiple contexts or situations.
4. Providing feedback and support or encouragement is also another way that can boost students' learning motivation and confidence.

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