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CONSTRUCTIVIST'S THEORY AND THE USE OF TECHNOLOGIES IN THE TEACHING AND EARNING OF LANGUAGES AND IMPLICATIONS.

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Abstract
The study examined the constructivist theory of learning and the inter-relatedness of this theory to the use of technology in the teaching and learning of languages. The study identified various technologoes use in and outside the classroom and assessed the use of one or two technologies in the learning of languages. It also exposed students to the ise of constructivism and technology in teaching. The paper finally suggested that the constructivist theory through the use of technology in teaching and learning be encouraged since it improves the teaching and learning process.
Keywords: Constructivists theory, rhizomatic knowledge, technologies, metacognition.

Introduction

There has been increasing interest in pedagogic theories and processes for the use of technology for learning. The lack of basic and necessary equipment in forms of modern technology constitutes a problem in the teaching and learning of English in many Nigerian schools. The use of adequate and standard facilities and equipment in teaching and learning of languages have been recognized or emphasized by education theorists. It has been observed that lack of or non-usage and application of technology in the teaching of language could be frustrating. It is indeed frustrating that technology enhanced learning has not improved the understanding of the teaching and learning of language due to the shift from the teacher-centred instruction to the influence of technology in the student-centred instruction.

Furthermore, Coffield (2008) criticizes limited understanding of learning as related to the transmission and assimilation of knowledge and skills. He himself uses the term “teaching and learning” and he offers a number of definitions of pedagogy. He cites John Dewey (1938) as saying “learning, or as he preferred to call it" the educative process' amounts to the 'severe discipline' of subjecting our experience 'to the tests of intelligent development and direction', so that we keep growing intellectually and morally. Coffield, (2008) also refers to Etienne Wenger who argued that what differentiates learning from mere doing is that 'learning in whatever form it takes, changes who we are by changing our ability to participate, to belong, and to negotiate meaning (1998).

Coffield (2008) says “learning refers only to significant changes in capability, understanding, knowledge, practices, attitudes or values by individuals, groups, organization or society. Knud Illeris (2007) cited by Coffield (2008), advances three different meanings of the term 'learning' in everyday speech. Learning can then refer to:

- The outcomes of learning, i.e what has been learnt.
- The mental processes used by individuals while learning.

- The interactions between individuals and their environment.

However, Illeris himself believes learning to be any process that in living organizations leads to permanent capacity for change and which is not solely due to biological maturation or ageing. We will now take a look at constructivism as a learning theory.

Purpose of the Study

The objective of this paper are to

i. expose students to the use of constructivism and technology in teaching.
ii. identify the various technologies in use in and outside the language classroom.
iii. assess the use of one or two technologies in teaching languages.

Statement of the Problems

The methods and strategies used by some teachers of English pose problems to the learning of the language by students. Any technology used by the teacher should aim at the greater understanding of the subject. These problems may largely be due to lack of knowledge and usage of technologies by teachers and also the inability of students to afford them. On the other hand, government has not made effort to make these technologies available in our schools. In the same vein, even where it is available, its usage and application is difficult as a result of power outage. In all these situations students' performance in the teaching and learning situation is not encouraging.

The Constructivist Theory of Education

Constructivism is the theory that says learners construct knowledge rather than just passively take in information. As people experience the world and reflect upon those experiences, they build their own representations and incorporate new information into their pre-existing knowledge (schemas).

The constructivist theory is based around the idea that learners are active participants in their learning journey, by building and constructing their own knowledge. Basically, learners use their previous knowledge as a foundation and build on it with new things that they learn. So everyone's individual experiences make their learning unique to them. Constructivism is crucial to understand as an educator because it influences the way all our students learn. Teachers and instructors that understand the constructivist learning theory understand that their students bring their own unique experiences to the classroom every day.

Constructivism (Conceptual Framework)

Much of the research into pedagogy for using technology for learning advocates a move toward constructivist approaches. Vocational education has traditionally been based on behaviourist pedagogies (Doolittle and Camp, 1999). Such approaches were in turn predicated on an ideological view of the role of vocational education in teaching students “the right work and moral habits.” Despite the move towards information processing and constructivist theories of pedagogy, Doolittle and Camp say “the single most pressing impediment to fundamental theoretical change in career and technical education has been the requirement that the profession provide trained workers for occupations based on definable worker competency lists and to document the success of those workers through placement, follow-up and reporting. That regulatory and structural constraint has tended to militate against a fundamental break from the behaviourist perspective.(Dobbins, (1999) as long as the local curriculum derives from worker task lists, is delivered using incremental teacher directed instruction, and is evaluated based on criterion-referenced measures, behaviourism remains the defacto theoretical foundations.”

The essential core of constructivism is that learners actively construct their own knowledge and meaning from their experiences. Doolittle and Camp look at different ideas of constructivist theory including cognitive constructivism, social constructivism and radical constructivism. They put forward eight principles as providing the essence of constructivist pedagogy, emphasizing the student's role in knowledge acquisition through experience, puzzlement, reflection and construction. Pedagogy is based on the dynamic interplay of mind and culture, knowledge and

meaning and reality and experience."

i. "Learning should take place in authentic and real-world environments.
ii. Learning should involve social negotiation and mediation.
iii. Content and skills should be made relevant to the learner.
iv. Content and skill should be understood within the framework of learners prior knowledge.
v. Students should be assessed formatively, serving to inform future learning experiences.
vi. Students should be encouraged to become self-regulatory, self-mediated and self-aware.
vii. Teachers serve primarily as guides and facilitators of learning and not instructors.
viii. "Teachers should provide for and encourage multiple perspectives and representations of content."

However, there is a strong suspicion that in reality practice may be different. Enochsson and Rizza (2009) cite Betran-court (2007), who, looking at an example from the UK project 'Harnessing technology' "shows that the discourse of the politics of implementation of ICT in schools is double. Although the accent is put on national objectives concerning use of ICT in order to support an active pedagogy, the majority of the tools support traditional transfer pedagogy and the use of ICT is limited to presentations or evaluations. In the same vein, as it is the situation in UK, Nigeria rarely or hardly use ICT as a medium of instruction due largely to government lack of attention to the use of ICT and partly due to teachers' inability to support their teaching with ICT tools.

Communities of Practice

The idea of communities of practice is based on situated learning theory that emphasizes the situated nature of learning. Knowledge in this sense is generated, acquired and transformed through the social interaction within such communities of practice. Communities of practice are not conceptualized as an educational programme, but the teaching and learning that practice takes place in such a community is part of the daily practice. It is based on the fact that communities of practice are involved in constant practice and construction of knowledge and skill that it is linked to the constructivist's theory.

Mark Smith (2003) has produced a useful summary of research and writings, particularly by Jean Lave and Etienne Wenge on Communities of Practice. Wenger points out that we are all members of different communities of practice. "Being alive as human beings means that we are constantly engaged in the pursuit of enterprises of all kinds, from ensuring our physical survival to seeking the most lofty pleasures. As we define these enterprises and engage in their pursuit together, we interact with each other and with the world and we tune our relations with each other and with the world accordingly. In this way we all learn. Over time, this collective learning results in practices that reflect both the pursuit of our enterprises and the attendant social relations. These practices are thus the property of a kind of community created over time by the sustained pursuit of a shared enterprise. It makes sense therefore to call these kinds of communities of practice (Wenger, 1998, p 45).

Although the nature and composition of these communities varies, members are brought together by joining in common activities and by "what they have learned through their mutual engagement in these activities.

According to Wenger (1998), a community of practice defines itself along three dimensions;

- What it is about its joint enterprise as understood and continually renegotiated byit members.
- How it functions-mutual engagement that bind members together into a social entity.
- What capability it has produced- the shared repertoire of communal resources (routines, sensibilities, artifacts, vocabulary, styles etc) that members have developed over time.

Vygotsky and Social Constructivism

Socio-constructivist approaches to learning are at least in part based on the ideas of Vygotsky. Vygotsky considered that all artifacts are culturally, historically and institutionally

situated. “In a sense, then there is no way not to be socio-culturally situated when carrying out an action. Conversely there is no tool that is adequate to all tasks and there is no universally appropriate form of cultural mediation. Even language, the total of tools' is no exception to this rule” (Cole and Wertsch, 1996).

Vygotskys research focused on school-based learning. He developed the idea of zone of proximal development which is the gap between 'actual developmental level' which children can accomplish independently and the 'potential developmental level' which children can accomplish when they are interacting with others who are more capable peers or adults.

In Vygotsky's view, interactions with the social environment, including peer interaction or scaffolding, are important ways to facilitate individual cognitive growth and knowledge acquisition. Therefore, learning pre-supposes a specific social nature and a process by which children grow into the intellectual life of those around them. Vygotsky said that learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in co-operation with his peers. Once these processes are internalized, they become part of the child's independent developmental achievement (Vygotsky, 1978). He also emphasized the importance of the social nature of imaginative play for development. He saw the imaginary situations created in play as zones of proximal development that operate as a mental support system (Fleer, 2008).

Scaffolding Learning

Scaffolding was not a termused by` Vygotsky, but is one of a number of somewhat similar ideas around learning which has come to be associated with Vygotsky's ideas (Emihovich and Souza Lima, 1995). Scaffolding is a six-step approach to assist learning and development of individuals within their zone of proximal development (Feden and Vogel, 2006). Knowledge skills and prior experiences, which come from an individual's general knowledge, create the foundation of scaffolding for potential development. At this stage, students interact with adults or peers to accomplish a task which could possibly not be completed independently. The use of language and shared experience is essential to successfully implementing scaffolding as a learning tool. (Feden and Vogel, 2006 cited in Dahms et al, 2007).

Dahms et al (2007) says that Vygotsky's findings suggest methodological procedures for the classroom. “In Vygotskian perspective, the ideal role of the teacher is that of providing scaffolding (collaborative dialogue) to assist students on tasks within their zone of proximal development” (Hamilton and Ghatala, 1994). During scaffolding the first step is to build interest and engage the learner. Once the learner is actively participating, the given task should be simplified by breaking it into smaller sub-tasks. During this task, the teacher needs to keep the learner focused, while concentrating on the most important ideas of the assignment. One of the most integral steps in scaffolding consists of keeping the learner from becoming frustrated. The final task associated with scaffolding involves the teacher modeling possible ways of completing tasks, which the learner can then imitate and eventually internalize “(Dahms et al, 2007).

According to Lindsay Lipscomb, Janet Swanson and Anne West, Lange (2002), there are two major steps involved in instructional scaffolding: first, the “development of instructional plans to lead the students from what they already know to a deep understanding of new material” and second the “execution of the plans, wherein the instructor provides support to the students at every step of the learning process.” In an appropriate scaffolding process, there will be specific identifiable features that are in place to allow facilitation of assisting the learner in internalizing the knowledge until mastery occurs.

Bricolage

The process of using technology for creation, remixing and sharing is similar to Levi Strauss's idea of bricolage as a functioning of the logic of the concrete. In his book 'Introducing Levi Strauss and structural Anthropology' Boris Wiseman (2000) explains the work of the bricoleur:

"Unlike the engineer who creates specialized tools and materials for each new project that he embarks upon, the bricoleur works with materials that are always second hand".

In as much as he must make do with whatever is at hand, an element of chance always enters into the work of bricoleur. The bricoleur is in possession of a stock of objects (a "treasure"). These possess "meaning" in as much as they are bound together by a set of possible relationships, one of which is concretized by the bricoleurs choices."

Young people today are collecting their treasure to make their own meanings of objects they discover on the web. In contrast our education systems can be seen as being based on specialized tools and materials.

Discourse, Collaboration and Meta Cognition

Many of the attempts to reconstitute pedagogical theory are based on discourse and collaboration, "Perhaps the most notable shift in instructional psychology during the last quarter of the 20th century was the shift from focus on individual cognitive strategies to focus on community, culture and collaboration". (Scardamalia and Bereitner, 2008).

Scardamalia and Bereitner propose a pedagogic framework based on the development of deep content knowledge, knowledge building dialogue, epistemic agency and collaboration. Deep content knowledge can be supported by allowing the students to move between an inclusive and integrative level of analysis, a more detailed level and analogous ideas. They propose to focus on "ideational content" (Scardamalia and Berentner, 2008, p5) rather than utterance to promote dialogue. Supporting them in becoming knowledge managers of their own ideas and taking responsibility for their peer knowledge building supports the development of higher levels of epistemic agency. Collaboration can be supported through allowing them to cite and link to each other work.

Coffield (2008) cites Robin Alexander (2006) who argues for education as dialogue", where dialogue is more purposeful, elaborated and principled than communication skills. Alexander maintains that interaction is more likely to be dialogic if it is based on the following as cited in (Coffield, 2008).

- Collective: Tutors and students learn together in group or classes.
- Reciprocal: Tutors show that they have listened to what the learners said and vice-versa.
- Supportive: tutors and students help each other to learn and avoid point scoring.
- Cumulative: Tutors and students build on their own past learning and on each others' ideas'
- Purposeful: dialogue is not mere conversation but has specific educational goals in mind.

There is also the increasing interest in the idea of meta cognition and how to support learners in developing meta cognition. The idea builds on constructivist and Vygotxian learning approaches in supporting learners in constructing their own models to help them make sense of their experiences. Teachers support through collaboration, challenge, dialogue. Coffield (2008) says "all learners should know how to: set themselves explicit, challenging goals; identify appropriate strategies to reach those goals, monitor their progress towards them and restart the whole process by choosing a new set of sensible goals".

Curriculum Development and Rhizomatic Knowledge

Learners' familiarity with Web 2.0technologies is seen as opening up new spaces and opportunities for learning, focusing on collaborative knowledge building; shared assets and a breakdown of distinctions between knowledge and communication (Attwell and Hughes, 2010). Such changes are seen as challenging traditional forms of curriculum and knowledge development. In a paper entitled 'Rhizomatic Education: community as curriculum; Dave Cormier (2008) locates traditional forms of curriculum development within societal forms of knowledge production.

Cormier (2008) proposes a "rhizomatic model" of learning in which "a community can construct a

model of education flexible enough for the way knowledge develops and changes today by producing map of contextual knowledge. In this model "curriculum is not driven by predefined inputs from experts; it is constructed and negotiated in real time by the contributions of those engaged in the learning process. This community acts as the curriculum, spontaneously shaping, constructing and reconstructing itself and the subject of its learning.

Implications of the Use of Technology for Teachings

In an era of technological advancement in all aspect of human life, it is pertinent to not that the use of technology in teaching enables students to explore new subjects and deepen their understanding of difficult concepts, particularly in STEM.

Through the use of technology inside and outside the classroom, students can gain 21st century technical skills necessary for future occupations. It also enable children to learn more effectively with direction. Technology is changing the way we learn. From zero to hero, technology has gone leaps and bounds. Gone are and regurgitate them at exam. The education sector has undergone a sea change and completely transformed with the introduction of new technology and gadgets for learning. There is no longer time for theory and role learning, as more emphasis is laid on skills development and on problem-solving abilities.

Technology has made life more colourful and makes studies interesting through the use of gadgets like smartphones, laptops, tablets etc. The use of technology in education is beneficial in many ways like:

Increased in efficiency and productivity of Teachers

Teachers and trainers use technology to boost their productivity, incorporate valuable digital tools to enhance students learning options and boost student support and participation. Technology enables teachers to improve their teaching methods and tailor learning for their students. In educational context, technology has the potential to increase access to education and improve its relevance and quality. Tinio (2002) asserts that technology has atremendous impact absorption of knowledge to both teachers and students through the promotion of learning. Digital tools and other technologies provided more opportunities for active learning outside the classroom, as well as providing self-directed spaces such as blogs forums and access to games with a learning benefit (Jewitt et al (2011).

Finally, other benefits of using technology in teaching are as follows:-

- Automation
- Reduction in the cost of schooling
- Encourages more communication between parents and teachers
- Enhances collaboration in classroom
- Aids in the preparation of students for their future lives
- Improves teaching and learning process. (trending technology 2021)

Conclusion

From this study, we have been able to see how learning theories could be applied in pedagogy through the use of technology advocates a drastic move toward the constructivist approaches. Much literature focuses on how to develop constructivist approach to the use of technology for teaching. Emphasis was given to pedagogical models that could suit various technologies in use in the language teaching/learning situations. It is believed in the long run that a careful application of these teaching models through the use of the right type of technology will tremendously improve teaching and enhance understanding among students.

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