BUILDING COMMUNITIES OF INNOVATION IN NIGERIAN EDUCATION THROUGH COLLABORATIVE LEARNING

By

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Abstract

Nigeria is a dynamic society, a multi-ethnic nation characterized by diversity in religion and culture, steady growth in population, poor economy as a result of low productivity, high rate of unemployment and political instability. Therefore, education in Nigeria is constantly challenged to become more and more relevant and functional. In this era of information age, ubiquitous communication is stimulating collaboration and community-based development of new ideas, technologies, and practices, while ubiquitous information in capitalistic societies is requiring many companies and establishments to prize the creation of new knowledge and skills. Simply knowing how things have been done is no longer sufficient as creative output is valued, and often required, through collaborations among workers. This paper took its standpoint from the potentials in diversities, and advocates communal, collaborative nature of innovation, a shift from the individualistic perspective. The concept of communities of innovation was elaborated in view of the need for creativity and innovation in Nigerian education amidst some obvious hindrances which could be overcome through collaborations.

Key Words: Innovation. Creativity. Communities of Innovation. Collaborative Learning. Nigeria Education

Education and society are dynamic duos always interacting to produce and/or respond to changes. Educators are constantly thrown back to the drawing board to keep pace with such challenges to ensure functionality of the educational system. This
results in regular paradigm shifts as can be clearly observed in this era of Information Age; emphasis is shifting from individuals to group interaction, brainstorming and collaborations to muster strength for consistent creativity and innovations in the society.

The society has moved from Industrial Age to Information Age, which according to Feather (2003), results in real economical, technological, sociological, and historical changes. The proceeds of these changes are ubiquitous access to information (through the internet, public databases, digital media, etc.) and ubiquitous communication, or access to social networks (through emerging social technologies and mobile devices). These two trends combine to create a very different society from previous generations – one that necessitates a different understanding of how people learn and work as communities. Ubiquitous communication has stimulated collaboration and community-based development of new ideas, technologies, and practices, while ubiquitous information capitalistic societies has required many companies to prize the creation of new knowledge and skills through collaborations (Proctor, 2005). With these characteristics of Information Age (ubiquitous access to information and social networks in ubiquitous communication), a new innovation economy has developed (Banaham and Playfoot, 2004, and Coakes and Smith, 2007). It is therefore not surprising to see educational policies in Nigeria as mere shadows, not following the trends but has largely remained models of the Industrial Age (Reigeluth, 1994). This paper is therefore an attempt to propose framework-communities of innovation (COI) for understanding the communal, collaborative nature of innovation. It took theoretical standpoints from studies on social learning and creativity to buttress the need for group effort in creativity and innovation in Nigerian society.

**The Concept: Communities of Innovation (COI)**

Researchers have sought to describe the nature of a community focused on the creation of physical or conceptual artifacts. They have described these communities using various names such as wisdom network (Benton and Giovagnoli, 2006), knowledge creating communities (Bielaczyc and Collins, 2006), creative organizations (Banahan and Playfoot, 2004), communities of creation (Sawhwey and Prandelli, 2000), networked strategic communities of business (Kodama, 2005), and innovative knowledge communities (Hakkarainen, Palonen, Paavola,& Lehtinen, 2004). Coakes and Smith (2007), used the term “communities of innovation” to describe a community development around a specific “innovation champion”, an individual champion rather than the community. Coakes and Smith (2007), define Communities of Innovation (COI) as a form of Communities of Practice that are dedicated to the support of innovation. They suggest that COI can be formed from champions of innovation and their social network and that COI are safe places for the creation and support of innovatory ideas. COI are groups made up of motivated individuals working together
Building Communities of Innovation in Nigerian Education through Collaborative Learning

Assoc Prof. Keziah A. Achuonye

towards a common goal, not because of orders from their superiors, but because they are convinced of their common cause. This study adopted the line of innovative nature of the community (West, 2009).

Before examining the theoretical backbone of COI, three words that share close linkage and need clarification here are creativity, discovery and innovation. According to Hornby (2010), creativity involves the use of skill and the imagination to produce something new; discovery is finding or learning for the first time about something or somebody not known before, while innovation is the introduction of new things, ideas or ways of doing something, a new way of doing something. So, while creativity has typically been associated with idea generation, the term innovation expands to include idea development and implementation (West, 2003), and steady transformation and reformation (Achuonye, 2008).

Theoretical Framework of COI

Creativity researchers use the term to describe “the creation of an original and useful product” (Mayer, 1999:449), while innovation refers to change in product and process. Creativity was earlier mystified in genius and gifted people; brilliant insight (Snyder and Lopez, 2002). However, further studies have demystified creativity as simply an extension of normal cognitive processes available to everyone involving stages of divergent and convergent thinking (Smith, 2003, and Ward, Smith, & Finke, 1999); creativity is an everyday thing that everybody could develop to different degrees (Bowers, Farvolden, & Mermigis, 1995). Innovation theories include not only initial divergent/convergent thinking processes, but also idea development, the overall innovation climate within the community, and factors related to implementation (Amabile, Conti, Lazenby, & Herron, 1996, and West, 2003).

Social learning theories brought to light the nature of collaborative work and learning; what is shared in social learning – concepts of shared meaning, practice and innovation. Shared meaning entails how interaction between an individual, others, and the environment construct shared knowledge understood among all of the participating members. According to Vygotsky (1997), before any concept is formed internally it exists external to the individual, and is thus social in nature. Bandura (1977 & 1986), broadened these ideas of social interaction and suggested that behaviour and learning occurs as the result of continual interactions among the person, the environment, and the behaviour. Bandura’s views, opened new avenues for studying the effect of environmental/individual interactions on student learning, such as motivation, self-efficacy, self-regulation, and other factors currently studied as critical to successful learning. These concepts are also important to understanding shared innovation, which often depends on persons being intrinsically motivated and self-regulated while
innovation, according to him, occurs from the juxtaposition of diverse perspectives with the group’s shared understandings.

Shared practice includes situated cognition and community of practice to offer understanding of how community members interact and bring new ideas into the group (Brown, Collins, & Duguid, 1989). Arguing that social participation is critical requirement for learning, Wenger (1998), stated its four components as meaning (learning as experience), practice (learning as doing), community (learning as belonging), and identity (learning as becoming). As result, learning involves much more than knowledge acquisition because it engages the whole person in a co-constructive, interactive process oriented towards developing the expertise of people as they integrate into a professional community.

A Shift from Individual to Group Innovations

Earlier studies on creativity concentrated on individuals. Even when researchers referred to environmental and societal conditions, they did so to show how they influenced individual creativity (Mayer, 1999). This, according to Henry (2004), is attributed to two reasons. Firstly, the predominantly Western psychological thinking about creativity that creativity is a quality which emanates from an individual. Countries like Japan have excellent record of continuous improvement in their products and processes, perhaps because they recognize that creativity is very much about collaboration over time and not just breakthrough by a few individuals (Henry, 2004:170). The second reason is the influence of cognitive psychology perception on creativity (Mandler, 1995). Paulus, Brown, and Ortega (1999:151), stated, “this localization of creativity within the individual is consistent with a variety of cognitive or attributional biases that lead us to ignore the social creativity research, and the Western focus on the individual”.

Nevertheless, in recent times, researchers are beginning to report an alternative view to creativity that emphasizes its group or social nature. Montuori and Purser (1999b) opined that many creative activities today involve social and collaborative processes. Communities of innovation (COI) are all about group of people working and learning and supporting each other to achieve and foster innovative ideas and skills.

Groupthink- Divergent/Convergent

A group is defined as two or more people who are interrelated in some dynamic way (Gross, 1998). Central to group dynamics is interdependence. According to Schmuck and Schmuck (1992), we all need continuous help from each other and that this type of interdependence is the greatest challenge to maturity of individual and group functioning. Emphasizing interdependence and strength in diversity can improve group divergent thinking process - ability to deviate from the normal to consider novel
Building Communities of Innovation in Nigerian Education through Collaborative Learning

Achue, Prof. Keziah A.

Closely associate with interdependence is group goal which was defined by Schmuck and Schmuck (1992:26), as “the preferred or desired state/task that guides the behaviours of group members”. Group goal stimulates group think which is the type of thinking that occurs when people make decisions as a collective group based on a compulsion to maintain unanimity and each other’s approval, to the extent that critical, realistic thinking does not occur (Parham (1988), Volkov (1988), and Schmuck and Schmuck (1992). Group cohesiveness is found to be the major factor in groupthink (Gross, 1998). The more cohesive a group, the greater the member’s tendency to rationalize or intellectualize the decisions of the group, and the more pressure that may be applied on dissenting members to conform. Studies have proved that divergent thinking in a group is often hindered by groupthink. This, Gross (1998), noted, may lead to inferior and often disastrous decisions; or when a dominant person offers an idea that is prematurely accepted by the group (Milliken, Bartel, & Kurtzberg, 2003; Nemeth & Nemeth-Brown, 2003; and Smith, 2003).

To prevent groupthink, Billy and Smith (1988), Kempa and Ayob (1995), suggested that qualified outsider’s opinions should be brought into the group; seeking a balance in skills, backgrounds, and expertise within the group can also help groups avoid groupthink and improve group divergent thinking, and the group should hold a ‘second chance’ meeting to re-evaluate and voice any after thoughts or misgivings and to reaffirm the decision.

Effective functioning of a group is also influenced by communication because the benefit derived from group diversity might not surface if members do not feel comfortable in expressing their dissenting opinions (Nemeh and Nemeh-Brown, 2003). These findings support the need for a strong community where members feel valued, confident, and interdependent with each other. After the phase of divergent thinking, comes the collaborative convergent thinking phase when the group must winnow the ideas to only the best to attain the group goal. Researchers like Goncalo 2004, Nemeth, (1986), characterize convergent negatively while others (Larey, 1995 and Kaner and Karni, 2007) advocated a mix of positive divergent and convergent thinking within groups to foster creativity and innovation process. According to Milliken, Bartel, & Kurtzberg, 2003, diversity among members is important in convergent thinking leading to superior ideas, and improved decisions due to an increased number of possible critical evaluations. In convergent thinking, independent judgment is important in keeping the group from attaining consensus before fully evaluating all ideas, a process called “premature closure” (Kim, 2007); full participation by all group’s members as one unified whole is critical to successful innovation.

COI Model
The key principles in the formation of COI are diversity, interdependence and full participation among group members; generation and selection of ideas; and a supportive environment for innovation. They form the elements for COI model as follows:

**Dynamic Expertise**- ‘a lifelong learner’, continuous effort to improve, is never satisfied at anything as the learner takes on new roles within the community: sometimes as the expert, sometimes as the novice but always growing in expertise. This is a ‘group flow’, a fluid role-sharing within the group which, Csikszentmihalyi (1990b), argued that learning is best accomplished by learners continually pushing themselves to collaboratively complete intrinsically interesting projects that are just beyond their level of expertise. This kind of activity requires intense focus, learning, and development, but results in discovery and creation, (Csikszentmihalyi, 1990b) and most effectively makes the group innovative.

**Entrepreneurship and Ownership**- ‘sole proprietorship’ a critical link to innovation; members share intuitive knowledge through intense collaboration, a networking both inside and outside the group (Banahan and Playfoot, 2004, and Coakes and Smith, 2007). Entrepreneurial networking allows members of the community to retrieve knowledge from other experts, re-use and repurpose the information, and create new knowledge that is then shared with the network. This keeps the community together and focused on an end goal, but enough flexibility to allow individual members to take ownership over their own projects and ideas.

**Inquiry**- inquiry-based learning; learners’ curiosities are agitated to generate problems, questioning, criticizing or rejecting some aspects of the accepted practice and existing wisdom. Innovative learners, according to Engestrom (1999), must raise questions, analyze the situation, model a new explanation, examine and implement the model, reflect on the process, and consolidate the new practice. West (2009), predicted that in the Innovation Age, the focus on group inquiry will become increasingly critical as problem-finding or seeking and defining questions to be solved, is the precursor of innovation.

**Group Reflectiveness**- deep group thinking; includes interpersonal and intrapersonal reflection. All models of innovative knowledge community highlight the importance of self-reflection and reflection within a community. New knowledge often emerges as a consequence of these kinds of practices of reflection-in-action (Hakkaraainen, Palonen, Paavola, & Lehtinen, 2004), and learning from past group failures (Sawyer, 2008). For any community to be truly innovative, it must foster this communal group introspection and reflection so that it can improve its own innovative processes.
Innoversity - describes how innovation is linked to diversity in a community (Justesen, 2004). Diversity in this context is not based on racial or cultural terms but as variety in cognitive and skills abilities, ‘multiple perspectives’ that raises question about what is best approach and provides different possible solutions; that allows for ‘new knowledge from previously separated domains to be exchanged and combined in new ways; theses are critical to innovation

Integrating COI into Classroom- Collaborative Learning

The laudable tenets of COI will be of no benefit to Nigerian education if the question of integration into the classroom is not answered; how can the school help Nigerian students to imbibe the culture of COI. This question on ‘how’ precisely hinges on strategy; what strategy can the teacher use to help Nigerian students learn, live, and practice the tenets of communities of practice? Precisely, the answer is any teaching method/strategy that encourages collaboration and cooperation; any teaching method that provides platform for students to work and learn in small groups, supporting and helping each other to learn.

According to (Hornby, 2010), collaboration is the act of working with another person or group of persons to create or produce something. When applied to learning environment it is referred to as collaborative learning. As stated in the Wikipedia (2014), Collaborative learning refers to methodologies and environments in which learners engage in a common task where each individual depends on and is accountable to each other. To Anuradha (1995), it is the grouping and pairing of students for the purpose of achieving an academic goal; an instruction method in which students at various performance levels work together in small groups toward a common goal; a situation in which two or more people learn or attempt to learn something together. Unlike individual learning, people engaged in collaborative learning capitalize on one another’s resources and skills (asking one another for information, evaluating one another’s ideas, monitoring one another’s work, etc.). More specifically, collaborative learning is based on the model that knowledge can be created within a population where members actively interact by sharing experiences and take on asymmetry roles. In a collaborative environment, children and adult learners can in engage play, work, and other activities together; individuals are actively engaged in a community in which learning takes place through explicit or implicit collaborative efforts.

In a classroom setting, face-to-face or online, Collaborative learning activities may include collaborative writing, group projects, joint problem solving, debates, study teams, and other activities. In higher education, Collaborative learning in thesis circles is a good example of people learning together. In a thesis circle, a number of students work together with at least one professor or lecturer, to collaboratively coach and
supervise individual work on final (e.g. undergraduate or M. Sc.) projects. Students switch frequently between their role as co-supervisor of other students and their own thesis work, including receiving feedback from other students.

In the secondary schools, Collaborative learning (study groups, examination/test discussion group) can lead to students’ success by deepening their understanding of a given topic; actively engage students with material and each other to maximize knowledge retention. In this setting students utilized daily class worksheets and periodic group tests designed to be more challenging than individual homework or exams, and students quickly learn how they are able to solve problems as a group that they might not have struggled with on their own.

At primary or secondary school level, Collaborative learning (Classroom Consensus Group) in a composition classroom can unite students when assigned open-tasks. Bruffee (1993), introduced the learning method, Classroom Consensus Group, in which the instructor allocates groups of three to five (three being ideal) students and assigns a problem to be solved or question to be answered. There are two directions the non-foundational task can be presented: as an indistinct, no right answer that generates discussion or propose an answer and request questions and a process of how the answer came to be. Once the task is assigned, the instructor backs off in order to resist the urge to intervene in students' conversation. The goal is to remove focus of the instructor's authority. The instructor must keep time to ensure that the students are centered on analogizing, generalizing, and bridging their comprehension with others. Following group discussion, the instructor is to evaluate, not judge, the students' work. Ideas should be presented to the entire class thus allowing the small groups to come together as a whole. It is then that the answers can be compared, gaps can be filled, and authority is not on one individual.

At any level of education particularly, those that can read and write, collaborative learning can take a form of Collaborative scripts structure by creating roles and mediating interactions while allowing for flexibility in dialogue and activities. Researchers have shown that when compared with more traditional methods where students non-interactively receive information from a teacher, collaborative learning:

1. not only increases interest among the participants but also promotes critical thinking; there is persuasive evidence that cooperative teams achieve at higher levels of thought and retain information longer than students who work quietly as individuals
2. improves student engagement and retention of classroom material
3. drives students to be responsible for one another's learning as well as their own; the success of one student helps other students to be successful.
Building Communities of Innovation in Nigerian Education through Collaborative Learning

- Assoc Prof. Keziah A. Achunye

4. gives students an opportunity to engage in discussion, take responsibility for their own learning, and thus become critical thinkers
5. increases students' time on tasks and motivation to learn, as well as students' interpersonal relationships and expectations for personal success.
6. enhances performance of lower-ability students (working best in mixed groups), and medium-ability students (doing best in homogeneous groups).
7. improves comprehension of the text and critical-thinking skills for students across ethnic and socioeconomic backgrounds.

(Johnson and Johnson, 1986, and Totten, Sills, Digby, & Russ, 1991)

Implementing Collaborative Learning: The first step using collaboration in classroom situation is to form heterogeneous or homogeneous groups. Groups can be formed using self-selection, random assignment, or criterion-based selection. Small groups of 3-6 are preferred to large groups because it is difficult to ensure that all members participate in large groups.

When groups are formed, then,
1. clearly specify the academic task - "group goals"
2. explained collaborative learning structure to the students
3. distribute an instruction sheet that points out the key elements of the collaborative process
4. encourage the students to take active part in the discussion proffering solution or explaining facts.
5. instruct students to listen carefully to the comments of each member of the group and be willing to reconsider their own judgments and opinions (Anuradha, 1995).

As experience reveals, group decision-making can easily be dominated by the loudest voice or by the student who talks the longest. Hence, it was insisted that every group member must be given an opportunity to contribute his or her ideas. After that the group will arrive at a solution.

According to Slavin (1989), for effective collaborative learning, there must be "group goals" and "individual accountability". When the group's task is to ensure that every group member has learned something, it is in the interest of every group member to spend time explaining concepts to group-mates. Research has consistently found that students who gain most from cooperative work are those who give and receive elaborated explanations (Webb, 1985).

Evaluation in a collaborative learning setting is on an average basis- an average of the group score (50%) and individual score (50%).
Significance of COI in Nigerian Education

Keeping Together is Progress. Working Together is Success. (Henry Ford)

The advances in technology and changes in the organizational infrastructure put an increased emphasis on teamwork within the workforce. Workers need to be able to think creatively, solve problems, make and take decisions as a team. Therefore, the development and enhancement of critical-thinking skills through collaborative learning is one of the primary goals of technology education.

The secret of the clear-cut progress in technology in Japan and China have been linked to emphasis on group-driven innovation. On the contrary, the backwardness of Britain is their emphasis on individual innovation. Creativity may be initiated by an individual, but is fostered by innovative ideas and skills of others in the environment. There is strength in diversity particularly, when properly and positively harnessed.

Nigeria is a country blessed with diversities in both human and material resources. Unfortunately, these diversities, rather than strength had been a source of weakness. This could be attributed to colonial influence of the British individualistic ideology. The negative influence is worsened by sole dependence on oil and gas exploration. Furthermore, initiatives and innovative ideas and skills are deterred by egocentric and ethnic adversities; so much that more than fifty years after independence, Nigeria is wallowing in abject backwardness, fully dependent on other countries’ technologies. Government after government with their aspirations and policies, the desired technological freedom remains a mirage.

A shift to COI integrated into the educational system in Nigeria would draw the strength in diversity. As buttressed by Raisch and Birkinshaw (2008), successful COIs increase innovations; they therefore have the potential to contribute to organizational ambidexterity, which refers to the organization’s dual capabilities of managing current business and being flexible and adaptable to meet future changes and demands. This would dissolve ethnic barriers, making Nigerians to shared meaning, practice and innovation; working and learning from each other, acknowledging and supporting creativities and improving on them, taking them to next level through steady innovative ideas and skills.

Conclusion

This paper believes that a shift from individualistic innovation to group format as COI taught in schools through collaborative learning strategies would take Nigeria to the desired technological progress. Past educational policies, particularly the 6-3-3-4 system would have produced the expected change if embellished with the tenets of ‘Keeping together is progress. Working together is success’; the strength in diversity, the tenets of COI.
Nevertheless, this change might not come so easy; some possible resistance and impediments are hereby foreseen in three major areas:

a. Human resistance to change due to ignorance and perceived stress

b. Curricular barriers- educators and curriculum planners would need to go back to the drawing board to make some changes emphasizing COI and collaborative learning

c. Teacher educators would need to adjust to train teachers and retrain teachers to understand and practice the new trend

Recommendations

In the light of afore-mentioned obstacles, the following roadmaps are eminent:

1. Nigerian populace should be educated by all means to discard the British individualistic innovative ideology and imbibe the Japanese group format,

2. Educators should be motivated to embark on curriculum innovation to foster group innovations

3. Pre-service and in-service teachers should be trained and re-trained to use collaborative learning methods to foster in Nigerian students strength in diversity and good team spirit.

References


