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Lifelong Learning from The Earliest Stages of Life

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The IAFOR International Conference on Education – Dubai 2017
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Abstract
The concept of Lifelong Learning, generally assumes that lifelong learning starts only when school finishes, thus overlooking the great importance that educability and education in the first stages of life have for one's whole life.
We define Lifelong Learning in broader terms as a process that builds from the first days of life and extends across one's whole lifetime to old age (*lifelong learning*). In addition, it develops in different environments related to training and experience (*lifewide learning*); furthermore it requires a secure basis and a deep form of learning (*lifedeep learning*) from which one can continue building over the course of life. Lifelong Learning is it a process located in historical-cultural and socio-economic contexts and mediated through the practices and perspectives of local culture (Engeström, 1987; Banks, Ball et al, 2007).
Today, three challenge remain unsolved in Europe (Field, 2010): the quality of education in formal contexts, starting from early education; the quality and enhancement of experiences in informal and no-formal educational contexts; the development of intentionally-designed educational settings, places of action, and significant experiences for the individual and for the group (Lindeman, 1926; Yeaxlee, 1929; Vygotsky, 1934; Dewey, 1938; Bruner, 1997; Cotè, 2004; Banks, Ball et al., 2007).
The basic idea is that 'educability' is a precondition for education and that 'education' is a factor of educability: in childhood and adolescence, there is a need to ensure those conditions for maturing and developing that are necessary in order to facilitate and not to compromise the mind's ability to learn throughout life.

Keywords: Lefelong, Lifewide, Lifedeep Learning; Little Learners; Formal & no-formal Education, Intergenerational relationships

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Introduction

It is widely recognised that lifelong learning is a natural and social process that is built from the early days and weeks of life and even before, and that spans the entire course of life, until old age (*lifelong learning*). It is built *in different areas* of education and experience (*lifewide learning*) and, above all, should be a process capable of providing cognitive and emotional anchors that trigger narrative paths, reflection, the enhancement of stories and identities that acquire the value of a *life-deep learning* (*life-deep learning*) and are a solid foundation on which to build during one's lifetime (West-Burnham & Coates, 2005; West-Burnham & Huss Jones, 2008; CONFINTEA VI, 2010; Derrick, Howard, Field & Lavender, 2010 Karlsson & Kjisik, 2011). It is also recognised, in line with the theoretical-methodological and interactive-constructivist and contextualist approach, that learning (and the perception of the usefulness of learning experiences) is a culturally-imbued process that fits into the historical-cultural and socioeconomic context and that is mediated by the practices and perspectives of local culture (Engeström, 1987; Banks, Ball et al., 2007).

Furthermore, when addressing the topic of Lifelong Learning, we generally refer to adulthood and old age, to training in service, to professional retraining in the labour market, to high postgraduate education and cultural and spiritual enrichment, as though lifelong learning began *when we finish school*, and in any case downplaying the huge importance that educability and education in the first stages of life have for a lifetime.

Three Challenges

In some strands of the literature available on Lifelong Learning in the 20th century we are faced again and again with three main challenges that, after about 100 years (and apart from the various statements and communications to the European Parliament), are still not fully realised, for all ages and especially for the first stages of life, in most European countries (Field, 2010). These are:

- *the better the quality of education in formal contexts, characterised by a formalised curriculum, starting with the first schools to University, the greater the potential for education and development in a lifetime* (Yeaxlee, 1929);
- *the better the quality of education and the quality* [1] *and enhancement of experiences* acquired in non-formal educational contexts, but intentionally formative, such as families, churches, social-educational and training services

[1] According to Dewey (1938, Italian transl. 2014), the key problem of an education based on experience lies in choosing the type of present experiences that will live fruitfully and creatively in the experiences that follow on the basis of three principles: (a) and (b) *the principle of continuity* and *the principle of growth*. In other words, each experience receives something from those that came before it and changes the quality of those that follow; and (c) *principle of interaction*. That is, the conditions of the experience are always two: the condition of the external environment and the condition of the subject that the educator must consider when developing the learning "situations". In this sense, learning situations must comply with the principles of continuity and development by connecting the past, present and future, and must combine the subject with the context within the experience, so that school work be the result of a collective endeavour. The experience in the "situation" thus becomes the means and end of education.

of local educational institutions (libraries, museums, art galleries, game centres, etc.), associations and working environments, *the greater and more open will be the "room for free personal movement,"* and therefore the possibility/self-awareness of cognitive-emotional enrichment and autonomy (Yeaxlee, 1929; Dewey, 1938, Italian transl. 2014; Lewin, 1935, 1997; Bruner, 1997; Cotè, 2004, Banks, Ball et al., 2007);

- *the better the development of educational contexts* so that "something experientially meaningful" (Riva, 2016, p. 214) for the individual and for the group can occur (e.g. recognising and attributing value to the action and to previous experiences, building upon them but pointing beyond, respecting the timing, pace and styles of learners), *the greater the chance* of learning, namely *of becoming an energy transformer and carrier* in the form of play and work, of imagination in thought and in action, of reflection and dialogue (Lindeman, 1926; Yeaxlee, 1929, Vygotsky, 1934, Italian transl. 1992).

Big Plans for Little Learners: Why? What? How? Where? With Whom?

Research on the educability of the child has revealed a large amount of empirical evidence and theoretical elaborations about rights, personal traits and expressions of relative maturity, quality of the contexts of education and care, as well as of the meso- and micro-contexts (Bronfenbrenner, 1979; Paparella, 2005; Grange Sorgi, 2005, 2011; Limone, 2007). The basic idea is that *education is a factor of educability and educability is a requisite for education*. Therefore, the purpose of this research is to be able to identify for each and every one the most favourable conditions for learning and an effective avenue for educational success (Grange, 2016, p. 88-100).

The reasons for believing that the potential of lifelong learning is to be cultivated from the earliest stages of life (as it is precisely the first stages of life that are a "work in progress", a "proximal development area" for future life) are manifold.

Why? Needs of relational contexts with a good cognitive and emotive bond value

For humans, it is vital to be part of a relational system with bonding value: a trans-personal network with emotional-cognitive value that can be likened to a magnetic field (Foulkes and Anthony, 1957). On the subject, Foulkes writes:

> "Every individual is part of a social network, a small nodal point, so to say, in this network, and can only artificially be considered as an entity on its own, as a fish out of water. In addition to these horizontal ramifications with other people and the community, the individual has a vertical connection that represents his biological inheritance, which he develops throughout life" (1957, p. 42).

According to the group-analytical conception, of which Foulkes is the founder, personal identity is structured through relationships that are potentially open to endless connections with different subjects, groups and contexts: the vertical ones, which hand down and transform our biological inheritance, personal history, events and culture of the groups we belong to, and the horizontal ones, that are built in educational contexts and through the many stimuli of everyday life. The educational

quality of the contexts (space, time, relationships-rules) in which the young boy and girl grow and, more specifically, of the dynamics that are at play within them (which are potentially constructive and creative and/or destructive and regressive) is a goal to which we need to reserve great care and which is never permanently achieved (Nitsun, 1991).

Consistently, other studies show that in order to survive, humans must be part of open systems that are functionally linked to other systems (especially to other brains) related to a broader context and that, as such, are prone to change when the environmental conditions and their own activities change (Contini, Fabbri, Manuzzi, 2006; Cozolino, 2008; Fiz Perez, Caserta, 2010). Research suggests that neural plasticity and cognitive modifiability are distinctive traits of the brain at all ages and in particular in the early stages of life, because there is a significant relationship between early experience and brain function. Cognitive development and the fluidity of intelligence are based on the formation of new synapses, the "pruning" of other ones and the structural and functional restructuring of nerve networks through the mediation of experience (Margiotta, 2011). According to educational neuroscience:

> […] early interpersonal experiences (largely emotional) are able not only to develop cognitive skills, but also to act as regulators of hormones that directly affect genetic transcription, causing certain genes to express themselves and "silencing" other ones. Conversely, the lack of experience or lack of educational care can have adverse effects on contacts between nerve cells (synapses) and on neural circuits, reducing their complexity. Brain development is largely a process that depends not only on a genetic programme, but also on both positive and negative experience. […] The physical structure of the brain, therefore, does not depend solely on a genetic programme, but also on the fact that experience fosters the establishment of new neural connections, the production of neural mediators and "trophic" principles, such as the well-known "Nerve Growth Factor" (NGF) discovered by Rita Levi Montalcini, which facilitate the transmission of information and the efficiency of neural circuits and thus, the activation of cognitive functions (Oliverio, 2015, pp. 10-11).

What? The Self as a body and as a narrative

The construction of identity starts very early in the environment where the young boy and girl move and act, and where they form and recognise their linguistic, religious and moral sense of belonging.

In the construction of identity, the motor dimension (the oldest from the evolutionary point of view) has been thus far neglected at the expense of a "disembodied" cognitive dimension. However, this dimension can shape not only motor skills, but also motivational and cognitive ones.

> As it evolves, in fact, the brain needs to have tactile and motor experiences for it to develop those sensorimotor areas that represent the starting point for the development of the higher areas, those of language and complex thought. […]

> Our brain is a huge archive of motor repertoires [...] that the Russian psychologist Alexander Lurija has called "kinetic melodies" to indicate the complex fluidity that all of us apply to the individual acts of everyday life (Oliverio, 2015, p. 32).

Even before the birth of neuroscience and cognitive psychology, Maria Montessori described these traits of the infantile mind in her book *The discovery of the Child*, where she points out that children create their 'mental flesh' through experience in their environment. Therefore, we can say that the self and self-awareness are a product of the *Self as a body* in action in the concrete context to which the child belongs.

The self and self-awareness are also a *Self as a narrative* or, in other words, the product of a story we tell ourselves to "put things in order" and give meaning and coherence to the succession of facts in our life. Image and self-awareness are co-built, story after story, through the progressive "layering" of representations and narratives: narratives of others, especially of significant others, and narratives made for ourselves and others, and about ourselves and others. This is a process that develops in a surprisingly systematic way that is also "deeply intertwined with how we master language itself, not only with syntax and lexicon, but also with its rhetoric and with the rules applied in forming the narrative. Like all other aspects involved in the shaping of the world, the construction of the self (or "construction of life") depends on the symbolic system in which it is conducted, its opportunities and constraints" (Bruner, in Sempio, Marchetti, 1995, p. 136). The cognitive-emotional "roots", to which experiences and stories are anchored, develop curiosity, mental outfits, aptitude frames and valuable implicit knowledge. They allow us to discover/recognise similarities and experience cohesion, in order to progressively acquire an awareness of otherness. And this "matrix" that is built day after day tends to be transmitted from generation to generation.

What? Emotional and cognitive Self-awareness

Emotions and Self-awareness are “in-between”, “inside” the “I” as a body and the “I” as a narrative.

If you have a body you have emotions. If you have cognitive tools (language and literacy) you can use them to express perceptions, emotions, concepts. We are emotional animals, we are musical animals, we leave the metaphor we create (Lakoff and Johnson, 1980).

The plasticity and cognitive modifiability of the brain and the obvious importance of early experiences calls us to cultivate, from the earliest stages of life, evolved human qualities such as pro-sociality, comprehension, listening and intentional communication, cooperation, emotional self-awareness and reflection. Identity and cognitive-emotional self-awareness can be severely compromised in the absence of these qualities, which should be experienced, exercised and mastered in formal and non-formal contexts, above all in families and in early schooling, particularly in childhood and pre-adolescence. Emotional self-awareness requires developing the

capacity to recognise the sensations felt in relation to a particular emotion, to know how to explain what we experienced verbally and to describe the event that triggered the emotion, to know how to recognise and process thoughts, emotions and feelings, learning to monitor and handle our emotions. At school, we can point to an expansion of the children's linguistic repertoire and ability to speak of themselves, with oneself and with others, to recognise how they feel and communicate it, to understand how their friends, parents or other people feel, to learn to communicate (*Self message*) the sensations, emotions, feelings and thoughts they experience and have. It is clear that emotional literacy is only a first step, but we believe that it can help lay the groundwork for developing advanced skills at an age (such as early childhood in kindergarten and elementary school) when the young boy and girl (and also the pre-adolescent) are not yet fully committed to coping with the pressure of other developmental dimensions.

As Fabbri (2016, p. 265) writes: "We thus return to the key role of infancy and puberty in formative experience, not because all the knowledge we need to survive has to be imparted at these stages of our lives, but because during them there is a need to ensure those conditions for maturing and developing that are necessary in order not to compromise the mind's ability to continue to learn throughout life".

Haw? Contexts such as magnetic fields and constructive dynamics

As we have mentioned: (a) in order to survive humans must be linked with different subjects, groups, contexts (expecially with other brains); (b) all ages of life are important for the development of the dimensions of existence and for people to feel fulfilled in their humanity and cultural and spiritual wealth, both as producers and as citizens. But there are particular ages where, by virtue of mankind's educability and of the fact that education is the key factor of educability, "matrices" are developed on which real scripts will be "engraved" that will guide and affect action and learning. We therefore may have reason to ask ourselves: what form of education can have deep roots and value for the development of the individual and the community? What form of education is able to keep up with the "transformation-proneness" of local and global contexts and with a society prone to multiple and persistent transformations?

We have to take care of the educational quality of the experiences and settings (space, time, relationships-rules for educational Projects): the environment-mother and the environment family (Winnicott, 2005), the environment-community, the environment-Planet (earth, nature, urban areas). In these fields of action we weave relationships that are potentially constructive and creative and/or destructive and regressive (Nitsun, 1991).

The first schools represent a great experience of continuity in discontinuity. Educational responsibility involves the commitment to accompany and support the development of identity through a relentless succession of differentiations and integrations, and consists in identifying individual children, their subgroups and the class as the measure of the educational choices and action. How can this be done?

How? The essential components of learning

We agree with Dewey (1938) and with the lines of research on *experiential learning* (Mortari, 2016) and *cooperative learning* (Comoglio 1996, 1998, 1999; Dozza, 2006; Ellerani, 2013) in suggesting that an experience has educational value if it knows how to devise contexts and create inter-subjective relationships that act as "carriers" of energy or, in other words, that allow/indicate to the subject to look and go beyond, in the direction of independence. This is to say that:

- it knows how to take advantage of the experience acquired and of the "little stories" to expand the possibility of future experiences, and how to recognise/respect relative maturities, linguistic and cultural affinities, the timing, pace and personal cognitive styles, because every age has particular biological traits and each child has his/her own individuality;
- it knows how to form significant new experiences and projects in which the individual (and the group) can act as a body and as a thinking machine, and feel "a head taller than themselves" (Vygotskij, 1930). In other words, it knows how to ensure that the learner can feel as a creator of action and part of group-game and/or learning projects.

In a school that still frequently favours the information sphere to the detriment of one that focuses on the needs of the individual child/student (including emotional needs), there is a need to create the conditions for a *life-deep learning* at an early age. It is again Dewey who provides the most complete and concise definition of *life-deep learning*[2]. In discussing the subject, Dewey emphasises the essential components of learning in a profound sense: he distinguishes between information and knowledge; he focuses the attention on understanding; he considers reflection as the key learning process.

West-Burnham (2010), drawing inspiration from Dewey, lists five different forms of learning: 1) an increase in the amount of information; 2) memorisation; 3) the development of skills and techniques; 4) understanding, in the sense of the ability to grasp relationships and to be aware of the processes involved; 5) the ability to create new realities and to engage in the critical assessment and renewal of knowledge. The categories described in points 1), 2) and 3) can be considered forms of *shallow learning* that concern the management and memorising of information provided by the teacher; the fourth and fifth category are linked to *deep* and *profound learning*. In *deep learning*, the teacher is a facilitator, mentor and co-builder of the learner's knowledge and brings into play a higher order of cognitive skills (analysis, synthesis, integration of the lessons learned with other themes and topics, formative and negotiated assessment, understanding of one's learning process). In *profound*

[2] We state emphatically that, in terms of its intellectual side, education consists in the formation of wide-awake, careful, thorough habits of thinking. Of course, intellectual learning includes the amassing and retention of information. But information is an undigested burden unless it is understood. It is knowledge only as its material is comprehended. And understanding, comprehension means that the various parts of the information acquired are grasped in their relations to one another – a result that is attained only when acquisition is accompanied by constant reflection upon the meaning of what is studied (Dewey, 1933, pp. 78-79).

learning, in which the teacher is a guide and coach, the learner is capable of transferring skills on to new situations and, in the personal reinterpretation of knowledge and problems, relies on the understanding of the whole and of the relationships between the different parts. In summary, in *shallow learning* I rely on my usual tactics (*single-loop learning*). If I fail to achieve the aim by adopting the usual tactics (and I am able to), I reflect and I try to understand (*deep learning*), in order to change my goals and strategies (*double-loop learning*). But if the situation again challenges me (and I am able to), I try to acquire an even deeper understanding (*profound learning*) of the situation/problem and to change my very own way of seeing and dealing with them (*triple-loop learning*). West-Burnham uses a metaphor to describe these different learning levels. If *shallow learning* is like playing the notes, *deep learning* creates the melody and *profound learning* echoes that melody within ourselves and in relation to others to transform it in a creative way.

The main indicators of the *deep* and of the *profound learning* are: the ability to create and exchange meanings; to analyse and codify; to describe, model and illustrate; to recognise and create connections; to problematize (Why? How? What if?); to compare; to contextualise, i.e. to recognise relationships and differences; to formulate assumptions and generalise; to transpose theory into practice; to have self-awareness and orientation.

There are some strategies that can support the development of deep and profound learning: understanding one's learning styles, aptitudes, dispositions and motivations; using a portfolio of cognitive strategies (analysis, synthesis, method); *problem solving*; a constructivist approach and extensive use of small-group coaching insofar as concerns the use of strategies and mentoring; emotional self-awareness (*emotional literacy*); personalised educational paths; consideration of the student as a whole by recognising the role of the family and community; systematic review and reflection.
These are strategies that belong to approaches such as *experiential learning* and *cooperative learning*, which unfortunately are all too often considered as a set of techniques rather than as methodologies supported by clear theoretical constructivist and contextualist references oriented to developing meaningful learning and deep learning.

The development of active and collaborative learning environments interested in deep and profound learning allows us to build a culture of learning even among students (Ellerani, 2012). We know that when students do not feel aware of their pre-knowledge and personal learning strategies, they may experience greater difficulty in organising learning and in tackling new concepts. Most importantly, to keep themselves actively learning throughout life, students need to discover that they know how to use personal methods to control their study actions and the way they develop and produce knowledge by creating/discovering connections with their own experiences (Schneider, Stern, 2010) and with conceptions of others (De Corte, 2010).

Intergenerational relationships to create deep learning, soul and force of character

The different generations need to be part of a vital netowork where they meet and clash, where they rely to each other and differ.

Grandmother and Grandfathers have the huge duty to "do spiritual work", by talking about the things that really are important. They can accompany the gradual re-writing of the personal and family narratives, and can help others to understand the carious seasons of life. Grandmothers and Grandfathers have the important task to fulfil the generational pact between human beings and the being of the Planet (Hillman, 1999).

Conclusion

When the education become "to know to and how" rather than " to know that", it opens minds and builds the foundation of deep learning. It shifts the focus of the speech and research and allows one to experience a culture of exchange and dialogue. It conceives and organises contexts for learning and learning to live in a collaborative dimension. Mental attitudes, postures, skills and behaviours are passed down from the adult to the children and little learners (L. S. Vygotskij, 1992, original ed. 1930; Robtzov[3], 2005), from the context's and settings' coherence to the children and little learners. We need adults who play a scaffolding function.

To make Big Plans for Little Learners we need adults who play a *tutoring* and *mentoring* role that can transpose command of matter and *expertise* and allows to experience in situation *humanitas* and respect for diversity and differences, with the intent of educating not only the producer/consumer but primarily the citizen (Baldacci, 2016).

We know that *Lifelong, Lifewide, Lifedeep Learning* is a *Utopia*, a Big Plan for Little Learners, but we have to work in order to try to realize this Big Project for all children, men and women of the Planet.

[3] Vladimirovich Rubtzov, Director of the Psychological Institute of the Russian Education Academy (R.A.O.), with headquarters in Moscow.

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Public Relations Education in an Arab/Islamic Context

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Abstract
Numerous scholars consider the discipline of public relations a western construct, infused with classic Greek rhetoric and Judeo-Christian tradition. In fact, public relations education in many Arab and Islamic countries continues to be based on Anglo-Saxon concepts and knowledge generated by US-UK scholars. A number of critical scholars have referred to the need of addressing issues pertaining to public relations ethnocentricity, and recommended replacing it with global perspectives in terms of culture and identity. The present public relations education and multinational corporations are change agents aim at re-shaping public relations practices in host countries with a view of creating liberal political governments, securing cheap raw material/labor, and new markets. Public relations ethics in Arab and Islamic countries did not capture adequate scholarly interests. The focus of this paper is to highlight public relations ethics in an Arab/Islamic context. Ethics is of paramount importance at this historical moment because it helps redefine the role of public relations practices at a time when most of the countries in the region are facing insurmountable political, economic, and nation-building problems. The paper provides basic principles of Islamic ethics that pertain to public relations education. These principles include: unity Tawheed (unity), Iman (faith), *Khilafah* (trusteeship), ‘Adl (justice), and *Ihsan* (benevolence), and *Hu*r-riyya (free will). The paper recommends that public relations educators include these ethical principles in their curricula. Moreover, public relations students and practitioners in Islamic countries should learn these Islamic ethical principles guidelines by heart and use them in their daily activities.

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Introduction

Public relations education receive more attention in recent years. A number of scholars have provided informative histories and commentary on the state of public relations education in their home countries (Azarova, 2003; Ferrari, 2009; Ferreira and Verwey, 2004; Gorpe, 2009; L'Etang, 1999; Pirozek and Heskova, 2003; Sriramesh, 2002; Zlateva, 2003; Zhang, 2009). The practice of public relations can be traced to ancient times. The Greek, Romans, Assyrians, as well as Pharaohs practice one form of another of publicity or relationship management. Religions also played their role in public relations. According to Seitel (2014), "Even the catholic church had a hand in the creation of public relations. In the 1600s, under the leadership of Pope Gregory XV, the church established a college of propaganda to 'help propagate the faith'." (Seitel, 2014, p.29). Islam also played its role in utilizing the power of persuasion to propagate its message. Islamic ethics exist in communication, advertising as well as public relations (Abuznaid, 2009). Nonetheless, most of the public relations literature, particularly textbooks in Western countries remain Eurocentric, with Judeo-Christian ethical underpinnings. Islamic teachings and ethics receive little or no attention in most Western public relations textbooks. According to Toth and Aldoory (2010) argue that the Leeds University assessment on the possibility of creating a global public relations curriculum suggested "the difficult tension between uniformity vs. diversity; the need for cultural awareness; the attention to language differences in meanings of public relations course titles and concepts; and the possible backlash against a historical, United States dominance of education (pp, 10-11).

Kirat (2016) defines public relations in Islam as a vehicle of creating a healthy environment for both the individual and the community to establish the Islamic community (*Umma*) which should live in harmony within itself and with others according to Islamic principles and values. The Qur'an states that Islam is a religion for all people, and all times, "One day we shall raise from all peoples a witness against them, from amongst themselves. And we shall bring thee as a witness against these (thy people): and we have sent down to thee a book explaining all things, a guide, a mercy, and glad tidings to Muslims." (Al Nahl: 89). Another verse affirms, "We have explained in detail in this Quran, for the benefit of mankind, every kind of similitude: but man is, in most things, contentious." (Al Kahf: 54). Islamic ethics are based on the Qur'an, *Haddith* (Sayings of Prophet Mohammad (pbuh)) and *Sunnah* (Acts of Prophet Mohammad (pbuh)).

Allah bestowed the most perfect qualities on Prophet Mohammad (pbuh). The Qur'an explicitly asked all Muslims to follow the steps of Prophet Mohammad: For you in the Messenger of Allah is a fine example to follow (Al-Ahzab 33:21). "And thou (standest) on an exalted standard of character" (Al Qalam: 4). His daily behavior was exemplar in honesty, mercy, and generosity. He did what he preached, and his actions followed his sayings. For this reason Allah requires that Muslims "Obey Allah and obey the messenger", (An-Nisa: 59) and "Whatever the Messenger giveth you take it and whatever he forbiddeth abstain from it." (Al-Hashr: 7). In another verse, "And verily in the messenger of Allah ye have a good example for him who looketh unto Allah and the last day and remembereth Allah much." (Al-Ahzab: 31). According to

this verse, Allah asks every Muslim to follow the good example of the prophet as a role model and an ideal in life. In another verse he has been made a 'Hakam' – judge – for the Muslims by Allah Almighty. No one remains Muslim if he does not accept the prophet's decisions and judgments:

"But no, by thy Lord, they can have no real faith until they make thee judge in all disputes between them and find in their souls no resistance against thy decisions but accept them with the fullest conviction." (An-Nisa: 65). The virtues of prophet's deeds consisted of his good conduct, combining at the same time mercy (for followers) and awe for those who opposed him. His Shari'ah (law) is a just one, moderate between intemperance and negligence

This paper builds on previous studies that reflected on the relevance of Islamic ethics in advertising in some Arab and Islamic countries (Lewis, 2016; Kalliny, 2012; Haque et al., 2010; Rice and Al-Mossawi, 2002; Melewar *et al.* , 2000;), consumption in Islamic contexts (Fischer, 2016; Wilson et al. 2013; Jafari, 2012; Sandikci, 2011; Yusuf, 2010; Kruckeberg, 1996), and public relations in Islamic countries (Kirat, 2015; Parsons, 2008), to create a better understanding of how Islamic values influence global public relations strategies, tactics, and programs.

The advent of globalization and rise of new market opportunities in Islamic countries has generated considerable debate among scholars and practitioners regarding appropriate ethical marketing communication strategies and tactics to use when dealing with Muslim consumers (Lewis, 2016; Sandikci, 2011; Yusuf, 2010; Zakaria & Abdul-Talib, 2010; Birch et al., 2001; Kruckeberg, 1996). And although, there are numerous studies examining issues pertaining to some Islamic values in advertising (Cader, 2015; Kalliny et al. , 2011; Haque *et al.* , 2010; Melewar *et al.* , 2000), there has been limited discussion in the literature pertaining the influence of Islamic ethics on global advertising and public relations strategies (Kirat, 2015; Rice and Al-Mossawi, 2002).

Global public relations debate

There is an ongoing scholarly debate on the role of ethics in advertising and marketing communication. According to Turnbull, Howe-Walsh, and Boulanouar (2016) the debate can be summarized in two schools of thought (Lugmani et al., 1989; Agrawal, 1995; Fastoso and Whitelock, 2007). Those who advocate a standardized approach to the marketing communication mix argue that standardized products and services offer advantages of economies of scale and furnish a solid and consistent global brand image (Schmid and Kotulla, 2011). A standardized approach capitalizes on the synergy of brand image, and harness the potential for cost savings, better planning and control (Melewar *et al.* , 2000). On the other hand, proponents of tweaking the marketing communication mix to fit emergent local markets highlight the downside of a standardized marketing communication strategy that ignores the local cultural variations even if that standardization is Islamic in nature (Navarro *et al.* , 2010; Fischer, 2016). Moreover, socio-economic and cultural factors constitute major obstacles to standardization of marketing communication (Haque *et al.* , 2010).

The importance of Islamic ethics

A number of studies (Grunig, Toth & Hon, 2000; PRSA, 2000; Boynton, 2006) have examined the topic of professional values in public relations. Some scholars focused on ethics and professionalism (Winston, 2005; & Barnard, 2008; Panina & Bierman, 2013). The importance of studying public relations from an Islamic perspective arises from that fact that many Muslim countries use Islamic laws (*shariah*) based on the Qur'an (the Muslim Holy book) and the Sunnah (the sayings and practices of Prophet Mohammed) in addition to the rulings of prominent Muslim scholars who rely on *Ijma'a*, *Qyias*, and *Ijtihad* (Alserhan, 2011; Charrad, 2001). Thus, the core values and traditions in many Islamic countries differ substantially from Western countries, which derive most of their values systems from Judaism and Christianity. A number of studies have reflected on the importance of adhering to Islamic business ethics when communicating with consumers in Islamic contexts (Jafari & Sandikci, 2016; Hassan *et al.* , 2008; Marta et al., 2004; Abbasi et al., 1989). Understanding the underpinnings of Islamic ethical values make it easier for companies to design persuasive messages to consumers in Muslim countries (Alserhan & Alserhan, 2012; Behboudi et al., 2014; Cader, 2015).

An extant literature highlights the holistic nature of the Islamic teachings and ethics that should normatively regulate various aspects of socio-economic, cultural, and political life and create a unique culture in most of the Muslim countries (Kruckeberg, 1996; Arham, 2010; Feiz *et al.* , 2013; Wilson, 2012; Yusuf, 2010).

The basic principles of Islamic ethics in public relations

In Islamic literature the word ethics correlates with *Akhlaq*, which pertains to what is right and what is wrong. According to Beekun (1997), this concept include: *khayr* (goodness), *birr* (righteousness), *qist* (equity), *'adl* (justice), *haqq* (truth and right), *ma'ruf* (known and approved), and *taqwa* (piety). Thus, good and pious actions are considered salihat, and wrong and impious actions are known as sayyi'at (Fakhry, 1991, pp. 12-13).

Islamic teachings revolve around a fundamental concept called *Tawheed* (Unity). In general, *Tawheed* refers to a unified creation, under one omnipresent, omnipotent Creator (*Allah*). The acceptance of *Allah*'s unity, and overarching control over every "thing" living, seen and unseen is the cornerstone of Islamic creed. *Tawheed* is an acknowledgement of transcendence in human relations which highlights the "process" of each act undertaken (Wilson and Hollensen, 2010). In addition, Tawheed explains how Muslims articulate their personal and communal interests to serve the Islamic community (*Umma*) (Al Faruqi, 1992). Thus, Islamic ethics should be followed when conducting all business and marketing activities, including public relations which is the node of communicating with various stakeholders. What makes Islamic ethics different from other codes of ethics is the fact that *Allah* "is closer to man than his jugular vein, and has eternal knowledge of everything (Beekun, 1997). Armstrong (2004), argues that this constant awareness of *Allah* is what makes observant Muslims different from others.

Turnbell, Howe-Walsh, and Boulanouar (2016) examine the field of Islamic marketing and state six principles including Unity (*Tawheed*), Faith (*Iman*), Trusteeship (*Khilafah*), Balance (*Tawazun*), and Justice *('Adl*). *Tawheed* impels on all Muslims to treat all people fairly and equally without discrimination. Faith (*Iman*) concerns the conscience, and orders Muslims act conscientiously within the *Shariah* (Islamic Law). Qur'an states, "Indeed, they who have believed and done righteous deeds - those are the best of creatures" (Al Bayyinah: 7). *Iman* is the belief in Oneness of Allah, his angles, prophets, and revealed books, the hereafter as well as destiny Muslims should choose what is lawful (*Halal*) and avoid what is forbidden (*Haram*). Although, halal and clear and haram is also clear, some people see a gray area between what is halal and what is haram. Trusteeship (*Istikhilaf*), deals with the intelligence *Allah* has bestowed on the human creation over other creation (Dhabouadi, 2006), and emphasizes the trusteeship (rather than ownership) of the Earth's resources. Thus, human beings have to strive on earth and to ensure virtue and eliminate evil. This active engagement and participation in world's affairs is part of *tazkiyah* (purification). In a nutshell, it means that all the resources on Earth belong to *Allah*, although owned by some people, and are distributed unevenly among them (Bassiouni, 1993).

Using their human intellect, human beings should re-distribute these resources evenly among them and in a *halal* way (Al Faruqi and Al Faruqi, 1976). Balance (*Tawazun*), emphasizes moderation . Qur'an emphasizes *Wasatiyah*, "Thus, We have made you a justly balanced community that you will be witnesses over the people and the Messenger will be a witness over you" (Al-Baqarah, 2:143). This principle stresses that valuing human beings and doing the virtuous things is more important than profit maximization (Siddiqi, 1981; Saeed *et al.* , 2001; Chapra, 1992), because Islam emphasizes duties over rights (Alserhan, 2011). Thus, business success and money and wealth as mere allurement, whereas "the things that endure, good deeds, are the best in the sight of Allah…" (Qur'an, 18:46). Accordingly, individual needs as well as communal and social needs should balanced. Justice (*'Adl*) is an important of Islamic teachings. The Qur'an emphasizes *'Adl*: "Allah commands justice, the doing of good… "(Al-Nahl, 90). Justice (*'Adl*) requires treating all people equally without discrimination prohibits usury, and calls for honoring of contracts (Mustapha, 1989). In this sense, *'Adl* also embodies balance and equity. Finally, free will (*Al hur-riyya*) means that human beings, have freedom of choice in their behavior - they can do the right thing, or the wrong thing according to their socio-economic contexts (Alserhan, 2011). Endowed by intelligence, human beings are free to choose whatever course of actions they choose. Nonetheless, every human being is solely responsible for his/her actions. According to Turnbell et al., (2016), these six dimensions that make up an overview of Islamic ethics are intertwined and consistent with the overarching concept of unity (*Tawheed*).

Kirat (2016) refers to five approaches to Islamic communication and public relations work, which include, sincerity, consistency, gentleness, and gradual propagation. Sincerity and truthfulness to *Allah* requires being honest and truthful. One verse states, "shun the word that is false" (Al-Hajj, 30). Prophet Mohammad (pbuh) "spoke assertively of the virtue of truthfulness as a pillar of strong faith"(Berenger & Taha, 2013, p.96). Practicing what one preaches is a cornerstone in public relations. Many

public relations problems arise from inconsistency between words and deeds. One verse states: "Grievously odious is it in the sight of Allah that ye say that which ye do not"(Al-Saff:3). In communication, the way the message is presented is as important as the message itself. *Allah* advised Moses and Aaron to address Pharaoh, who proclaim himself as god, in a soft tone, and gentle manner: "But speak to him mildly; perchance he may take warning or fear (Allah)" (Taha: 44). Another verse, describes how gentle and tactful Prophet Mohammad (pbuh) was in communicating his message: "And by the Mercy of Allah, you dealt with them gently. And had you been severe and harsh-hearted, they would have broken away from about you" (Al Imran: 159). Kirat (2016) argues that a gradual approach to propagation is essential for effective Islamic public relations. He adds that Prophet Muhammad (PBUH) had set priorities for his mission by focusing on the most important things.

Rahman (1983) focuses on four aspects of Islamic ethics emanating from the Qur'an and Haddith. They include, *Iman*, *Taqwa*, *Ihsan*, and I*slam*. *Ihsan* refers to benevolence and pertains to devotion, love, and dedication to *Allah*. All these aspects come under the umbrella of *Islam*, which refers to peace, purity, and subordination to *Allah*. Thus, Muslims are supposed to be kind, and work to end exploitation in various business contexts.

Islamic ethics and consumer relations

To business people, investors, sellers and consumers there are a number of Islamic guidelines that should be followed. There should be no fraud or deceit, the Prophet (pbuh) is reported to have said, " When a sale is held, say, "There's no cheating" (Al-Bukhari). Exaggeration and deceit are forbidden. Sellers are advised not to make oaths during transactions. The Prophet (pbuh) said, "Be careful of excessive oaths in a sale. Though it finds markets, it reduces abundance" (Muslim). Mutual understanding and mutual consent are two important pillars for beneficial seller-consumer relations. The Prophet (pbuh) said, "The sale is complete when the two parties involved depart with mutual consent" (Al-Bukhari). One of the most important teachings of Islam in trade is being honest and strict in regard to weights and measures. The Qur'an states, "And establish weight in justice and do not make deficient the balance"(Al-Rahman, 10). The Prophet (pbuh) asked sellers, "You have been entrusted with affairs over which some nations before you were destroyed" (Al-Tirmidhi). The Prophet (pbuh) emphasized that honesty and kind dealings with customers are the secrets of success in business. He adds, said, "The truthful and honest merchant is associated with the Prophets, the upright and the martyrs" (Al-Tirmidhi). In another Haddith, "God shows mercy to a person who is kindly when he sells, when he buys and when he makes a claim" (Al-Bukhari).

The Prophet forbade monopolies. "Whoever monopolizes is a sinner" (Abu Dawud). Moreover, although Islam if for free enterprise, the price of the commodities should not be fixed unless there is a crisis or extreme necessity. Hoarding goods and products cause many economic and social difficulties to many consumers. Some business people hoard products in order to increase their future prices is forbidden. More importantly, trade in haram items, such as gambling, intoxicants, and illicit drugs is forbidden. Prophet Mohammad said Hallal is clear and Haram is clear, but there are

some doubtful area in between, and Muslims should avoid these doubtful things. He adds, "Every king has a sanctuary, and God's sanctuary is the things he had declared unlawful" (Al-Bukhari). Islamic ethics also provide some guidelines for consumers. Consumers should purchase in moderation, without being stingy or extravagant. They are those who, when they spend, are neither extravagant nor miserly, but follow a middle way between them (Al-Furqan, 25: 67).

Corporate Social responsibility (*Takaful*): An Islamic perspective

Compared to many western ethical theories, the Islamic perspective of corporate social responsibility (CSR) posits a holistic approach. Ahmed (2003b) argues that the moral and ethical principles derived from divine revelations are more enduring, eternal and absolute. Thus, the concept of CSR in Islam follows *Shariaa*, manifests itself in *Taqwa*, *'Adl*, *Birr*, and *Khilafa* and aims at creating and consolidating equality, justice and human dignity. Thus, Muslim public relations practitioners are supposed to be guided by the Islamic values of honesty, truthfulness, fairness, kindness, tolerance and uprightness, instead of deceit, envy, backbiting and cheating (Farook et al., 2011).

According to Kirat (2016), corporate social responsibility is a moral and religious initiative based on the belief that a company should avoid 'to do bad' and be 'good' regardless of the financial implications. The main point here is not an advertising gimmick, but a true charitable contribution to alleviate human sufferings. Thus, invoking the *Shariaa* and *Taqwa* in business communication imply that the business is not merely driven by profit maximization, but rather by the pursuit of the ultimate happiness in this life and the Hereafter. Consequently, business people acknowledge their moral responsibility for the wellbeing of other human-beings such as consumers, employees, shareholders and local communities (Dusuki, 2008). That means using altruism, rather than cheap advertising, to articulate individual self-interest and societal interests (Naqvi, 2003). Eventually, the drive to serve individual self-interest is retooled to serve the social justice for the Islamic *Ummah* and the society at large.
Faith, *Taqwa*, which is an overarching concept, also refers to fear of Allah, and impels pious public relations practitioners to use socially-responsible programs to serve the interests of the Islamic *Umma*. Qur'an states, "O mankind! We have created you from a male and a female, and made you into nations and tribes, that you may know one another. Verily, the most honorable of you with Allah is that (believer) who has *Taqwa*. Verily, Allah is All-Knowing, All Aware." (Al-Hujuraat, 13). Prophet Mohammad (pbuh) emphasized the importance of *Taqwa* by saying, "The most common thing which leads people to Paradise is *Taqwa* of Allah and good conduct, and the most common thing which leads people to the Hell Fire is the mouth and the private parts." (Tirmidhi). Indeed, most of the principles of Islam ethics particularly *'Adl*, *Khilafa*, and *Birr*, constitute excellent vehicles for an ideal practice of corporate social responsibility. Dusuki (2008) asserts: "…The firm must always operate in a good and socially responsible manner regardless of the financial consequences. By so doing, the firm will be blessed by God and will achieve ultimate happiness in this world as well as in the Hereafter." (p.20). This notion is in tandem with Sherry Baker's *enlightened self-interest model*, that stipulates "Business do well by doing good."(Seitel, 2014, p. 128).

Islamic ethics and public relations education

Studying and applying Islamic ethics in public relations can build on the Islamic advertising and marketing literature (Arham, 2010; Feiz *et al.* , 2013; Haque *et al.* , 2010; Rice and Al-Mossawi, 2002). Islamic public relations is important because acknowledging cultural and religious sensitivity is essential for effective communication in Islamic societies.

Pursuant to *Adl*, not only public relations, but all marketing activities should be in the spirit of Islam and governed by Islamic ethics (Arham, 2010). This suggests that in addition to public relations research, tactics, strategy, message design, all aspects of campaign process and practice should adhere to Islamic values. This fits nicely into the overarching concept of unity (*Tawheed*) which is a fundamental linchpin of the Islamic ethical framework.

Some scholars caution that neglecting Islamic ethics could jeopardize brands, because communication and advertising that ignore "the sensitivities of Islamic values and culture, may result in lost sales and perhaps company image" (De Run *et al.* , 2010, p. 29). By extension, public relations messages could also be negatively perceived if they neglect the peculiarities of the local culture, core values and ethics in Islamic societies.

Scholars argue that advertising needs to take into account the socio-cultural and religious sensitivities of the consumers in Islamic states (Haque *et al.* , 2010). They posit advertising should be consistent with religious understanding and advertising appeals need to ensure they observe religious knowledge. They do suggest including religious terminology in advertising as a means to provide consumers with the affirmation of the Islamic integrity of the brand (Haque *et al.* , 2010). Islamic values is an important one and relates to *Iman*. Consideration of *Iman* is hence an important consideration for public relations practitioners in Islamic States.

If communicators in general, and advertisers in particular, are advised not to mislead vulnerable groups including the poor, less educated, and elderly (Luqmani *et al.* , 1989), public relations practitioners are advised to respect and care about all vulnerable groups in their community. Guided by the Islamic principles of *'adl*, *ihsan*, and *Khilafah*, Muslim public relations professionals should ensure that symmetric communication with vulnerable groups lead to mutual understanding and serve the interests of these groups as well as the interest of the dominant coalition.

A further consideration for public relations practitioners is how to represent various segments of their target audiences. A number of scholars underscore the need for media and advertising messages to respect women (Al-Makaty *et al.*, 1996; Al-Olayan and Karande, 2002; Luqmani *et al.*, 1989) and recognize their inalienable rights and contribution to society (Rice and Al-Mossawi, 2002). A similar advice should be given by Islamic ethics educators to public relations students and practitioners. Some studies highlight the merit of ensuring women are modestly dressed with long dresses that cover their body and head (Lewis, 2016; Al-Olayan and Karande, 2002). Islamic ethics call for treating women with kindness, and

consequently, advises against objectification and commodification of women in media messages Thus, public relations messages pertaining to women should be humane and not demeaning. Indeed, abiding by the Islamic ethical principles of *'Adl* and *Ihsan*, leads to sending messages that contain no objectification or commodification of women.

Scholarly research suggest that for media and advertising messages to be effective in some Islamic countries, the messages need to be fair, truthful, and avoid deception (Arham, 2010; Haque *et al.* , 2010; Rice and Al-Mossawi, 2002). Public relations professionals also need to understand this fact. They will do the right thing if they abide by the Islamic ethical principle of *'Adl*. Marketing and communication messages and promotions that exaggerate product or service benefits and leave consumers feeling deceived should be avoided (Luqmani et al., 1989; Haque et al., 2010; Arham, 2010). Islamic ethics do not condone flagrant lies, cover-ups, and spinning, and consider these acts unacceptable.

The style of communicating public relations messages in Islamic societies should also adhere to Islamic ethics. Communication should be considerate, polite, value diversity and emphasize justice (Rice and Al-Mossawi, 2002). Controversial issues pertaining to violence, alcohol, gambling, nudity, and obscene pop culture should be avoided (Michell and Al-Mossawi, 1995; Wilson and Hollensen, 2010). Melewar et al. (2000) suggest that images of dogs and statues should be avoided. On the other hand Luqmani et al., (1989) encourage the use of poetic symbolism such as Arabic proverbs and pictures of horses, camels, and falcons. By following the ethical value of unity (*Tawheed*), public relations practitioners should use a communication style that satisfy the needs of their stakeholders.

Localizing rather than standardizing public relations education

Standardization of public relations education may not be helpful in the global marketplace. In a similar context, some studies have argued that localizing advertising messages is more effective that standardization (Kanso & Neslon, 2002). Religion, customs, and value systems are important factor that influence the practice of public relations in various socio-economic conditions. In addition to the variations in socio-economic contexts, public relations educators and practitioners need to consider the specific nature of the communication style, tactics, and campaign strategy from an Islamic ethics perspective. Public relations professionals should use effective messages that resonate with their target audience. Even, within Islamic countries, messages pertaining global Islamic brands such as clothing, travel and tourism, halal supply chains, and Islamic banking and Islamic finance may require some modification and adaptation to suit the cultural and societal needs of a specific local Islamic community.

Conclusion

Many textbooks in Islamic countries educate students about Judeo-Christian ethics. Nonetheless, these textbooks do not mention any thing about the Islamic ethics. Excellence in public relations require adhering to rigorous ethical standards. For businesses to succeed they need to promote their ethical standards by hiring individual who value justice, honesty and truthfulness. They should also guard against insider trading and fraud, and corruption. Most of the recent business failure resulted from swindling of money and corruption.

This paper highlights the need for public relations educators to incorporate Islamic ethics in their curricula. Although, Islamic ethics involve an array of teachings pertaining to human interactions in various socio-economic settings, the paper include some verses from the Qur'an, as well as Hadiths and actions of Prophet Mohammad (pbuh). The major components of Islamic ethics include unity *Tawheed* (unity), *Iman* (faith), *Khilafah* (trusteeship), *'Adl* (justice), and *Ihsan* (benevolence), and *Hur-riyya* (free will). Public relations students in Islamic countries should learn these Islamic ethical principles guidelines by heart. If applicable, these ethical guidelines will lead to honest and effective communication within and outside organizations.

The current paper builds on our knowledge of the current advertising standardization debate. It suggest that public relations education should not be standardized considering the divergent socio-economic contexts. The paper calls for including Islamic ethics in public relations education. Lack of empirical study is one of the limitations of this paper. Moreover, although many of the English public relations textbooks used in the UAE do not contain basic education on Islamic ethics, some Muslim countries have a reasonable component of Islamic ethics in their curricula. Future studies could examine public relations curricula in all Islamic countries and explore the implications of the presence or lack of Islamic ethics in their public relations textbooks.

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Ethnomathematics Concepts in Yakurr Culture: Applicability of Ethnomathematics Concepts in Conjunction with Conventional Methods of Teaching Geometry

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Abstract

This study sought to explore ethnomathematics concepts that exist in the culture of the Yakurr people of Cross River State of Nigeria. It also aimed at determining the applicability of ethnomathematics concepts in conjunction with conventional methods in teaching geometry in junior secondary one (JS1). One research question and one null hypothesis were used to guide the study. The study employed survey and specifically, pretest, posttest, and non-equivalent control group (quasi-experimental) designs. The samples used for the study comprised 120 unschooled Lokaa speaking adults; and 304 junior secondary school one (JS1) students. Two instruments – Ethnomathematics Concepts Questionnaire (ECQ) and Geometry Achievement Test (GAT) were used for data collection. Two sets of lesson plans were prepared, one for the treatment group and the other for the control group. The treatment and control groups were taught JSS One geometry using ethnomathematics teaching approach and conventional methods, respectively. Research question was answered using qualitative data, while the null hypothesis was tested using Analysis of Covariance (ANCOVA), at .05 significant level. The results established that ethnomathematics concepts exist in the culture of Yakurr people and cultural artifacts have geometric concepts embedded in them as contained in the Junior Secondary School Mathematics Curriculum. The results also showed that ethnomathematics teaching approach is significantly better than the conventional methods in improving students' learning and achievement in geometry. Based on these findings, it was recommended that ethnomathematics concepts should be incorporated into the Junior Secondary School Mathematics Curriculum, and ethnomathematics teaching approach should be adopted in teaching geometry in the Nigerian education system, amongst others.

Keywords: Ethnomathematics, conventional, method, geometry, artifacts, teaching, applicability.

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Introduction

Mathematics as a human activity is very relevant to everyday activities of man and manifests in all cultures the world over. This is as it provides a powerful, concise and unambiguous means of communication among people of either the same culture or different cultures. This is the reason Enukoha (1995) indicated that, every society no matter the level of its development, develops some type of mathematics that helps its people to tackle their daily societal problems. This further explains why adults and even school age children without formal education possess some basic knowledge of mathematics and mathematical competences.

In Nigeria, and indeed, Africa in general, mathematics which simply concerns calculation, measurement and shape is unwritten. Thus, it is culturally determined and transmitted orally from generation to generation (Zaslavsky, 1973). This mathematics which is culturally determined is reflected (Bishop, 1988) in the following significant activities that are universal in practice: counting, measuring, locating, designing and playing (example, games). The mathematical activities that exist in Nigeria and Africa are similar to those in other countries as mathematical ideas are universal and are embedded in the cultures of the peoples (Zaslavsky, 1973).

It is this mathematics, practised among identifiable cultural groups that D'Ambrosio (1999) called Ethnomathematics. Other mathematics educators have perceived and defined Ethnomathematics differently, though, without deviating from the meaning of the concept. For example, "A discipline interested in the study of mathematics and mathematics education in the cultural milieu of the learner" (Enukoha, 1995:39); it is the mathematical knowledge that is indigenous to a particular culture (Orey, 2003).
The existence of Ethnomathematics or cultural mathematics in every society has been established by the following studies in Nigeria. Oladimeji (1977) – among the Yorubas; Enukoha (1979) – among the Igbos, Enukoha (1981) – among the Efiks and Ibibios; Adaaku (1982) – among the Tivs, Akin and Fapenle (1985) – among the Awori people of Ogun State; Musa (1986) – among the Hausas; and Okpobiri (2005) – among the Ikwerre people of Rivers State.

These mathematical practices/activities of different cultural groups manifest themselves in arts and artifacts like clay bed, clay pots, fish traps, baskets, decorations, mats, native houses (round and rectangular), native caps, gongs, local drums, calabash plates, amongst others. Geometric concepts such as straight line, angle, parallel and perpendicular lines, lines of symmetry, square, rectangle, circle, cuboid, cube, cone, and cylinder are embedded in these artifacts. There are local terms within the tribes of Nigeria for these geometric concepts, but they are used in the topological rather than in the Euclidean sense. For example, the Igbo tribe of Nigeria have gburugburu for circle (Enukoha, 1979), the Efiks and Ibibios have terms like ekara for circle, ekari-ekari for round and itung for angles (Enukoha, 1981), the Tivs have ahwa for circle (Adaaku, 1982).

Bockarie (1993) indicated that mathematics teachers in Africa must explore and know the mathematics embedded in the learner's culture. In support, Gilmer (2005) argued that a mathematics curriculum aligned to the culture of the learner would respond to the classroom instructional needs of learners who ordinarily could have thought mathematics is too difficult to learn.

Geometry has for many centuries been regarded as one of the best ways of training the mind in logical thinking and imagination. Spatial ability, which is the learner's ability to judge the positions, sizes, and shapes of objects in space, can be developed through the knowledge of geometry. Kurina (2010) indicated that every child is in contact with quantitative impulses from the beginnings of life. The child lives and moves in space with important geometrical qualities like the basic properties of metrics (symmetry of metrics). Also, the space of the child's world is divided into some parts (the cot, the little room, the house, compound and the garden) and it is feasible to move from one of these parts to another. This means that before formal schooling, the child had acquired relevant geometrical experiences which if recognised and explored by the teacher could enhance instructions in geometry.

Since no study has investigated into the basic ethnomathematical concepts of the unschooled adults of the Yakurr people of Cross River State of Nigeria, the first part of this research project provided the relevant data that formed the basis for the main purpose of the study.

In spite of the existence of Ethnomathematics in different cultural groups in Nigeria, schools still seem to use Mathematics that is anchored on Western tradition or Western theorist thought (Bush, 2003). This situation is disturbing as classroom mathematics does not appear to be sufficiently aligned to the cultural milieu of the learner. This is in spite of the stipulation in the National Policy on Education (FRN, 2013), that as a means of preserving the people's culture, the language of the immediate community of the child should be emphasised.

This could be the reason (D'Ambrosio, 1990) argued that widespread apparent failure in school mathematics is actually a cultural problem being consciously played out through the filtering mechanism of Western Mathematics Education. This is the reason much of the contents of the current junior secondary school mathematics curriculum in Nigeria seem to be supported by a tradition foreign to the learner in Nigeria.

If we therefore think about ethnomathematics as our own mathematics practices, then the pedagogical approach which reorients teaching and learning towards ethnomathematics is advocated (Achor, Imoko and Uloko, 2009; Laridon, Mosimege and Mogari, 2005; and Odili and Okpobiri, 2011). The quality of teaching and learning mathematics in secondary schools in Nigeria has continued to be a source of concern to researchers in mathematics education. The continued low achievement in mathematics among Nigerian students is a clear manifestation of the perceived problem. Geometry remains one of the most poorly taught, widely disliked and poorly understood branches of mathematics, in mathematics education.

The methods of teaching Geometry (Kurumeh, 2004; Telima, 2011 and Undiaku, 2013) have been implicated as one of the undisputed factors responsible for this problem. Experts in education argue that mathematics phobia is borne out of the age-long Eurocentric bias of the mathematics curriculum and teaching methods which leaves the learner thinking in abstractions that are alien to his environment or real world. Therefore, a teaching approach that focuses on a cultural perspective as against the traditional/conventional didactic method of teaching that promotes rote learning of

geometry is considered in this study as capable to address this gap in geometry teaching and learning.

Again, the state of teaching and learning geometry in schools does not appear to improve as conventional methods have failed to use the geometrical experiences of the learner acquired at home in teaching geometry. Zaslavsky (1973) indicated that mathematics is a cultural product. It means that mathematics educators might be transmitting the values of particular cultures while teaching students from different cultural backgrounds in the same classrooms. This has caused students outside the mainstream culture to see mathematics as foreign to them and hence their difficulty in learning the subject in school. Thus, the problem of the study.

Even though mathematics educators with interest in ethnomathematics research have argued in favour of the benefits of using a cultural perspective in geometry instructions, not much empirical evidence has been provided to favour the adoption of the approach. As a result, researchers in mathematics pedagogy are still faced with the task of providing statistical evidence for the adoption of ethnomathematics teaching approach in our junior secondary schools. This research project is a response to this challenge and is designed to explore (1) basic ethnomathematics concepts in Yakurr culture; and (2) examine empirically the effects of an Ethnomathematics teaching approach on junior secondary school students' achievement in geometry.

Research Method

One research question and one hypothesis formulated and tested at probability of = 0.05 level of significance guided the study. Survey research and quasi-experimental designs were adopted for the study. Two instruments were developed by the investigators for collecting data from research subjects.

The study was carried out in Yakurr Local Government Area of Cross River State of Nigeria. Two different populations were used for the study. The first population comprised all the Lokaa speaking adults of the area of study. The exact population figure could not be obtained because there were no records available to the investigators. The second population consisted of 1,260 Junior Secondary One (JS1) students in sixteen public secondary schools in the 2014/2015 academic session.

The samples for the study comprised 120 unschooled Lokaa speaking adults and 304 JS1 students from 12 secondary schools in 15 intact classes. Using hat-and-draw method, 8 villages were randomly selected from the list of 18 serially numbered villages that make up the area of study. Purposive sampling procedure was adopted to pick 15 unschooled adults from each of the 8 villages giving 120 subjects used for the study. The second sample of 304 JS1 students consisting of 155 students for the experimental (treatment) group and 149 students for the control group in 18 intact classes of 12 schools was used. Simple random sampling procedure was employed to randomly select 12 schools from 16 public secondary schools.

Through the random assignment of the experimental (treatment) and control groups with 7 intact classes; and 6 control groups with 8 intact classes were obtained using balloting. The experimental and control groups were exposed to ethnomathematics teaching approach and conventional teaching method, respectively.

The Ethnomathematics Concept Questionnaire (ECQ) contained 18 oral interview items on the existing ethnomathematics ideas/concepts and covered various aspects of school mathematics with emphasis on school geometry in Yakurr culture. The questionnaire was administered on the 120 unschooled Lokaa speaking adults through oral interview in "pidgin" English. "Pidgin" English is accepted in Nigeria, and spoken fluently by the uneducated/ unschooled adults in the area of study. Geometry Achievement Test (GAT) contained 20 multiple choice items with 4 options each which measured subjects' achievement in school geometry. The 20 items in GAT adequately covered all the basic ethnomathematics ideas/concepts identified in Yakurr culture. A test blue-print based on the school scheme of work for JS1 class was developed to guide the construction of test items. 20 test items which were constructed, validated, with reliability established were administered on the 304 JS1 students.

The sets of instruments were validated by two experts in Tests and Measurement and three experts in Mathematics Education. ECQ and GAT were trial-tested. The suggestions of the experts and the results of trial testing were used to produce the final versions of ECQ and GAT. Furthermore, item analysis was done on the items in GAT. The calculated difficulty and discriminating indices of each item were found to be 0.53 to 0.88 and 0.12 to 0.89, respectively. Test items with difficulty and discriminating indices equal to and above 0.20 were accepted or revised (Aiken, 1988).

The reliability of the instrument (ECQ) was established as the two sets of instruments were found to be stable after administering ECQ twice at a time lapse of two weeks after trial testing. Kuder-Richardson 20, Test-retest and Pearson Product Moment Correlation Coefficient(r) techniques were used to determine the reliability of GAT.The analysis yielded internal consistency reliability coefficient of 0.69 (Kuder-Richardson 20); test of stability (Test-retest); and reliability index of 0.72(r). Copies of the two instruments were administered to research subjects in their various locations with the help of 8 and 15 research assistants respectively.

Two sets of lesson plans for teaching the units of geometry concepts outlined for the study were prepared by the investigators. They were prepared based on the test blue-print. The two sets of lesson plans were 12 and used for classroom instructional delivery for one month. Three experienced Mathematics teachers who have been teaching Junior Secondary Mathematics for at least five years were used to establish the suitability and conformity of the prepared lesson plans with the prescribed lesson plan format in current use in the school system in the State. The lesson plan for the treatment group used ethnomathematics teaching approach while the other lesson plan for the control group used the conventional method only in teaching geometry. The procedure was the same in both cases, except that the control group was not exposed to cultural mathematical artifacts. Fifteen (15) classroom teachers from 15 intact JS1 classes were used as research assistants. They were trained by the investigators and they taught the lessons for one month while the investigators monitored and supervised their teaching. Before the start of teaching, GAT was administered as pre-test to both the treatment and control groups. Post-test GAT was administered to the research subjects in the two groups by the research assistants at the end of one month of twelve periods of teaching during school lessons as appeared on the time-table in each school used for the study. The following extraneous variables were controlled:

Subject variable, teacher variable, pre-test and post-test wiseness and Hawthorne effect, which could introduce bias into the research.

Data collected were analysed using qualitative data to answer the research question; while Analysis of Covariance (ANCOVA) statistic was used to test the null hypothesis at probability = 0.05 level of significance at relevant degree of freedom.

Results

Research Questions

What are the ethnomathematics concepts that exist in Yakurr culture?
It was revealed that the Mathematics of the people of Yakurr can be described under the following topics: (i) Numeration/Counting System; (ii) basic arithmetic operations; (iii) fractions; (iv) zero; (v) telling time; (vi) geometric concepts; (vii) Mathematical games and probability; and (viii) rhymes.

Numeration/Counting System

Counting is done at four different base levels, namely, (1) sub-base 5, (2) sub-base 10, (3) sub-base 15 and (4) main base 20. The special number words for these base numbers are: 5=yataan, 10=joo, 15=jiib, 20=leyau. Other number words worthy to mention because intermediary numbers are formed from them include: 40=aapoo, 60=aatele, 80=aanaa, 100=aataan, 200=aajoo, 400=ledu, 800=aduapoo. Counting using the number words goes thus: 1=wana, 2=yapoo, 3=yatele, 4=yaana, 5=yataan, 6=yataanawana, 7=yataanyapoo, 8=yataanyatele, 9=yataanyaana, 10=joo, 11=jooawana, 12=jooyapoo, … 15=jiib, 16=jiibawana, 17=jiibyapoo, … 20=leyau, 21=leyauopaliwana, 22=leyauopaliyapoo, … 40=aapoo, 41=aapooopaliawana, … 800=aduapoo, 1000=addu-apoo-opoliaajoo (Iyam, 2011). It can be seen from this counting system that the number words are said to multisyllabic and literally constructed since symbols/numerals are not invented for numbers. The existence of the special number words mentioned above has made possible the formation of number words for numerals up to 1000 and beyond. However, situations are very rare in the daily transactions where the people of Yakurr are required to count beyond 1000.

Basic Arithmetic Operations

The terms in Yakurr for +, –, x, ÷, are fooneneke, delikeka, non-oso and ton-mbenben, respectively. It is clear that the method of addition in this culture brings out the idea of place value and the writing of whole numbers in expanded form. For instance,

11 = 10 + 1 ; 113 = (20) 5 + 10 + 3

Tens Units Twenties Tens Units

These arithmetic operations could be carried out mentally, using fingers and toes; and objects to aid simple computations.

Fractions and Zero

The idea of fraction exists in Yakurr culture. Number word for a fraction does exist, but they do not exist for most fractions as in Hindu/Arabic. For example, proper fractions like $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{2}{3}$, to mention a few, cannot be distinguished from one another in Yakurr. Fraction is called yipah while yopah is used to refer to many fractions. However, the fraction $\frac{1}{2}$is commonly called yipah and can easily be determined or estimated, whereas all other fractions are each estimated as it relates yipah$\left(\frac{1}{2}\right)$.

The number word for zero(0) is kekongha. The concept of zero is vague among the people, and thus, not in common use. However, if a problem like 10 cups of garri minus 10 cups of garri was asked, a Yakurr person would correctly respond kekongha, meaning nothing is left. Similarly, other arithmetic operations are used involving objects, not pure numbers; they have various ways of keeping records of events; units of measurement which are not standardized are used to measure lengths and distances.

Geometric Terms

There is a dearth of geometric terms in Lokaa language. Lokaa is the language spoken by the Yakurr people. Where such terms exist, they are used descriptively; or technically put, they are used in the topological sense (example, enclosure, proximity, separation) as the Euclidean notions are lacking in the Yakurr culture. Some of these geometric terms are shown below:

English	**Lokaa**
Rectangle	keku
Square	yopah-yonahboyobonghoma
Triangle	yopah-yoteleboyobonghoma
Circle	lensonghoo
Cone	yopah-yopoh boyo-yakekekanha

Again, some geometric forms derived from the Lokaa cultural artifacts (example, thatched houses, long wooden gong, native drum, native box, traditional chief cap, leg bead, clay pot, calabash plates) included: rectangles, cylinders, circles, symmetries, patterns and parallelism. The artistry displayed in these artifacts is a rare attribute. These culturalartifacts could have been formed by observing the natural environments, thereby consciously or unconsciously producing these geometric forms found in the Junior School geometry.

Hypothesis

There is no significant difference in the mean achievement scores of students taught geometry using the ethnomathematics teaching approach and those taught geometry using the conventional method.

The hypothesis was tested using Analysis of Covariance (ANCOVA) at probability = 0.05 level of significance. Summary of results is presented in Table 1.

Table 1: Analysis of Covariance for Students Geometry Achievement Scores by Methods of Teaching

Source of variation	Sum of squares	Df	Mean square	F	Fcv
Corrected Model	32662.591	4	8165.648	150.967	
Intercept	25042.254	1	25042.254	462.981	
P	19021.770	1	19021.770	351.675	
Method	10083.287	1	10083.287	186.420	
3.88					
Residual	16172.642	299	54.089		
Total	948633.000	304			
Corrected Total	48835.234	303			

From the hypothesis, the Analysis of Covariance (ANCOVA) table (Table 1) showed that the calculated F-value of 186.420 is higher than the critical value of 3.88 at probability = 0.05 level of significance. Hence, we rejected the null hypothesis and retained the alternative hypothesis. The investigators concluded that there was a significant difference in the mean achievement scores of students taught geometry using the ethnomathematics teaching approach and those taught geometry using the conventional methods.

Discussion

The findings of this research revealed that there exist basic ethnomathematics concepts in Yakurr culture. There counting system uses bases 5, 10, 15 and 20 and they can count up to 1000 and beyond. Basic arithmetic operations, concept of zero, fractions, records keeping of events, cultural artifacts with geometric patterns and shapes and geometric terms are embedded in the culture. However, as noted, the local geometric terms are used in the topological, rather than in the Euclidean sense. This finding agreed with those of Zaslavsky (1973), Oladimeji (1977), Enukoha(1979 and 1981), Adaaku (1982), Akin and Fapenle (1985), Musa (1986) and Okpobiri (2005) which established the existence of ethnomathematics concepts in various cultural groups in Nigeria. As they indicated, their existence provide the basis for Mathematics teachers in Nigeria and elsewhere to adopt teaching techniques from a cultural perspective for mathematics instructions in schools.

The study also showed a significant ($p<0.05$) difference between the mean achievement scores of students taught geometry using ethnomathematics teaching approach and those taught geometry using the conventional methods. This higher achievement could be attributed to the active involvement (Blanco, 2009) of students in the cultural, student-centred and activity-based ethnomathematics approach. Similar findings had been established by Kurumeh (2004), Achor, Imoko and Uloko (2009) and Odili and Okpobiri (2011). They concluded that this kind of learning environment is practical and makes feasible the applicability of geometry in real life situation. This learning situation also is in agreement with the constructivist approach that supports learning in cultural and social contexts which is anchored on learners' perceptions of experiences.

Conclusion

It was established in this study that ethnomathematics concepts and materials are richly embedded in Yakurr culture. These ethnomathematics materials such as identified cultural mathematical artifacts have geometry concepts like rectangles, squares, cuboids, cubes, triangles, circles, cylinders, cones, amongst others. This forms the basis for their relevance in fostering positive learning in students, and by extension, effective teaching of mathematics in classrooms.

It is for this reason we strongly recommend their use in geometry instructions to enhance students learning, effective teaching, and hence improve achievement in geometry examinations. Thus, culturally-based teaching approach in Mathematics has been shown to be a veritable option for adoption in classroom mathematics instructions.

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Footnote:
Lokaa people with a population of 196,450 are located in the Central Senatorial District of Cross River State of Nigeria. At present, they constitute one Local Government Area in Cross River State. The geographical area is referred to as "Yakurr", while the language as "Lokaa".

APPENDICES

Appendix 1: Table of Specification on Geometry for Junior Secondary 1

Content	Knowledge (30%)	Comprehension (50%)	Application (20%)	Total Items
Properties of solid shapes-cubes, cuboids, cone, prisms, cylinder and spheres (35%)	2	4	1	7
Properties of planes, shapes, rectangles, squares, triangles and circles (30%)	2	3	1	6
Angles (15%)	1	1	1	3
Parallel and perpendicular lines (20%)	1	2	1	4
Total (Items)	**6**	**10**	**4**	**20**

Appendix 2: Lesson Notes For Treatment Group:
Using Ethnomathematics Teacing Approach In Geometry

Topic: Properties of 3 – dimensional Shapes
Class: JSS 1
Time: 40 minutes

Instructional Objectives

At the end of the lesson, students should be able to:
(i) Construct selected cultural artifacts in their locality.
(ii) Draw cultural artifacts, constructed.
(iii) Match cultural artifacts to related solid shapes.

Instructional Materials

Wood, raffia, native rapes, clay, and selected cultural artifacts.
Step I: Entry Behaviour: Students have seen clay bed, wooden gong, local drum, and traditional container made of cane rope, among other cultural artifacts.
Mode: Group Work

Teacher's Activities

A local artifacts constructor who would teach students how to construct local artifacts would be introduced to the students by the teacher.

Student's Activities

Students welcome the local artifacts constructor or maker.
Step II: Content Development
Mode: Group Work

(a) Construction / making of cultural artifacts.
(b) Drawing of Cultural Artifacts.**Teacher's Activities**

Construction of cultural artifacts. Ask students to observe attentively the procedure for making of native box (Kiku), long gong (Lokumo), native drum (Ekoma), native cap (Koboljongho), (Liman), thatched house (Etoh). Chart 1

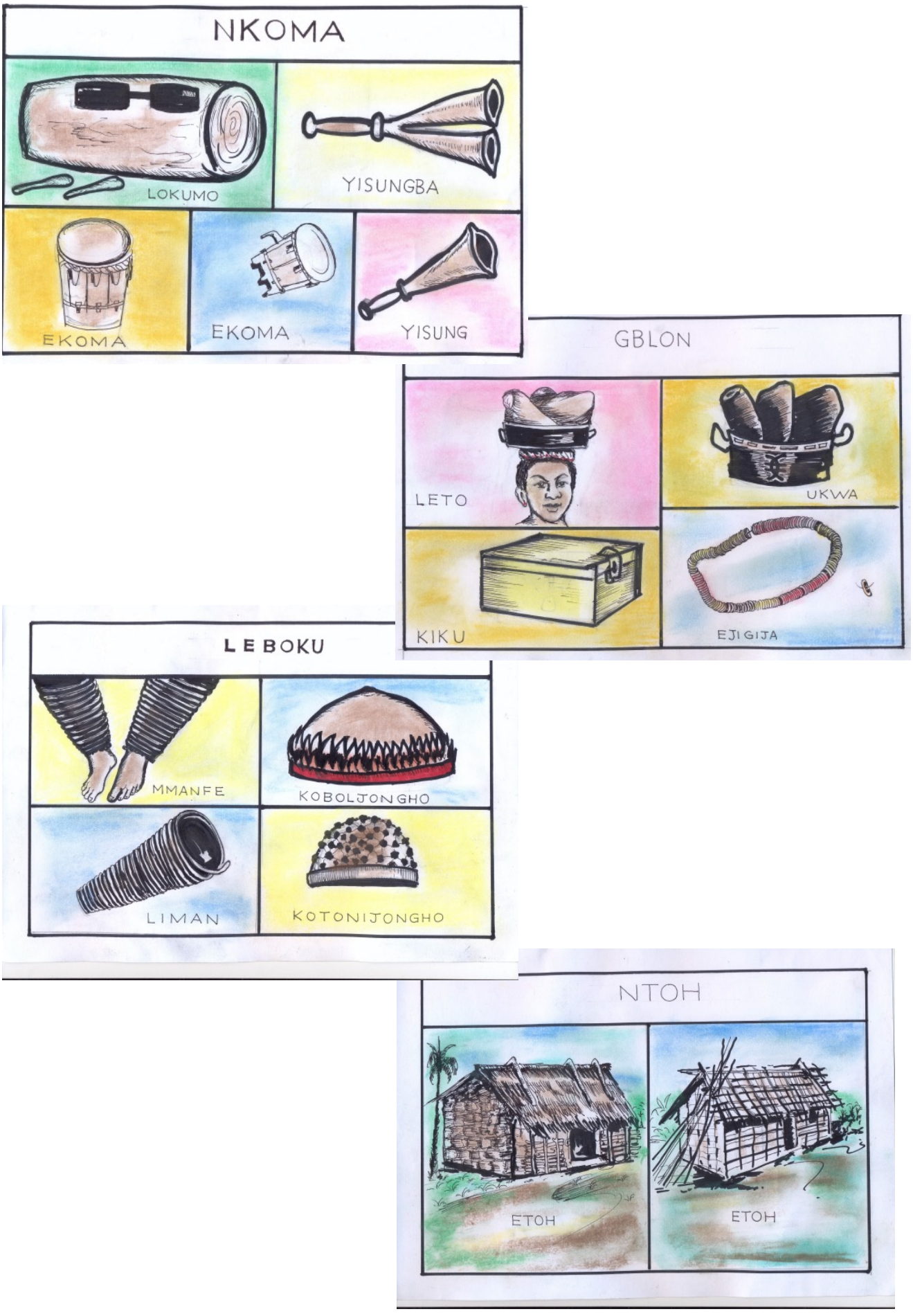


Chart 1: Cultural artifacts in Yakurr culture

Student's Activities

(i) Students observe the constructor/maker as he makes the cultural artifacts.
(ii) Students follow the procedure observed and construct the cultural artifacts.

Teacher's Activities

(i) Teacher guides the students to relate each cultural artifact constructed to the 3 – dimensional shapes they have seen in their environment.

Student's Activities

(i) Students observe attentively how each cultural artifact is made.
(ii) They follow the same procedure and make the same cultural artifacts.
(iii) Students detach the components that make up the objects constructed and put them together again.

Step III Discussions.
Mode: Group Work

Teacher's Activities

(i) Teacher gives the groups three minutes to discuss the procedures they have learnt in making the cultural artifacts.
(ii) Ask each group leader to present the procedures, while the local constructor helps, where necessary.

Student's Activities

(i) Students discuss the procedures for making these selected cultural artifacts.
(ii) Group leaders present the procedures.

Step IV Summary
Mode: Whole class

Teacher's Activities

(i) The local constructor goes over the procedure again.

Student's Activities

Students observe with apt attention as the constructor explains the procedure and then write down summary notes.

Step V: Evaluation
Mode: Individual Work

Teacher's Activities

Ask students the following questions:

1. Asks students to match the cultural artifacts constructed with the solid shapes in their locality.
2. Ask students to write the names (vernacular) of the cultural artifacts.
3. Students draw the artifacts with solid shapes.

Student's Activities

Students provide answers to questions

Assignment

Each student to construct one cultural artifact with solid shape and bring to the next class.

Topic: Properties of 3- Dimensional Shapes

Class: JSS 1

Time: 40 minutes

Instructional Objectives

At the end of the lesson, students should be able to:

(1) Identify some common 3-dimensional shapes, namely, cuboids, cubes, cylinder, cone, and sphere.

(2) Identify the faces, surfaces, vertices/corners, and edges of solid shapes.

(3) Draw their shapes using cultural artifacts

Instructional Materials

Cultural artifacts as may be mentioned by students in class.

Step 1 Entry behaviour: knowledge of cultural artifacts like clay bed, local basket, long gong, native drum, etc.

Mode: Group work (Gender sensitive)

Teacher's Activities

He divides the students into groups. Asks each group to appoint a leader.

Student's Activities

Students cooperate with the teacher to form groups and appoint leaders.

Step 11 Content Development

Mode: Group work

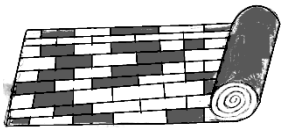
(a) Identification of Common 3-dimensional Shapes

Teacher's Activities

(i) The teacher introduces the lesson by explaining the things seen around, like liquids, gases and solids. All these things occupy space and have shape. A thing which occupies space and which can keep it shape without help is called a solid. Gases and liquids occupy space but must be kept in a container if their shape is to remain the same. So they are not solids.

(ii) Asks students to give examples of solids from their environment.

(iii) through appropriate questioning, the teacher explores students' knowledge of solid shapes using various cultural artifacts like clay bed/sleeping bed, long drum (Lokumo), native drum (Ekoma), leg bead (Liman), round house, gong (Yisung), top of a basic of garri, calabash plates (Kemekpla and Okiki) (Chart 2).



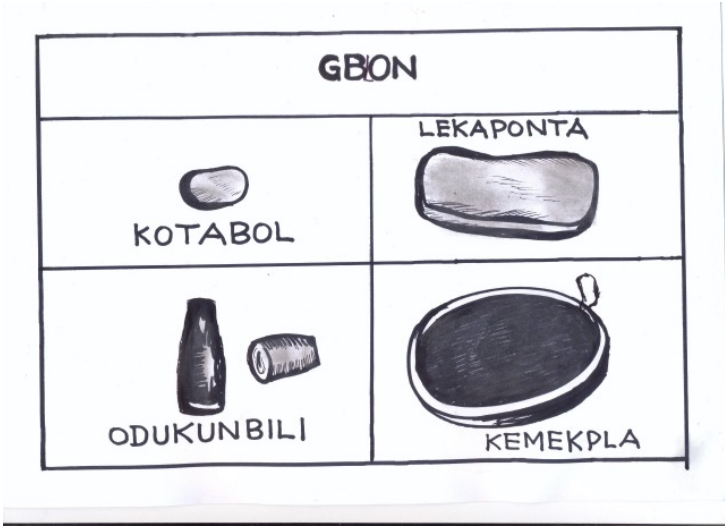


Chart 2: Cultural artifacts in Yakurr culture

(iv) Provides opportunity for students to discuss the names of these cultural materials (artifacts)

(v) Explains that these things that occupy space have their sizes, lengths and shapes (identify each cultural artifact with its related 3- dimensional shape)

(vi) Asks each group to show the outside, inside, width, length and height of solid shapes.

(vii) Explains that every solid shape has three dimensions, namely, length (1), width (w) and height (h).

Student's Activities

(i) Students listen attentively to teacher's explanations.
(ii) They give examples of solids from their environment
(iii) Students mention cultural artifacts that are identifiable with 3-dimensional shapes
(iv) They discuss the names of these cultural artifacts
(v) They observe the sizes, length and shape of solids.
(vi) Students identify the outside, inside, width, length, and height of solid shapes.

(b) Identification of Parts of the Outside of Solid Shapes

Teacher's Activities

(i) Explains that the outside of any solid shape is called the surface. Edges divide the whole surface into faces.
(ii) The teacher shows the students the surfaces, faces, vertices and edges on the various objects as indicated in charts 1 and 2.

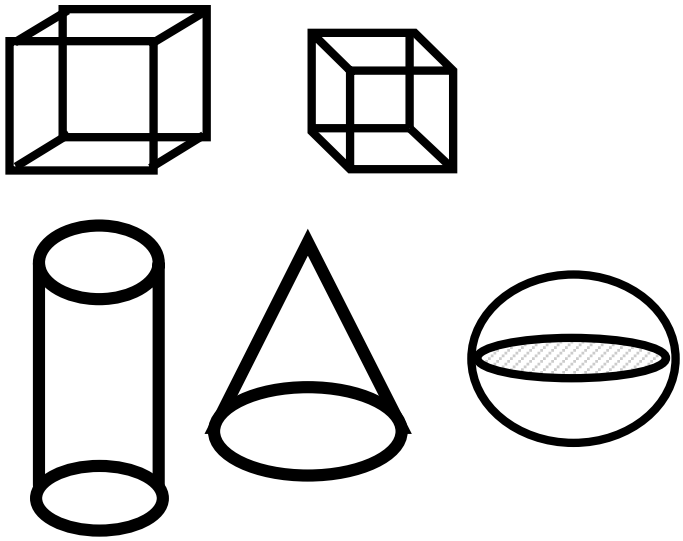


Chart 2: Diagrams of cuboids, cube, cylinder, cone, sphere

(iii) Asks students to discuss in their groups the various parts of solid shapes.

Student's Activities

(i) Students observe and identify the surfaces, faces, vertices and edges of solid shapes

Step III Discussions
Mode Whole class

Teacher's Activities

Teacher leads the class discussions by asking students to

(i) Differentiate between solids and gases/liquids
(ii) Give examples of three dimensional objects from their home.
(iii) Mention cultural artifacts that have shapes like cuboids, cube, cone, cylinder and sphere.
(iv) Identify the surfaces, faces, vertices, edges, height, width and length of solid shapes.
(v) Teacher corrects misconceptions that may arise as regard these shapes using cultural artifacts.

Student's Activities

Students participate actively by explaining the ideas learnt.

Step IV Summary

Mode: Whole class

Teacher's Activities

(i) Teacher summaries the lesson
(ii) Gives summary notes
(iii) Gases, liquids and solids that we see occupy space and have shape
(iv) Solids can keep their shapes without help; but gases and liquids cannot, except they are kept in a container.
(v) Solid shapes have sizes, lengths and shapes.
(vi) A solid shape is called 3 – dimensional because it has 3 dimensions – length (1), width (w) and height (h).
(vii) They have surfaces, faces, vertices and edges.

Student's Activities

Students write Summary notes in their exercise books

Step V: Evaluation (oral)

Mode: Whole class

Teacher's Activities

Mention:

1. The dimensions of a solid shape
2. Why is a solid different from gases/liquids?
3. The outside parts of a solid shape.

Pupil's Activities

Provide responses to questions asked by the teacher.

Assignment.

Draw the different cultural artifacts.

Topic: Properties of 3 – dimensional Shapes

Class: JSS 1

Time: 40 minutes

Instructional Objectives

At the end of the lesson, students should be able to:

(i) Draw some common cultural artifacts and other solid shapes
(ii) List the properties of 3- dimensional shape (solid shapes)

Instructional Materials

Cultural artifacts
Step I: Entry Behaviour: Students have seen and constructed clay bed, wooden gong, local drum, and traditional container made of cane rope.
Mode: Group Work

Teacher's Activities

Using some cultural artifacts, asks students to point out the surfaces, faces, vertices, edges, width, length and height.

Student's Activities

They supply answers to the teacher's questions
Step II: Content Development
Mode: Group Work
(c) Drawing of Cultural Artifacts and Other Solid Shapes

Teacher's Activities

Asks students to draw cultural artifacts in their exercise books.

Student's Activities

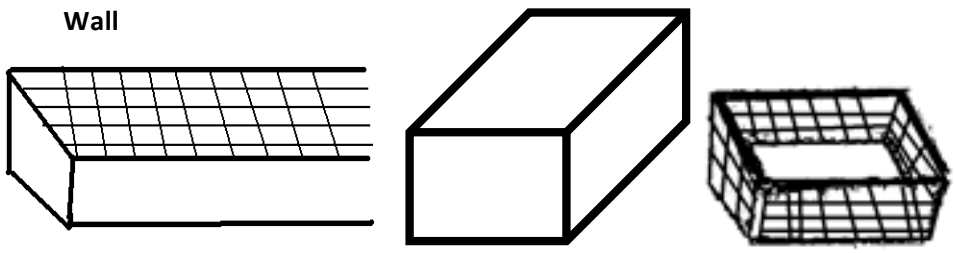
Students draw some cultural artifacts in their exercise books.
(d) Identification of properties of Solid Shapes.

Teacher's Activities

(i) Teacher notes down the relevant concepts students have acquired culturally in relation to these cultural objects (solid shapes)
(ii) He connects to the students initial ideas of these cultural artifacts with the new concept to be introduced in the lesson
(iii) Teacher gradually introduces the properties of each solid shape based on the initial ideas students expressed as surfaces, faces, vertices and edges.

The Cuboids:

Through questioning, students discuss the shape of a native box (Kiku), the traditional container (Ukwa), made of cane rope, and thatched house (Etoh).

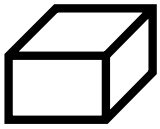


Each student participates in identifying and counting the number of the faces (6) edges (12) and vertices (8) and each flat face is rectangle. The chalk box or match box is used to illustrate the properties To explore their knowledge of a cuboid, each group is ask to write down six objects that have the shape of a cuboid in their home

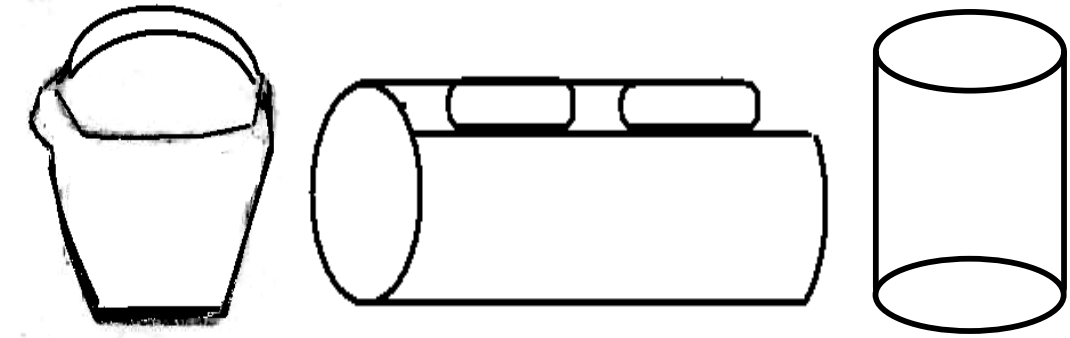
environment. Examples include, chalk box, maths set, match box, carton, etc. This brings out the cultural applications of cuboids.

The cube: teacher illustrates the shape of a cube employing a traditional musical drum (Ekoma). Students are asked to draw these cultural artifacts which have all sides equal. Together with the students, the properties of a cube are identified and counted thus: 6 equal faces, 12 edges, 8 vertices and each flat surface (face) is a square. The teacher then explores students' knowledge of common objects that have the shape of a cube in their home. Examples are maggi, sugar, die, etc.

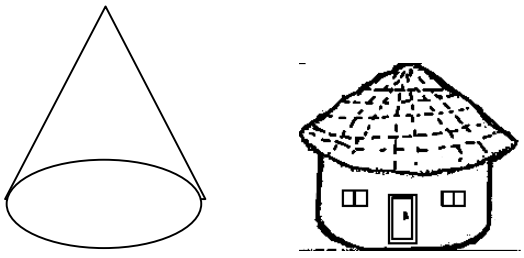
The cylinder:



The teacher uses appropriate questions to explore student's knowledge of objects (cultural artifacts) that have the shape of a cylinder. Students discuss the shape of native drum (Ekoma), long drum (Lokumo), made of wood and a leg bead (Liman). Students are asked to draw these cultural artifacts which are cylindrical in shape. Students participate to determine the properties of a cylinder (closed) 3 surfaces (two circular surfaces and one curved surface); 2 curved edges and no vertices. Students should discuss the uses of these cultural artifacts in their home setting. The teacher further asks group to list the local application of cylinder in their home environment. Examples include, the body of a round house, native drum, basket making with cane rope etc.

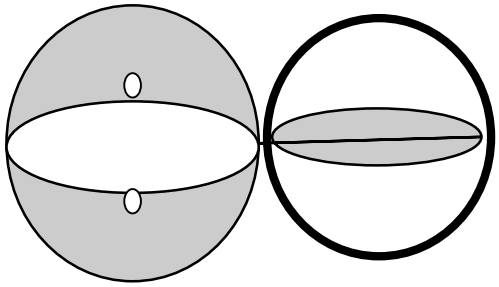


The Cone: The teacher explores the knowledge of students of traditional objects (cultural artifacts) with the shape of a cone. Students list out such objects like the gong (Yisung), top of a basic of garri, etc.



Students are asked to explain the cultural applications of this shape (conical) in making yam heap/mound, building the roof of a round house, top of the basin of garri. Teacher explains the properties of a cone: 2 faces (the circular and the curved surfaces), 1 edge and one vertex.

The Sphere: The teacher explores students' initial ideas of a shape that is spherical. They are asked to explain the shape of cultural artifacts like a pair of traditional eating plates (Kemekpla and Okiki) (calabash) made from gourd.



He determines the properties of a sphere: 1 face (round surface), no edge, and no vertex. Students are asked to explain the cultural applications of this shape (spherical) in making "Okiki" (traditional plates). Examples in the home are: an orange, ball, body of a water pot

Student's Activities
Students participate actively with the teacher to develop the content and to mention cultural artifacts related to each solid shape.

Step III Discussions.
Mode: Group Work
Teacher's Activities
(i) Gives the groups two minutes to discuss properties of solid shapes with regards to cultural artifacts.
(ii) Asks each group leader to present the ideas, listing the properties of each shape.
(iii) Teacher reconciles any misconceptions students may express and links same to the lesson

Student's Activities
(i) Students discuss the properties of solid shapes using cultural artifacts
(ii) Group leaders present the properties of solid shapes
(iii) Take note of any correction given by the teacher.
(iv) They mention the difference between a cuboid and a cube.
Step IV Summary
Mode: Whole class

Teacher's Activities
(i) The teacher summaries the lesson and writes summary notes on the chalk board for students to write in their exercise books.
(ii) Goes round the class to supervise students work.

Student's Activities
Students listen and then write down summary notes.
Step V: Evaluation
Mode: Individual Work

Teacher's Activities
Ask students the following questions:

1. List the properties of a cuboid, cone, cube, sphere, and cylinder.
2. Write down the names of solids shaped like (a) an orange (b) a brick (c) top of basic of garri (d) a die (e) a ball.
3. What is the difference between a cuboid and a cube?

Student's Activities
Students provide answers to questions
Assignment

Indicate the number of (a) faces (b) edges (c) vertices of a cuboid, cube, sphere, cylinder and cone.

Note: Other Lesson plans to cover angles, parallel and perpendicular lines and be presented using this format.

The Influence of Political Economy Context on Policy Reform Primary Education Curricula Reform in Egypt

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The IAFOR International Conference on Education – Dubai 2017
Official Conference Proceedings

Abstract
Understanding the contextualization that entail a certain policy reform is highly essential to explain why some reforms succeed while others fail. Unlike to policy approaches that are scrutinizing how political circumstances, system, different political actors formal and informal influence policies; political economy approach could be providing a wider scope of analysis. Curricula development is in the heart of any educational reform. Successive governmental efforts has been launched more than two decades ago that aimed at reforming basic and primary education in Egypt; where curricula development represented one of the main targeted pillars of the reform. Notwithstanding, it is argumentative to say that it fulfilled the desired attained outcomes. The paper will seek to analyze the political economy context of curricula development of primary education in Egypt.

Keywords: Political Economy, Primary Education reform, Policy Reform, Curricula Development, Egypt

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Introduction

One of the ever-lasting questions in policy studies always is why some policies fail and some are not. Same question applies on why adopting some policy reforms might be successful while others fail. Understanding the context that accompanied the design and implementation of such policies is very helpful to analyze success/ failure of policies. Unlike political sciences that focuses more on explaining the dynamics of coalitions, constituencies, institutions, and interest groups without relating it mostly to policy implications. Political economy approach represents a useful analytical approach that helps in a better understanding of a certain policy reform as it demonstrates the implications of political and economic factors to policy reform.

By end of the cold war world countries scope had been reshuffled towards adopting a different development agenda. The new development agenda sought to focus on handling more crucial issues that would help in bringing a world peace and consider them as world goals; such as eradication of poverty, achieving socioeconomic equity, and providing basic universal education to all children around the globe. Hence, many international organizations and donors directed their interest and money to education development as it had been perceived as the main bridge for achieving other goals. Basic education in particular came to be on the top priorities of development agencies' donation planes. World Bank, the largest donor for education during the 1990s, defined basic education as " a powerful instrument for reducing poverty and inequality, improving health and social well-being, and laying the basis for sustained economic growth…. and essential for building democratic societies as well as competitive economies" (Sayed, 2006)

The emergence of Education for All on 2000, EFA, that demanded world countries to provide at least first five years of primary education as compulsory and free to every child. Egypt is not an exception of that as it topped on the list of recipient countries of developmental assistances that had been directed to education reform during the two decades that followed Egypt's signing the Camp David Accords in 1978. Egypt was just second to Israel as a recipient of USAID, also it topped on the list of European Union development assistance. During 1990s development assistance that Egypt got amounted to 4.6 billion US$, which represented 10 percent of the total world development assistance. (Sayed, 2006)

Curricula reform is just a part of a holistic process of education system. Curriculum generally could be defined as" a central structure that frames what and how s student acquires skill and knowledge" (El Nashar, 2012). Who is determining that content of curriculum or the trending of reform does the process of reforming curriculum is undergirded with technical and professional dimensions only? What are the key influential participants in the reform process? The current paper will try to highlight some of these questions.

Conclusion

The current paper tried to investigate how the changing political atmosphere and consequently changing political actors influenced the processes of curricula reform of primary education In Egypt. I thought that I could include all influential actors, such as the syndicate of teachers, big companies that prepare and publish extra books, I

believed they are highly interrelated to the reform processes; however due to some difficulties related to reaching some of them I couldn't cover.

To sum up, there are some policy recommendations regarding curricula reform; curricula reform as part of any education reform can't be conceived as a mere technical process rather is includes other dimensions that have to be taken into consideration.

Research Statement

The main research statement the current paper will try to examine is; how the turbulent political and economic conditions that Egypt has been passing through since 25th January 2011 affected the trends of reform in primary education? And how the political economy context influenced the curricula reform of primary education pre and post 25th January 2011?

Research Hypothesis

The main hypothesis of this research is that the Egyptian successive governments pre and post 25th January 2011 perceived curricula reform as a keystone in primary education reform. Therefore, Egyptian government endured some extended effort in that regard during Mubarak's reign, and allowed some Non Profitable organizations to work in cooperation with the ministry of Education and Pedagogy on reforming curricula within a limited freedom. The obvious shift that could be alleged is when Muslim Brotherhood got to power late 2011. MB sought feverishly to change the Egyptian primary education curricula; however intended outcomes of the reform didn't target improving the quality of the education process generally, rather than serving their controlling plan over state apparatus. Muslim Brotherhood efforts' deeply targeted neither education quality issues nor giving more attention to issues related to building a new generation that believes in democratic values.

Generally speaking the impact of the curricula development process could be described as limited to great extent. The strong centralized grip that the Egyptian government has been exercising over the curricula reform process could partly explain that. Moreover, it has been always circulated in an implicit way in media and among researches circles that there have been some interest networks that have and exercise a direct influence to keep that status quo of the current situation. In other words, those who are working on extra books industry have some sort of interest in hindering the reform efforts.

Literature Review

Previous research in policy studies, to some extent, recently examined the influence of the political and economic conditions through policy networks. Policy network as a policy methodology tool is considered to be one of the most useful methods to understand how different political, economic, societal actors and factors interact and affect policy outcome. Literature on primary education reform in developing countries such as Egypt highly emphasized some problems related to the low quality, classrooms density, poor teaching techniques, high dropout ratio, teacher- students' ratio, low expenditure, deteriorated school facilities, and lots of other major problems.

Notwithstanding, few studies aimed to examine how different interest networks, different political actors, and economic condition in a certain moments shall shape reform in education generally and primary education specifically. The current research will try to highlight that gap with a specific concentration on curricula reform in primary education in Egypt.

Based on a conceptual framework of education quality assurance in Chile developed by the World Bank; that framework provided a scope that helps to understand how different participants (individuals, politicians, actors, institutions, local municipalities, central government apparatus) interact and influence education process generally and education quality assurance in specific. Moreover, that framework identified a number of functions that any education system is aiming at attaining and ensure that those functions are well defined to all participants; (1) performance standard, (2) performance assessments, (3) performance reporting, (4) impact evaluation, (5) requirements to operate, (6) ensuring adequate and equitable resources, (7) autonomy, intervention, and support, (8) accountability and consequences (World Bank publications, report No.39830-cl, PP10-11). Interestingly, some of those influential participants, taking into consideration the political context, might seek to impede the reform some how. This is what Abdel-Moniem referred to in his study as he pointed out that the political regime in Egypt inclined to believe that injecting some real reform in the education system might not be in favor of the regime. Moreover, he explained that the longer the existence of some key players in the scene; the slower the outcomes of a reform (Abdel-Moneim, 2016).

Some studies pinpointed that influential actors in an educational system might seek to hinder the efforts of reform for their own interest. Kindon &Muzammil in their study that examined the political economy of education in India that focused on the case of Uttar Pradesh state; they strongly demonstrated the passive role played by the teachers union in hindering the state's effort in improving education quality through implementing more decentralized system. In addition, the decentralized system sought to adopt more accountable and transparent system that will enhance the poor performance of teachers who usually register high absentees rate in state's schools. According to them two factors can help in explaining how dynamics of political economy; one is understanding the guaranteed representation of teachers in the upper legislative body at state's level by constitutional rights. Second, teachers who are working in in private schools that receive governmental aids, have a considerable representation in the lower house of the state's legislative body as they can run for the elections as long as they are not holding a public office being part of a public school teachers. Thus, teachers have a real substantial representation at both houses at state's level that enable their union to hinder reform to great extend (Kingdon &Muzammil, 2008). Through analyzing the implementation of three educational policies in El Salvador, combining three dimensions technical, institutional and political that permeated the selected three policies particularly the political one; it showed how a limited political elite that monopolized the political regime since 1800s, the 13th family, highly shaped the political scene and affected strongly affected policies. The study's main argument is that the political economy context it self of the state could strongly affect the preferences of the state's officials (Edwards Jr, Libreros & Martin, 2015)

Research Methodology

As the research can be considered an exploratory research; it will basically rely on some in depth interviews with senior officials in the Egyptian ministry of Education and Pedagogy, the National Authority for Quality Assurance and Accreditation of Education, and the National Center of Developing Curricula. Moreover, the research will withdraw a random sample of some primary school students' parents to interview them.

Historical Background

Public discourse about reforming the education system in Egypt generally and reforming primary education in particular is an overheating issue that represented always an urgent matter to be reformed. The number of challenges that the Egyptian government is facing is enormously huge. Moreover, what makes situation worse is some demographic facts that tells any reader how much the reform generally is a fatal issue. Nevertheless, the allegedly formal enduring announcements of reform, the quality of outcomes represented through a real measurable sense is so low.

The development of the formal Egyptian Education that based on a western style curriculum and teaching models could be dated to early 19th century when Mohammed Ali got to power. Mohammed Ali, as being known as the builder of modern Egypt, in his way for rebuilding and modernizing the Egyptian state economically and militarily; he sought to adopt a European education style that would help him in creating competent state administrative cadre. That moved education system from what prevailed centuries before of traditional education that based on some sort of religious education "Kuttab" or Madrasah to more modernized one. That had been considered an enormous shift in the education system in Egypt. The second drastic shift occurred after the toppling of the monarchy on 1952. During the Nasser's reign free universal education had been hugely expanded and extended to free access to university as well. The over centrality feast of the state over education system generally and over curricula, instructional materials and teaching methods prevailed. (Farag, 2012).

According to law No (139) of 1981 the hierarchy and structure of basic education in Egypt, which is composed, of primary education and preparatory education. Primary education is composed of six grades, and preparatory is comprised of three years. The segmentation of schooling is so complicated as follows; there are public schooling that fully funded and supervised by the state where about 83 % of pupils are enrolled in. there are also what is known as an experimental language schools where science and math are taught in English and that type of schooling shows the necessity of English language proficiency for labor market. In addition, there are private schools attended by a7 percent of pupils; where national curricula are taught with some better or qualified teaching conditions in terms of less class density, better equipment, and more qualified teaches who receive slightly higher salaries than their equivalents who are working in public schools. Other private schools are sponsored by some foreign institutions and teach most classes in English, French or German; foreign curricula are taught side by side with some national curricula; these schools also provide the possibility to attain the American Diploma, French Baccalauréate or the German Abitur (Farag, 2012)

Historically speaking the Egyptian state, as most developing countries, perceived education as a principal tool for social and economic development of the state. Therefore, the right to education has been enshrined in Egyptian constitutions and Egyptian state sought to control education through a heavily centralized system. Nothing could be more expressive for state perception as Dr Hussien Kamel Bahaeddin's statement, former minister of education, on 2003 justifying the necessity of state's controlling grip over education " Education falls under the direct supervision of the state so that it would ensure the minimum common level of enculturation and socialization, this as he argued, would enhance the national unity and the cohesion of the social fabric" (loveluck, 2012). Henceforth, ministry of education is controlling all aspects of education process (curricula, schools management, instructions tools and materials, etc.….) centrally through education directorates and administrations that spread all over local units of the country.

Education for All 2015 National Review Report commissioned by UNSCO obviously mentioned that alleviating the central grip is so important for achieving educational quality " The Ministry of Education (MOE) is committed to provide a high quality pre-university education for all as one of the basic rights of the Egyptian citizen. This is carried out in a decentralized system based on the community participation" (Al Baradei, 2015)

The Reality of the Story

Why curricula need to be reformed? Or why reforming school curricula represent a problem?

After the Education For All meeting in Dakar on 2000, the Egyptian government declared its commitment to the goals of summit;

Box 1. The list of Education for All Goals that Egyptian Government committed to in April 2000 are:

- Goal1: Expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children;

- Goal 2: Ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete, free and compulsory primary education of good quality;

- Goal 3: Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life- skills programs; - Goal 4: Achieving a 50percent improvement in level of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults;

- Goal 5: Eliminating gender disparities in primary and secondary education by ensuring girls' full and equal access to and achievement;

- Goal 6: Improving all aspects of the quality of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all especially in literacy, numeracy and essential life links.

Source: UNESCO (2015), Education for all 2015 National Review: Egypt
http://unesdoc.unesco.org/images/0022/002299/229905E.pdf

Focusing on goal No 6 that is concerned with quality assurance; there are a number of policy and goals pursued by the Egyptian government as many as some national reports tried to tackle and related to curricula development including; (El Baradei, 2015)

- Curricula Reform: basically through adopting some national standards adopted by the National Authority for Quality Assurance and Educational Accreditation (NAQAEA) that had been founded on 2006. Also, resuming the implementation of number of improvement projects funded by donating agencies such as; USAID, UNICEF and the World Bank.
- Updating curricula and teaching methods at the various levels of schooling.
- Enhancing extra school curricula activities in cooperation with the ministry of culture
- Improving the evaluation methods

Concerning the institutional arrangement related to curricula development, Based on the Ministerial Ordinance No (192) on 1988 the Center for Curriculum & Instructional Materials Development had been established. Later on and based on another ministerial ordinance No (176) on 1994, its tasks and goals had been identified as follows;[1]

- Adopting modern approaches and techniques in reforming curriculum in a way that contributes in developing the whole educational process.
- Taking part in fulfilling required level of coordination, integration and interaction among the elements of pedagogical and educational systems in a way that affects the educational outcomes positively.
- Working on interpreting the new and most updated societal changes that are inclusive in the social, political and economic developmental plans of the state. Therefore, School curriculums should be the mirror of such societal changes and play as main tools for the demanded community behavioral changes. Hence, that will correlate educational outcomes to the labor market needs.
- Supervising the whole process of curricula design and reform and follow up the teaching process later on.
- Upgrading and modifying educational materials and instruments in away that helps in overcoming the dilemma of excessive numbers of students at schools, the high ratio of students drop out and impoverished educational tools. Thus, working on creating new educational models that serve the educational process is an essential task of the center.

[1] Egyptian Ministry of Education, Center for Curriculum & Instructional Materials Development, CCIMD (http://moe.gov.eg/ccimd/create_center.html)

Notwithstanding, that the above tasks show that reforming curricula as a part of a bigger picture of education policy, some studies pointed out that the process is politicized as long as it is managed through an over centralized manner. When students cam back to school after the ousted of Mubarak in 2011, there had been about twenty percent omissions of some educational materials as those were heavily about the legacy of Mubarak's regime and the achievements of the National Democratic Party the ruling party during Mubarak's reign (Loveluck, 2012). This is what Dr Nawal Shalaby, the former director of CCIMD; confirmed to me in interview I conducted with her; as she mentioned that taking into consideration the political situation at that time many curricula parts had to be omitted. She continued that when Muslim Brotherhood prevailed in the political scene during (2011-2013) the CCIMD most leadership had been replaced by some elements that are showed their loyalty to the Muslim Brotherhood regardless of their competency. She pointed out that during Ikhwan presence in power there had been some implicit trends to push with some certain topics to be included in some particular curricula; specifically history, Islamic religion, Arabic language, and national education.

Dr Shalaby gave me an illustrative example; she mentioned an illustrative picture used for the fifth grade students that shows state's institutions such as the legislative body " the House of Representatives". That picture according to her explanation, had been replaced with another one that showed Dr Mohammed Saad El Katatini, the speaker of the house, senior member of the MB, and head of Justice and Liberty Party. She illustrated that the political influence on the curricula design and reform always was there implicitly some how through the ministry main guidelines sent from the minister's office. She also admitted the absence of a well-articulated philosophy that should frame the curricula reform process. Moreover, she emphasized that the reform of school curricula and materials are not student-centered reform rather it is exams centered. She insisted that curricula couldn't be under real reform unless that reform is genuinely linked with reforming the evaluation and examination methods. Dr Shalaby ended her interview with me emphasizing the necessity of incorporating the 21st century skills in Egyptian curricula effectively.

In that context Abdelrahman illustrated in her valuable study that she tried to articulate the most acute problems facing curricula reform in Egypt, based on a comparative analysis with international experiences; she pointed out to a number of obstacles that hinders curricula design and development in Egypt (Abdelrahman, 2016);

- ✓ The absence of a clear legal framework that regulates the curricula reform.
- ✓ The blurred role of the Center for Curriculum and Instructional Material Development, CCIMD, in developing curriculum. Also, there are no clear rules about the selection criteria of recruited staff.
- ✓ Over - centralization control on curricula development process; which in turn results in a non- participatory reform.
- ✓ Most of the curricula are not student-centered rather they are exams- centered. The current curricula are not concentrating on students nor on the required live skills and knowledge they should acquire during their educational years.

- ✓ The irresponsiveness of the current curricula to the global changes, not only in terms of technicality and ways of teaching, but also in the absence of a general guiding philosophy that articulate the reform process and its periodical revision.

- ✓ The absence of required coordination between those who are responsible for reforming the curricula and teachers who are responsible for teaching at schools level.

- ✓ The rigidity and stagnation of most curricula in a way that don't motivate learners to use critical thinking and innovation.

- ✓ Unequal chances between public, private and international schools' pupils due to the gab between their curricula and teaching methods followed in each.

Conclusion

The current paper tried to investigate how the changing political atmosphere and consequently changing political actors influenced the processes of curricula reform of primary education In Egypt. I thought that I could include all influential actors, such as the syndicate of teachers, big companies that prepare and publish extra books, I believed they are highly interrelated to the reform processes; however due to some difficulties related to reaching some of them I couldn't cover.

To sum up, there are some policy recommendations regarding curricula reform; curricula reform as part of any education reform can't be conceived as a mere technical process rather is includes other dimensions that have to be taken into consideration. The current study comes out with three main policy recommendations:

- The necessity of developing more articulated philosophy that should regulate the reform process. The hard core of that philosophy should be based on a student- centered approach.

- Adopting more participatory approach for curricula reform, where different influential actors. That will enhance the inclusiveness aspect of the reform.

- Developing curricula process should be linked with a comprehensive plan of teachers' capacity building. That would ensure more successful implementation of the new curricula.

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Friends with Benefits: Causes and Effects of Learners' Cheating Practices During Examination

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Abstract
Cheating during examinations is a hidden curriculum which is triggered by peer influence. It makes every learner know and do what should not be done, for cheating corrupts and defeats the purposes of understanding, applying and creating ideas as stipulated in revised Bloom's taxonomy by Anderson. Based upon the qualitative analysis using open-ended questionnaires and interview method, the study was participated in by sixteen (16) key informants using random sampling procedure among Junior and Senior High School learners of Roxas National Comprehensive High School in Palawan during the months of June to October 2016. Nvivo software analysis was used in the analysis of the themes that emerged. This study found out that friendship is manipulated, for it makes doing right things unacceptable and things to be avoided like cheating seem right and acceptable. As Filipinos, this behavior is deeply rooted on the culture of *pakikisama* (social acceptance/liking) and *utang ng loob* (debt of gratitude). If a learner does not share his or her answers, he or she will be labeled as *walang pakisama* (no concern).This paper then argues that honesty should not be just a policy; rather, honesty in this case, is the only policy. Condemning academic dishonesty must not merely rest in the enrollment forms, but by constant moral reminder and intervention of teachers who have responsibility to hone learners' decorum on honesty and maturity.

Keywords: Academic Cheating, Examination, Academic performance, Friends, Cheating Practices, conformity. Proctor

Introduction

I cheat with, from and for my friends (see photo[1]). This is but a prevalent mindset of learners whenever they are facing difficulties during examinations. Adolescents are at a time in their life where peer influence and peer pressure are high (Rettinger & Kramer, 2007). Student habits and views on cheating are developed in high school (McCabe, Butterfield &Trevino, 2012). In the limelight of twenty first century generation, one of the most disturbing and alarming problems in the region of education is underpinned by students' ways of cheating. Cheating, in this context, means copying from other students during exams, one of the forms of misconduct that has become one of the biggest concerns of educational institutions (Wilkinson, 2009). Problems concerning cheating not only among undergraduate university students have become increasingly evident in academic institutions but also among secondary learners hitherto since the past decades. "Cheating or academic misdemeanor is, however, not a new phenomenon" (Bjurklond & Wenestam,1999), but a long-familiar problem not only in many European countries but also in the Philippines in particular.This is a kind of misconduct in such a way that it undermines student's capability to mastery of lessons and achieving excellence in their performance and learning competencies as embedded in the curriculum guide provided by the Department of Education. Learners' beliefs that "everyone cheats" (Houston, 1976; Bjorklund & Wenestam, 1999) or that cheating is a normal part of life (Baird, 1980) motivates academic cheating. The expression "cheaters never win" may not be employed in the case of academic dishonesty. With cheating rates as high as 75% to 87% (Baird, 1980; Jendreck, 1989) and detection rates as low as 1.30% (Haines et al., 1986), academic dishonesty is reinforced, not punished. (Davis, Grover, Becker & McGregor, 1992, p. 17)

In the glaring arena of Philippine educational system, its participants, learners in particular, are required to faithfully follow the mandate of excellence, mastery and integrity of learning knowledge and skills which are intended for the proliferation and actualization of their infinite potentials which lie dormant if untouched with graces of academic instructions. In this sense, this purpose is nowadays almost and always frustrated by misconducts or undisciplined performances among the learners of this 21st century era. "Why students cheat has been the topic of extensive research, but how they cheat has been largely neglected" (Cizek, 1999; Bjorklund and Wenestam, 1999). This paper supplements the established findings on academic dishonesty by delineating the innovative techniques that students use to respond to perceived difficulty and frustrations encountered within the context of Junior and Senior High School learners.

[1] https://www.google.com.ph/search?biw=2560&bih=1214&tbm=isch&sa=1&btnG=Search&q=academic+cheating+during+examinations#imgrc=k3o4b2rCg49DWM%3A/January 27, 2017.

The Aim of the Study

Why do students from all age groups and levels of achievement participate in cheating? One line of speculation is that dishonesty in school is just a reflection of a much broader erosion of ethical behavior that has become commonplace in a society that tends to support self-centeredness over concern for others (Sommers & Satel, 2005).With regards to this compelling issue on academic cheating practices, the researcher conceptualized objectives that will be subservient to the discovery and unravelling unbiased and truthful answers. To delineate the essence of the issue, I focus my attention to:

1) The reasons why students copy other learner's answer during examinations
2) The ways by which students copy other learner's answers
3) The effects of copying other learner's answers in personal and social identity
4) The interventions that need to be maintained, formulated and implemented to respond on this issue.

Theoretical Framework

"We learn through observation"(Bandura, 1986). This is the central idea of social learning theory. Inherent with this theory are the principles such as observing the behavior of others and outcome of those behaviors, learning occurs without a change in behavior, and cognition plays a role in learning (Bandura, 1986). In the midst of this compelling issue-copying other learner's answers, the Department of Education through its teachers, is making better alternatives and remediation for students failing marks. But then, copying-in-the making issue somehow reverberates in the halls of student's unconscious behaviors with and without teacher in front of them."Cheating is rampant in professional schools, a major shift has occurred in cheating related attitudes, individual and contextual factors influence academic cheating and integrity including peer behavior and ethical environments, and a deeply embedded honors code can play a key role in creating an ethical environment" (McCabe et al., 2012).

Literature Review

The reasons for cheating are considered as null curriculum (lessons that should not be taught to students) and most of the time influenced by peers in the context of hidden curriculum.

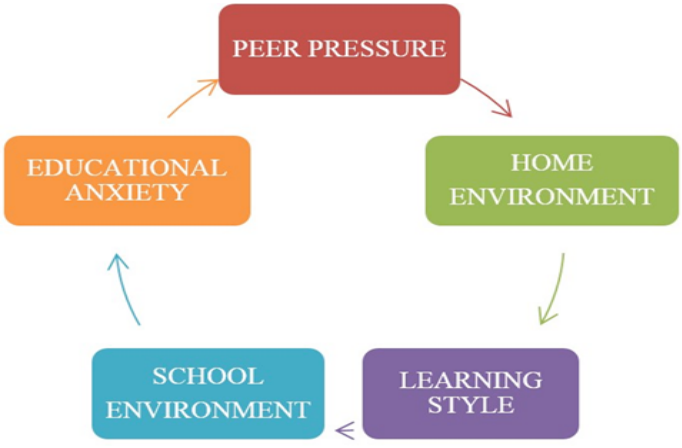

Fig.1 Factors that enhance academic cheating (Sarita, 2015)

On the first place, the author determined that **peer group** is the prime mover of cheating. If peers in their peer group are choosing academic dishonesty, then they are more likely to do the same (McCabe, 1999 as cited by Sarita, 2015). Adolescents are influenced by what their peers do and they form their peer groups around similar interests. Peer influence is at its highest at this point in their lives. Secondly, **home environment** which refers to the conditions where people live is another factor in cheating. The old saying "The most important work you do takes place with in the walls of your home". It is noticeable that children learn many things at home not only in academics but also values like honesty in particular. Academic dishonesty is more likely to occur with parental pressure to get good grades (Taylor *et aI*. 2002). The third factor is **school environment** where academic cheating takes place. There are many reasons why an adolescent may choose academic cheating over academic integrity. Adolescents compete against each other for class rank (Sarita, 2015). Class rank helps them edge their way into competitive institutions and colleges. Politics in a school may also play an important factor for who gets caught and disciplined accordingly when they engage in academic dishonesty (Riera & Di Prisco, 2002 as cited by Sarita, 2015). Teachers have some influence on how to set up their classrooms, as well as goals set and attained throughout the academic school year. Teachers can have mastery goal structure or performance goal structure in their classroom. Mastery goals focus on learning and improvement, whereas performance goals are based on grades and what one can do to be at the top (Anderman & Midgley, 2004). Learners' learning style's vary. Some students are naturalistic while others are visual and auditory. **Learning styles**' likes cognitive, affective and physiological behaviour is that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment (Keefe, 1979). In this case, Sarita (2015) argued that if student do not utilize appropriate learning style and want to score good marks, in that situation student use slip or other unfair means to copy. Sarita (2015) claimed that **Educational anxiety** is the combination of anxiety and academic anxiety. Stu dents have many anxieties related to education like pressure by parents and schools to achieve top scores has created stress levels among students. A student always wants to stand first for that they use unfair means. The students know cheating is wrong but they feel like the most important thing they do is get the grades, by hook or by crook. In fact, much of the research on academic cheating has been centred on elucidating possible psychological reasons why students engage in cheating behaviours. Most prominently, variables significantly related to cheating include test anxiety, impulsivity, intelligence, self-esteem, locus of control, social desirability and guilt (Alarape & Onakoya, 2003). This research paper by Sarita (2015) contributed a lot in researcher's understanding of the social millieu and development of this current study about cheating, for it manifested the prime factors why learners' cheat particularly peer group which influence the flow of academic dishonesty.

A follow-up study was published in 2007. Results expounded that although 15% of students indicated cheating on an exam, only four percent of students admitted using IT to cheat on an exam. Fourteen percent stated that he/she let another student copy from their exam. Thirty-four percent of the students indicated permitting another student to copy their homework and only four percent admitted to downloading a research paper from the Internet and submitting it as their own (King & Case, 2014). Overall, forty-three percent of the students admitted to some type of unethical behavior including cheating on exams either with or without IT, letting others copy their homework or exams, downloading research papers as their own work, or cutting

and pasting information from the Internet and not citing the source of the material. The motives are not very well known but must be anticipated to be analyzable."The schools' obsession with performance measures spurs cheating" (Anderman, Griesinger, and Westerfield, 1998). It is recommended that classrooms that stresses high grades and test scores may lead the learners to cheat.

In our modern time today, cheating involves the possession, communication or use of information, materials, notes, study aids or other devices not authorized by the instructor in an academic exercise, or communication with another person during such an exercise. Many students cheat just to receive a passing grade and impress their parents and teacher. Academic cheating is caused by many reasons; parental pressure, teacher pressure and poor time management. Teacher pressure will generate the need for students to cheat academically. Academic cheating is a growing concern among adolescents in schools worldwide. It is a problem that starts in elementary school and goes on through college (Sarita, 2015).

One notable character and uniqueness of this study is that literatures available can be commonly found in researches conducted on higher education but not extensive in secondary education. A revaluation of previous studies on undergraduate cheating reveals that 65-100% of undergraduates acknowledge to cheating on at least one occasion anytime throughout their college education (McCabe, 1992; McCabe & Bowers, 1994; Stearns, 1997). According to the Center for Academic Integrity (Fields, 2003), 75% of students in higher education admit to cheating behaviors. However, only over 20% of 1,369 undergraduates studied reported that they had committed an act of academic dishonesty while in college (Stearns, 2001). Using one full semester as the unit of measurement,"28% of undergraduates surveyed admitted to cheating at least once during the semester in question"(Ward and Beck,1990)).

Methodology and Methods

This study used a case study design. An open-ended questionnaires designed to evaluate Junior and Senior High School learners' awareness in Roxas National Comprehensive High School were administered to sixteen key informants during the months of June to October, 2016. In the process of interview method, the respondents were asked to fill out the questionnaire and answer all the questions with audio recorded files. The first part of the questionnaire is about the codename, age, section and year level intended for confidentiality of informations. In the second part of the questionnaire respondents were asked to assess their knowledge and experiences through the qualitative interview guide. The questions concentrated on knowledge and awareness about copying answers during examinations, causes and impacts of cheating phenomenon as well as respondent's responses. The questionnaires were randomly distributed to the all secondary levels using convenience sampling. Furthermore, Nvivo software data analysis program was used to analyze the themes which are geared to provide solutions to the problem of cheating during examinations. This oeuvre sets its limit in the realm of secondary level particularly at Roxas National Comprehensive High School as its center of reference. Delineating the prime reasons and effects of academic dishonesty trigger the researcher to find out student's aspirations in meeting the standard of the academe among Junior and Senior High School learners.

Results and Discussions

The first part of the questionnaire categorically focused on learners' experiences of cheating during examinations. The choices presented revolved on quizzes, mastery tests, periodical tests in Junior High School learners while chapter/unit test and quarterly Examinations for Senior High School learners. Data revealed that majority of the informants disclosed their experiences in cheating during quizzes, mastery and periodical tests. It is supported by the informations gathered during focused group discussion that their behavior on cheating is highly dependent on their aspiration for passing grades in order to be qualified for promotion.

More than half of the informants confessed that they have no experience of being caught in the act while cheating. Their common response came from the second part of the questionnaire which asked the question: Have you had worst experiences of being caught in the act while cheating? On the other hand, one of the respondents disclosed that she cannot forget the experience of being reprimanded by her teacher and it was reported to her parents. She suffered emotional pains of being treated as someone who is not using her mind by her father.

When the informants were asked by the question as to what made them engage in cheating during examinations, more than half of them responded from the line of reasoning that; they did not understand the topic or lesson discussed; they did not review their lessons beforehand; the teacher does not give punishment when he and she caught them; they are lazy to listen to discussion and their teacher is very strict. In these particular reasons, lack of the skill in understanding wide and various array of academic notions penetrated and dominated learners' behavior towards the discussion. It must be noted that in the context of 21st century learners, they are very inclined with collaborative activities rather than plain traditional discussion strategies given by their teachers. Attention and focus are the main skills that are interrupted if the teaching strategies are very traditional. Hence, learners are gradually losing their appetite in substancial absorption of concepts in the classroom. Data revealed that continous decrease of attention and focus because of traditional teaching pedagogies served as prime factors and causes of learner's dependency on cheating with their seatmeates during examinations.

Highly Creative Methods of Cheating

Most of the informants admitted that they have highly creative ways of copying other learners' answer during examinations. Data revealed that learners academically cheat by way of looking and asking at their classmates answers, giving and receiving a crumpled paper containing answers on the exam, by way of writing the answers on their hand and desk, by way of sign language, by way of going out while exam is ongoing and look for the answers on their pocket, by way of recording the answers to their cellular phones and listening on them via headset while taking examination and by way of having picture of the answer in cellular phone during mastery test and look at these answers during periodical test. For them, most of the test questions in mastery test or unit test for senior high school are the same with periodical test of quarterly assessment questions.

Utilitarian Perspective of Friendship on Cooperative Cheating

Friend is defined as a person who helps or supports someone, a favored companion, one that is not hostile, and the one attached to another by affection or esteem (Merriam dictionary). Along in-class examination, friendship is at the momentum zone, that is either to build strongly or break abruptly. The most common strategy that they are doing when copying is by making friends of their classmates who are intelligent in the subject in order to copy through looking and asking their classmates' answers. Loy, one of the informants, highlighted this theme by saying: "I need to befriend my classmates for me to be able to copy their answers if I do not know the answer." In line with the gender codes, respondents revealed that their peers are commonly in similarity with their sexuality. Male learners are building friendship not just socially but also for academic benefits involving cheating during examinations. My data revealed that male learners are more susceptible on cheating than female. It is because most of the males are always at the back of the classroom where they have boys' talk while discussion is ongoing, thus, making them not to copy or hear what the teacher is presenting or the activity being given to them.

Perceived Benefits of Friend Networks

There is an expression that goes: "Birds with the same feather, flock together". As friends, individuals share the same interest, likings, hobbies and aspirations. Emerging themes from the data suggested three kinds of group of friends in relation to in-class examination, namely: the slow friends, the average friends and the elite friends.

1) Slow friends tend to always go together in one place in the classroom. For them there is a feeling of belongingness, that is, they gain confidence through each other's way or means of help in times of uncertainty during examination. If this means does not work, they resort into tapping their friends on average levels. Their passion is not on reviewing but radically on depending to other's answers.

2) Average friends are those learners who oftentimes deal with accomodating and helping slow learners to cope with their answer if left unguarded. They make every way possible to copy answers from the elite learners.

3) Elite friends are the ones who are very competitive. Most of them, as revealed by the informants are not sharing answers. But, if they are triggered by the maintaining grade posed by their academic strand, they tend to give in to idea that one for all, all for one. They are also receiving free snacks from their friends if all of them got passed. They shifted from notion that we study because we compete with each other to idea that we study because we need keep every classmate on track.

4)

However, "the opportunity to cheat presents itself spontaneously" (Ferrell and Daniel,1995); "for some, however, cheating is meticulously planned, rationally calculated, and painstakingly premeditated. It is erroneous to believe, however, that all students cheat with sophistication, their "ingenuity" being used to outwit unsuspecting teachers. In this sense, some tactics do not take much creativity at all, and only require minimal vigilance from teachers to dissuade students from cheating. Some cheating methods are just common and unimaginative: students sit in the back of the room and blatantly whisper answers back and forth to one another. In this

section, some of the recurring, yet not so obvious, methods that students use to cheat in conjunction with their peers are discussed"(Bjurklond & Wenestam, 1999).

Causes and Effects of Cheating During Examination

Data revealed that peer pressure is one of the most triggering causes in this kind of academic dishonesty. Moreover, the findings revealed that unpreparedness causes stress and triggered with time pressure deeply affected learners to commit cheating during examinations. Rex shared his experience in this regard:"Peer pressure caused me to be stressed if I cannot answer the questions correctly. So, I just wait to find a way and copy if the proctor is not guarding us."

As to their aspirations, most of the informants conceded that they do not want to feel ashamed to their parents because of their failing grades. In their mindset, they copy during examination in order to get good grades, make their parents proud, avoid failing grades, and to be happy still despite knowing that they pass examination through unfair copying others' answers. When they were asked as to how certain are they that the answer which they copied is true or not, they commonly answered that they are confident with seatmeat's answer is true for she and he is their friend. For them, they have this saying that friends do not lie and leave each other in any ways. Data revealed that duration of time given is not a problem but the access to friends who know the answer. Kid stated: "Time is not a problem as long as you have a friend who knows the answer, the problem is if you both do not know the answer."

Learners' cheating habit during examination is notably rooted in their elementary years. Most of them revealed that their dishonest behavior occured between their grades two (2) to four (4). Peer influence is the common ground to this problem of copying. Because their friends are cheating, so are they. In this realm, curiosity and need to be belong could also be noticed as the cognitive tendencies that played a huge effect to learners developing habit of copying other learners' answers during examinations.

Upon probing on the subjects when they found difficult and in which they are always copying, data revealed that Mathematics is the most challenging subject for senior high school learners. This finding is the opposite on the basis of Junior high school learners which revealed that Science, Math and English are the most difficult subjects. When asked on what particular subjects that find easy to cope with, data revealed subjects like Filipino language and Values.

Most of the informants have conviction that this culture of copying other learners' answers during examination could be put to an end if and only if every learner avoid and control themselves to academically cheat. Majority of the respondents that academic cheating particularly copying during examination decreases self-confidence and understanding in their academic performance. For them the idealistic way of holding to the idea that they prefer to be failed than to cheat during exam. But in reality, they detach themselves to that ideaslistic ideas when they caught themselves unprepared, time pressured, and that particular subject is for them difficult to bear academically.

Effective teachers' interventions on the issue

Enforcing academic integrity by limiting the opportunity for academic fraud in the first place is a herculean task, but it is one that is controllable: my data agree with the claim that teachers and "professors can do simple things such as making sure that desks are free of scribbled notes, that book bags are closed, that hats are removed. Further, they can look for gazes that repeatedly veer off into areas other than the test; multiple versions of exams can be administered in small classrooms rather than auditoriums; instructors can also employ additional proctors during exams, adopting wide and fixed space seating"(Bjurklond & Wenestam, 1999). In addition, many of the informants suggested monitoring techniques that are effective such as: Set A, Set B technique, random sit plans, supply type test strategies (e.g. essay, identification and modified true or false,) no gadgets, no talking and going out while exam is ongoing and alphabetical sitting arrangement.

Academic and Practical Implications

The study is formulated, disseminated and corroborated among Roxas National Comprehensive High School Junior and Senior High School learners. Thus, awareness about copying other learners' during examination are noted in author's conclusion about the following:

1) Informants admitted that they learned copying since their early days in elementary. First they act as observers and the need to be belong or being in the group triggered the manifested behavior of copying. Imitation is not wrong if put in its proper context. In business, for example, imitation is a must, for it makes a businessman copy all the strategies and skills in order for him to be effective and efficient. But in the academe, the implication is reversed. Learners should internalize the lessons discussed for them to be able to be critical thinkers upon landing in their chosen field in the future. If cheating is the culture that they embibed, then they surely cannot pass in any board or bar exam where their need for security (jobs) is on the line.

2) They are differentiated in terms of the subject which they treated as difficult in which they feel the need to copy during examinations. There are informants who found it hard to deal with Mathematics yet comfortable in learning English. On the other hand, there were also informants who found that English is more difficult than Mathematics that is why they need to copy other's answer. The bottomline is learner's learning abilities are complex, for everybody is unique. But then, cheating cannot be a rational means on compensating different strengths and weakness upon taking hard subjects. Honesty is tested when a learner admits to himself and desire to change his weakness into strenght by seeking help from his peers and teachers for interventions. In this way, a learner will have self-confidence in bearing difficulty on the examination.

3) Most informants happened to copy other's answers in dealing with their aspirations like passing the particular subject and consequently make their parents proud. Promotion became the main factor in cheating engagement. But, some of the informants realized that even if they think and know that they pass already, their conscience haunt them at the end of the day. Their concience that cheating is not a moral way to get promoted. Some of them are rationalizing that maybe those subject

are no value to the jobs that they will do someday, without even considering that honesty which they defeated is the prime factor that determines their altitude or downfall.

4) Most of the informants realized, along the process of investigation that copying other learners' answers triggers lack of self-confidence and lack of passion in learning. Low self-esteem and feeling of boredom makes a person suffer when he is at his field of work or employment. On this dimension, many informants disclosed that they have to adhere on not cheating for them to earn self-confidence.

5) To extinguish this habit of academic dishonestry especially during examination, informants suggested that to end this bad habit, they could resort to intensive concentration on reviewing their lesson beforehand in order that they will not be stressed and ruttled as examination continues to go along with their ways. This attitude then makes every learner attained that highest level of revised Bloom's taxonomy-Creativity. In life, love and business, creativity which emanates from focus makes everything successful and excellent.

6.) For some adolescents, parental pressure is high at this age in regards to academics (Strom & Strom, 2007). However, data revealed that informants resorted to cheat during examination because of the lack of parental presence who are supposed to guide them in their quest for knowledge internalization by giving advises and inspirational messages. This research found out that the need for parental moral support in the home is needed. Furthermore, even to those learners who are living in the boarding house also have a great amount of communication between parent and learner.

7) Friendship became very practical. Learners who depend on building friends in order to copy during examinations are very utilitarian in character. They are always on harmonious relationship on those learners whom they know they can benefit about, but resent to those who do not share their answers. It is as if friendship is manipulated for it makes that right things to do as unacceptable and things to be avoided as if they are the right things to do. As Filipinos, this behavior is deeply rooted on the culture of *pakikisama* (need to be belong) and *utang na loob* (debt of gratitude). If a learner does not share his or her answers, he or she will be labeled as *walang pakisama* (no concern). To get rid to this kind of social indifference, many learners resort to share their answers even if they know it is not the right thing to do.

Conclusion

This paper then argues that honesty should not be just a policy; rather, honesty in this case, is the only policy. Indeed, teachers nowadays cannot assume that learners know and abide the unwritten moral codes and rules imposed by school, family and society as a whole. Henceforth, to uphold honesty and matureness is to emphasize these rules and codes. The rules and codes must not merely rest in the enrollment forms or written school policies, but it must be in action, meaning to say in constant reminder given and intervened by teachers who have full authority and responsibility to hone learners in the light of honesty and maturity as enduring values in the arena of life.

Effective Communication between Parents and their Children

Indeed, educators cannot provide all of the guidance that students require to adopt honesty as a lifestyle. Some parents tell daughters and sons that cheating is a fact of life in the world of work and this has forced them to cheat in order to succeed. When parents act in this way, condoning dishonesty and deception as standard, it becomes challenging for educators to counter the message that power of cheating makes it an acceptable practice. "Schools could provide workshops for parents that focus on the range of cheating issues adolescents face and offer agenda questions for discussions at home about honesty, integrity, trust and maturity. In this way, mothers and fathers would be enlisted to sustain their efforts to nurture these valuable attributes in their children. Successful academic performance rooted in honesty enables students to take pride in work that is their own and to make known when tutoring is needed to improve learning" (McCabe & Pavela, 2000).

Recommendations

This paper similarly recommend the twofold way of reducing cheating in the long run, namely by a) using positive reinforcement and b) by encouraging and fostering the students to acquire an outlook in life that will prevent them from cheating (Davis, Becker & McGregor, 1992).

As I have presented in this paper, learners's illegitimate means of responding to the triggering failures and frustration during examinations are not to be counted as excuse for them to be recognized as highly innovative (e,g making friends of their intelligent peers, tolerating their dishonest behavior by giving answer because of friendship, gaining confidence through social approval, for everyone does it, feeling of being intelligent because of cheating practices, manipulating gadgets to copy clear-cut answers). These innovative ways are not good or bad in themselves (ammoral) but if they are put in the wrong context (academics), which upholds the virtues of honesty for self-discovery of skills and self-mastery of talents, these mentioned means of cheating becomes immoral, and thus destructive for every learner who engages in this practice. Therefore, I conclude that not all popular are right, and not all right are popular.

Appendices

Appendix A

Informed Consent Form

The open-ended questions to be asked are in line with the research topic: ***Friends with Benefits: Causes and Effects of Cheating Practices During Examination***, which will be conducted by Leo Andrew Diego, Senior High School teacher for this action research. The main objective of this research is to find out the factors why students copy other learner's answers on their exams in order to adapt plausible solutions to be done after knowing the problem. Your answers, real name and identity are confidential, meaning to say, it will not be shared to others. Your full cooperation in this meaningful endeavor is highly appreciated.

Codename:_____ Year Level:_____
Age: _____

Qualitative Questionnaire

Objectives	Interview Questions
❖ To identify reasons why students copy other learner's answer during examinations	➢ What made you engage in cheating activites during examinations? ➢ What are your aspirations in doing whatever it takes to pass the subject even if it means copying other learner's answers?
❖ To determine the ways by which students copy other learner's answers	➢ What are the ways in which you cheat during exam?
❖ The analyze the effects of copying other learner's answers in personal and social identity	➢ How affected are you when you cheat during exam? ➢ What do you think are the personal effects of cheating during exam? ➢ What do you think are the personal effects of cheating during exam? ➢ What are the possible consequences if you do not copy other learner's answers? ➢ What are the ways in which you can stop copying other learner's answers during examinations?
❖ To identify interventions that need to b maintained, formulated and implemented to respond on this issue.	➢ What are the cheating policies of teachers in the classroom during examination to avoid chating activities? ➢ What do you think are the disciplinary measures given by teachers on this issue of cheaning? ➢ What are the interventions being done by teachers for those learners who are slow in learning?

Appendix B

Code name	Age	Current Year level	Grade level when first learned the culture Cheating during examination	Causes of copying other learner's answer during examination	Way/s of copying other learner's answer during examination	Effects of Cheating practices during examination	Subject/s that he/she thinks he/ she needs to copy
BOY	13	7	2	Difficulty of Subject	By making friends of classmates who are intelligent in the subject in order to copy from them	Passing grade but low self-esteem	English
AXL	15	9	3	Peer Influence	By making friends of classmates who are intelligent in the subject in order to copy from them	Low self-esteem	Mathematics
SKO	16	11	3	Difficulty of Subject	By way of looking at the paper of my classmate/s.	Passing grades	Science
JED	14	8	5	Not ready for exam	By way of sign language	Make my parents proud	Mathematics
LAD	15	9	4	Peer influence	By way of looking at the paper of my classmate/s.	Avoid failing grades	Mathematics
HAB	14	8	5	Difficulty of Subject	By making friends of classmates	Avoid failing grades	Science
TIN	17	11	3	Not ready for exam	By making friends of classmates	Avoid failing grades	English
GEN	14	7	4	Difficulty of Subject	By way of sign language	Get good and passing grade	Mathematics
WE M	14	8	4	Difficulty of Subject	By making friends of classmates	Passing grades	Mathematics

MEN	15	9	5	Not ready for exam	By way of looking at the paper of my classmate/s.	Passing grades	Mathematics
SER	16	11	6	Peer influence	By way of sign language		Science
REX	16	10	7	Not ready for exam	By way of going out while exam is ongoing and look for the answers.	Avoid failing grades	Science
KID	13	7	6	Peer influence	By way of sign language	Passing grades	English
LOY	14	8	5	Peer Influence	By making friends of classmates	Avoid failing grades	Mathematics
JET	15	10	3	Peer influence	By making friends of classmates	Wish to help a friend	English
JOY	14	9	4	Peer Influence	By making friends of classmates	Passing grades	Mathematics

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Future Indian Citizens' Position of Intention towards Nuclear Power Plants Influenced by Beliefs and Understanding: An Intervention Study

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Abstract

Nuclear energy is considered as a future sustainable energy resource in power hungry and fast developing Indian economy. Public understanding of advantages and disadvantages of nuclear power is a key for governments to make informed decisions and actions. Too there are propaganda, misconceptions and politics for and against installing nuclear power plants in India. This study is conducted among 100 secondary students (age group of 13-14) from private, state and central government schools and in their last years of secondary schooling, considered as future Indian citizens. Study specifically looked at their beliefs, understandings and intentions about having Nuclear Power Plants. This research used a design based research method and focused on what beliefs, understanding and intentions future citizens in India have, towards generating power from Nuclear Power and to what extend a 5E model intervention programme can influence it. The questionnaire used was based on theory of reasoned action and the structured intervention lessons used the 5E instructional model as a framework. The data analysed qualitatively and quantitatively, and the qualitative data were coded into categories based on responses. These responses to beliefs, understanding and intentions were analysed to show their inter-relationships using the Structural Equation Model (SEM). Overall findings indicate that before the intervention future citizens' believe and understand that Nuclear Power plants are harmful to the society and at the same time, needed for the economic development of the country and had misconceptions about the safety of the Nuclear Power Plants. Study showed a shift in their position after the intervention. The data analysis using SEM showed that there is considerable change in their beliefs, understandings and intentions before and after the intervention and the changes are not unique in all cases. These differences were depended on the type of institutions (State, central government and private schools).

Keywords: Beliefs about Nuclear power plants, 5E Model, Science education, Public decision making

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Introduction

Scientific knowledge can be achieved by the cumulative experience of knowing how by doing it. In most case, it is achieved by participating in the practical research group. Research can therefore be seen as a way of learning. Universities have long abandoned the accent on research and have become mere teaching centres. Research aptitude in students is not properly developed during their course of study. Their curriculum is neither research oriented nor updated. For many reasons majority of teachers with doctoral degrees in science are unwilling to undertake research projects or collaborative research.

C V Raman said that there is nothing intrinsically inferior with the quality of the Indian mind when compared to that of a Teuton or an Anglo-Saxon. Rather, he added that what inhibits us is the lack of a certain courage that would allow us to explore unusual avenues. To this I will add that the average Indian lacks a constructive curiosity and interest in goings-on around him or her. The Indian is far too self absorbed and believes that there is no need to know about many things because it does not help him or her to address an immediate, personal concern. Courage and curiosity are, however, the two essential attributes of a good scientist and their singular lack in the Indian psyche have contributed in no small measure to the deterioration of our science. This is a big problem we face. It is remarked often that an Indian makes a good student or postdoctoral fellow but a poor scientist when (s)he attempts to do independent research. The Indian is too scared to question authority of any form. He would rather swim along with the current. He does not dare to differ. All this runs counter to the scientific disposition, which proceeds systematically along the route of questioning, formulation, experimentation and verification.

Science education research since the 1980s has focused on strategies to improve science education and develop effective school-based science education programs. Despite these efforts, there has been a decline in science education performance. More recently, the implementation of the National Curriculum Frame work(NCF) in India presents unique challenges for science teachers as they are charged with fostering an inquiry-based instruction through the integration of the dimensions outlined in the Framework.

Although the research topic of students' conceptions and conceptual change was the most frequently investigated one , a declining trend was observed when analyzed by year. Moreover, the research topics related to student learning contexts, and social, cultural and gender issues were also received relatively more attention among science educators.

In recent years, science education started to highlight the use of socio-scientific issues in the teaching and learning process. In fact, the use of socio-scientific issues in education served as an approach to make science learning more relevant to students' lives (Cajas, 1999; Pedretti, 1999). It is a venue in assessing students' learning outcomes and appreciation of the nature of science (Bell & Lederman, 2003; Sadler, Chambers, & Zeidler, 2002;Zeidler, Sadler, Simmons, & Howes,2004).And as an important component in enhancing scientific literacy (Driver, Newton, & Osborne, 2000; Pedretti & Hodson, 1995). In the study of Ratcliffe and Grace (2003), using socio-scientific issues in secondary science classrooms enabled students to identify

the strengths and weaknesses of their own reasoning aside from enhancing their awareness on the relationships of science and society (Sadler, 2004; Zeidler, 2005). This teaching approach was useful in developing scientifically-literate individuals who use their scientific knowledge to build a competent community who decides and performs actions and participates in any form of inquiry objectively (Tal & Kedmi, 2006). Also, the inclusion of controversial socio-scientific issues in science lessons had the potential to train students who are objective in their decision making processes (Kolstoe, 2001; Millar & Hunt, 2002; Millar & Osborne, 1998; Monk & Dillon, 2000).

Traditionally, state policies associated with school funding, resource allocations, and tracking leave high poverty school districts with fewer and lower-quality books, curriculum materials, laboratories, and less qualified and experienced teachers. Education needs to change to focus on issues facing the 21st century and on every aspect of daily decisions and actions at all levels (personal and governmental) to secure the future of the planet (UNESCO, 2003).A scientifically literate public could improve the quality of public decision-making and actions. Decisions and actions made in the light of an adequate understanding of the issues are likely to be better than decisions and actions taken in the absence of such understanding. Greater familiarity with the nature and findings of science will also help the individual to question pseudo-scientific information (Royal Society, 1985). Sadler et al (2004) asked high school students to demonstrate their understanding of global warming as presented in two media articles. The results showed that only 47% of students were able to understand and explain the use of data in the global warming articles. Other studies (Detterman& Sternberg, 1993; Haskell, 2001) also point to students lacking skills and strategies in using their scientific understanding into informed decision making about a scientific issue. Issues like greenhouse gas emission and global warming are not included in teaching and learning programs and teachers tend to avoid teaching these topics (Kurup, Hacking & Garnett, 2005).

1.1 5E Instructional Model and Development of Intervention Programme

The 5E instructional model (Bybee, 1997) of teaching and learning focuses on inquiry based science teaching and learning through a constructivist approach. This model enables student learning from their prior knowledge to achieving ownership of the knowledge in a learning journey of a five stage cycle - engage phase to evaluate phase. The Engage stage identifies prior knowledge including alternative conceptions; Explore stage provides authentic learning situations in a challenging way, and hands on activities; Explain stage encourages using correct scientific understanding to explain science phenomena; Elaborate stage enables using concepts in new situations to gain ownership of the knowledge; and Evaluate stage generates an overall picture of learning outcomes. The 5E model was found to be effective in the curriculum development process and producing units of work on variety of topics. Primary Connections (Australian Academy of Science, 2005) used the 5E model in their units and found that teachers could use the model effectively to enhance their confidence and competence in teaching science as well as students enjoying learning science (Hackling & Prain, 2005). The 5E model being an activity based model of teaching and learning science it has the potential to develop 21st century skills such as adaptability, complex communications skills, non-routine problem solving, self-

management/ self-development and system thinking (Bybee, 2009, 2010; NRC, 2006).

A unit of work of twelve lessons based on the 5E instructional model is developed for this study by the lead researcher and it is further refined with science teachers for suiting to school curriculum and implementation in classroom situations. Table 1 outlines a unit at a glance of final intervention unit of lessons and sequences.

1.2 Objectives and Purpose

1. Identify high school students' levels of prior knowledge related to the need and environmental issues related to Nuclear Power plants and provide with an authenticity and ownership with knowledge base (science behind this issue)
2. Identify and map out formal and informal reasoning patterns and intention for actions regarding Nuclear Power Plants by providing scenarios for them to discuss and make decisions and actions;
3. Suggest the links between informed knowledge, formal and informal reasoning patters, intention for actions and decision making.

2. Rationale and Research Questions

The aim is to provide a strong knowledge base regarding the issue of Nuclear Power plants in India and test how it influences their beliefs and further their opinion in Public Decision Making. The study centred on two primary research questions

- How does the 5E instructional model based unit of intervention enhance beliefs about the issue of Nuclear Power plants in India?
- Identifying links and influence of knowledge base in making decisions regarding Environmental issues of Nuclear Power Plants.

3. Methods

The questionnaire used was based on theory of reasoned action (Ajzen & Fishbein, 1980).The structured intervention lessons used the 5E instructional model as a framework. The data analysed qualitatively and quantitatively, and the qualitative data were coded into categories based on responses. These responses to beliefs, understanding and intentions were analysed to show their inter-relationships using the Structural Equation Model (SEM).

This study is conducted in four steps in sequence to suit methodology used and the details are as follows

Step1. Professional development for participating on the five E instructional model
Step2. Administering pre-test questionnaire.Step3. Intervention lessons are for two weeks. Intervention is set to identify beliefs and prior knowledge regarding Nuclear power Plants
Step4. Administering post-test questionnaire two months after the intervention to identify changes in belief.

3.1 Population

The sample used for this study is a group of 120 students of class IX from different(State, CBSE,ICSE) syllabus and as well as govt., private and residential setup. These children are selected as they are in their last yea of schooling and future decision makers.

3.2 Intervention Programme

Table1 given below illustrates the intervention programme based on the 5E Instructional model on "need of nuclear power plants in India" .The programme is divided into 12 lessons covering all 5 phases of the 5E.

In the engage phase, the basic beliefs about the structure o an atom and basic beliefs about the emission of radiations from the nucleus is included. In the explore phase, Nuclear reactions, generation of power from nuclear reactors and radiation management issues are discussed. Teachers took the lead role in the Explain phase and covered all aspects. Explain phase was done with the interactions of children as well as the intervention of teacher. Finally children came up with their group presentations in the Evaluation.

Table 1

Phase	**Lesson**	**Description and Targets(B,U and ID)**
Engage	1.What you believe about atoms and nucleus 2.What you believe and know about the structure and radiation emitted by NPP	Represent,discuss,flow charts, concept map etc which reflects the beliefs and understanding Making rough diagrams in an A3 sheet, comments, discussions, cartoons, poems to reflect the ideas.
Explore	3.Radiation emitted by NPPS	1.Identify and make connection 2.How radiation cause pollution
	4.Nuclear reactions	1.Discuss about historical events and side effects 2.Discuss about power projects, industrial development
	5. Nuclear Power plants	1.Identify the need 2.Discuss the advantages and disadvantages
	6. Nuclear radiation- cause and management	Discuss the variable available resources
Explain	7.Need for NPP	Discuss the advantages and disadvantages.
	8.facts and figures about NPPs and their operational details	Discuss the advantages and disadvantages

Elaborate	9. various group study	Developing a vision about NPP
	10. group discussion	Finding solutions and possible actions
	11.Group presentations	Presenting different outcomes and intentions for actions
Evaluate	12. Final class presentation	Generating an opinion based on discussions and deliberations

4. Data Collection and Analysis

The test and survey were coded to ensure teacher confidentiality and pre- and post-tests were matched by coded numbers. The questionnaire was standardised using t-test. These data were scanned and uploaded into an Excel data file for processing. The statistical package used in analyzing the data were box plot,mean,ANOVA,ANCOVA. Only completed data from students taking both the pre- and post-test/surveys were used in the analysis (n=120). Changes in pre- and post-test scores were analyzed using t-test, box plot,mean,ANOVA,ANCOVA and analysis of covariance. Relationships between test scores and teacher independent and school variables were analyzed using descriptive statistics, t-test, cross tab and correlation analyses.

4.1 Data analysis

The test and survey were coded to ensure teacher confidentiality and pre- and post-tests were matched by coded numbers. The questionnaire was standardised using t-test. These data were scanned and uploaded into an Excel data file for processing. The statistical package used in analyzing the data were box plot,mean,ANOVA,ANCOVA. Only completed data from students taking both the pre- and post-test/surveys were used in the analysis (n=120). Changes in pre- and post-test scores were analyzed using t-test, box plot, mean,ANOVA,ANCOVA and analysis of covariance. Relationships between test scores and teacher independent and school variables were analyzed using descriptive statistics, t-test, cross tab and correlation analyses. Also used Structural Equation Model (SEM) to identify Beliefs, understanding and intention relationship

Table 2 and Table 3 represent the data analysis of experimental and control group(N=120) regarding the overall knowledge in pre-test and post- test. Most of the students were having misconceptions about Nuclear Power Plants like “ it is a bomb”, “ it will surely explode” etc. before the intervention. Also most of the children were not having the minimum scientific knowledge about it. The “t” value obtained here is 13.85 and this is significant at 0.01 level. This shows that the level of knowledge of children in the experimental group has considerably changed during the intervention programme.

Table2. Descriptive statistics for overall knowledge

	Pre test		Post test	
	Experimental	Control	Experimental	Control
Mean	66.3	70.2	87.7	67.3
Median	66.0	70.5	88.0	67.0
Mode	66.0	70.0	72.0	67.0
SD	6.7	6.4	16.2	6.4
Quartile	2.5	4.8	12.4	3.0
Skewness	0.14	-0.15	-0.06	0.15
Kurtosis	0.16	0.37	0.29	0.21

Table3 Unadjusted and adjusted mean scores at pre and post test achievement for overall knowledge

Group	N	Mx	My	My.x	t
Experimental	120	66.3	87.7	88.4	13.85**
Control	120	70.2	67.3	66.6	
Total	240	68.2	77.5	77.5	

**:- Significant at 0.01 level x:Pre test y:Post test y.x:Adjusted post

Table4 showing the comparison in the percentage increase in the belief score based on the type of institution they study.Out of 120 studnts, 40 each were in CBSE,ICSE and state run schools. 40 students of CBSE got a mean score of 23.2 and that of ICSE (40), the score is 18.0. The score of state run schools is very low, only 2.3. During the intervention, students from CBSE and ICSE students raised questions like 1." if we generate power from NPP, will it be cheap?" 2."Why people say that Nuclear Power is dangerous?" Students from state run schools asked a serious question-" why it is said that power from Nuclear Power Plant cause cancer?!!!."Too much misconceptions were there among the children of state run schools regarding this.

4.3 Effectiveness of FIVE E model knowledge base among the students of secondary school based on type of school

Table 4. Comparison of percentage increase in belief score based on type of school in experimental model

Type of school	Mean	SD	N	F	Sig.	Scheffe Multiple Comparisons		
						Pair	F'	p
CBSE (A)	23.2	20.6	40	19.54**	0.000	A &B	1.1	0.334
ICSE (B)	18.0	16.3	40			A & C	18**	0.000
State (C)	2.3	5.6	40			B & C	10.2**	0.000

**:- Significant at 0.01 level

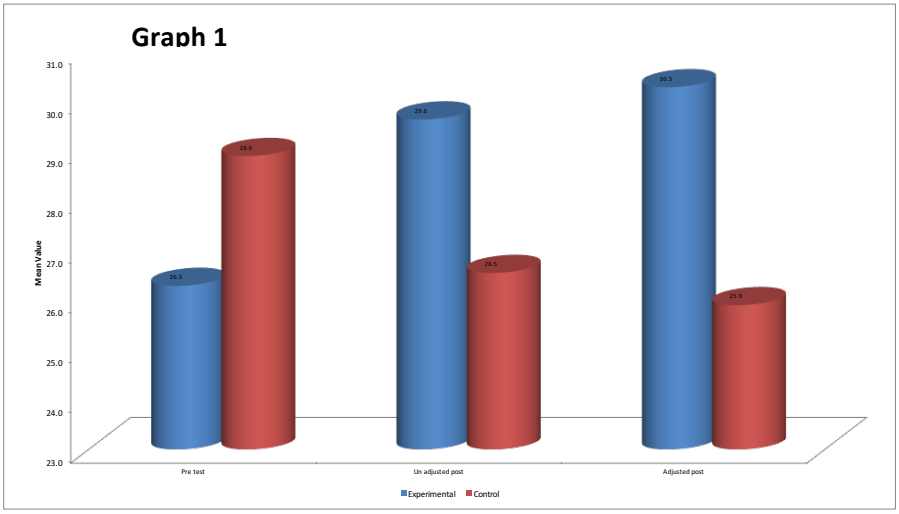
This shows that there is a difference in the beliefs of students studying in these schools about NPPs .The study is significant at 0.01 level.

4.4 Graphical Representations

The data were coded and for easy interpretation, graphs are plotted. General comparison is done for beliefs, understanding and overall knowledge of children. Each one is plotted separately. The results are very clear and easily understandable

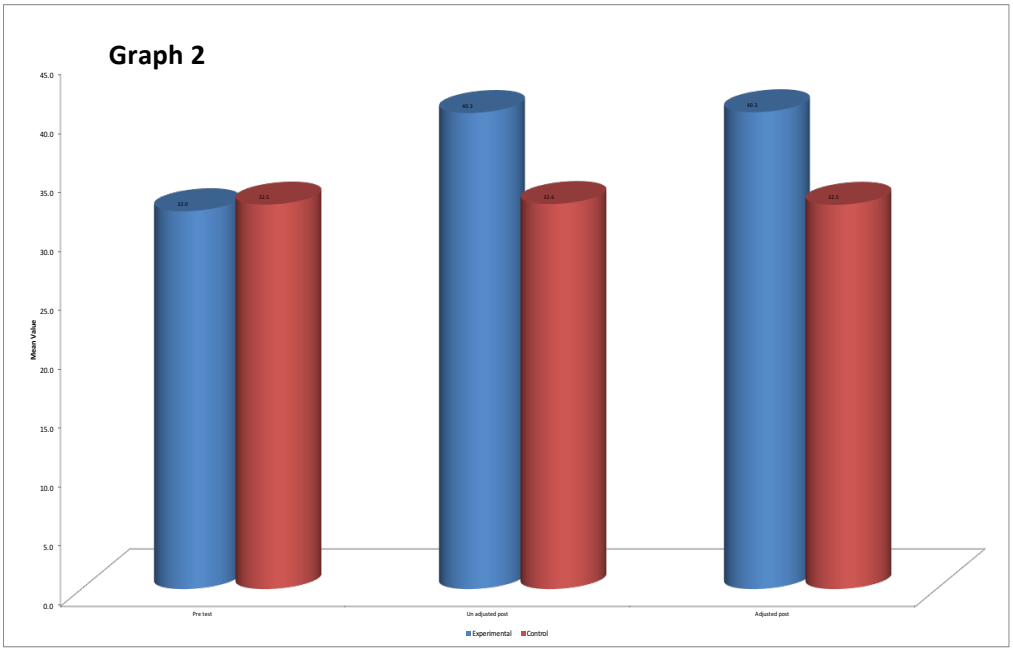
4.4.1 Unadjusted and adjusted mean scores at pre and post test achievement for beliefs

Graph 1 shows the mean score of pre-test and post- test achievements of children regarding their beliefs about the Nuclear Power plants. Students in the control group showed no considerable improvement after the post test, or rather changed their mind in a different way. The post test of the experimental group clearly shows a considerable change in their beliefs. The difference in the mean value is also large which clearly indicating the influence of the 5E model intervention



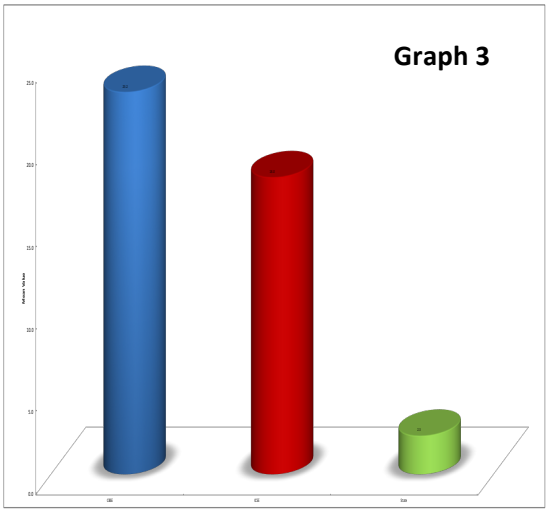
4.4.2 Unadjusted and adjusted mean scores at pre and post test achievement for intentions for action

Graph 2 shows the pre-test and post-test achievements(N=120) of children (mean score) regarding their intentions for action about Nuclear Power plants. The pre-test score of control and experimental groups are more or less same. But the post test score of the experimental group shows a significant difference, both in the un-adjusted (32.6-40.3) and in the adjusted(32.5-40.3).This clearly indicate that the 5E intervention had a significance in their intentions as well as their decisions in future. Before the intervention, children were not in a position to make a clear decision whether it is for the Nuclear Power Plant or against it. Now they are very clear in their intentions and scientifically confident in making a decision



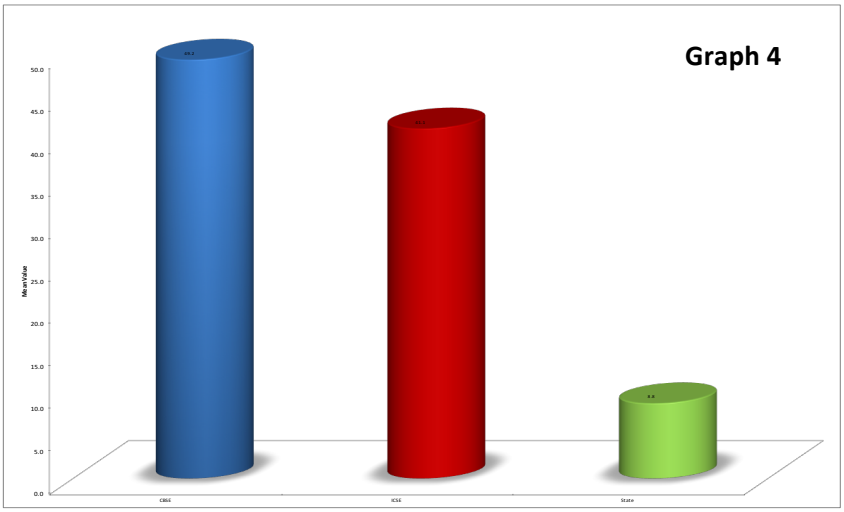
4.4.3 Ccomparison of percentage increase in belief score based on type of school in experimental model

Graph3 showing the change in percentage on the belief score compared to pre-test and post-test of experimental group(N=120). This is a very clear illustration of the fact that there is a difference between the curricula. The score is analysed depending on the type of institution they study and the results shows a maximum change for students studied in CBSE curriculum schools followed by ICSE curriculum schools. But the change is minimum in the case of state run schools. The general observation is that Children study in CBSE &ICSE schools in India are more receptive to new ideas and ready to accept challenges in life. During the intervention, children from CBSE and ICSE schools asked many questions and interacted nicely in the group. They enjoyed the programme and also contributed to make the programme, very live.



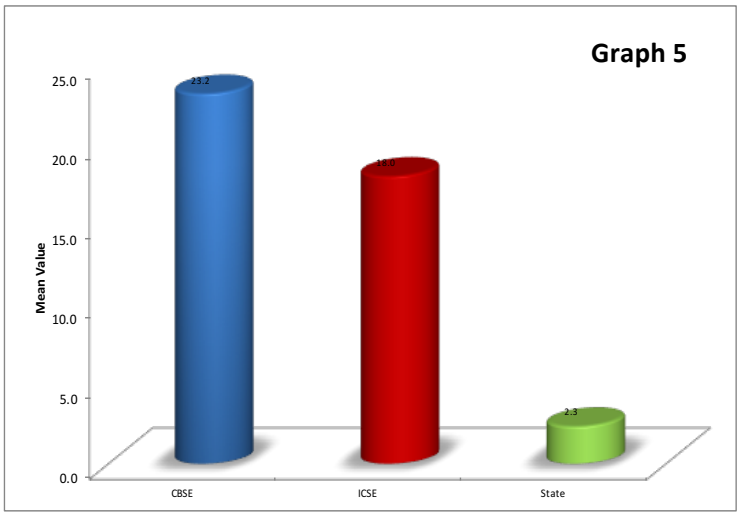
4.4.4 Ccomparison of percentage increase in overall knowledge score based on type of school in which they are studying.

Graph4 showing the percentage increase in overall knowledge of experimental group compared to pre-test and post-test(N=120). The score is analysed depending on the type of institution they study and the results shows a maximum change for CBSE curriculum schools followed by ICSE curriculum schools. The change is minimum in the case of state run schools again.



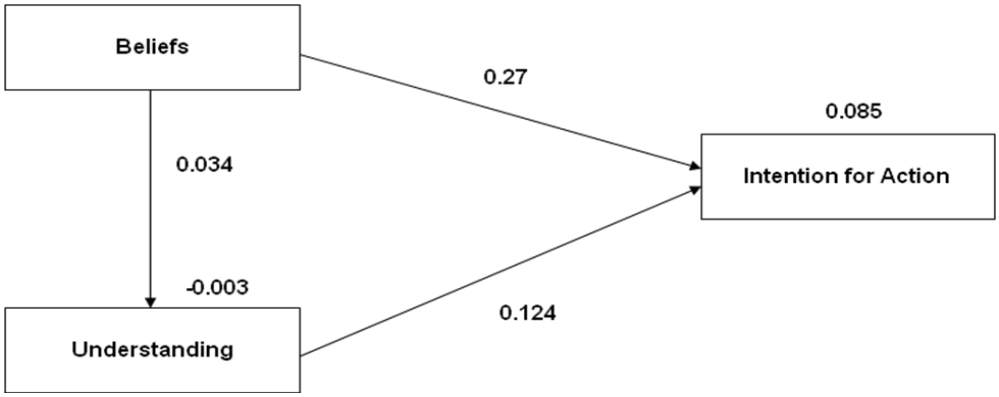
4.4.5 Effectiveness of five e model knowledge base on informed decision making in nuclear power plants in india, among the students of secondary school based on type of school

Graph 5 shows the percentage change in the score of children in the post-test depending upon the type of institution they study. The percentage change regarding informed decisions is maximum in the case of CBSE children and minimum in the case of State Schools children. There is a difference of about 16 to 20 between state run and CBSE type of schools, which clearly indicate that there exist a wide difference in the structural knowledge acquisition program between these type of institutions.



4.4.6 Structural equation model analysis of interdependence of beliefs and understanding, influence of beliefs and understanding on informed decisions.

Fig.1 shows the inter-dependence of Beliefs and understanding on Intentions for Action and influence of Beliefs on understanding. The structural equation model clearly shows the significance of beliefs and understanding on Intentions for Action



4.4.7 Teachers and Pre- Service teachers Comments

Three science teachers and two pre-service teachers with major science in science teaching were involved in this study. The 5E instructional model was formulated and implemented as a team with cooperative venture and was willingly undertaken in all its challenges for an effective completion. The cooperation and encouragement received from head of sciences and academic coordinators were very valuable at all stages of this intervention program.

The following were the final comments and observations from teachers and pre-service teachers. The quote given is almost the same repeated by other members also.
Teacher A:

“It was a great experience.They are concerned and committed about environment. It is normally a big issue to deal them during last two sessions on a Saturday; however, they were involved in formulating policies and researching ideas. Well unfortunately there won’t be many such opportunity within classroom environment to engage that effectively in science, although most of them really hate science. I have taken them to science museums and this is more interesting and engaging for them….”

Pre- Service Teacher A:

“Everyone is involved; there were discussions, arguments, research, teaching and learning. They were very realistic and serious with their roles and committed in making decisions. 5E instructional model is a very good framework it is an inquiry based approach very engaging and providing lot of life skills to students. I enjoyed the teamwork and gave me more confidence and competence to teach.”

Teachers and pre-service teachers played vital role in the success of this intervention and their comments concur with evidences from classroom and from questionnaire data. These interventions could lead to the following ideal scenario:

The ideal scenario describes students' beliefs, understandings and commitments to take actions that would enable individuals and communities regarding the use of Nuclear Power Plants in India.

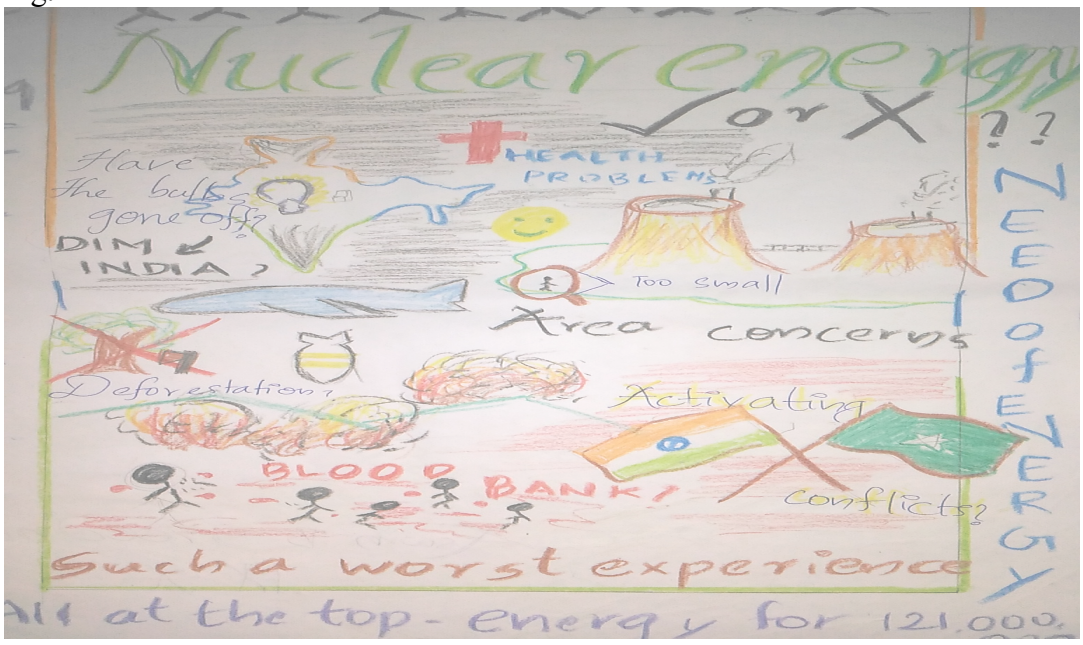
- Beliefs: the NPPs are to be handled carefully meeting all safety standards. It is not a bomb.
- Understandings: know that the NPPS may cause serious danger to society and at the same time capable of generating power at a very high rate.
- Commitment to take actions: students are now in a position to take a decision as part of National Policy making whether we need the NPPs or not. They will not depend on the opinion of others

Classroom teaching of science should encourage experience of issues related to environment in terms of decision making. This will provide opportunity for students' to engage real world decision making to issues such as energy use (Tsurusaki, etal., 2012). Decision making and formulating a policy documents based on classroom deliberations can empower students' in societal commitments and social justice (Dimik, 2012). These processes connect to the real use of science in daily life and probe engagement in science (Feinstein, 2010). Most of the teaching and learning science in classroom is disconnected o real world and become more formal and textual. In this circumstances promoting responsible socioscientific decision making though contextually teaching about science can influence responsible actions by future citizens (Herman, 2014).

5. Summary & Findings

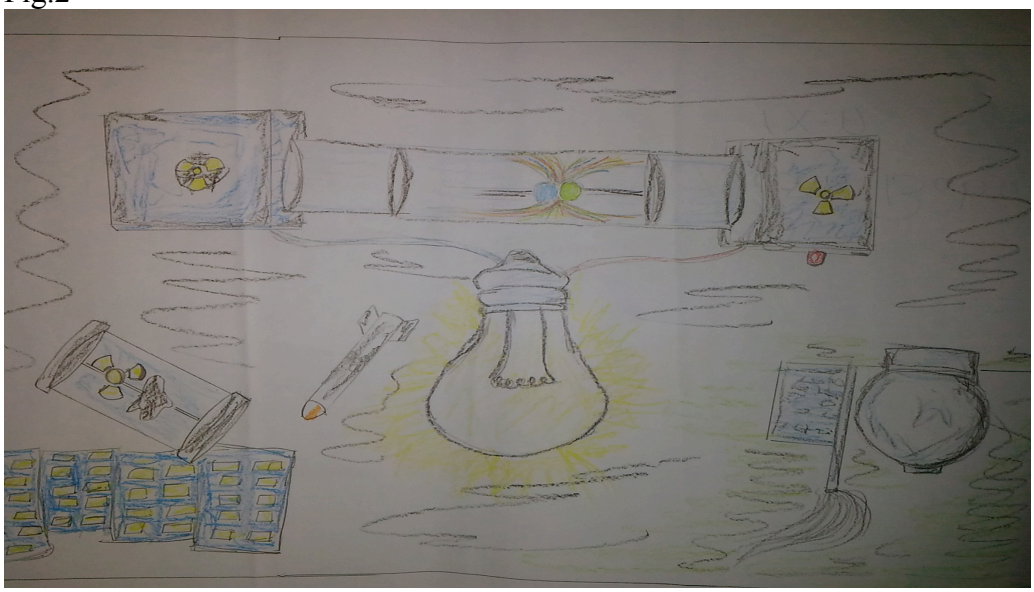
1. Before the intervention, children were having lot of ideas which are sometimes superstitions/unclear etc. One of the sample given below(Fig.1) explains well about the confused mind of children about the Nuclear Power plants and Energy production from Nuclear Power Plants.

Fig.1



2. After the intervention, the response was different, (Given in Fig.2)many children withdrew their idea of "a bomb "about Nuclear Power Plants and came up with more scientific reasons with logical background. Now they are able to derive conclusions of their own in a definite form.

Fig.2



3. After analysing the data, it is clear that unadjusted and adjusted mean scores at pre and post test achievement for overall knowledge of children studying in high schools, show a significant change in the knowledge level before and after the intervention.

2. Comparison of pre- test and post test on beliefs about Nuclear Power Plants among high school children, shows a significant & relevant change
3. Comparison of pre- test and post test on understanding about Nuclear Power Plants among high school children, shows a significant & relevant change .
4. Comparison of pre- test and post test on informed decisions about Nuclear Power Plants among high school children, shows a significant & relevant change .
5. There is a significant influence of beliefs and understanding about Nuclear Power Plants among high school children, on the decisions of children which is evident from the SEM and also there is a clear influence of Beliefs on understanding of children about Nuclear Power Plants

Based on these, the following conclusions have been derived

- **Overall findings indicate that before the intervention, future citizens' believe and understand that Nuclear Power plants are harmful to the society and at the same time, needed for the economic development of the country and had misconceptions about the safety of the Nuclear Power Plants.**
- **Study showed a shift in their position after the intervention. The data analysis using SEM showed that there is considerable change in their beliefs, understandings and intentions before and after the intervention and the changes are not unique in all cases.**

- **These differences were depended on the type of institutions (State, central government and private schools).**

A 5E instructional model unit of work based on a real world socioscientific issue like the need of NPPs will provide students with skills such as justification of claims based on evidences. They would weigh credibility of claims based on evidences and will use their science knowledge in justifications (Sandoval & Cam, 2010). Overall engagement in such units can provide students an ability to cultivate knowledge and skills needed to participate in scientific argumentation and evidence based informed decision making (Sampson, Grooms & Walker, 2010). Nuclear Power Plants being a complex scientific issue student' confident belief and understanding of science behind this issue affirm the utility of knowledge in framing polices and evidence based decision making (Manz, 2012). The real gap identified in this study is that normal school curriculum has no place in engaging science in real world. Pre-service teachers are also not getting an opportunity to organise an inquiry based instructional sequence to teach in school filed placements (Gunckel, 2013). Use of an instructional model like the 5E instructional model by teachers and pre-service teachers can change classroom environment and provide students' to become scientifically literate citizens to make informed decisions regarding their health, wellbeing and environment (Gunckel, 2011). Bridging this gap needs a deliberate effort from all angles like school curriculum, teacher preparations and overall education policies. Simple thing to do is make connection to everyday life in communicating science fruitfully and provide opportunity for evidence based decision making in classrooms (Nibert, Marsch & Treagust, 2012).

Scientific literacy can easily be integrated in secondary school children through 5E model lesson sequencing and this may lead to a generation, scientifically aware of policy issues and there by a stronger democracy.

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Scenery Changes on Campus Advanced by Students

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Abstract
University is where students improve their abilities and professors proceed with their research. It is fortunate if their interests coincide with each other's. However, they are not always the same. In such a case, a seminar in a laboratory might fill the gap between them to a certain extent. In department such as architecture or landscape architecture that considered as training for creating real spaces, the final purpose is to have the students experience creating a place as they visualized it, even if it is a small one. Armchair theory does not accomplish their real needs. Theory is important for researchers; however, students are young and often impatient and do not pay attention to others' past works. As a beginner, only experience can teach them the knowledge they require.
This paper shows the result of a trial begun in 2013, wherein students were provided the chance to make actual change in the scenery in an experimental area of the campus. Lawrence Halprin's RSPV cycles were referred to in this experiment. The landscape operations added to the site by the students in the campus yearly for a period of three years are presented, and the meaning each change conveys is also considered.

Keywords: scenery change, landscape architecture, students' experience, failure

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Introduction

All students have to belong to a laboratory during their junior year in our landscape architecture program. Each professor has their own professional interests and manages his or her own laboratory. I am an associate professor interested in the theory of scenery making. I have researched historical Japanese landscape making (Okajima, 2009, 2010). However, research on this theme has not always coincided with the interest of students even if they belong to my laboratory. Theoretical research explores verbal information in written form. Students' imagine this subject is more visual and tangible and naturally visualize real open spaces. Our landscape architecture program is in the Environmental Horticulture Department at the university. Students have to take several other natural science subjects. Visible and tangible information seems to be more important than conceptual and abstract information. Students are disposed to study in this manner. To correspond with students' interest and their learning temperament we began with their pre-conceived interest and developed it. In craftsmanship, the master displays experienced skill to the disciple. The disciple learns the master's methods of creating things by assisting the master's work. However, in my case, the teacher is a theorist, so when students want to obtain a practitioner's position, what happens? In this case, the laboratory professor becomes an observer of students, reversing the role of teachers and students. In reality, disciples are developed in their master's company. The company pays for their work. Conversely, university staff are paid from students' fees. Thus, the money flow is also opposite. Hence, since 2010, our laboratory has supported students' project of creating scenery on campus. If students are interested in such a scenery creating process, we provide them the opportunity. Therefore, all we provided was the opportunity and observed what happened. Nevertheless, it is not easy in most cases. Researchers want to spend their money on their own research subject. When students created some real spaces that were not good products, the money for the project was utilized for the failed work of students. However, we did accept this situation for six years. During this period I lead a project myself only once in 2013. Except for this, students have advanced all the scenery changes. We have already published our activities in 2010 and 2013 (Okajima 2011, 2014; Fiscal year of 2014 is 2013). Three years has passed since then. This paper describes the new changes that have occurred.

Lawrence Halprin, a master of American landscape architecture called his life, "A Life Spent Changing Places" (Halprin, 2011). He did not say, "a life spent designing places." "Changing" was a better word for him. It is also true about our project.

Objectives

This paper first briefly displays the outline of our project, and second, indicates two important events from previous years. Halprin described the creative process as "RSVP cycles." We examine earlier important events in this respect. The accomplishments in 2016 were the most recent and impressive, so we review the project from the perspective of educational opportunity.

Project history and overview before 2016

Our campus was constructed in 2009. From 2010, our faculty members moved onto this campus and lectures and practices began. The first students' project began in

2010. Six years have passed since then. Table 1 displays students' activities each year. It indicates the year, outline of the activity, a concrete explanation, and the number of students who participated in this graduate work. The number of students varied each year. Altogether 23 students, 77% of all laboratory students chose this as their primary graduate work.

Table 1. Scenery changes practiced by our laboratory since 2010

Year	**Outline of Activity**	**Explanation**	**Number of students**
2010	Initial project	Land survey, Conceptual design, Level the land, Terrace and fireplace, Path, Readymade bench, Three small islands landscape	4
2011	Extending the 2010 landscape	*Karesansui* (Dry landscape garden), original bench, addition of six plants	1
2012	Creating an entrance	Low brick gate as an invitation of space usage	3
2013	Constructing a wooden shed	A shed for storing garden tools, adding human element in the woods	2
2014	Exchanging the 2011 bench	The 2011 bench was rotten	1
2015	Renewing the 2010 path and islands	Five islands from three, adding habitability in the 2013 house	5
2016	Renewing the 2015 islands, making a new pergola, exchanging the 2014 bench	Three new benches for people's communication, accessible pergola, improvement of darkness in the woods	7

The following content describes the important activities for this paper.

The first important year was 2010. The candidate place was a wooded square area of 20meters by 30 meters. Once a withered tree was removed from the area, some open space appeared. First year students made a small garden there. That year three of four students were close friends. They wanted to symbolize their friendship by making scenery. In the summer holidays, one student called and told the teacher that he truly wanted to create a good graduate work with every laboratory member. The other student was not a part of the friends' group, but he had a strong interest in design. He drew his ideal plan as a diagram on a whiteboard in the students' room. The other three students respected this diagram and decided to construct it. Because the original diagram contained several ideas, they could not realize everything. The details of this project were introduced in the previous report (Okajima, 2011). Let us observe this project from the RSVP perspective. One student illustrated "Score" while the three close friends did "Performance." The first diagram contained a square terrace that was altered into a triangle to reduce costs. These four students did not give this advice. A fifth student indicated this procedure. It is like a "Valueaction" operation. Another student proposed that this area was suitable for our graduation work. Without the student's proposal, we would not have decided on this place. All these six members

that year participated in “Resources.”

In 2013, a new aspect was introduced. The other university students did not seem to pay much attention to the wooded area. We had not examined people’s usage frequency here. We did not recognize the exact effect and value of this place. The situation is the same even today. Fortunately, we saw a questionnaire conducted on senior students wherein a person indicated that this was the most relaxing place on campus. Though that was a nice description, I saw it as a somber space. The woods had been implemented as a garden. To make it a real garden, a house had to be constructed.

I proposed that the students create a small shed to generate more human warmth there. I imagined a summer resort in central Japan and “Zoki no niwa” which was a modern Japanese garden style. The teacher persuaded students about the purpose of the project. Thus, constructing a shed in the woods became their graduate work. Laboratory members did not draw the design of the shed. Perhaps members designed some shapes but we had to construct it in the space. In traditional architecture education in universities, students have the opportunity to design a variety of buildings but they remained un-built projects. To construct a real building a vast amount of money is required. The university could not pay for such an imaginative project. If students have to be involved in constructing buildings, they have to participate in real projects requested by clients outside the university. Since that is a true professional’s work, why would an amateur receive such a contract? This project was an empirical study that assessed one very important factor. Did we really have the ability to construct a building from a blueprint? I searched for blueprints and advice regarding the concrete construction process. Even though it was a scenario, it was a completely new experiment for our faculty. Eventually we constructed a small wooden shed that year using a DIY text. Details of this project were introduced in a previous report (Okajima, 2013) as well. The DIY text was selected from several options based on an aesthetical viewpoint. The Teacher chose it. Let us look at this project from the RSVP perspective. The DIY text displayed a “Score.” The Teacher organized the schedule for the construction. Two students had to participate in the construction. The Teacher also worked as a constructor. The Teacher had to work very hard. So two students and one teacher were “Performers.” The DIY text explained every construction process. Though it was helpful, it sometimes did not explain every method specifically, so we had to consider other methods. This was like “Valueaction.” Our university has a practical training facility that has several woodworking tools. This was one of the “Resources.”

2016 Project

This year, totally there were seven laboratory members. There were three groups of close friends. Each group had different characters. One student was outside of the three groups. This student first chose a graduate thesis. The other six students wanted to be involved in scenery change as graduate work. Apparently, the group number was stable. If one group merged into another group, they could not work efficiently. The Teacher gave several choices such as different place, different theme etc. If they accepted to do graduate work in a vacant plot in a different place, they could do a completely new activity. The appeal did not make sense. They selected the wooded area even though it had several restrictions. Figure 2 illustrates the wooded area.

The wooded space was important for several teachers. It was the nearest woods from the main faculty building. The natural science teachers sometimes brought their students here to observe nature. This area was also frequented by environmentalist. There was the risk that students might insist on behaving like developers, desiring to cut down several trees.

For the students, the place senior students concerned was important. They considered the activity in this place endorsed an authenticity. For them the place was an important "Resource." Before admitting these students to utilize the area, I created an official document setting the boundaries for usage and protected areas. The space was 20 by 30 m^2 so, in a sense, it was not a completely protected area (it was venerable area). This document was circulated among the managing team members of our campus and a month later, we obtained permission to use the area.

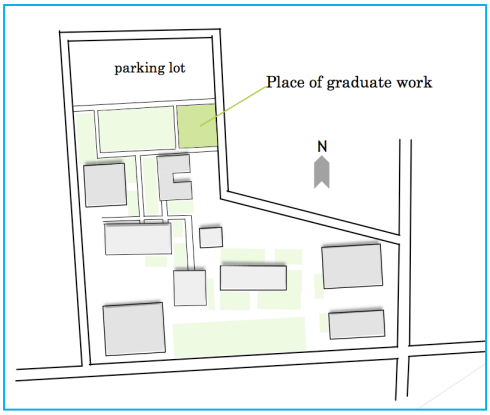

Figure 1. Placement of campus

It was the end of summer. It is difficult to use this area between spring and autumn as there are many mosquitos. The second semester began in October. From autumn to spring, the conditions are better. A student outside these three groups asked the teacher that he be included in the graduate work. He joined one group. This year three groups had to conduct graduation work in one area, so setting a boundary for protected and usage areas was helpful. The three groups wanted to conduct their work independently. To accomplish that, three themes had to be in place.

The following was what happened. One group proposed to take over the renovation of the 2015 project ("group C" hereafter). The senior students had created five islands in 2015. Members of group C obtained permission from the seniors to alter the island scenery. Therefore, they appropriated that portion of the site and selected the working area. The Teacher did not influence this group. They found their own working area.

Members of group B increased into three people by the end of summer. They seemed to be interested in woodcraft. One student was interested in architecture. I asked the student to design a wooded arbor. Our university is situated in Southern Japan. In summer, it is hot and the sun is very strong. "If an easy-to-make arbor model is designed, it can be used in other places on campus. So how about making a good model in the wooded area and if it is nice let us build the same model in other places as a sunshade." This was the proposal for the students of group B.

Group A members were interested in motorcycles. They enjoyed altering and repairing motorcycles. Hence, they were considered good at manufacturing. "They might do graduate work smoothly," the teacher thought. They seemed to be realists. They did not approach theoretical learning during laboratory seminars. They always seemed to have something more important to do than laboratory activity. They proffered minimum participation in the laboratory. This group was proposed an assignment. Samples of the hardwood "Itauba" from Brazil were in our laboratory's storage. Group A was asked to use the timber in graduate work. The Teacher did not tell them what to make. Therefore, for a long time, they could not decide what to do.

Figure 2. Completed scenery

Figure 3. Scenery of group B

Figure 4. Scenery of group A

The group A leader would sometimes offer to help the other groups if necessary. However, such need did not appear. The leader finally found a theme to work on. In the first semester, we had conducted a seminar in the shed made in 2013. Eight people gathered in the shed. It was very small for eight. The leader remembered this and proposed to create a space where seminars could be held. Three benches for about eight people were proposed. He said, "This space will be a good place for laboratory seminars in the forest in the future. Sometimes holding seminars outside will help deciding the next effective laboratory activity." It was a sign that the group had found their own theme.

All three groups were informed about the budget for their activity. "Maximum budget for the activity of each group is 700 dollars," they were told. Then they began their own assignments. Completed scenery is shown in Figures 2, 3, and 4.

Consideration

In scenery, when many people gather and effectively accomplish something there has to be some "score." If there is no score, the people may not accomplish anything meaningful. That is human nature, I think.

In our laboratory activity in 2016, three groups had to do something in one place. The three groups had their own scores and their own missions. Table 2 illustrates the first score maker. The existence of these "scores" leads their own "performances." First performances have the potential to lead their next scores. When their performances were about to result in scenery, they were asked, "Why not consider each other's work? This is one place and we are doing this as a group. Please look at the whole scenery. There are sceneries made by senior students and by other groups. Please find a way to relate fittingly with the other works as currently, each scenery is isolated."

Table 2. First score maker

Group	**Score maker**	**The contents of first score (assessed by observer i.e. teacher)**
A	Students	Inherited senior students' area, enhance its usage aspect
B	Teacher	To create an arbor where passersby can rest
C	Students	To create a suitable space in the woods where several people can have discussions

Group B created a small path to the one that senior students had made in 2015. They changed the rafter design. This might be a small aspect but it transformed the area and created a sense of unity. The Teacher's advice operated as "Valueaction."

One "Resource" in this experiment were eight (7＋1) laboratory members. There were other resources including history, i.e., five years of accumulated sceneries. There was special hardwood that was a material resource.

Evaluation

After the completion of every construction, the students were given a questionnaire. It asked nine aspects of graduate work that are summarized below.

1) Do you think it was useful for you to choose graduate work (changing scenery project)? Please write the reason.
2) What do you think if you have a special budget for your project? Does it help?
3) Compared with a graduate thesis, was it good for you to actually create a space?
4) Do you think teachers have to participate more in your project?
5) Please evaluate the result.

86% of students stated that choosing graduate work was useful and gave the following reasons:

・*Having to work within a set of guidelines enabled me to think of different ways of doing the work. If there had been no rules, I might not have been able to consider new methods.*
・*We could imagine a garden and consider it in unity with the surrounding environment. We could contemplate the ideal state of the place from several viewpoints.*
・*Deliberating on a way to make the place better, we thought and got ideas.*
・*I learned the difficulty of dealing with lumber. I learned about presentations.*
・*I learned to make a schedule and act upon it.*
・*From this experience I could see things what I couldn't before. It was related to other things.*
・*This enabled me to think for myself and act.*

One Student did not provide a positive response as he suffered from Agoraphobia and Claustrophobia. The person indicated that he could not obtain a similar job because of his anxiety disorder.

Conclusion

We explained a brief history of scenery changing activities from 2010 to 2016. The 2010 and 2013 projects were reviewed from the RSVP perspective. The process of the latest 2016 project was described. The 2016 project was almost successful so the RSVP cycle was utilized. Reviewing this project indicated the following:

1) Good relation between students creates a good result.
2) Students are happy with graduate work especially when it is a result of their good teamwork.
3) A kickoff "Score" is effective for students to begin their own projects. Such scores stimulate students. A score leads to "Performance." The performance leads to the next score with "Valueaction."
4) Showing students the "Resources" of the activity is also effective.

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