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MORAL/RELIGION EDUCATION AND THE TEACHER AS ANTIDOTE TO INDISCIPLINE IN SCHOOLS

Dr. James Audu Ngada*

Abstract

The practice that relgion and moral education are no longer compulsory subjects in schools has greatly contributed to the problem of indiscipline amongst students.For schools to curb indiscipline amongst students there is need for full restoration of moral and religion education in the school curriculum as well as activities such asmorning and afternoon devotions. There is equally the need to employ teachers that are morally sound and disciplined who would assume their full responsibilities as role models to their students. Schools should equally appoint disciplined students to participate in the governance and administration of their schools.

Key Words: *Moral, religion, teacher, antidote, indiscipline, schools.*

Introduction

Schools established by Christian Missionaries or Islamic Organisations before the takeover of schools by the Federal Government of Nigeria around the 70s were emphasising moral and religious worship in almost every aspect of their programmes. There was early morning devotion before going for morning lessons and afternoon devotions before closing for the day. All these activities contributed in disciplining students in their schools. Teachers themselves were not left out in the process of disciplining students. Teachers then must participate actively in all religious and moral activities of their schools. The aim behind it was to instil discipline in the students and to remain good role models for their students. The true secret to discipline in those schools of the olden days was nothing other than the attitude of the teachers by being good role models to be emulated by their students. Teachers were morally sound and religiously commited to the tasks assigned to them. Teachers really practiced what they preach to their students unlike those of today who preach "do as Isay but don't do as I do".

For discipline to be instilled in students as witnessed in the olden day's schools there is need to reintroduce moral/ religion education as compulsory subjects for students. Also teachers are not only to teach

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these subjects as ameans of eking a living, but they must be true practitioners of what they teach and preach. They must set good examples to be emulated by their students. Teachers must be those that belief in God and practice the tenets of their religion. Equally disciplined students should be appointed as student union leaders to participate actively in the good governance and administration of their schools. Students need to be part and parcel of the decision making body of their schools.These students are in a better position to give the school authority better advices on the behaviours of their colleagues which will help to curb all indiscipline menaces exhibited by the students.

Moral/Religion Education

Oxford Advanced Learners Dictionary (2006) defined morals as the priciples of right and wrong behavior. Moral is the ability to distinguish between right and the wrong. It concerns itself with goodness as well as badness of behaviour. Generally speaking, moral deals with good character, right or proper conduct or righteousness.

Moral education can be regarded as the process of guiding the character development of an individual in the society in order for an individual to be able to do what is right or just. Again, moral education can be regarded as the teaching or an attempt to teach standards of right or wrong. It also concerns itself with the establishment of principles of right or wrong as well as their application to individuallives (Lawal, 2006).

Education according to Lawal (2006) generally enhances the development of good moral conduct in the society. Moral education is therefore responsible for strengthening the idea of morality as an important foundation for social order in the individual and the entire society. This is best achieved through the moral rules established by the society for its citizens. Morality as an instrument for developing good conduct in the individual kicks strongly against such behaviours as cheating,stealing, dishonesty, fraud, armed robbery, drug abuse, disrespect for oneself, disrespect for elders and authority,disrespect for colleagues or agemates,etc. Morality however supports good behaviours such as honesty, truthfulness, fairplay, respect for authority and elders, kindness, hardworking and patriotism among others.

To teach good morals in the school, the school should include in its curriculum moral and religion education. Most of the school subjects if taught correctly have some contribution to the moral development of the students but the contribution of religion is greater than all the others. This simply put is that religion has to do with the belief in the existence of a supreme being (God). Also naturally it is difficult for good moral to exist without religion or religion without good moral. Conclusively therefore both religion and morality are inseparable as none of them can be studied in isolation. Again it is worthy to note that God is the origin of morality considering the nature of God Himself. He is full of moral; He therefore expects uprigthness from creatures-- including man. If we agree that God is the origin of morality, then it is also logical for us to believe that the source of morality is basically located in the Holy Books of the two religions, Holy Bible and Quran. For this reason, it can be concluded that moral actions are derived

from religion as a result of which the two cannot be separated. Thus to curb the menance of indiscipline amongst students they need to be morally sound which is only possible through the teaching of moral and religion education.

The Moral and Religion Education Teacher

The personality of the teacher of moral and religion education affects the students morally in many dimensions. An ideal teacher has certain traits which in one way or the other affects the students positively or negatively.Some of these personality traits according to Lawal (2006) and Ukairo (1978) in Lawal (2006) include the following:

Dressing: The teachers dressing should be modest and neat. Male teachers should dress in simple dresses, well buttoned and appear neat. It is unethical for female teachers to put on trousers or transparent dress. All her clothes should cover her nakedness, neat and modest. They are expected to be role models to their students even in their dressing culture. The teachers hair, fingernails and teeth should be well cared for to be emulated by their students.

Reliable and Cooperative: The good teacher should be a person of honour. He should have self respect. He should be polite to his students, interested in them and their problems and treat them with understanding. He also works in harmony with other teachers. He carries out his duties very well and does not tell lies. He is hard working and reliable.

Sincere and Honest: Agood teacher should be trustworthy by his students.He should love all his students and treat them the same. He should correct his students' mistakes in love. He should aim at makig his students the best in the school.He should fulfil all promises made to his students.

Be Patient: The teacher should know that there are different categories of students in his class-the above average, average and slow learners and should treat them patiently as they learn at different paces. Students learn certain important concepts and habits slowly and gradually and so should endeavour to be patient with them.

Be Firm: A good teacher should make few rules and stick to them. He should not say onething today and do a different thing tomorrow.

Be Kind and Courteous: A good teacher should know when his student is in difficulty both personally and academically and should be willing to give a helping hand to solve his problem. Being kind does not mean the teacher should condone bad behaviours exhibited by his students.

Be Healthy and Full of Life: A good teacher should maintain good health which is essential for teaching. He should be enthusiastic in his work as a teacher. He should put life to his work to make his teaching interesting and lively.

Be Able to Communicate Effectively: An ideal teacher should have a good command of English or the vernacular to be able to present clear and audible messages to his students. He should be a good model to his students in spoken and written language.

Be a Learner Always: Agood teacher realises that learning goes on throughout life.

The teacher should make it a policy to buy new books every year for his personal library. He attends refresher and inservice courses when the oppurtunity is made available. He should be the type that exchanges ideas with hiscolleagues on educational problems and issues.

Strategies for Teaching Morality and Religion in Schools

In the teaching of morality and religion the teacher should make sure that the strategy chosen should appeal to the three domains of the students-cognitive, affective and psychomotor. For a teacher to be a good role model to his students he needs to observe the following according to Lawal (2006):

1. **Be punctual to class:** This will create the habit of punctuality in the students in all their endeavours.
2. **Be conscious of time:** Always respect time at your disposal. This will make the students respect time and be time conscious in everything they do. This will disabuse the idea of African time in their minds.
3. **Be adequately prepared:** This will create in the students the habit of good preparation for everything they intend doing.
4. **Be sure of neatness of chalkboard before writing:** This will create the culture of neatness in the students not only in their writing but also in every area of their life.
5. **Make sure students are well prepared with right textbooks and writing materials:** This will keep the students busy and engaged. There will be no room for mischief and laziness among the students.
6. **Know your subjectmatter very well:** This will make the students learn very well and destroy the spirit of cheating during exams. This is because the teacher will teach very well and the students will understand the lesson which will remove the room for non understanding and the desire for exam malpractice.
7. **Avoid corporal punshment:** This will make the teacher to be loved by his students.It will foster love and good relationships amongst students and the teacher.
8. **Make use of rewards and punishment as the need arises:** This will motivate students to be interested in learning and avoid disruptive behaviours.
9. **Make provision for adequate class activities:** Students will be kept busy and there will be no room for indiscipline in the classroom. This will train them to be hard working and self-reliant.
10. **Encourage class participation:** Individual differences of students will be recognised. Each student is encouraged to discover himself and feel important as he participates and contributes in class discussions.
11. **Know your students by names:** Teacher will make their students feel loved when they are called upon by names. This makes the student feel he is recognised by his teacher and

he can easily approach his teacher even when he has a personal problem.

12. **Make the best use of facilities at your disposal:** This will make the teachers' lesson interesting as students will participate fully in the activities of the lesson. Students understand better when they handle and manipulate things by themselves.

13. **Aim high or at the best performance:** This will encourage students to set goals that are attainable in life.

14. **Be cordial with the class:** This will give the students the priviledge of trusting each other and relying on one another and the teacher. Even in the absence of the teacher there will be discipline in the classroom.

The Teachers Role in the Academic Development of the Student

Ukairo (1978) in Lawal (2006) analysed the teachers' role in the academic development of the student as follows:

- **Set clear objectives:** Teacher for his teaching to be effective and meaningful to his students must have clear objectives of what the students will achieve at the end of each segment of his teaching. This will give the students the oppurtunity to achieve the set goals of their education.
- **Preparation of lesson:** Lesson plans should be adequately prepared for the objectives of the lesson to be achieved by both the teacher and the students. In his preparation he will take into account his students background, the subjectmatter, the locality and his knowledge of the lesson.
- **Provision of motivation:** Different devices could be used by the teacher to motivate and sustain the interest of their students. Such devices may include praise, prizes, award of marks etc. They should be used with caution to prevent its abuse by both students and the teacher.
- **Providing oppurtunity for active learning:** Students should be actively involved in the teaching-learning process through varieties of activities. Good teaching aids should always be provided for each teaching episode. This will appeal to most of the senses of the students and make learning to be meaningful and permanent.
- **Individual differences:** In most classroom set ups the population of the students are heterogenous in ability. Some are above average, average and some below average. The teacher needs to adapt methods, activities and assignments that will suit the individual differences of the students. Students from time to time can be grouped according to their abilities and given work based on such abilities.
- **Maintaining good relationships with students:** Teacher needs to have the interest of his students at heart. This will make the students to appreciate his encouragement and understanding of their problems. The more he respects the individuality of the students, the less trouble they will make in the class. Students will

equally accept punishment as corrective rather than hatred.

- **Teaching using varieties of methods:** For the lesson to be interesting, understood with active participation by each student, there is need for varieties of methods to be applied in teaching. This will sustain the interest of the students over a long period of time.

The role of teachers in inculcating moral values in the school students

Oxford Advanced Learners Dictionary (2006) defines Moral Values as beliefs about what is right and wrong and what is important in life. Values can be regarded as perception of what is desirable and cherished by an individual (Lawal, 2006). The role of teachers in inculcating values in school students according to Lawal (2006) includes the following:

1. He should be able to identify the most rules for the students.
2. He should be able to identify the character which he wants his students to promote.
3. He should teach the students to have consideration as well as feeling for others.
4. He should be able to teach the students to understand or read the minds of others.
5. Teachers should give moral education to their students.
6. Teachers should serve as models for their students. In other words, whatever they expect from their students, they should also demostrate it.
7. Teachers should teach their students how to relate to the society in which the school is located or situated.
8. Teachers should relate education or school lessons to the real life situation.
9. Teachers should lay greater emphasis on the value attributes of the school lessons.
10. Teachers should act as the society mirror and teaches the students the right way to behave.
11. Teachers should emphasize the moral aspect of religion while teaching their students.
12. Teachers should have a sense of resposibility and a sense of devotion to duty.
13. Teachers should come to work regularly and punctually to show good examples.
14. Teachers should be committed to their work.
15. Teachers should instil discipline in their students.
16. Teachers should always be honest in carrying out their duties.
17. Teachers should always see themselves as parents of their students.

The Role of the School in the Moral and Character Reformation of Students

Lawal (2002) identified several roles the school can play in the moral and character reformation of students. Some of these roles include the following:

- ✓ The school needs to provide adequate educational materials that could be

used to teach the students. Such educational materials should include relevant textbooks, teaching aids, etc that would influence students attitudes towards positive change in their character formation.

- ✓ Moral and religious education should be included in the school curriculum. Unlike today where moral and religious education as subjects are optional, they should be made compulsory for all students and should be taught as practical as possible with students practicalising the expected behaviours in their school environment and even in the wider society.
- ✓ Condusive environment that will enhance learning should be provided by the schools. Good facilities such as building infrastructures and well landscapped environments with beautiful flowers should be made available. Equally good seattings (furniture) should be provided in the classrooms. School environment should be kept tidy and clean for condusive learning of good habits of cleanliness and tidiness.
- ✓ Programmes of various types that will motivate students to learn should be organised by the schools. Clubs and societies such as debating club, Boys and Girls brigades, Man owarbay, Boys scouts and religious bodies such as Muslim Students Society (MSS) and Fellowship of Christian Students (FCS). Educational films, field trips, dramas and resource persons could be used to help students develop good character and morals.
- ✓ The school should teach the students how to be good and loyal citizens of their country and particularly in the school. School teachers, head teachers and their assistants should practice what they teach the students as good role models.
- ✓ The school according to Ngada (2009) should appoint disciplined students as leaders of their colleagues. These students should be part of the governing body of the school. This will enable the students contribute positively in the administration of the school.

Conclusion

Education is a vehicle for positive change. As a result of this any nation or society that wants to bring positive change in her citizens embark on education as the instrument for that change. However, such a change is only possible where you have dedicated, committed and qualified teachers. It is for this reason that the National Policy on Education (FRN, 2004) stated that 'no education of a nation can rise above the quality of its teachers'. This equally agrees with the adage that says 'like teacher like student'. Thus moral and religious education should form part of the school curriculum if discipline should be returned into the lives of students. Also teachers and the school needs to be committed if this goal is to be achieved in sutdents and the wider society.

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POLICY OF INCLUSION AS AN ETHICAL IMPERATIVE FOR THE LEARNING DISABLED

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Abstract

This paper is about the ethical considerations of inclusion. Inclusion's central ethical issue is whether or not the disabled deserve equal access to educational establishments and to not be segregated in demeaning and detrimental ways.

Inclusion is the placement of a child with a disability into the general education programme (Roy, 2001). Lindsay (2007) suggests that 'inclusive education/ mainstreaming is the key policy objective for education of children and young people with disabilities'. In practice, inclusion must be made functional. This is an issue of planning, logistics and research. Educators must find balanced ways for disabled students to spend quality time with their peers as well as with their special education teachers who are critical to their supplemental support. Similarly, educators need to find ways to involve peer support groups that truly bolster the child's sense of inclusion and allow them to establish actual relationships with fellow students.

Introduction

Inclusion's central ethical issue is whether or not the disabled deserve equal access to educational establishments and to not be segregated in demeaning and detrimental ways.

Inclusion is the placement of a child with a disability into the general education programme (Roy, 2001). It is generally accepted that "Inclusion" means inviting those who have been historically locked out to "come in". This well-intentioned meaning must be strengthened. A weakness of this definition is evident. Who has the authority or right to "invite" others in? And how did the "inviters" get in? Finally, who is doing the excluding? It definitely becomes our responsibility as a society to remove all barriers which uphold exclusion since none of us have the authority to "invite" others "in". So what is inclusion? Inclusion is recognizing our universal "oneness" and interdependence. Inclusion is recognizing that we are "one" even though we are not the "same". The act of inclusion means fighting

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against exclusion and all of the social diseases exclusion gives birth to racism, sexism, 'handicapism' and similar social constructs. Fighting for inclusion also involves assuring that all support systems are available to those who need such support. Providing and maintaining support systems are a civic responsibility, not a favour. We were all born "in". Society will immediately improve at the point we honour this truth (Asante, 2000).

The term 'inclusive education' is nowadays broadly conceptualised to include students from different backgrounds and, as well as students with disabilities (Ashman, 2002).

The term 'Inclusion' signifies the process of interaction of disabled children and normal children in the same educational setting (Sibichen, 2008).

Lindsay (2007) suggests that 'inclusive education/mainstreaming is the key policy objective for education of children and young people with disabilities'. The Kothari Commission (1966) which highlighted the importance of educating children with disabilities during the post-independence period. It expressed that the education of children with disabilities must be a part of the general educational system suggesting that educational facilities must be extended to the blind, deaf, orthopedically challenged and mentally challenged (Pandey, 2006). In 1974, the centrally sponsored scheme for Integrated Education for Disabled Children (IEDC) was launched which is currently being implemented in over 90,000 schools in the country. The scheme was introduced to provide equal opportunities to children with disabilities in general schools and facilitate their retention. It provides facilities like expenses related to books, stationery and uniforms, allowance for transport, reader and escort for students with disabilities. It also supports appointment of special teachers, provision of resource rooms and removal of architectural barriers (MHRD 2009).

Inclusion is a Moral and an Ethical Right

Children with disabilities are first and foremost children. They will benefit from the same experiences that are desirable for all children, for the same reasons. They also will benefit from avoidance of the same undesirable experiences, for the same reasons. Inclusion provides opportunities for socialization and friendships to develop. It provides a sense of belonging and appropriate modelling of social, behavioural, and academic skills. Including children with disabilities in general education classes models acceptance of diversity. It teaches children how to relate with others of different abilities. Separate is not equal. If something is offered to all children, it must be accessible to all children. Access should not be denied based on disability or any one characteristic. Children with disabilities have a right to go to the same schools and classes as their friends, neighbours, brothers and sisters. They have a right to be afforded equal opportunities.

What are some of the practices that promote inclusion?

- Appropriate supports and services are available in general education classes.
- Individualized education programs are well designed.
- Students with disabilities are considered in decisions that affect all students.

- Teacher preparation adequately addresses inclusion of students with disabilities.
- Disability is considered when teaching about diversity.

Ethical Issues of Inclusion

One of the difficult challenges regarding inclusion in the classroom is actually defining what inclusion means and who it concerns. While the notion of inclusion may point toward many types of differences such as racial, ethnic, economic or social. The primary focus of the inclusion has concerned students with disabilities or those designated "at risk." Strategies for their ethical inclusion in the classroom revolve around how to best acclimatize them to a normal relationship with non-disabled peers, enhance their quality of education and cater to their essential and specialized needs for support and services.

In practice, inclusion must be made functional. This is an issue of planning, logistics and research. Educators must find balanced ways for disabled students to spend quality time with their peers as well as with their special education teachers who are critical to their supplemental support. Similarly, educators need to find ways to involve peer support groups that truly bolster the child's sense of inclusion and allow them to establish actual relationships with fellow students.

Although inclusion is seen as important in most countries, experience tells us that it is difficult to achieve for children with additional support needs for a number of reasons including:

a) Uncertainty about professional roles and the status of teachers especially those who have responsibilities for additional support needs
b) A lack of agreement about the nature and usefulness of specialist knowledge
c) Territorial disputes between professionals associated with certain 'special' practices
d) Inadequate preparation of teachers and a lack of on-going professional development opportunities.

What are some of the barriers to effective inclusion practices?

1. Funding is used as a reason for not identifying and appropriately supporting a student's needs.
2. There is a separation between general and special education—two systems.
3. There is lack of accountability and a failure to collect data objectively.
4. There are low or no expectations for students with disabilities.
5. There is a fear that general education classrooms will be disrupted if students with disabilities are included (Karagiannis, Stainback, & Stainback, 1996).

Conclusion

In keeping with demands for a more inclusive system of education in India, the government promises to include disabled children in all its educational programmes. In a move to make the educational system more inclusive, the government has promised to include disabled children in all its educational programmes including the Sarva Shiksha Abhiyan and the Integrated Child Development Scheme (ICDS). India is one

of the few countries in the world where 90% of disabled children do not receive any form of education, although there are a handful of schools in Mumbai, Chennai and Delhi where inclusive education is being practised. Children with disabilities and special needs also have the right to education just as normal children do. Inclusive education strives to address the learning needs of children with special needs, with a particular focus on those who are subject to being isolated and excluded. The philosophy behind inclusive education is to promote opportunities for all children to participate, learn and have equal treatment, irrespective of their mental or physical abilities. While the awareness on inclusive education in schools throughout the country is still at an infancy stage, educational institutions are somewhat sceptical about having both normal and special children studying in the same classroom. And in circumstances, where a former excluded child is given admission into a mainstream classroom, the outcome of the action is questionable.

Lack of flexibility in curriculum, inability to fend for them and thus being bullied by others in the class and not getting adequate attention from the teacher are common issues. All these may result in the child not getting a fair inclusive education. As a result, the number of children with special needs receiving higher education is on the decline. In India, a majority of children with special needs do not receive any formal education, in spite of the practice of inclusive education in some schools. This is because children with disabilities and learning deficiencies are segregated from mainstream schools and other regular routines and social activities of normal children. Other contributing factors to this situation are lack of affordability and awareness on the kind of education choices available to children with special needs.

Hence, inclusive education becomes a key reason for integrating a special child with the mainstream. Inclusive schools have to be well-equipped in all aspects to cater and deliver quality education for all children. This includes having a balanced curriculum that is appropriate for all categories of children, teachers who have the ability to handle the individual needs within the classroom and thereby promote an environment where personal development, social skills and student participation are strongly encouraged. Another critical aspect of inclusive education for a special needs child is in having the acceptance and friendship of classmates. This kind of support also aids in the progress of special children and helps them gain confidence within the school environment. Further, parents have a vital role as partners to make inclusive education successful within the classroom. This is possible when the children with special needs continue to live at home and attend school, just like normal children. Parents should also be involved with the teachers and administrative staff at the school to coordinate travel arrangements, school activities and learning materials for their special child.

There are several national and local NGOs that champion the cause of children with disabilities and provide specific resource centres in support of inclusive education. There are also private schools in the country such as The Heritage School, Akshar School, Vydehi School of Excellence, Chettinad

Srihari Vikasam etc. that offer individualised learning programmes for children with special needs. In conclusion, children with special needs have a distinctive experience undergoing inclusive education along with normal, non-disabled classmates. There are several barriers for providing education to special children in a regular classroom.

We can overcome these obstacles by creating more awareness on inclusive education, by schools having the resources and the ability to re-structure their curriculum to cater to all types of students, by recruiting teachers who have the skills and proficiency to meet varying demands within the classroom and by having the support of family. If these changes are implemented, it will increase the confidence of a number of special children to aspire for a valuable education like their normal peers.

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WE'VE GOT TO DO BETTER: EXAMINATION MALPRACTICE AS A BARRIER TO GOOD GOVERNANCE AND DEMOCRATIC LEADERSHIP IN CROSS RIVER STATE, NIGERIA. (A QAULITATIVE STUDY)

Dr. Bernedette U. Cornelius-Ukpepi*

Abstract

For good governance and democratic leadership in Nigeria, universities must address the issue of examination malpractice. We need to assure that those who claim university degrees when they run for office or seek leadership positions have exercised integrity in pursuit of their degrees and that they have the knowledge base they claim to have. This presentation will report results of a research project in the Faculty of Education, University of Calabar, Calabar, Nigeria. Students were asked to answer anonymously, in writing, questions about their knowledge of and/or involvement in examination malpractice. Focus group discussions were held among faculty concerning their knowledge of examination malpractice and their observations. Reports of malpractice on which the university has taken action during the past two years were examined. The students' writing was coded and analyzed for patterns and themes. These themes aligned with the themes of focus group discussions and official reports of malpractice. The research was conducted in agreement with Hendricks, Young-Jones and Foutch's (2011) assertion: "If professors knew why students cheat and how to prevent the 'need' to be dishonest, students would benefit more from their classes…." Results do shed light on students' perspectives, including their experience of high degrees of pressure.

Key Words: *Examination malpractice, cheating, academic integrity, qualitative research, governance, Nigeria.*

Introduction

Examination malpractice … could deprive the nation of leaders, men and women who can contribute to the wellness of the nation in terms of moving forward and contributing their own quota to the betterment of the nation. — *UNICAL Student.*

When we talk about literacy, we mean ability to read, write, listen, calculate and act responsibly. When one is literate, one is

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required to perform his or her duties honestly and credibly. Literacy for good governance and leadership will mean that after acquiring literacy skills, one should govern adequately and act honorably in any position. This is because according to Herbert (2011) lack of basic communication and numeric skills is in itself a severe limitation in both productivity and contemporary globalized village respects. But where certificate is the end thing, and people do all sort of things to acquire this certificate, the end result will be corruption, cheating, and bribery in the society. For good governance and leadership to reign, people must learn to shun examination malpractice or any form of malpractice.

In our contemporary society, the issue of good governance and democratic leadership dominates public discourse. Efforts have been made in educational settings to assure good governance. This is seen where the inclusion of democracy education in social studies has been made, including peace education in addition to the existing citizenship education. All these are in a bid to ensure good governance in our society. Dada, Udoaka, and Dada (2013) are not the first to assert that "governance in Nigeria as in many African countries has been characterized by bad leadership, unbridled corruption, lack of transparency and accountability, legislative lawlessness, executive recklessness and judicial rascality (47)." They explain:

It follows that since good governance is a prerequisite to nation building, national development and sustainable democracy; and democracy remains the best form of government, there is an imperative need to nurture and sustain our nascent democracy by ensuring among others, good governance. (47)

But how can this be possible in a society where many people give in to examination malpractice at all levels of education? In order to ensure good governance, Nigerian citizens must refrain from examination malpractice. When I asked a small group of University of Calabar (UNICAL) students to respond to the question, "Do you think examination malpractice is a problem in UNICAL?" their responses created a clear picture of widespread malpractice. All of the students were clear in their assessment that there is a problem. This is not simply a UNICAL problem. It is a national problem. In a focus group of UNICAL lecturers, one participant spoke passionately of this problem as a national concern:

Examination malpractice is not just a problem in University of Calabar (UNICAL) but to the entire nation. It is a false premise that leads to a very terrible conclusion, that a child is certified a teacher by the grade he had, a child is certified a medical doctor, and he is so certified and sent into the society to commit professional havoc.

He went further to reiterate that "the government of the day looks at certificates, making certificate the ultimate. The import of certificate has lead to examination malpractice."

For good governance and democratic leadership in Nigeria, universities must address the issue of examination malpractice. We need to assure that those who claim university degrees when they run for office or seek leadership position or take

up significant social professions, such as teaching and medicine, have exercised integrity in pursuit of their degrees and that they have the knowledge they claim to have.

Purpose of the Study

The purpose of this study is to find out from both students and a cross section of faculty members about the incidence of examination malpractice in University of Calabar and how it acts as a barrier to good governance and democratic leadership in Nigeria.

Research questions

The following questions were raised.

1. Do you think examination malpractice is a problem in UNICAL? If so, what makes you think so? If not, why?
2. If you are aware of any instances of examination malpractice, explain what you know or have seen.
3. Have you ever been tempted to engage in exam malpractice or actually done it? If so, what pressures or other forces led you to do this?
4. What other thoughts do you have about examination malpractice?
5. What are the impacts of examination malpractice on society and the development of the nation?

The deeper purpose is to learn how students may be helped to refrain from examination malpractice and how the university can create a more conducive atmosphere for academic integrity.

Methods of Data Collection

I recruited participants from a small group of students. I first of all addressed the students, encouraging them to feel free to respond to the questions. I also assured them that they were not going to be implicated. They appeared relaxed and they were given two hours to answer the questions. At the end of the exercise, the data was coded and themes were identified. Meanwhile, a focus group discussion was held with ten lecturers.

Data Analyses

Data collected from the students' responses and the focus group discussion was typed, patterns were identified using colored pencils, scissors was used to cut out the patterns. Both data were analyzed for patterns and themes and for overlapping concerns.

Results

From the analyses of the data, the following results emerge.

Confirming Malpractice

All the students in this study attest to being aware of widespread malpractice, and all but one admit that they have participated in malpractice. Neil writes:

I do turn my neck left or right inside examination hall when what I stored in my brain is exhausted. Though I do this in almost the end of some examination when the environment is favorable and when my neighbor is as good as myself; it is a malpractice.

Chube, too, admits:

I have been tempted to engage in examination malpractice but never actually done it. But if it is about turning your neck in an exam hall to look at your

friends work or turning to ask questions then I am guilty of it.

Simkin (2010) likewise carried out a study in which the majority of participating college students admitted that they have cheated in college. Staats, Hupp, Wallace, and Greseley (2009) reported that, more than 50% of college students admitted they have cheated in college. Also, a study by Chen (2009) showed that out of approximately 800 participants, only 3 claimed they had never academically cheated in college. O'Rouke, Barnes, Deaton, Fulks, Ryan, and Rettinger (2010) concluded that cheating is a social decision where a student must choose between his or her moral values and group accepted behaviours in an academic setting.

From the focus group discussion in the current study, one of the lecturers pointed out that, "when we talk about examination malpractice, we should go beyond the physical, and we should go into morals. I mean there is moral decadence in the society; this is what has yielded to examination malpractice."

Reasons Given for Participating in Malpractice

Although all of the students in this study condemned examination malpractice and all but one admitted to participating in malpractice, each who had engaged in malpractice had "good reasons" for doing so.

The broken contract reason

Brent and Atkisson (2011:645) carried out a study that examines students' responses to the question, "What circumstances, if any, could make cheating justified?" One of the students in their study comments, "If a teacher violates their side of the student-teacher contract and tests over material not covered in class or purposely tries to make students fail due to a personal bias, maybe cheating is acceptable because by this point the contract is already void". In the present study, several students seem to have adopted this attitude. **Ajameo** writes,

- This is true experience I have from previous exams, where I prepared on what was taught, and I found out that the questions asked by the examiner were based on past questions which contained topics that were not taught by the lecturer.

Ankata also indicated as a reason for cheating that "the test instrument … did not have content validity."

Others implicitly claim a broken contract excuse when they offer reasons such as "the time stipulated for exams was not adhered to by the lecturer" and "the lecturer never attended any class with the students."

When people do wrong things, they always look for reasons to justify their actions so that they can be free from the blame or look for a scapegoat to take the blame. However, from what the students report, it is clear that some of the reasons why students get involved in examination malpractice are teacher related factors, and there are strong implications for lecturers.

The high standards reason

Some students point to high academic demands as their "reason" for choosing to engage in examination malpractice. **Dakone** admits that she succumbs to pressure when standards are high.

- Yes, the factor that leads me to that was that the marking scheme of the lecturer is so demanding (so high)…. I have to pass the examination. I actually make use of my phone to browse in examination hall … the pressure was too much.

Riki complains about not being offered a makeup test:

- I have sorted for a course because I missed the test and the lecturer refused to give me a makeup test and said that the only option I had is to sort if I wanted to pass, which I did.

The economic reason

A few students admitted to hiring themselves out for impersonation as a way of making money. **Lawar** gives several reasons to justify her engagement in malpractice, and one of these is economic:

- Money is involved. I do impersonate students that are weak in some areas because I do need money to support my livelihood.

Riki, too, admitted to impersonating for money "when the offer is tempting."

- My reason was that I needed a transport back home after my examination…. A friend of mine introduced me to a friend who had been having problems with a particular course. The offer was tempting, so I agreed to go for the examination.

The personal reason

Personal reasons for examination malpractice range from lack of transportation to peer pressure and a death in the family. **Bibang** spook of losing his father during the examination period:

- I lost my father… at that time, we were writing examination… so I was compelled to write something in a piece of paper and I took it into the examination hall, and that aided me to write that paper.

Lawar points to peer pressure:

- I do help people. That's just because of the pressure of peers or course mates, what they will say after the examinations.

The reasons of Lawar

Lawar expands her reasons, however, to take a stance that is unique in the data. She claims that impersonating is her duty "to help my friend that possibly will not pass the examination in three good sittings for graduation….The Bible said bear with one another's burden and so fulfill the law of Christ. Therefore to me, if I help to lessen one's problem or burden in class, I have done what Paul wrote in his epistle." Although her perspective is unique in this study, in a much larger study, McCabe (1992) reported that the third most common reason given for examination malpractice was "appeal to higher loyalties," including "helping a friend…."

Lawar has another reason that is unique in this study.

- Impersonating an individual makes the particular course to be in my heart and promotes my ability to read, study and understand.

In other words, impersonating is good for *her* education. In their 1968 study, Scott and Lyman identify four types of excuses and justifications for exam malpractice. One

of these is self-fulfillment, "taking the action to improve one's self or achieve satisfaction."

A range of excuses

Perhaps the most amusing "reason" offered comes from **Ubadio:**

- Sometimes I do ask my fellow students questions in examination hall because of the factor of lack of remembrance.

Chube doesn't want to fail:

- The pressure that leads me to do it might be attributed to not wanting to fail.

Niel is strategic:

- What prompted me to do this is that it is always painful when a student gets scores like 49, 59, 69, remaining only one mark to step forward to a better grade, but the lecturer refuses to add up that one mark. Therefore, I believe that if I can grasp anything from my neighbor that can give me one mark or more, it is good for me because everybody likes good things.

LaBeff, Clark, Haines & Diekhoff (1990) carried out a study with a sample of 380 undergraduate students in a small university in a the South West of the United States. When surveys were administered in class in courses that are part of the university's core curriculum, 54% of their respondents admitted having cheated. Students' responses regarding reasons for cheating were classified into denial of responsibility, condemnation of the condemners, and appeal to higher loyalties. Similarly, McCabe (1992) did a study with a sample of 6,069 students from 31 institutions. He found that the most common category of responses was 61.0& (N= 214) who indicated a denial of responsibility such as "mind blocked," failing to understand the material, or unclear explanations of assignments. The third most common reason was appeal to higher loyalties for 6.8% of respondents (N= 24). Those including helping a friend and responding to peer pressure. Furthermore, Scott and Lyman (1968) in place of denial of responsibility, speak of excuses. They identify four common excuses to include: appeal to accidents, appeal to defeasibility, appeal to biological drives, and scapegoating. They went ahead to add to the list two excuses; sad tales and self-fulfillment. Brent and Atkisson (2010) examine in a study students' responses on the question, what circumstances, if any, could make cheating justified? They made use of the existing theories of neutralizations and accounts by Scott and Lyman (1968) and McCabe (1992). The three most common excuses identified include; too hard, too much to do/ too little time and beyond scope.

In the studies of LaBeff et al (1990) and McCabe (1992) results show that students agree that cheating is wrong and not justified, yet readily describe circumstances in which they believe cheating might be understandable, acceptable, even justified. In the current study the students accepted that cheating is bad but gave reasons for doing it. Some of the reasons given by students in this study are quite related to the reasons found in Brent and Atkisson (2010), McCabe (1992), and Scott and Lyman (1968). See table.

Selected Reasons /Excuses

Brent and Atkisson, McCabe, Scott and Lyman	Cornelius-Ukpepi
Too hard	Marking scheme of the lecturer is too demanding (too high)
Too much to do/ too little time	The time stipulated for the exams was not adhered to.
Beyond scope	Exam questions were based on past questions which contain topics that was not taught by the lecturer.
Appeal to accidents	Due to pressure that I lost my father.
Denial of injury	Lack of remembrance/ when what I stored in my brain is exhausted.
Condemning the condemners (blaming others)	Lecturer tore my answer sheet, lecturer refuses to add one mark and lecturer refuses to give make up test.
Self-fulfilling	Promote my ability to read, study and understand, to help a friend, and I do not want to fail.
Higher loyalties	Helping a friend.

What Students Said about Negative Impacts of Malpractice

The students indicated many ways in which society is negatively affected by malpractice. Some of them point directly to effects upon national governance and economic development. One student says that examination malpractice … "Could deprive the nation of leaders, men and women who can contribute to the wellness of the nation in terms of moving forward and contributing their own quota to the betterment of the nation".

Another student echoes:

Any student who always involves himself in exam malpractice cannot perform well in the society; for example, any student that believes in passing with money can never sit down for three hours and read because he believes that paying money without reading or preparing for exams can still pass. He now passes the influence to the society in which he cannot express himself as a graduate or cannot contribute to the development of the nation because he will not know what to say, how to do those things that are relevant to the society and the nation. This shows that examination malpractice cannot bring or give quality leaders in the society. Many people occupy many offices without knowing what to do because of this practice when they were in school.

Several of the students speak of examination malpractice in relation to bribery and corruption. One of them has this to say: "It also increases the rate of corruption in the society. This is so because examination malpractice is corruption itself and as more enters, the number increases."

Reading the students' interpretations of the situation, I recall Dada, Udoaka and Dada (2013) who echo Gwegwe's opinion (2010:57): "The situation is so bad that corruption has turned out to be a national culture." These students see similarly how malpractice enters the culture as corruption. For example, two of them write:

The impact of examination malpractice is a negative one … say for example, a student who graduated from the department of accountancy and is been offered a job in any of the banks or ministry cannot analyze data or even do correlation. That is very bad and it means that you have nothing to offer to the society or the nation in general.

The impact of examination malpractice on the society and the development of the nation can best be imagined than realized because it makes the society to have people who are not capable of doing things they are supposed to be capable of. In the case of teachers, it produces incompetent teachers, incompetent doctors, lawyers, engineers etc. The student went further to reiterates that; "the impact it could have on the development of the nation could be devastating as those people who are supposed to move the nation forward assuming they were involved in malpractice will not be able to and in that situation the country will be stagnant.

Accordingly, Passow, Mayhew, Finelli, Harding, and Carpenter (2006) say that cheating threatens the mission of developing leaders and good citizens while Whitley and Keith-Spiegel (2002) among other things say that cheating erodes public confidence in universities.

The Students' Contradictions

From the students' written responses, it is clear that there are discrepancies between their thoughts about exam malpractice and their actions. For instance, all the students agreed that examination malpractice is bad and has negative impact on the individual involved and also on the society at large; but at the same time, all of them except one admitted that they have indulged in the act for one "good" reason or the other. The contradictions between their thoughts and their actions are striking.

I feel that there is something that makes them act the way they did. Again I recall Dada, Udoaka, and Dada (2013) who write of Nigeria's culture of "bad leadership, unbridled corruption … legislative lawlessness… (47)." In order to survive in this corrupt society, everybody is doing one thing or the other, whether good or bad, to survive.

Another issue is the paper qualification that is so stressed in the society. Nobody wants to know whether you are capable of doing a job perfectly. Everyone is interested in the paper qualification. Without the paper, no one cares. Writing of the Indian context, where there are similar issues of concern, Maheshwari (2011:3) critiques "the value system" that has "placed emphasis on certificates because of their assumed transformational power. This inherited notion has dominated and suffused the Indian education system so much so that the products of the system prefer to flaunt certificates and credentials rather than knowledge, skill and competence."

I believe that if paper qualification were de-emphasized, many people would look for means of improving whatever skills they have acquired and our society would be better. When people indulge in examination malpractice in school, they may be influenced by that when they get out of school. This is because when one does something over and over again, it becomes part of that person which he/she may carry along into the society. A habit can easily be formed, but it is hard to discard.

Impact of exam malpractice on society and economic development

Even though the students have their reasons why they involve themselves in examination malpractice, some of these students pointed to the fact that examination malpractice has impacted negatively on the economy of the nation. **Bibany** narrated the impact thus:

The impact of examination malpractices in the society cannot be overemphasized. The following points are the effects:

- Low quality graduates. This is common within the society, graduates roaming the streets with certificates that cannot be proven yet they claim to have been taught and found worthy of the … qualification….
- Unproductive population. An average Nigerian claims to have had a level of education but if called to practice in the area he or she is claiming to have graduated from becomes a problem even if given resource and time….
- Lack of practical entrepreneurial skills. The education system is based on theoretical framework. This impedes the skills and interest of learners.

Bibang advised that,

- Adequate skills courses should be introduced to the university so as to enable students to function within his or her society.

The issue of hard work was raised by some of the students and **Chube** writes that the impact of malpractice on society can change people 's perception about working hard and will make them believe they can get through things without hard work which can be detrimental to the development of the nation. Furthermore on hard work,

Orop indicated the following:

- Examination malpractice has negative impact on technological know-how because most people with high paper qualifications will not be able to live up to their qualifications.
- Examination malpractice also discourages hard work and demoralizes those that are not involved for greater achievement. It tells people that honesty does not pay.

Bibany and Chube were not the only ones who saw the negative impact of examination malpractice on the economic development of the nation. **Niel** says that examination malpractice brings about low economic growth: this is the situation where malpractice graduate… cannot contribute to the growth of the economic system in the society and the country at large. He aptly said that: I can sincerely say that it is as a result of examination malpractice that we have the so called "economic meltdown" in our country, Nigeria. This is as a result of the mismanagement of the economic sector of the country.

In a democratic society people are part of the government and what they do affects the government and the society as a whole. Some of the students talked about inability of those involved in examination malpractice to perform their duties when they are employed in any establishment. Lawar says, "It reduces man power production. "

Ankata enumerates the impact on society thus:

- The quality of students… that pass through the school system where exam malpractice is predominant will be producing unskilled, unqualified and untrained graduate.
- Scientifically and technologically, there will be no invention or innovation as the so called scientist or technologists are not well trained and are not knowledgeable in their field as a result of examination malpractice.
- The capacity building or development of the students who pass through the school system will not be achieved as students who were meant to be developed cognitively, affectionately, psychomotively are not developed, but rather such students see examination malpractice as a short cut to great achievement. That is the under-development of potential or innate abilities in the students.

Ankata further said that examination malpractice affects "the socio-economic state of the nation because of the kind of students that are graduated who are now involved in the economic activities or others. This will lead to low economic growth."

Riki complements **Ankata** when he says that:

Examination malpractice has great impact on the society as it brings low productivity: the product of exam malpractice cannot be productive or add value to anything because they do not pass through the learning process in the proper way so they cannot contribute anything both to the society that they belong and to the nation in general. They also rely on existing technology or product. It leads to lack of manpower, this bad product of graduate leads to shortage of skilled manpower in the society which will result in bringing in experts from other countries to control our economy, leads to our dependence on foreign goods and services because those that were to be innovative and creative are lacking the ability to do that because they are all product of examination malpractice therefore depending on foreign good and service which is bad.

Onone on her part indicated that, "examination malpractice in the society might lead to negative way. E.g. if a person who read doctor was in school he/she was not active in studies and finish school, he is giving an opportunity for employment in the hospital And start the work, in his first treatment with the patient instead of the patient to be healthy it becomes worse that means we are moving to negative way that is poor development".

Maheshwari (2011:4) affirms that examination malpractice decreases job efficiency and he says: "Imagine the havoc a half-baked medical doctor could wreck on human lives. What about teachers who cannot competently handle the subject they are trained to teach. There is a chain effect of examination malpractices on the educational system and the society as a whole."

Niel further comments on incompetencies as one of the impacts of examination malpractice. "This is the situation where a graduate who believed in examination malpractice is employed but his/her productivity is negatively small such that he/she becomes a disappointment to the employer. The employer saw the goodness of the degree he/she carries and eagerly accepted his/her application but at last cannot defend the certificate because what is in the certificate is not what is in the brain".

According to Oduwaiye(2009) the moral decadence in the society and the struggle to attain certification in the face of poor academic performance is one of the causes of examination malpractice. The author went further to say that examination malpractice which took place in the educational system is a reflection of the society. That, the Nigerian society celebrate mediocre and views cheats as being smart and does not want to know how an individual achieves success. The important thing is the success. From the focus group discussion, one of the participants affirms, "there is moral decadence in the society. The society has decayed".

Commenting further on the impact of exam malpractice on the society, Okorugbo (2012:2) summaries the views of Ogunsanya (2004) thus:

… a nation stands the risk of being underdeveloped in terms of accumulation of illiteracy,… when its youths reject the honour of getting sound education and seems to opt for fraudulent activities and deceptive ways in making-ends meet as epitomized examination malpractices thereby negating the philosophy of sound education. The products of such a system can only grow up to be cynics, insensible, dishonesty ignorant, Narrow-minded, myopic, unintelligent, deceptive, close-minded, one-sided beings that would be indifferent to the issues of life and powerless to act.

Negative impact of exam malpractice on the students

One third of the students indicated that the culture of exam malpractice increases students' laziness. This makes them to lack the inclination to study, for example one student writes.

Examination malpractice also encourages the student not to learn because when they know there is a way out other than to study and pass it makes the student to be relaxed and not encouraged to study" and another student similarly asserts, "many students who are always involved in this act do not have interest again in reading because they believe that reading or not reading they will still pass their examination through this.

Also another student writes: "the level of unpreparedness among students keeps increasing, by so doing, it makes students to lose confidence in themselves and depend on sorting."

One of the lecturers in the focus group discussion also comments that "examination malpractice is a thing of confidence; if a student goes into an exam hall without confidence he will look for ways of cheating."

Furthermore another student says that "it reduces the interest of student in book reading. Most students who believe on sorting for their courses are less interested in reading and studying their books for a success that is merited by them". Yet another student

agrees that "it makes the student not to be studious, their study habit is adversely affected when the student know that there is a conducive atmosphere or that the school encourages exam malpractice, this will destroy their study habit, it hinders the learning effectiveness."

Maheshwari (2011:3), commenting on the widespread impact of exam malpractice in India, writes: "The impact of malpractices in examination is so wide that every aspect of our individual or social life is feeling its negative influence". Complimenting this view, one of the participants in this study asserts that exam malpractice "has effects on the psychological and academic performance of the students. Psychologically exam malpractice can make the person(s) involved to have a feeling of achievement while demoralizing the person(s) that do not involve themselves in the ugly practice. This is because those that are involved usually have high marks while those that are not becomes under achievers with low marks which sometimes lead to psychotic disorder or other forms of discomforts." According to Maheshwari (2011), examination malpractice discourages good candidates from studying hard. In line with this author the student further said, "Academically, examination malpractice can discourage those that are not involved from studying because they may feel that at least those that are involved will take the lead in marks and grades".

Alutu and Alutu (2003) carried out a study on examination malpractice among undergraduates in a Nigerian University: Implications for advising making use of both qualitative and quantitative methods, found from the qualitative data of a focus group that, lack of confidence among students, poor state of the economy, lack of accommodation in the examination halls among other things are sustaining factors of examination malpractice.

On the exam misconduct cases in the university, I examined cases for 2010/2011 and 2011/2012 sessions. From the document many students were invited to face the examination misconduct panel. The analysis of the deliberated cases is shown in table.

Session	No of students suspended		No. of students expelled
	One academic session	Two academic session	
2010/2011	15	6	12
2011/2012	28	1	20

Implications for faculty

Most of the reasons given by students concerning why they cheat, apart from their flimsy excuses (e.g. "lack of remembrance"), pointed to the behaviors of the lecturers. Their written protocols have implications for faculty since some of their reasons are directly related to lecturers. Lecturers might be advised to:

- Keep to their stipulated time allowed for exams.
- Teach their courses adequately
- Assure content validity of examination
- Provide conducive exam environment devoid of crowd
- Set exam questions based on what has been taught and not on past questions.

Studies like this one and those cited can assist faculty in understanding why their students cheat in examination, so they may

better think about solutions. This is in agreement with Hendricks et al (2011:68) who affirm that "if professors knew why students cheat and how to prevent the "need" to be dishonest, students would benefit more from their classes and be less influenced by social factors."

Final Reflections

Maheshwari (2011:4) reflects:

The fight against corruption cannot succeed if examination malpractice continues to be endemic in the educational system. As leaders of tomorrow who have gone through a school system characterized by academic fraud and dishonesty, the youths of the country will sow and nurture this fraudulent behavior in any organization they find themselves.

Maheshwari writes from the Indian context, but these words could equally have been written about Nigeria. It is clear that examination malpractice has become widespread and that a large portion of the university student populace is engaging in one way or another with malpractice. This study and other studies (Gbenendio 1993, Alutu and Alutu, 2003, Oduwaiye 2005, Meheshwari 2011, Okorugbo 2012, and Passow et al 2006) make this disturbing trend clear. For the sake of the future of our nation and the quality of government our citizens deserve, we've got to do better.

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STRESS AND ANXIETY OF CARTOON VIEWING OF UPPER PRIMARY SCHOOL CHILDREN

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Abstract

Children learn and develop skills by interacting, observing and experiencing the world around them. Children begin watching Cartoons on television at an early age of six months and by the age two or three children become enthusiastic viewers. Children have become much more interested in Cartoons over many years and it has become a primary action to some lives. Typically, children begin watching Cartoons on television at an early age of six months, and by the age two or three children become enthusiastic viewers. This study aims to find out the stress and anxiety TV Cartoon Viewers in upper primary schools. Hence the investigator adopted descriptive survey method, where a survey is conducted on a sample of 315 Upper Primary School Students of Kottayam District. The investigator found that he most viewing cartoon programmes by children are Tom and Jerry, Chota Bheem and Danny & Dady etc. It is also found that Cartoon viewers have more Behavioral problem than non viewers.

Key Words: *Stress, Anxiety, Cartoons, Mass Media, Behaviour, Affective domain, etc.*

Education is recognized as the mirror of the society and the educational institution as society in miniature. If education fails to inculcate self- discipline and commitment to achieve in the minds of student, it is not their fault. The educators have to convert education into a sport and learning process and have to generate interest in the students and motivate them to stay back in the institution than to run away from it. Education should become a fun and thrill to students rather than burden and boredom. It is an integral part of their growth and helps them become good citizens.

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Children are often said to be the future of the country. The childhood is the most important period in which the behavior can be easily moulded. Children learn and develop skills by interacting, observing and experiencing the world around them. The child is exposed to a variety of programs pertaining to nature, entertainment, Cartoons, sports, films, serials, advertisements, etc. In particular Cartoons have gained prominence among children because of their high-speed flashes of light, rapid color changes and movements arrest the child's concentration. (Anitha, 2005).

Children and Cartoon

The children are at discretion to choose the Cartoon programs which in turn indirectly influences their development. The Cartoon mesmerizes the child and replaces the childhood activities like playing with friends, being physically active, getting fresh air, reading, playing imaginatively, doing homework, doing chores. Though Cartoons are thought as entertaining, they have a positive as well as negative influence on children depending upon the theme and the content. Some Cartoons are neutral and purely meant for entertainment, some are educational but some are violent to the core. (Razel, 2000).

The mass media are defined as those instruments of communication which convey identical messages to large numbers of persons who often physically separated. The identical one-way messages may be printed, as in newspapers, books comics and magazines. They may be on film, as in film strips and motion pictures. The mass media also include television, radio, and recordings. The Mass Media, Television programs, internet, websites, feature-length films, newspapers, music tapes and CDs, magazines, billboards, radio programs: essentially, a tool/technology which is used by someone to transmit a message to a large external audience (hence, the term 'mass'). Media is the combination of form (i.e., the television) and content (i.e., the program).The parallels between the mass media and the education system is striking. It is becoming increasingly clear that the Mass Media educates; for many people, it is a far greater source of information about the world than textbooks or academics. At the same time, the education system can be seen a form of mass media. Specific tools (curriculum, teachers, and examinations) are used to convey messages (about progress and development, in particular) to a large audience. With so many similarities, it is clear that probing into the violence of the mass media can strengthen our understanding of the education system as well. (Obel, et.al.2004)

The effects of the mass media may be defined in two ways: (a) as a precipitating experience, the final triggering action in a chain of related events; or (b) as those influences which have persistent, shaping effect upon the thought and behavior of human beings, singly or collectively. One of the teaching instrument which perhaps is seldom used is the Cartoon. To encourage this development learning activities become important. It is suggested that Cartoons (a term used to include stand alone illustrations, captioned or non-captioned, and short comic strip formats) have a potentially valuable contribution to make. Visually the impact is

immediate and all students, irrespective of age or background, are able to respond in some way to the educational point. (Healy, 2004).

Cartoons are also violent to the core. Psychological research has found that televised violence has numerous effects on the behavior of children. These include the imitation of violence and crime seen on television (copycat violence). To minimize the potential negative effects of television, it's important to understand the impact Cartoons have on children. Hence an attempt has been made to analyze the behavioral change in children on viewing Cartoons. Chi square and multiple regression analysis were used as a tool to identify the factors that influence the change in behavior of the child on viewing Cartoons. (Bond and Bradley, 2013)

Cartoons, by their very nature, usually exaggerate particular facet that can help focus on a suitable teaching/learning point. As a neutral resource, students are able to respond, joke about possible interpretations, and react to the exaggerations alone, in pairs, small groups and eventually in large lecture classes. In interacting with the Cartoon stimuli, they are refining their own learning and understanding while at the same time be encouraged to develop critical higher order cognitive skills.

Need and Significance of the Study

Children have become much more interested in Cartoons over many years and it has become a primary action to some lives. This has become a problem because too many children are watching too much television and have become violent and addictive. This is unfortunate because children watch the Cartoons on the television and they see material that is not appropriate for their age group. The Children who watch too much Cartoons on television are more likely to have mental and emotional problems, along with brain and eye injuries and unexpectedly the risk of a physical problem increases.

Some children's television shows may be bad for young kid's brains according to a new study about watching Cartoons. It appears that children may not concentrate and focus very well after watching fast-paced programming. Television violence affects children of different ages in different ways. The effect depends on their level of understanding, the way they interpret and process information and their own experiences and upbringing. According to the American Academy of Pediatrics (AAP), kids under 2 years of age should not watch television and those older than 2 should not be allowed to watch more than 1 to 2 hours a day of good TV shows. But the situation in Kerala is more anxious, because many of young children are cartoon addicts.

Children are the future as we knows, their right behavior that can be accepted by social were established in family, communities and society. The child now is very different with the several years ago. It's the real problem to the parent, teacher and government for handling and a serious public problem in many societies around the world, one of the main causes was media influence. The children in the society will be easy to accept influence from environment and they have good memorize to do anything because of stimulant. The brains can help to learning and doing anything. It's transforms to be their

negative lifestyle and copy cat behavior (Pang Shinnapong, 2004). Children will view violence as an acceptable way to settle conflicts.

In the present circumstances, it has become essential to study the behavior of children. Earlier it was not a problem to taken into account. The effect of media was not prevalent in those days. But drastic changes occurred in the field of media.TV became the most widely used media now a day. TV programmes affects children positively and negatively, physically and mentally. Cartoon network is a main source of entertainment for children. Children keenly observe what Cartoon is on air on Cartoon network. Because of this channel, we can see barren play ground, children's sloppy attitude towards studies. They have no time for the healthy activities. Parents are not aware of these problems. They take it as an advance to keep child silent. So it is essential to conduct a study on it. It will help Parents and Teachers to understand the difference in the behavior of Cartoon viewing children. So it is significant to conduct a study on this problem.

When children watch Cartoons, they always pay attention to what is being said. In a child's subconscious mind, he or she is exposed to auditory subliminal messages that they may never discover, but they will eventually become a part of their lives children. The interesting thing about the situation is that these messages are most common in popular Cartoons. This causes the behavioral problems of children. So here the investigator attempts to make a study on behavior of T.V Cartoon Viewers with respect to the stress and anxiety among upper primary School children. Hence, the present paper is entitled as, "***Stress and Anxiety of Cartoon Viewing Upper Primary School Children".***

Operational Definitions of the Key Terms

Stress and Anxiety of Cartoon Viewers

The term behavior is taken in its totality, connoting a wide and comprehensive meaning. "Any manifestation of life is activity", says Woodworth (1948) and behavior is a collective name for these activities. TV Cartoon is many of several forms of art with varied meanings that evolved from one to another and is broadcasted through different TV channels. In this study, the behaviors of TV Cartoon Viewers such as; stress and anxiety are considered. *Stress* is a state of mind, which reflects certain biochemical reactions in the human body and is projected by a sense of anxiety, tension, depression and fear and is caused by such demands by the environmental forces that cannot be met by the resources available to the person. *Anxiety* is an unpleasant emotional state characterized by value fears, psychological arousal and bodily symptoms such as rapid heartbeat and perspiration.

Upper Primary School Children

The children studying standard V. VI, VII are considered as Upper Primary Scholl Children in the Kerala context. Upper primary level forms the second stage in new educational structure of schools and covers standard V, VI, VII. As the middle of the upper primary level, class VI is considered for the collection of data.

Objectives of the Study

1. To identify the different TV programmes and Cartoons viewed by upper primary school children.
2. To study the Cartoon channels viewed by upper primary school children.
3. To study the behavior of TV Cartoon Viewing and Non-viewing in upper primary school children with respect to their stress and anxiety.

Hypothesis of the Study

1. There is no significant difference between the behavior of TV Cartoon Viewing and Non-viewing in upper primary school children with respect to their stress and anxiety.

Methodology in Brief

The present study intends find out to Behavior of T.V Cartoon Viewers with respect to stress and anxiety. Hence the investigator adopted descriptive survey method, where a survey is conducted on a sample of 315 Upper Primary School Students of Kottayam District.The following tool was used by the investigator for data collection, i.e., A scale for identifying the behavior of TV Cartoon viewing upper primary school children, titled "Scale on Behavior of Cartoon Viewers". The first part of the tool contains the personal information regarding the children, house hold utensils, different TV Cartoons and programmes viewed by them, their preferences of Cartoon characters, etc. Both descriptive and inferential statistics are used for the analysis interpretation of the data, such as; Percentage, Mean, Standard deviation, 't' test, etc.

Analysis and Interpretation of the Data

This study aim to identify the different TV programmes, Cartoons, and Cartoon Channels viewed by upper primary school children and to study the behavior of TV Cartoon Viewers with respect to their stress and anxiety.

A. Children viewing different TV programmes and cartoons

Table 1 presents the data of different TV programmes viewed by Children and Table 2 presents the data of different TV Cartoon Programmes viewed by Children.

Table 1

Number and Percentage of different TV programmes viewed by Children

Sl. No.	TV Programmes	Yes		No	
		No	%	No	%
1	Cinema	310	98.41	5	1.59
2	Cartoon	290	92.06	25	7.94
3	Reality Show	288	91.43	27	8.57
4	Serial	283	89.84	32	10.16
5	Animal Planet	260	82.54	55	17.46
6	Agricultural Programmes	112	35.56	203	64.44
7	Sanjaram	108	34.29	207	65.71
8	Education Programmes	94	30.47	219	69.53
9	Sports	90	28.57	225	71.43
10	Quiz	88	27.94	227	72.06
11	News	54	17.14	261	82.86

Out of 315 students, 310 (98.41%) view Cinema, 290 (92.06) view cartoon. The children view TV programmes such as Serial 283 (89.84%), Animal Planet 260 (82.54%), Reality Show 288 (91.43%), Sanjaram 108 (34.29%), Quiz 88(27.94%), Education Programmes 94 (30.47%) and Agricultural Programmes 112 (35.56%) respectively. Sports 90 (28.57%) and News 54 (17.14%) are the least viewing TV programmes of children.

Table 2
Number and Percentage of Children viewing different TV Cartoon programmes

Sl.No.	Cartoon Programmes	No	%
1	Tom and Jerry	270	93.10
2	Chota bheem	267	92.06
3	Danny & Daddy	237	81.72
4	Scooby doo	198	68.28
5	Spiderman	183	63.10
6	Mickey mouse	141	48.62
7	Ben10	105	36.20
8	Kid Vs. Kat	78	26.89
9	Pokémon	66	22.76
10	Mr. Been	45	15.52

Out of 315 students, 270 (93.10%) view the cartoon 'Tom and Jerry', 267 (92.06%) view the cartoon 'Chota bheem'. The children view the cartoons such as 'Danny & Daddy' 237 (81.72%), 'Scooby doo' 198 (68.28%), 'Spiderman' 183 (63.10%), Mickey mouse 141 (48.62%), 'Ben10' 105 (36.20%) Kid vs. Kat 78 (26.89%) respectively. Pokémon 66 (22.76%) and 'Mr. been'45 (15.52%) are the least viewing TV cartoons of the children.

B. Cartoon channels viewed by upper primary school children

The data is presented in table 5.4.

Table 5.4
Number and Percentage of Children viewing different TV Cartoon Channels

Sl.No.	Cartoon Channels	No	%
1	Cartoon network	287	98.97
2	Pogo	273	94.14
3	Kochu TV	250	86.21
4	Spacetoon	183	63.10
5	Disney Channels	147	50.67
6	Ytv Channel	78	26.89
7	TV Tokyo	69	23.79

Out of 315 students, 287 (98.97%) view the cartoon channels like cartoon network, 273 (94.14%) view the channel pogo. The children view the cartoon channels such as Koch TV 250 (86.21%), Spacetoon 183 (63.10%), and Disney Channels 147 (50.67%) respectively. Ytv Channel 78 (26.89%) and TV Tokyo 69 (23.79%). are the least viewing TV cartoon channels.

C. Difference in the Behavior of Cartoon Viewers and non viewers in the terms of Stress and Anxiety

The major objective of the study is to find out the difference in the behavior of Cartoon Viewers and non viewers in the terms of Stress and Anxiety. The null hypothesis formulated was, 'There is no significant difference between the behavior of Cartoon Viewers and non viewers in the terms of Stress and Anxiety'. In order to test the null hypothesis, the investigator used inferential statistic namely, the test of significance for large independent sample,

two tailed (t-test). The value of t-test was set as 2.58 at 0.01 level of significance and 1.96 at 0.05 level of significance. The data is presented in table 3.

Table 3
Difference in the Behavior of Cartoon Viewers and non viewers with respect to Stress and Anxiety

Behavior	Viewing behavior	M	SD	df	t-value	*p*
Stress	Viewers	25.63	8.49	313	2.577	.010**
	Non viewers	21.16	5.83			
Anxiety	Viewers	10.33	3.82	313	.580	.562@
	Non viewers	9.88	2.93			

Note: ****** Significant at 0.01 level,
@ Not significant at 0.05 level.

From the table 3, it is observed that the t- value for the two components of behavior of Cartoon Viewers and non viewers such as Stress (2.577) is significant at 0.05 level whereas Anxiety (0.580) is not significant at 0.05 level.

Discussion of the Results

The first objective was to find "To identify the children viewing different TV programmes and cartoons", among Upper Primary School children. The children viewing different TV programmes are; Cinema, Cartoon, Serial, Animal Planet, Reality Show, Sanjaram, Quiz and Education Programmes. Out of 315 students, 98.41%view cinema, 92.06 % view cartoon. Sports 28.57%and news 17.14% are the least viewing TV progamme of children. Cartoon programmes are Danny & Daddy, Mickey Mouse, Spiderman, Pokémon, Tom and Jerry, Ben10, Scooby doo, Chota bheem, Mr. Been and Kid vs. Kat. Out of 315 students, 93.10% view the cartoon Tom and Jerry 92.06% views the cartoon Chota bheem. Pokemon 22.76% and Mr. been 15.52% are the least viewing TV cartoons of the children.

The Second objective of the present study was to find "To find out the cartoon channels viewed by upper primary school children of Kottayam District". The major cartoon channels are Cartoon network, Pogo, Kochu TV, Spacetoon, Disney Channels, Ytv Channel and TV Tokyo. Out of 315 students, 98.97% view the cartoon channels like Cartoon Network, 94.14% view the channel Pogo. Ytv channel (26.89%) and TV Tokyo 23.79%are the least viewing TV Cartoon Channels.

The third objective of the present study was to find "To find out the difference in the behavior of Cartoon Viewers and non viewers in the terms of Stress and Anxiety". The investigator found that there is a significant difference in the means of the scores of Stress of Cartoon Viewers and non viewers, no significant difference in the means of the scores of Anxiety of Cartoon Viewers and non viewers.

Major Findings of the Study

1. The most viewing TV programmes by the upper primary school children is

Cinema. Cartoon and Reality show gets second and third priority respectively.

2. The most viewing cartoon programmes by children are Tom and Jerry. Chota Bheem and Danny & Dady gets second and third priority respectively.
3. The most viewing cartoon channel by children is Cartoon network. Pogo, Kochu TV gets second and third priority respectively.
4. There is a significant difference in the Stress of Cartoon Viewers and non-viewers. The Cartoon Viewers have more stress compared to the non-viewers.
5. There is no significant difference in the Anxiety of Cartoon Viewers and non-viewers.

Conclusion

In the current era of powerful media, the children also affected by their most favorite programme on television i.e. cartoons. It can be said that there is a strong impact of Cartoon Network on school going children which can be seen on their life style, dressing, aggressive and violent behavior and their language. It is found that most of the kids often spend their time in watching cartoons and more over Cartoon Network is the most favorite cartoon channel. The study found that Cartoon viewers have more stress than non viewers. The investigators would feel gratified if the findings of the present study would lead to a better understanding of the importance of Behavior of cartoon viewers. The teachers, parents and experts in the field of education should consider this issue favorably to help and lead our younger generation for better future.

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INFLUENCE OF MENTORSHIP-WORKSHOP ON YOUNG FEMALE CHEMISTRY TEACHERS' FOR PROFESSIONAL DEVELOPMENT AND PEDAGOGICAL KNOWLEDGE

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Abstract

This study has assessed the influence of mentorship-workshop on secondary school female chemistry teachers for professional development and pedagogical knowledge. Three research questions guided the study with a sample of 298 female chemistry teachers in Lagos State. It was a survey method where Interns Professional Support (IPS) and Focus Group Discussions (FGD) were used in data collection. Data were analysed using percentages, mean, standard deviation and correlation coefficient. The results show significant influence of mentorship on interns demographic variable of marital status and age, such that 16.1% of single female below 20 years had tremendous improvement on only pedagogical knowledge with 10.7%; There was significant influence of mentorship on the interns who had working experience below five (5) years (8.1%) on professionalism only. High performance was obtained for both young and old females mentored on correlation of professionalism and pedagogical knowledge. Ten (10) good indices of secondary school chemistry education in Nigeria were outlined by the Focus Groups (FG). The paper suggests e-mentoring training to control direct mentor- gender biases and those old female chemistry teachers should be committed, knowledgeable, emphatic and energetic in providing enabling environment for the younger ones. The paper concludes that chemistry education should attract the best human brains that could translate to best practices for socio-economic growth but without well trained young female chemistry teachers, certified with proficient knowledge of teaching ethics, the proper development of the school child and the nation's educational system would be in jeopardy.

Key Words: *Prospective teachers, Good indices, TRCN, Interns, Mentors, Teaching expertly*

Introduction

Teacher education institutions before and after Nigeria independence provided adequate pre-service and in-service training to the 'would-be' and 'beginning teachers' in pursuit of excellence in their subject areas

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of specialization (Okafor, 2010). Teachers then were adequately trained with high prestige, highly motivated with incentives and remuneration, committed and dedicated with increased skills, broad knowledge of the subject matter with positive attitudes to teaching (Ikulayo, 2007; Nwaboku, 2006; Okafor, 2005 & 2007). Later in the 80s, stakeholders began to criticise the institutions and its programmes as being distant from practical in preparing prospective teachers (Okafor, 2010). Some researchers observed that most young female graduates of science education employed in the secondary schools are confronted with numerous challenges emanating from teaching some difficult concepts, classroom management; lesson preparation; assessment of students work; high teacher-student ratio (1:125), weak academic grade in chemistry, poor teaching methods, inadequate facilities, high attrition rate, poor content knowledge, skewed and naïve knowledge of teaching ethics (Ciwar, 2005; Okafor, 2005; 2007 & 2013b; Omoifo, 2005). Ukeje (2002) asserted that the teacher of tomorrow needs in-depth knowledge of the subject matter and increased skills for instructional delivery. In addition, isolation of young teachers from well skilled colleagues is found as the key de-motivating factor for beginners (Okafor, 2010). In search of suitable means of professionalising Nigerian teachers, Teachers Registration Council of Nigeria (TRCN) was established by Act No. 31 of 1993 as an approved government agency to control and regulate the teaching profession in the country for high quality service delivery, teacher retention with best practices, implementing internship schemes for fresh graduates to ensure that they remain relevant on the job (TRCN, 2004 & FRN, 2002). Unfortunately, the traditional teaching practice which constitutes main component of teacher professional preparation in Nigeria was found inadequate in the preparation of pre-service teachers for knowledge and skills acquisition in the teaching profession (Okafor, 2010; Omoifo, 2004 & TRCN, 2004). This calls for professional development (teaching expertly) in building young teachers' capacity and pedagogical knowledge (learning or experiencing the art of teaching) through communicating and applying teaching principles for instructional delivery and problem solving in sciences (Ivowi, 2008). Omoifo (2005) identified pedagogical knowledge as the knowledge of how particular topics and issues are organized and presented for classroom instruction. Okafor (2010) asserted that lack of interest and uncooperative attitude of some beginning teachers contribute greatly to their inefficiency in the teaching –learning situation. Young serving chemistry teachers need to acquire knowledge and teaching expertly in upgrading their professional status through mentoring especially in the teaching of chemistry, noting the importance of chemistry to socio- economic development of a nation. Mentoring is a planned programme with the intention of providing sustained assistance especially to young teachers' for a given period (Orlando, 2000). He posits that mentoring enhances teaching skills, behaviour development and personal growth. Pellatt (2006) explains further that mentors are characters that guide learning; promote the passing down of knowledge; values and life skills to a less experienced protégé for development of professional identity.

In this paper and Nigeria in particular, mentors are classified as experienced and competent professional teachers not below the secondary school level 15 officers, and who also have received best practices awards in the teaching profession, work collegially and in teams to empower novice teachers. Geber (2003), has outlined three mentoring techniques to include; teaching expertly (behaviourism); adoption of educational beliefs and ideas (ideology) and nurturing personal growth (human personality).The number of females teaching secondary school chemistry, barely kept pace with the rising number of the male teachers which in turn holds back the enrolment of girls studying chemistry (Okafor, 2013 & Omoifo, 2004). Some females teaching chemistry and who have less than five (5) years teaching experience do not want to remain in the classroom since the support they require for professional upbringing and socialisation are eluded (Omoifo. 2004). This necessitated the need to assess some young female chemistry teachers in Lagos State coeducational public secondary schools who participated in the three-months in- service mentorship workshop organised by Lagos EKO project in collaboration with Foremost Educational Services Limited, a Training Service Provider(TSP).

The purpose of this study therefore, was to determine if the demographic data of young female chemistry teachers in Lagos State co-educational public secondary schools in Nigeria mentored during three- months in-service workshop would influence their professional development and pedagogical knowledge. It also assessed good indices of chemistry education that may require mentoring as to increase the number and career achievement of young females teaching chemistry**.**

Research Questions

RQ1: How has/have the frequencies of the young female chemistry teachers' demographic data (age, gender, marital status, working experience and school districts) influenced their Professional development and pedagogical knowledge after mentorship workshop?

RQ2: Will there be significant relationship between young and old female chemistry teachers mentored on professional development and Pedagogical knowledge (instructional delivery)?

RQ3: What are the good indices of secondary school chemistry education in Nigeria that require Mentorship?

Methods and Materials

The study employed survey method in collecting data from the above interns in their respective schools after one year of the mentorship workshop. 610 secondary school chemistry teachers (interns) in Lagos State Coeducational public schools attended a three-month in- service mentorship workshop for upgrading, professionalism and pedagogical content knowledge.TSP mentors were attached to the interns and also met with them thrice weekly for three months in the teaching and discussions on some perceived difficult concepts in chemistry such as (electrolysis, thermodynamics, mole concept, radioactivity among others) to ascertain interns areas of strengths and weaknesses for knowledge competence and teaching effectiveness. TSP mentors were university professors and doctorate degree holders of chemistry education duly registered with TRCN. The interns were

assessed thrice during the three months mentorship in-service workshop. At the close of the mentorship workshop, recommendations were also given to the interns by the mentors against standard certification based on the assessment reports. Simple random sampling was used in selecting three (3) Co-educational Public Secondary Schools (CPSS) from each of the six (6) Education Districts in Lagos State (with a total of 18 CPSS) that participated during the intern mentorship workshop. In each school, all the chemistry teachers that participated at the mentorship in-service workshop were selected. The total sample involved in the study was 610 (298 females and 312males) chemistry teachers. Only the females were considered because of their dwindling interest in the teaching of chemistry.

Instruments

Intern Professional Support (IPS) and Focus Group Discussions (FGD) were the two instruments used for data collection. IPS contained 24 items designed in 2008 by Foremost Educational Services for teacher development and professionalism with reliability index, r=0.7455. This was adopted by the researchers. It was adopted by National University Commission (NUC) accreditation panels in assessing university lecturers for accreditation purposes. The items in the instrument examined interns demographic data (age, gender, marital status, working experience, education districts); teachers planning; classroom management; communication skills; teaching competence; instructional and assessment strategies. These are grouped under professionalism and pedagogical knowledge. The frequency and percentage of the items responded by the 298 interns are determined as shown in Table 1 below. FGD consisted of structured interview questions that teased out the interns' views on good indices of chemistry education that may require mentoring in Nigeria. It was trial-tested on small sample of 30 respondents that did not form part of the study. Too difficult and too easy questions were excluded in the final sample. Eighteen (18) investigators were involved in data collection with each handling every education district. Percentages, mean, standard deviation and correlation coefficient were used in data analysis.

Results and Discussion

Results and discussions were taken in turn based on the research questions that were analysed statistically.

RQ 1:How are the frequencies of the respondents' demographic data (gender, marital status, age, working experience, and education districts) distributed for mentorship on professional development and pedagogical knowledge?

Table 1

Frequencies of the respondents' demographic data (gender, marital status, age, working experience, and education districts) distributed for mentorship on professional development and pedagogical knowledge.

Gender	Frequency	Percent
Male	312	51.1
Female	298	48.9
Total	610	100.0
Marital Status		
Married	250	83.9
Single	48	16.1
Total	298	100.0

Age		
Below 20 yrs	32	10.7
30-39 yrs	35	11.7
40-49 yrs	75	25.3
50 & above	156	52.3
Total	298	100.0
Working Experience		
Below 5 yrs	24	8.1
6-14 yrs	54	18.1
15-24 yrs	64	21.5
25-34 yrs	130	43.6
35 yrs & above	26	8.7
Total	298	100.0
School Districts		
1	53	17.8
2	44	14.8
3	40	13.4
4	53	17.8
5	40	13.4
6	68	22.8
Total	298	100

Table 1 above depicts the answers to research question 1. The distribution of interns (respondents') demographic characteristics was ascertained by computing their frequencies and percentages in the categories of gender, marital status, age, working experience and education districts.

RQ2: Will there be significant relationship between young and old female chemistry teachers mentored on professional development and Pedagogical knowledge (instructional delivery)?

Table 2a

Correlation of Mentorship for relationship between Professionalism and Pedagogical Knowledge

Variable	Analysis	Professionalism (Teaching expertly)	Pedagogical Knowledge (Experiencing art of effective teaching)
Professionalism (Teaching expertly for professional development)	Pearson Correlation Sig.(2-tailed) N	1.000 - 249	0.229 0.000 239
Pedagogical Knowledge (Experiencing the art of effective teaching of chemistry)	Pearson Correlation Sig.(2-tailed) N	0.229 0.000 239	1.000 - 274

Correlation is significant at the 0.01 level (2-tailed) **Source:** Foremost Educational Services (FES), Training Service Provider (TSP).

It is important to note that the paired Professionalism (teaching expertly) & Pedagogical Knowledge for N=239 has given a correlation of 0.229 at 0.000

significance as shown in Table 2a. This shows that professionalism and pedagogical knowledge intercept between each other for the mentorship workshop.

Table 2b

Explained Paired Sample of Professionalism and pedagogical knowledge of Interns Responses

Paired Variable	Mean	Std. Dev	Std.Error Mean	95% Confidence of the difference		T	d.f.	Sig. (2-tailed)
				Lower Interval	Upper Interval			
Professionalism & Pedagogical Knowledge	-13.707	12.408	0.803	-15.288	-12.126	-17.079	238	0.000

From Table 2b the paired samples correlation of professionalism and pedagogical knowledge of the interns that received mentorship workshop are significant at the 0.000 level. Details are shown in Tables 2a &2b. The cross tabulation on mentorship for professionalism and pedagogical knowledge (Table 2a) shows that differences between them are not significant

RQ3: What are the good indices of secondary school chemistry education in Nigeria that require mentorship?

The views expressed at the Focus Group Discussions (FGD) in the six education districts as good indices of chemistry education in Nigeria that require mentorship were pulled together and summarized as follows:

- Effective management of funds earmarked for science, technology and mathematics (STM) education(Judicious use);
- Remuneration, incentives(award of scholarships, prizes to outstanding teachers, students and schools, hazard allowance) and promotion of teachers as at when due;
- Mentorship on teaching methods and techniques in chemistry teaching;
- Managing large and unwieldy chemistry classes;
- Employment of only qualified chemistry teachers duly registered with Teachers' Registration Council of Nigeria (TRCN);
- Proper counselling of colleagues and students as well as role modelling on good study habits;
- Monitoring chemistry students during practical activities for skills acquisition to become employable on leaving the school;
- Chemistry teachers acquisition of adequate knowledge and skills involved in improvisation of inadequate teaching/ learning materials;
- Chemistry teachers acquisition of computer- assisted learning skills;

- High quality of teacher-made tests in chemistry and interpretation of tests results;

These were areas identified as good indices for chemistry education which require stakeholders' contributions to ensure that older chemistry teachers mentor younger ones irrespective of gender.

Discussions

The study showed that mentorship has raised the quality of teaching and classroom performance of young female secondary school chemistry teachers. It is observed in Table 1 that men teaching chemistry in Lagos State coeducational schools still out-number the women with 51.1% and 48.9% respectively. This collaborates with the findings of Okafor (2013) that there are more male science teachers in coeducational institutions than females which means that fewer females are likely to take up science careers in coeducational schools. It also supports the works of Okafor (2013) and Omoifo (2004) which state that the number of females teaching secondary school chemistry, barely kept pace with the rising number of the male teachers which in turn holds back the enrolment of girls studying chemistry. More male teachers who may not be better role models to female students could mean low participation of girls in sciences. The result shows significant influence of mentorship on interns demographic variable of marital status and age, such that 16.1% of single young females below 20 years of age had tremendous improvement on only pedagogical knowledge with 10.7%; These young female teachers are very few in number but very optimistic in teaching expertly and upholding ethics of teaching profession. This contradicts Omoifo (2004) who states that some females teaching chemistry with fewer years of teaching experience do not want to remain in the classroom due to eluded professional training. There was significant effect of mentorship for the interns who have working experience below five (5) years (8.1%) on only professionalism. The young females were highly motivated that they benefitted from the mentorship workshop. There was no significant effect of mentorship on the interns (respondents) education districts for both professionalism and pedagogical knowledge. The non significant is unclear since teaching expertly means employing pedagogical principles and practices expertly in various education districts. Apart from superior ages and working experiences the older females had in teaching, they displayed the need for e-mentoring training because of their inability to flow with the current trends in the teaching of chemistry. Given the interns opportunity for professional development and pedagogical knowledge through direct interactions with mentors, their views of mentorship is biased due to mentor-gender issue. The young females mentored demonstrated knowledge of the perceived difficult chemistry concepts when teaching and assessing students. They were satisfied that the Lagos State government significantly met their needs through mentoring workshop. They were also motivated by the prospects of their improved teaching pedagogy and professional knowledge. This satisfaction supports Ukeje (2002) assertion that the teacher of tomorrow needs in-depth knowledge of the subject matter and increased skills for instructional delivery.

From Tables 2a and 2b, high performance was also obtained for both young and old females mentored on

professionalism by them indicating (knowledge of : curriculum, individual differences in learners needs & abilities, current trends in chemistry teaching, effective classroom management and ethics of teaching profession). For pedagogical knowledge, all the interns too outlined acquisition of (competence in lesson planning & preparation, application of learner centred strategy and others during chemistry instruction, use of effective procedural & communication skills and appropriate lesson assessment. This corroborates with Orlando (2000) who posits that mentoring enhances teaching skills, behaviour development and personal growth.

The female responses to the items on Interns Professional Support (IPS) depict that their self-esteem and confidence were better enhanced after mentorship workshop. They further explained that lack of confidence in teaching difficult chemistry concepts creates negative self-concept in them. The findings of this study shows that mentoring could lead to improved friendship and social networks among women in academics thereby increasing and retaining their numbers in the teaching profession.

Recommendations

The study hereby suggests the following:

- The number of females teaching chemistry should be increased and sustained for improved teaching competence and good classroom practice.
- Only the chemistry teachers with Teachers' Registration Council of Nigeria (TRCN) certification should be licensed to teach and those teaching without this certification should avail themselves of the TRCN approved training courses, like mentorship workshop as to get more qualified females in the field within a limited period of two or three years and failing may result in flushing them out of the system.
- There should be e-mentoring programme for all irrespective of gender to control direct mentor- gender biases as envisaged in this study.
- Effort should be made to recruit more unmarried young females chemistry teachers who may show more optimism in teaching expertly and upholding ethics of teaching profession.
- Young females teaching chemistry should be committed, knowledgeable, emphatic and energetic in providing enabling environment for other females in the profession.
- Older females that possess greater skills and teaching expertly could act as mentors to the less experienced colleagues for professionalization.
- Chemistry education stakeholders' should ensure frequent mentorship workshop on good indices of secondary school chemistry education in Nigeria identified by the focused group as outlined I research question 3.

Conclusion

The vision of Nigeria is to provide a virile teacher education programme in achieving its national goals which the teacher plays an important role. Mentoring has often been relegated to the background but its effectiveness on professional development and pedagogical knowledge of young female chemistry teachers in Lagos State secondary schools is quite commendable. Chemistry education programme must be rich to attract the best human brains which entails that any

female breakthrough in Science (chemistry) teaching could translate to best practices, performance improvement in career choice, quality assurance, socio-economic growth and national development but without a well trained female chemistry teachers, certified with proficient knowledge of teaching ethics, the proper development of the school child and the nation's educational system would be in jeopardy.

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SENSITISING STUDENTS TO CONSERVE NATURAL LIFE - SUPPORT SYSTEMS FOR PROSPECTIVE BLISS: A CONCEPTUAL MODEL

Dr. Prasanth Mathew*

Abstract

The immense potentiality of Nature to gratify man's physical, emotional, psychological and spiritual needs makes it imperative for man to conserve natural resources in all its richness, grandeur and beauty. The imprudent use of natural resources and the devastation of the Natural Life Support Systems can ruin the complex web of relationships in nature which can prove disastrous in the long run.

The present paper highlights the necessity and some effective ways of raising pupils from the 'level of awareness' for conservation to the 'level of sensitisation' through education to experience physical, emotional, psychological and spiritual well being. In this paper the author has presented a model of the different phases of sensitisation involved in one's development from the awareness level towards the level of sensitivity characterised by 'responsible stewardship' of nature.

Key Words: *Conservation, Natural life-support systems, Responsible Stewardship, Sensitise to conserve*

Introduction

The technologically- driven existence of man has placed him at the heights of luxuries with all amenities at his finger tips. Unprecedented scientific developments at a galloping pace have influenced the physical, social, cultural and economic facets of human life. However, man's unquenchable desire for an inner peace has not been gratified with these developments. Physical survival, on its own, is not sufficient to provide for the satisfaction and fulfillment that individual humans yearn for in their lives. This has been known for thousands of years. The biblical wisdom that "Human beings cannot live on bread alone..." strongly suggests that human fulfillment is not synonymous with mere physiological subsistence. Beyond this, people have subtler and less tangible needs that contribute to what can be thought of as emotional and psychological sustainability. Deep in our soul we yearn for beauty, for balance, for rhythm and for harmony. Lacking this type of

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development, human beings can feel demoralized and worthless. Life can seem emotionally empty or unsustainable.

Conserving Natural Life -Support Systems for a Sustainable Future

A Natural Life-Support System is any natural system that furthers the life of the biosphere in a sustainable fashion. The fundamental attribute of life-support systems is that together they provide all of the sustainable needs required for continuance of life. In 1992, United Nations Earth Summit defined 'Biological diversity' as "the variability among living organs from all sources including, *inter-alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species and of ecosystems".

We live today in a globally interconnected world in which physical, biological, psychological, social and environmental phenomena are all interdependent. An indiscriminate use of natural resources can disrupt the "complex webs of relationships and multiple interdependencies" among various systems of the universe. Human encroachment and exploitation of natural resources has disrupted the biodiversity which has led to the environmental crisis of climate change and global warming. This has posed a serious threat to the healthy existence of human and non-human species on earth.

However, it is inappropriate to regard environmental problems as matters of mere careless industrialization and inexpert management of natural resources which can be solved by experts and officials. Environment is not just a 'given' but a social construct. Environmental problems are not "problems 'out there' in our surroundings, but problems 'in here', in the way we choose to make sense of the world. They are pre-eminently social problems - problems of people, their life styles and their relations with the natural world". I, being a part of the society, have a personal responsibility towards these problems. "Environmental problems will not 'go away' nor will they be solved by a quick 'technical fix' while we blithely maintain our profligate life style". I must change the way I live. Changing my way of life entails changing my values in favor of an orientation towards "the organic, the gentle, the nonviolent, the elegant and beautiful" (Shumacher, 1973). The significance of this change for conservation of natural resources should spring not merely from the prospect of a comfortable material life in future but also from a desire for our ***emotional, psychological and spiritual well being***.

The starting point for considering the central significance of human psychological and emotional dynamics in the sustainability of physical life-support systems is the observation that human beings yearn to experience well-being and fulfillment in their lives. Emotions once associated with the mother do not disappear as a person grows up. Furthermore, the emotions are no longer expressed purely and simply as immediate needs for physical nourishment, security, and so on. Even if the latter are satisfied, the *experience* of yearning continues and is often felt as lack, emptiness, or desire for fulfillment, completeness and satisfaction. As adults, these feelings are displaced onto other objects—other people, beliefs and ideologies,

and material things - which come to be seen as the means of resolving these yearnings and are therefore desired and sought after.

Nature: A Potential Source for Gratifying Deeper Human Yearnings

Abijan (2008), after conducting some naturalistic studies on culture, has enumerated his experiences with the natives of some small villages in the southern African countries. He writes: "I marveled at how these people, who are rooted in their culture in a spirit of dwelling, can find inner peace and peace with others. Nestled in a natural environment they are able to care and nurture, following their indigenous ways and make peace with the Earth, with other people and most importantly with themselves… I discerned the villagers 'deep connections with the Earth, the vegetation and the animals. I conjured that their deep understanding of the science of the earth and of the spirituality of the Earth is enshrined in their stories, songs and dances".

From this, he drew a fragment of his understanding of humanity- making connections with Earth and with others, with deep reverence.

Positive emotions which broaden our attention and prepare us to be open to new ideas and practices and to be more creative than usual (Isen, 2000) are associated with being in natural rather than artificial environments. People report positive feelings in geographical locations where there is vegetation, water and panoramic views (Ulrich *et al*., 1991). Such environments are both safe and fertile. Positive emotions broaden momentary thought–action repertoire. This broadening of momentary thought–action repertoires offers opportunities for building enduring personal resources, which in turn offer the potential for personal growth and transformation by creating positive or adaptive spirals of emotion, cognition and action. Educational studies of children show that children in positive mood states learn faster. Evidence from developmental and laboratory studies show that positive emotions can facilitate creativity and problem solving which in turn increases work productivity. (Fredrickson, 2002)

Paul Shepard (1982) says, maturity of thought (wisdom rather than mere knowledge) arises from connecting with the Earth in the early years of childhood. Without close contact with the natural environment, he argues, we become ***infantile adults****:* wanting everything now and new; careless of resources and waste; unable to empathize with 'others'; prone to violence when frustrated; despising age and denying human natural history.

The warmth and silence of nature, the gentle whisper of the breeze, the chirping sounds of birds, the majesty of the awe – inspiring animals, the rippling sounds of the rivulet have the potential to ignite the psychic/ vital energy in man and can stir human beings into creative endowments. They have the power even to revitalize the drooping spirit in man to move through life with courage and vitality.

The philosophical aspect of nature lies in its unraveling of healthier conception about life- the need of benevolence portrayed by plants, the unending flow of water which inspires man to go on amidst all formidable challenges posed by life and so on.

Significance of the Educational Scenario in Conserving Natural Life-Support Systems

Nurturing a caring disposition, compassion and sense of responsibility in children is inevitable for a balanced ecology in future. The impressions made on the absorbent mind of a child are almost indelible. Children must be made 'to experience and sense the world in its natural state' through innumerable experiences of being 'one' with nature. Providing learning experiences 'against the backdrop of nature by going out into the fields, meeting nature at its best, the sun, the wind, the rain, the flowers, the grass and the animals in their actual habitat' can help them grow in a natural way. They must be taken beyond the 'level of awareness' of the interconnectedness of man with his environment to a 'level of being sensitized', whereby they experience and feel their interrelationship with the other systems in the universe. Such upbringing of children can generate in them a 'biocentric ethic' of *respecting* the intrinsic value of all living things; of *showing a sense of compassion and caring* towards both human and non human species; of *having a concern* for maintaining the existence of biological and cultural diversity; of *challenging and rejecting all forms of discrimination*; of *appreciating interconnectedness* between all the natural and human made systems; of *recognizing* that all human actions have consequences that will affect a complex global system that includes human and nonhuman species, of *having an awareness of and acting* on choices to maintain an ecologically sound and humane life style. Laszlo (2001) describes the inculcation of this clutch of values as developing a '*planetary ethic*'- an ethic which respects the conditions under which all people in the world community can live in dignity and freedom, without destroying each other's chances of livelihood, culture, society and environment.

Re-orienting Pedagogic Approaches

The present day education has adopted *fragmented approaches to reasoning,* negating the possibility of a deep connection between humans and nature and the very notion of stewardship, which provides one with 'a sense of responsibility towards the dynamic web of relationship in this universe', is erased. Since we have either refused or been unable to see the ***interdependence*** of things, social alienation and environmental decay have occurred. (Miller, 1999). One of the purposes of fragmented education which 'took away the parts from the whole' was to make *understanding better*, but in doing so the connections were destroyed which changed our perspectives of the whole. Modern schools concentrate mainly on *thinking* and 'processing information' without any regard for the experience of 'being'. This, in turn, has led to our failure in understanding ourselves holistically in all profundity. This has also resulted in the lack of resilience in children and adolescents in the face of stress.

Educators have a crucial role to play in enabling pupils to recognize the 'wholeness of their being', which would make them 'sensitive' to their part in the *complex web of relationships* among human and non-human species and various other systems of the universe. A creative curriculum, where children can **experience and sense the world in its natural state** can awaken pupils

to 'responsible stewardship' (taking care of the earth), characterized by a strong sense of responsibility towards the dynamic web of relationships in this universe. Learning activities that provide a **'personal' experience of the beauty and benevolence of nature** can instill in the pupils a feeling of 'oneness' with it which can lead to an 'inner urge' for the *conservation* of forests, ponds, the sacred groves, various plant and animal species and other natural resources that influence our lives in various ways. In forging a lasting relationship with planet earth, we need to teach a new set of ***three R's*** regarding this relationship (Abijan, 2008):

a) ***'Respect'*** which means 'honouring' the defined ways of acting towards the relationship.

b) ***'Responsibility'*** which demands a responsive attitude and 'loyal fulfillment' of the responsibilities to each other and to the relationship itself.

c) ***'Reverence'*** which means considering the relationship 'sacred'.

This necessitates a value shift from 'anthropocentrism' characterized by mastery over natural elements and exploitation of natural resources to 'biocentric' ethic which advocates respect for the intrinsic value of all living things.

It is well documented that informal learning experiences can sometimes be more effective than formal schooling in bringing about radical changes in values and attitudes. (Ramey-Gassert & Walberg, 1994; Rennie & Mc Clafferty, 1996; Jeffrey-Clay, 1999; Pedretti, 2002). Informal learning experiences are particularly well positioned to facilitate the affective and social components of learning (Alsop &Watts, 1997). They can provide the fusion of the cognitive, affective and social that is too often absent in the classroom but is essential to the kind of radical shift in attitudes and values. **Education *in* and *through* the environment** can play a substantial role in **personal exploration of the interconnectedness** of the various systems of the universe. Hodson (1999) advocates the idea of ***'getting a feel for the environment'***- building a sense of ecological relationships through powerful emotional experience 'in the field'.

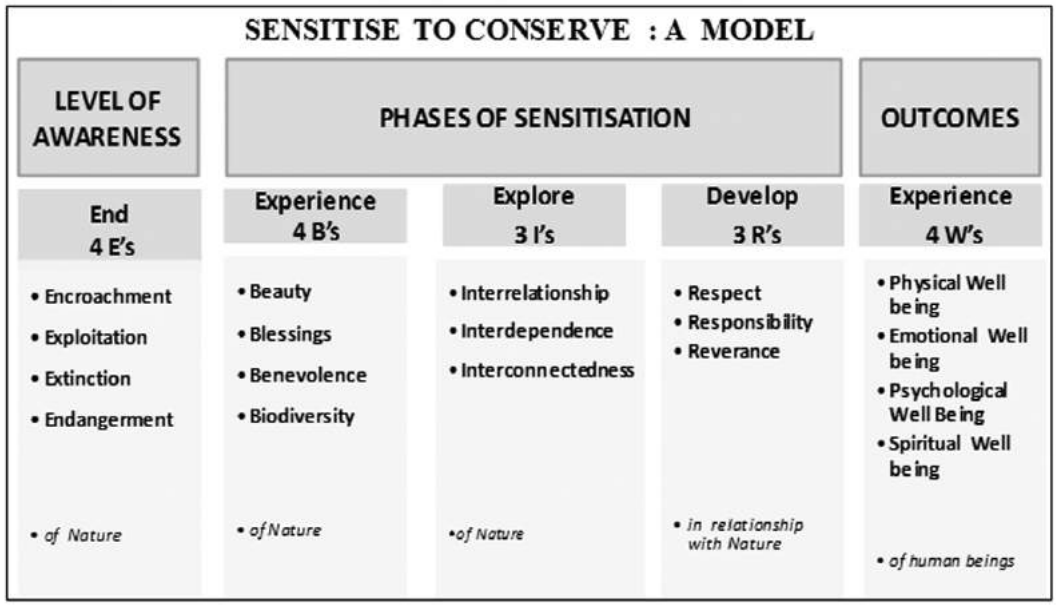
Every child comes into this world with peace in his/her heart. This is the magic of childhood (Abijan, 2008). Stories about nature that can instill compassion, responsibility and humanity in the minds of children with a space for imagination and wonder about its intricacies can enable children to **grow 'sensitive' even to the minutest change in the natural settings that they happen to be.** Meditation and simple exercises on silence can help sustain the 'inner peace' that is in the heart of the child.

In all our attempts to create awareness of 'modern science' of the earth through scientific explanations about it, we ought to keep a place for the unexplained - the silence and majesty of the forest, mountains and seashore; the spirituality of the caves, volcanoes and trees which would lead to a sense of awe and wonder in children rather than seeing them merely as products of erosion. This is what many indigenous peoples around the world have never lost: **a**

sense of unity between humanity and the environment which is indispensable in our progression from **'the level of awareness' of nature to 'the level of sensitivity' to nature.** Literature, art, photographs and movies are both a useful substitute for, and a powerful adjunct to outdoor experiences. However, they cannot outweigh the effects of one's firsthand experience of nature.

Sensitise to Conserve: A Model

To enable pupils to conserve Natural Life-Support Systems as part of 'responsible stewardship' of nature, a radical shift from mere 'awareness level' for conservation to the 'level of sensitivity' to nature is inevitable. Ways of raising pupils from the level of awareness to the sensitisational level have already been discussed. The different phases of sensitisation involved in one's development from the awareness level towards the level of sensitivity to nature and the outcomes of being sensitised in one's relationship with nature can be summarized through the following model:



1. Level of Awareness

The solution to the dangers of the **4 E's** – '*Encroachment*' of Natural Life-Support Systems; '*Exploitation*' and '*Extinction*' of Natural Resources and the '*Endangerment*' of Natural Species can be realized to a certain extent by raising pupils to the level of 'awareness' regarding the dangers of such activities through various academic sources and through various formal and informal campaigns related to the environmental issues.

2. Phases of Sensitisation

To raise pupils to the level of sensitivity characterized by 'responsible stewardship' of nature, they must be taken through three different phases of sensitization:

Phase 1.

'*Experiencing' the 4 B's* of nature – the Beauty, the Blessings, the Benevolence and the Biodiversity of nature.

Phase 2.

'Exploring' the 3 I's of nature – the Interrelationship, the Interdependence and the Interconnectedness of the various systems in nature.

Phase 3.

'Developing' the 3 R's in one's relationship with nature – Respect, Responsibility and Reverence towards nature.

3. Outcomes

The outcomes of being raised to the level of sensitization in one's relationship with nature are that one is able to experience-*Physical well being, Emotional well being, Psychological well being, and Spiritual well being* owing to nature's immense potentiality to gratify the physical, emotional, psychological and spiritual needs of man.

Conclusion

The need for conservation of Natural Life-Support Systems emerges not merely from the prospective material gains and comforts offered by nature but also from its potentiality to re-vitalize our psychic energy contributing to our emotional, psychological and spiritual well-being. A shift from mere 'awareness level' for conservation to a 'level of sensitivity' through 'personal experience' of nature would lead to an 'inner urge' for conservation of natural resources which would rather be long-lasting than a mere ephemeral feeling. Education must enable pupils the experience of the real *beauty, blessings, benevolence and biodiversity* of nature; the exploration of the *interrelationship, interdependence and the interconnectedness* of the various systems of the universe and the development of *respect, responsibility and reverence* towards nature. Hence, it is valuable to pursue Laura Rendon's (2000) ***academics of the heart,*** where we can "honour both our science and our heart" in our educational enterprises, and most importantly, honour our relationships with our fellow beings and other living and non-living species.

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INTEGRATING EDUCATION FOR A LASTING CULTURE OF PEACE IN NIGERIA

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Abstract

This paper focused on peace education as the key means to spearhead the movement towards a lasting culture of peace in Nigeria. It discussed the concepts of education, culture of peace, peace education and the challenges facing peace education in Nigeria. The paper concluded with recommendations such as policy makers must work towards developing a clear-cut peace education curriculum with its own content and methodologies at the basic and post basic levels of education in Nigeria. Policy makers must also work towards introducing peace education as a course of study in teacher training institutions so as to produce competent teachers that can develop the required culture of peace in learners.

Key Words: *Education, Culture of Peace, Peace Education*

Introduction

The fundamental aim of education is the transmission of knowledge and the development of attitudes and skills necessary to be useful, productive, and to live in harmony with oneself, with others and with the natural environment. In spite of this, peace and security continue to be elusive for Nigeria. Over the years, religious extremism, ethnic rivalry, communal wars and land disputes have given the quest for a lasting culture of peace in Nigeria a new urgency.

To this end, a culture of peace involves providing children and adults with an understanding of the principles of and respect for freedom, justice, democracy, human rights, tolerance, equity and solidarity. It also implies a collective rejection of violence and the means and will to take part in the development of society. Education still remains the means by which this culture can be imbibed. This is because education is the most powerful weapon that can be used to change how people think and act in order to promote peace and tolerance, not fuel hatred and suspicion.

Designing a curriculum that will give learners ample opportunity to be given constant peace education as well as civic responsibilities is a call in the right direction.

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In this direction, curriculum to enlighten learners on the danger of violence will open up the minds of the learners to enable them embrace dialogue for conflict resolution which is instrumental for socio-economic development. The paper therefore discussed the concept of education, culture of peace, peace education and the problems facing peace education in Nigeria.

Education

Education has been variously defined. To Farrant (1980), education describes the total process of human learning by which knowledge is imparted, faculties trained and skills developed. To Fafunwa (1974) education is the aggregate of all processes by means of which a person develops abilities, skills, and other forms of behavior of positive value in the society in which he lives. Ughamadu (2006) maintains that education is not a single process but a conglomeration of processes or activities which enable a person to grow in adaptive behaviour in terms of knowledge, skills and behaviors that will enable him not only to survive but also to contribute to the development of society.

Education according to Opoh (2011) is an activity which goes on in the society in which it takes place and is widely perceived and acknowledged as an instrument per excellence for the transformation of any human society.

Culture of Peace

A culture of peace implies a global effort to change how people think and act in order to promote peace (U.N. Declaration, 1998). It means transforming conflict, preventing potentially violent conflict, and rebuilding peace and confidence among peoples emerging from war. Its mission also extends beyond war situations to schools and work places around the world, to households and play grounds.

Ekwueme, Odunuga and Ogunrinade (2013) quoting from an article of the UNESCO declaration, which was adopted in 1999, described a culture of peace as:

> *A set of values, attitudes, traditions and modes of behaviour and ways of life based on ideas like respect for life, ending of violence and promotion and practice of non-violence through education, dialogue and cooperation and adherence to the principles of freedom, justice, democracy, tolerance, solidarity, cooperation, pluralism, cultural diversity, dialogue and understanding at all levels of society and among nations (p.3).*

To achieve a culture of peace, Weis (2001) recommended peace education which is a participatory process that develops critical capacities for solutions to the challenges of war, terrorism, economic and racial violence, gender exploitation, environmental damage to be integral to all school curricular.

Peace Education

There are numerous definitions of peace education. Castro and Garlace (2010, p. 27) see peace education as "education that promotes a culture of peace".

Peace education to Haris and Synott (2002) is a series of teaching encounters that draw from people the desire for peace and non-violent alternatives for managing conflict.

Page (2008) suggests that peace education should be taught of as encouraging a commitment to peace as a settled disposition and enhancing the confidence of the individual as an individual agent of peace; as informing the student on the consequences of war and social injustice; as informing the student on the value of peaceful and just social structures and working to uphold or develop such social structures; as encouraging the student to love the world and to imagine a peaceful future; and as caring for the student and encouraging the student to care for others.

Peace education has also been defined as the process of acquiring values, knowledge and developing attitudes, skills and behaviors to live in harmony with oneself, with others, and with the natural environment (Wikipedia, 2010). There is thus no shortage of definitions on peace education.

The Aims of Peace Education

The following list summaries aims found in UNICEF (1999) peace education working papers. These are commonly expressed as knowledge, skill and attitudinal aims:

Knowledge

1. Awareness of own needs, self awareness
2. Understanding nature of conflict and peace
3. Ability to identify causes of conflict & non-violent means of resolution
4. Conflict analysis
5. Enhancing knowledge of community mechanisms for building peace and resolving conflict.
6. Mediation process
7. Understanding of rights and responsibilities
8. Understanding interdependence between individuals and societies
9. Awareness of cultural heritage
10. Recognition of prejudice

Skills

1. Communication: active listening, self expression, paraphrasing, refraining
2. Assertiveness
3. Ability to cooperate
4. Affirmation
5. Critical thinking
6. Ability to think critically about prejudice
7. Ability to deal with stereotypes
8. Dealing with emotions
9. Problem solving
10. Ability to generate alternative solutions
11. Constructive conflict resolution
12. Conflict prevention
13. Participation in society on behalf of peace
14. Ability to live with change

Attitudes

1. Self respect, positive self image, strong self-concept
2. Tolerance, acceptance of others, respect
3. Differences
4. Respect for rights and responsibilities of children and parents
5. Bias awareness
6. Gender equity
7. Empathy
8. Reconciliation
9. Solidarity
10. Social responsibility
11. Sense of justice and equality
12. Joy in living

Peace Education in Nigeria

The Nigeria government introduced the 9-year Basic Education Programme as one of the means of attaining the Millennium Development Goals (MDGs) by 2015. This prompted the need for the revision of the existing school curricular. Hence, the National Council on Education (NCE) in 2005 directed the Nigerian Educational Research and Development Council (NERDC) to review, re-structure, and re-align the existing primary and junior secondary school (JSS) curriculum into a 9-year Basic Education Programme. In 2006, the NERDC produced the 9-year Basic Education Curriculum which covered current and emerging issues namely: value orientation, peace and dialogue including human rights education, family life and HIV/ AIDS education, etc. in view of this, a new basic education social studies curriculum was developed. The new social studies curriculum incorporated contemporary issues such as peace and conflict issues, child/women trafficking, youth employment and youth restiveness, gender issues etc.

While a new civic education curriculum was disarticulated from the new social studies curriculum, other emerging areas like peace education, gender education and family life education were integrated into the social studies curriculum. It must be noted here that peace education is not a separate subject in the new Basic Education Curriculum. Rather, peace education concepts have been integrated into the social studies curriculum. Table 1 shows some of the peace education concepts that are reflected in the upper basic education social studies curriculum.

Table 1
Peace education concepts that are reflected in the UBE social studies curriculum

Class	S/N	Content	Performance Objective	Evaluation
JSS 1	1.	Conflict and conflict resolution within social groups	Students should be able to: explain the causes of conflict within social groups and suggest solution to these conflicts.	State the causes of conflicts in the social groups and how these conflicts can be resolved.
	2.	Meaning of national unity and integration i.e. living together peacefully	explain the meaning of national unity and integration	State the meaning of national unity and integration
	3.	Need for national unity, progress and development of national integrity	discuss the need for national unity and integration in Nigeria.	Describe the need for national unity and integration
	4.	Importance of national unity and integration to nation building	analyze the importance of national unity and integration to nation building.	Enumerate the value of national unity and integration

				Mention institution that promotes national unity and integration
JSS 2	1.	Types of group behaviour (mass action and communal labour)	student should be able to: identify types of behavior	Describe types of collective behaviour
	2.	Characteristics of different types of group behaviour (destructive and constructive).	distinguish between the different types of group behaviour	State the distinguishing characteristics of different types of behaviours.
	3.	Benefits of group behaviour	mention benefits of group behaviour	Enumerate the benefits of group behaviour
	4.	Advantages of living together in the family	state the advantages of living together in the family	Mention some advantages of living together in the family.
JSS 3	1.	Meaning and types of peace	student should be able to: explain the meaning and types of peace various	Explain the meaning of peace
	2.	Importance of peace	explain the importance of living in peace with one another	Differentiate between types of peace. State the importance of peace
	3.	Ways of promoting peace (tolerance, social justice, human rights etc).	Describe the ways of promoting peace	Describe those things that can promote peace
	4.	Meaning and types of conflict	explain the meaning of conflict	Define conflict
	5.	Example of conflict	Describe the cause of conflict	Identify types and examples of conflict
	6.	Causes and consequences of conflict	explain the consequences of conflict	State the consequent of conflict
	7.	Conflict management and resolution e.g. dialogue, compromise, etc.	suggest non-violent methods of resolving conflicts	Describe non-violent methods of resolving conflicts.

NERDC, 2007

Problem Facing Peace Education in Nigeria

1. Absence of a peace education curriculum:

In Nigeria, there is no clear cut definition of a curriculum for peace education at the primary and post primary levels and there does not seem to be any intent on the part of policy makers to integrate peace education as a subject of its own into the national educational curriculum. Though at various times, there have been efforts at developing subjects like "moral education", 'social studies" etc. These subjects are not sufficiently designed to serve as good vehicles for passing the message a well designed peace education curriculum will be expected to convey.

Rita (2006) notes that the apparent lack of political will by policy makers in Nigeria to integrate peace education into the national curriculum is because the focus of curriculum revision has been more on developing and encouraging science and technology based studies with little or no thought for using education as a tool for building national unity and better understanding among the various heterogeneous groups in the country.

2. Lack of qualified teachers to teach peace education

The Nigerian Teachers Manual (1987), states that a qualified and professional teacher is one who has the registrable qualifications (in a particular subject discipline) to be appointed to teach at any recognized level of education. This is to say that, in Nigeria professional teachers are usually trained along subject lines. Sadly, teacher training institutions in Nigeria do not offer courses on peace education let alone award certificates, diplomas and degrees in peace and conflict resolution. As a result, teachers teaching the peace education concepts which have been integrated into other curriculum are not professionally trained to do so. In this connection, Bichi (2008) reported that:

Teacher education is inadequate in structure, content, and mode of delivery to cope with the urgent demands for qualified teachers in the expanding basic education sector as well as challenges of emergent national issues and problems such as HIV/ AIDS, life skills, value education, environmental problems, ethno-religious and communal conflicts, child labor etc (p.5).

3. Conventional Methods of Teaching Peace Education

In spite of the fact that in Nigeria there is no clear cut definition of a curriculum for peace education, the peace education concepts which have been reflected into other subjects are often taught using conventional teaching methods which does not promote group roles and group mechanism and hence cannot help to develop the required culture of peace in the learners.

To support this, Falade, Adeyemi and Olowo (2011) examined the teaching of peace education (P.E) concepts in the upper Basic Education Social Studies Curriculum. The findings revealed that the conventional rote learning method used in our schools cannot develop in the learners the values, attitudes, and skills required for building the culture of peace. The study also revealed

that the conventional method of teaching adopted by junior secondary teachers in Nigeria is characterized by indoctrination, memorization and rote-learning which encourage learners to memorize and recite facts learnt in the classroom in order to succeed in examination. Students are not stimulated to develop and demonstrate the inherent moral values in the concepts that are learnt.

Summary and Conclusion

The discussion so far has shown that education is a process of inculcating knowledge, skills, behaviors and ideas that are necessary to enable a person become useful and productive to society. A culture of peace implies a global effort to change how people think and act in order to promote peace.

To achieve a culture of peace, peace education is essential for developing in learners the values, attitudes and skills required for building the culture of peace. In Nigeria, efforts have been made by policy makers to integrate peace education concepts into the social studies curriculum. However, absence of a clear cut peace education curriculum; lack of qualified teachers to teach peace education and conventional methods adopted by teachers are some of the problems facing peace education in Nigeria.

Recommendations

In view of the unprecedented peace and security challenges facing Nigeria today, the following are recommended:

i. Policy makers should work towards developing a clear-cut peace education curriculum with its own content and methodologies at the basic and post basic levels of education in Nigeria.
ii. Policy makers should also work towards introducing peace education as a course of study in teacher training institutions so as to produce competent teachers that can develop the required culture of peace in learners.
iii. The participatory approach should be adopted for the teaching of peace education concepts. This would help learners to acquire and demonstrate the values and traits of peace.
iv. Training and retraining of social studies teachers should be refocused and intensified to enable the teachers acquire the skills to employ appropriate strategies to effectively teach the peace education concepts reflected in the social studies curriculum.

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INVESTIGATING THE 21ST CENTURY SKILLS ACQUIRED BY NIGERIAN SECONDARY SCHOOL CHEMISTRY STUDENTS

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Abstract

Teachers globally are working very hard to design innovative strategies that would prepare learners for life and work in the twenty- first century. Studies have shown that some secondary school chemistry students are not adequately prepared in acquisition of practical skills and theoretical knowledge of the concepts that would prepare them effectively in this information driven age. This paper investigated the four (4) 21st century learning skills as to determine the learning activities that facilitated its acquisition by secondary school chemistry students in Lagos State of Nigeria. Two research questions guided the study. It was a survey that involved 350 chemistry students randomly selected from all the secondary schools in Lagos State of Nigeria. The instrument used for data collection was Learning Activities for Skills Acquisition Questionnaire (LASAQ). Data was analysed using mean scores and standard deviation. The findings revealed that chemistry students acquire communication and collaborative skills effectively when working as a team; construct knowledge when guided to generate new ideas that involve higher order cognition and are unable to think critically when communicating discrepant events in chemistry. All the four 21st century skills were found to be transferable in the world of works. The study suggests that State and federal governments, corporate bodies, philanthropists and other education stakeholders should provide fund to organize workshops and conferences periodically for chemistry teachers to equip them on the fast growing tools that will enhance their competence on skills acquisition that could be transferred to the students. It concludes that nations whose workforce lack 21st century skills are at a disadvantage in competing globally. Also, secondary school chemistry teachers' should promote self confidence, team spirit, resourcefulness and critical reasoning on the students that could be transferred beyond the classroom settings in Nigerian secondary schools.

Key Words: *Secondary School Chemistry Students, 21st Century Skills, Nigeria.*

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Introduction

Today's education system in Nigeria faces irrelevance on how students learn and live their lives outside the school. It is obvious that these students will spend their adult lives in a multitasking, multifaceted, diverse, vibrant and technology-driven world and therefore must be well equipped to do so. In recent years, Nigerian educators have responded with some strategies to improve teaching and learning of chemistry (Nnaka, 2006; NECO, 2012 & Okafor, 2013a). A number of classroom activities had been adequately organized and managed by chemistry teachers to help chemistry students learn meaningful for knowledge and skills acquisition (Okafor, 2013b). There remain a gap between the skills most students acquire in school and the skills they may require in the 21st century communities and workplaces (Okebukola, 2012). There has been a significant shift over the last century from rote memorization to knowledge and skills acquisition (Olibie & Obidike, 2008).Today's success lies in ability to communicate, think critically, share decision, use information to solve complex problem as well as changing circumstances to create new knowledge (Kubik, Kay, Greenhill & Langworthy,2013). In the wake of Information and Communication Technology (ICT) influx, teachers face growing challenges in teaching students with electronic gadgets that are evolving every day. The new skills students need to thrive in today's global economy are proliferating and to meet these challenges, schools and teachers must be transformed in ways that would enable students acquire the creative abilities, flexible problem solving, collaborative and innovative skills they would need to be successful in life(Partnership for 21st Century Skills, 2002). Appropriate skills gained by the chemistry students would enable them engage effectively in the global issues and diverse learning communities (Okafor, 2013b).

Against this backdrop, preparing secondary school chemistry students in Nigeria for 21st Century Skills acquisition is critical in accomplishing the national goals of chemistry education.

Dilemma of Secondary School Chemistry in Nigeria

It is realised that the people's standard of living is dependent on the level of science and technology education available and utilised in that nation (Okafor, 2012). Chemistry is one of the core building blocks of science and technology, and thus, has overtly contributed greatly to socio-economic growth of Nigeria (NECO, 2012 & Okafor, 2012). It has become the central science and its major responsibility is to sustain the environment by identifying ways in which humans and nature coexist in achieving sustainable development within the society. Chemistry has been continuously and rapidly developing with high attrition rate but weak interactions has been recognized. The teaching of chemistry at the secondary school sector in Nigeria is very vital for nation building since it is the foundation where student's interest in chemistry education at the tertiary level is either encouraged or marred (FME, 2007). It is not necessary that every chemistry student becomes a chemist.

Margaret Thatcher, the first female prime Minister of Great Britain and Northern Ireland (1979-1990) earned degrees in chemistry at Oxford University, worked as a research chemist for years and later became a successful Lawyer and a Politician. Nigeria is a nation developing rapidly with increasing demand for skilled manpower in chemistry. A nation that fails to take the teaching and learning of chemistry seriously has sentenced itself to perpetual under-development (Okafor, 2012). National secondary school chemistry curriculum (FME, 2007) has emphasised that chemistry students should be taught 'fishing' rather than giving them 'fish' to be skilled and lifelong learners. This demands attention on students learning activities that would motivate them to acquire skills on learning tasks (Okafor, 2013b). Unfortunately, majority of secondary school chemistry teachers have resorted to talk-chalk method and note copying which do not promote meaningful understanding and skills acquisition (Okafor, 2013b). It is obvious that secondary school chemistry students learn the same concepts in different ways and hence, need to shift learning for skills acquisition to effectively surmount challenges of the global communities (Kubik, Kay, Greenhill & Langworthy, 2013). In order to teach secondary school chemistry for skills acquisition, innovative and flexible methods should be employed as to reform the traditional 'chalk' and 'talk' teaching approaches since learning is not only active and cumulative but also integrated and connected (Chang, 2007 & FME, 2007). Unfortunately, many secondary school chemistry students in Nigeria have not been adequately exposed to learning activities that involve skills acquisition that would enable them to face real life challenges (Okafor, 2013b). Learning however is a vital field which involves the transfer of knowledge for personal and societal growth (Spencer, 1999)). This requires that chemistry students should be adequately equipped with updated skills during learning activities to ensure maximum intellectual capacity and capabilities (Okafor, 2013b).

For decades, Nigerian researchers have focused more attention on improving students' achievement and attitudes, to the detriment of enhancing skills and learning abilities during classroom activities. This is envisaged when the secondary school students are judged solely on their individual performances with little or no interest on the learning tools and processes (Nnaka, 2006, NRC, 1999 & Okebukola, 2012). The 21st century learning tools and processes make intense demand on secondary school science students. However, the growing capacity and capabilities of the 21st century tools available could provide supportive environment required in the 21st century learning needs of secondary school chemistry students in Nigeria.

Importance of 21st Century Skills for Workforce Development

The 21st Century Skills (21st CS) is an innovative technique found useful in the teaching and learning, developed by the Partnership for 21st Century Skills (P21), a group of business and education organizations formed in 2002 who were working on closing the gap between the knowledge and skills most students learn in school and the required

knowledge and skills they need in their community workplaces. One of the P21 objectives is to build on the significant progress made in the recent years on 'No Child Left Behind' (NCLB) and to produce a vision for capturing the full range of 21st century skills in the assignments that the Nation's law requires. Bybee & Starkweather (2006) posit that the 21stCS could prepare students for the challenges they might encounter in the workforce and could be integrated in the school system to facilitate the acquisition of theoretical and practical skills expected of students. Consequently, the bridge to 21st Century Skills requires six learning elements that include: emphasizing core subjects; emphasizing learning skills; using 21st century tools to develop learning skills; teach and learn in the 21st century context; teach and learn 21st century content and use 21st century assessments that measure 21st century skills.

The first point emphasizes core subject that is dependent on the society where it is to be taught. Core science subjects and specialization are introduced to the students during their secondary schooling. Hence, the need for teaching chemistry in Nigerian schools for skills and knowledge acquisition. Also, learning skills should be emphasized to prepare students for lifelong learning that is being cut up with rapidly changing characteristics and as such, students should be taught to adapt optimally to changes. Teachers are required to organize learning activities that would enable the students to acquire communication, thinking and problem solving, interpersonal and self-directional skills. This might be organized in line with the P21 learning skills framework. By using 21st century tools for skill development, it becomes clear that students would be proficient in the tools used in the digital world. Students need to learn and develop their Information and Communication Technology (ICT) skills, and use them to develop themselves in gaining new knowledge for active participation in the society. By teaching and learning in the 21st century context, students are advised to learn through real world examples both in and out of schools. Students tend to learn faster and understand better when they are engaged and exposed to real life situations. Students of 21st century skills need to communicate and collaborate with each other on difficult concepts; become flexible in accepting classroom dynamics, support independent learning and should be willing to accommodate new approaches to learning (Kubik, Kay, Greenhill & Langworthy, 2013). According to P21, assessment of students' skills is essential to guide learning and provide feedback to education stakeholders in achieving set standard. In designing indicators for assessing 21st century skills, there is need to have a comprehensive approach to measurement and assessment with the following consideration:

- Assessment system based on multiple measures of students' abilities that include 21st Century Skills (21st CS).
- Assessment of 21st CS listed as integral part of the academic assessment in mathematics, reading and sciences (chemistry).
- Reporting requirements has to be expanded to include information on

whether the students are achieving the 21st CS or not.

In response to the need for extensive opportunities to experience and practice the teaching of chemistry, the Lagos State government recruited Pearson Education Experts to train all the science teachers (21st century teachers) on how to impact the 21st century skills on the students. All the senior secondary school science students were taught how to acquire six (6) 21st century skills through some learning activities by the 21st century teachers in various science concepts. Among these, only the chemistry students trained on skills acquisition were used in this study. Out of the six (6) 21st century skills, four (4) were selected for the purpose of this investigation. These four skills are given priority because the other two skills are subsumed in them and they include:

Critical Thinking

This is one of the most important 21st century skills that involves analysis, interpretation, precision, accuracy, problem-solving among others that enhances individual development. Every student and indeed, every human should possess the skill for survival in this technological driven world. Individuals with rigid attributes and who lack self development will surely be replaced by flexible and dynamic individuals or even machines. This means that everyone should possess critical thinking skill to survive in this growing competitive world. Secondary school students should be adequately exposed in critical thinking acquisition in order to perform better in their future carriers.

Communication

This is a declining skill in the society that emphasises adequate language knowledge in the educational system. People spend less time working on their interpersonal skills which gravely influences their ability to communicate effectively in the outside world. Effective communication is one of the criteria placed by employers in recruitment. This means that people with effective communication skill, possess competitive edge over others. Communication is a basic requirement especially in the service industry where achievement in the workplace is determined solely by the ability to relate with customers. Communication includes; written skill, verbal skill and effective use of technology.

Collaboration/Team work

In today's society, emphasis is laid on how productive an individual is. This connotes the productivity of personal efforts. Realistically and statistically, more productive work is done through collaboration. Individuals who fail in the workplace are usually those who cannot collaborate with colleagues effectively. The workplace is usually a combination of individual and team (group) efforts to attain set goals.

Creativity and Innovation

Creativity implies the use of available tools and acting on ideas to perform some operation or activity which leads to new discoveries. The importance of this is noticed in the fact that leading technological firms spend a considerable amount of time and resources in research and development in

order to provide new innovations. Creativity and innovation is the backbone of technological advancement and students should be prepared in acquisition of the skill.

Purpose of the Study

In recent times, many Nigerian industries and employers have recognized that graduates in chemistry have weak background for employable skills and knowledge. Studies have also shown that many secondary school chemistry students exhibit inadequate expectations in using modern learning tools and techniques for acquiring the 21st Century Skills (Okafor, 2013, Olibie & Obidike, 2008).Graduate students in chemistry focus on grades and to a lesser extent in the acquisition of learning skills (Okafor, 2013). Teacher- training institutions have been criticised for producing chemistry graduates who are not adequately grounded in pedagogy and content knowledge transfer (Okebukola, 2012). A survey conducted by Rotherham & Willigham (2009) on employees performance found that 70% of the employees across all occupations had shortage of skills. They found them deficient in employable skills such as: team work, problem solving and communication ability. These and other issues pose challenges to the performance of the Nigerian chemistry students in all works of life. This paper therefore investigated the type of 21st century skills secondary school chemistry students have acquired during learning activities and determined the relevance of those skills to them in competing favourably with the challenges they may face within and outside the classroom threshold for workforce development.

Research Question

RQ1: What type of 21st Century Skills (Critical thinking, team work, communication and creative/innovative) did secondary school chemistry students acquire during learning activities?

RQ2: Will the 21st Century Skills acquired be relevant in preparing the students for workforce development?

Scope /Delimitation of the study

The scope of this study is limited to only coeducational public secondary schools in Lagos State of Nigeria. Chemical bonding was chosen to determine learning activities involved and the topic was taught to senior secondary school chemistry students in year one by their chemistry teachers who attended the workshop for preparing students for 21st century skills acquisition organized by Pearson Education in collaboration with Lagos State government. Learning activity is any task the students do as part of their school work. It can be a class work, students need to complete in a lesson period or extended projects that take place within and outside the school environment.

Methodology

The design adopted is a descriptive survey to investigate and describe the 21st century learning skills chemistry students have acquired during learning activities using chemical bonding.

The population comprised of all the public co-educational senior secondary school chemistry students in six education districts of Lagos State in Nigeria.

This study made use of multistage sampling in which 234 public secondary schools in six Education Districts of Lagos State were grouped into three(3)- Girls only; Boys only and co-educational (girls & boys) respectively. Only co-educational public secondary was considered. Simple random sampling was used in selecting eleven (11) out of 153 co-educational public schools in the State. In each school, the arm that has between 30 and 33 senior secondary chemistry students participated in the study. On the whole, the sample consists of 350 senior secondary school two (2) chemistry students in co-educational public schools. Their varying ages and gender were not considered due to time constraint.

The instrument used for data collection was Learning Activities for Skills Acquisition Questionnaire (LASAQ). This was in two sections. Section one had twenty items that were grouped into four for easy analysis which asked the respondents to reflect with a decision on learning activities that prepared them in the acquisition of critical thinking, communication, collaboration and creativity/ innovative skills respectively on a three point Likert Scale of A=Agree; D= Disagree; U: Uncertain. Each item described learning activities on chemical bonding in chemistry that could prepare them for 21st century skills acquisition. Section two had sixteen items that were grouped into four too. Each item was drawn on the relevance of acquired skills in preparation for workforce development. The instrument was administered by the researchers on the respondents and LEO Smart biro was given to the respondents as incentive. Their responses to the learning activities determine the actual 21st century skills they have acquired and their relevance in preparing them for workforce development.

Pilot Study

A pilot study was carried out to have a tryout of the instrument. LASAQ was administered to 90 respondents in the three coeducational public schools that did not form part of the study. LASAQ was validated by an evaluator who is an expert in test development on learning skills. The instrument was further subjected to a reliability test using Cronbach Alpha reliability statistics. The results are shown in Table 1.

Table 1

Learning Activities and the 21st Century Skills

Skills/Variables	Cronbach Alpha
Critical Thinking	0.895
Communication	0.905
Collaboration	0.911

The Cronbach Alpha results showed that all the skills assessed were very close to 1. This showed internal consistency and reliability of the instrument. Data however, was analysed using mean score and standard deviation. A mean of 2.50 was adopted as the agreement level for the items.

Results

Results of the findings are discussed below from the research questions outcome.

RQ1: What type of 21st Century Skills (Critical thinking, team work, communication and creative/ innovative) did secondary school chemistry students acquire during learning activities?

Table 2
Mean rating on type of 21st century skills acquired during learning activities

S/N	Skills/Variables	*x*	SD	Decision
1	I understand the principles of bonding and can analyze and evaluate the process critically	2.44	0.71	U
2	I can have relevant discussions with peer on bonding in both oral and written form	3.53	0.85	A
3	I worked in a small group to acquire knowledge on types of chemical bonding	3.50	0.89	A
4	I can relate chemical bonding to the activities in the family with adequate questions on its varying interactions.	2.48	1.00	D

Table 2 above presents the views of secondary school chemistry students in Lagos State with regard to the type of 21st century skills acquired during learning activities that would help them in tackling real life challenges. Looking at Serial Number (S/N) 1 in Table 2 above, it could be seen that the respondents have mean ( ) range of 2.44 and Standard Deviation (SD) 0.71 and had uncertainty decision that critical thinking skill was acquired during learning activities. Also, S/N 4 depicted disagreement decision that creativity/innovative skill was not acquired during learning activity with = 2.48 and SD= 1.00.They fall below the agreement level of 2.50. In addition, the students agreed that communication and collaborative skills were acquired during learning activities with = 3.53; SD= 0.85 and =3.50; SD=0.89 respectively.

RQ2: Will the 21st Century Skills acquired be relevant in preparing the students for workforce development?

Table 3
Mean rating on the relevance of the 21st century skills acquired in preparation for workforce development

S/N	Skills/Variables	*x*	SD	Decision
1	I have the necessary skill to surmount real life challenges	3.54	0.75	A
2	The acquired skills have compelled me to develop adequate philosophy on how to tackle global challenges	3.59	0.87	A
3	I will always display my acquired skill through solving human and environmental problems	3.61	0.73	A
4	The skills I acquired have improved my thought processes and I can now work as a team, speak and write confidently and can create unimaginable ideas.	3.68	0.94	A

Table 3 required the respondents to cognitively assess the relevance of the 21st century skills acquired to the challenges they may encounter in the real life situation. The Table showed that the acquired skills obviously are inherent in them and could be applied consciously and unconsciously with the mean scores highly above 2.50.

Discussions

Secondary school chemistry students have demonstrated success in acquisition of 21st century skills. They emphasised that the well grounded teaching received from their teachers who attended Pearson Education workshop was instrumental to their acquisition of the skills (communication and collaboration/teamwork) as shown in Table 2. The uncertainty and disagreement expressed in Table 2 also were verbally interrogated by their classroom teachers. This supports Okafor (2013b) who posited that chemistry students should be adequately equipped with updated skills during learning activities to ensure maximum intellectual capabilities. It further explained that the students are not critical thinkers and can hardly be creative / innovative or design project on their own but can model any sample given to them by the teachers. This also agreed with the assertions of the Partnership for 21st Century Skills (2002) which proposed that the new skills students need to thrive in today's global economy are proliferating and to meet the challenges, schools and teachers must be transformed in ways that would enable students acquire the creative abilities, flexible problem solving, collaborative and innovative skills they would need to be successful in life. This explains the importance of Information and Communication Technology (ICT) which connects their past and present knowledge during independent and group learning. The students responses also showed improvement in confidence and ease of speaking while interacting with audiences of all ages in the school environment which also provided explanations of the skills acquired. This corroborates with the works of Kubik, Kay, Greenhill & Langworthy (2013) which state that today's success lies in ability to communicate, think critically, share decision, use information to solve complex problem, responding to new demands and changing circumstances for new knowledge. The impact of the workshop is commendable since the teachers were able to inculcate the 21st century skills among students during learning activities. Their uncertainty and disagreement could be inadequate professional development of chemistry teachers on 21st century teaching activities. Students' responses also depicted that they cannot confidently present their ideas outside the classroom which requires critical reasoning and creation of new ideas. This is in agreement with Okebukola (2012) who stated that there is a gap between the skills most students acquire in school and the skills they may require in the 21st century communities and workplaces. It also corroborates with a survey report of Rotherham & Willingham (2009) on employee's performance that lack adequate skills across all occupations. This explained that chemistry education and skills of the workforce are critical elements for national growth and development. The students also can construct knowledge only when guided to generate new ideas that involve critical thinking. Activities that are learner centred

should be packaged and presented to the science students generally since they foster acquisition of 21st century skills.

Moreover, students generally agreed that they would confidently display acquired 21st century skills in the world of works if adequately taught on defined skills with available resources put in place. This supports the work of Bybee & Starkweather (2006) which posits that the 21st century skills could prepare students for the challenges they might encounter in the workforce and could be integrated in the school system to facilitate the acquisition of theoretical and practical skills expected of students. The explanation was that they have acquired sustainable skills and can effect changes within their community. It is observed that technology could help them make authentic connections beyond the classroom with emphasis on synthesising their learning and generating creative solution to real world problems. They promised to create a wiki as public evidence of the skills acquired as well as their contributions to the school community.

Recommendation/Suggestion

On the basis of the findings of this study, the following recommendations are made

- Recruitment of 21st century chemistry teachers who would impart adequate skills to secondary school chemistry students should be given top priority by the government.
- Chemistry teachers should employ technical practices that would inspire and galvanize chemistry activities since the practices are seen as oak trees on which chemistry activity is perched.
- Teachers and parents should encourage students to study chemistry concepts collaboratively with innovative approaches within the context of acquiring the 21st century skills.
- State and federal governments, corporate bodies, philanthropists and other education stakeholders should provide adequate fund in organizing workshops and conferences periodically for chemistry teachers as to equip them on the fast growing tools and to enhance their competences on skills acquisition that could be transferred to the students.
- Positive mind set and enthusiasm need to be planted into the minds of the 'would be' chemistry teachers, chemistry students, scientists and chemists who would assist in re-branding Nigeria for technological development.
- Every chemistry student needs good background knowledge of chemistry concepts and learning activities involved as stated in the scheme of work.
- Chemistry students need to study ahead of the teachers through the use of internet tools.
- Curriculum developers, ministries of education and education agencies should integrate the 21st century skills knowledge and training into the teacher preparation and certification programmes.
- Secondary school chemistry teachers should make their teaching learner-centred to enjoy the privileges of admiring learning activities of their

students after an explorative search for answers to chemistry problems.

- They should also promote self confidence, team spirit, resourcefulness and critical reasoning on the students that could be transferred beyond the classroom setting.

Conclusion

It is imperative to recognize that the acquisition of 21st century skills is based on the learning tools, learning experience and teaching effectiveness. Consequently, Nigeria system of education is conservative and leaps on a very slow pace by paying lip-services to the professional development of the workforce leading to some of them not adequately equipped with skills required in the information age and works of life. This requires urgent integration with the 21st century skills and knowledge, which may provide ways of presenting secondary school chemistry teachers and students proudly in any field of endeavours that require expression of 21st century skills beyond Nigeria. The inclusion of 21st century skills in chemistry classroom activities could deepen students understanding, improve the quality of teaching and provide students the opportunities of acquiring lifelong learning skills that would prepare them for problem solving, critical thinking and team participation for a greater future. This should be addressed seriously to provide Nigerian education system the necessary impetus to function for relevance and workforce development. Since any country whose workforce lack 21st century skills are at a disadvantage in competing globally.

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QUANTITATIVE AND QUALITATIVE PARADIGMS AND THEIR IMPORTANCE IN RESEARCH

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Abstract

Research should be about discovering 'truth'. It often depends on how someone is looking at things. It is therefore important as a researcher to understand how you are looking at your research and to be able to explain this to everyone else who needs to know about your research. Quite generally a way of looking at the world is known as a 'paradigm'. Different writers tend to use different terminologies when discussing research paradigms, because of where they are coming from. For practical purposes, though, various paradigms can normally be simplified into just two: (i) The 'traditional' research paradigm which is essentially quantitative (ii)The 'interpretivist' research paradigm which is essentially qualitative. Researchers who can work in this quantitative paradigm are fortunate because high reliability and validity are held in great esteem. Interpretivism, or the qualitative approach, is a way to gain insights through discovering meanings by improving our comprehension of the whole. Qualitative research explores the richness, depth, and complexity of phenomena. Qualitative research, broadly defined, means "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (Strauss & Corbin, 1990).

Key Words: *Paradigm, Quantitative Research, Qualitative Research, Data Collection.*

Introduction

There is general agreement that research is a systematic and methodical process of inquiry and investigation that increases knowledge and/or solves a particular problem. The purpose of research, as opposed to the process, can be summarised as follows. To review and synthesise existing knowledge, to investigate existing situations or problems, to provide solutions to a problem, to explore and analyse more general issues, to construct or create a new procedure or system, to explain a new phenomenon or to generate new knowledge.

Paradigm

A paradigm provides a conceptual framework for seeing and making sense of the social world. To be located in a particular paradigm is to view the world in a particular way. And indeed paradigm has been termed a (Patton, 1990; 37) "world view". However

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it was Kuhn (1970) who introduced the term as "universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners", and suspected that (Khun, 1970; 113) "something like a paradigm is a prerequisite to perception itself". In the postscript to his second edition, Khun (1970; 175) provides a useful definition; "it stands for the entire constellation of beliefs, values and techniques, and so on shared by the members of a community.".

The significance of paradigms is that they shape how we perceive the world and are reinforced by those around us, the community of practitioners. Within the research process the beliefs a researcher holds will reflect in the way the research is designed, how data is both collected and analysed and how research results are presented. For the researcher it is important to recognise their paradigm, it allows them to identify their role in the research process, determine the course of any research project and distinguish other perspectives.

Quantitative Research Paradigm

Quantitative research allows the researcher to familiarize him/herself with the problem or concept to be studied, and perhaps generate hypotheses to be tested. In this paradigm:

(1) the emphasis is on facts and causes of behaviour (Bogdan & Biklen, 1998),
(2) the information is in the form of numbers that can be quantified and summarized,
(3) the mathematical process is the norm for analysing the numeric data and
(4) the final result is expressed in statistical terminologies.

A quantitative researcher attempts to fragment and delimit phenomena into measurable or common categories that can be applied to all of the subjects or wider and similar situations (Winter, 2000). The basic beliefs of a positivist or quantitative researcher lead them to perceive the world as external and objective, and science as value free. As an observer they are independent and values can be suspended in order to understand. Reality is seen as one and therefore by dividing and studying its parts the whole can be understood. Therefore in their general approach to research design the quantitative researcher is seeking to deduce cause and effect relationships to predict patterns of behaviour. Therefore the research purpose is likely to be causal or predictive rather than exploratory. The quantitative researcher then develops theory and uses this to explore the world. This theoretical framework identifies key variables and their relationships and associations. It allows initial design clarity but the result may not necessarily contribute to existing knowledge.

The stages in data analysis and interpretation are completed after data collection. Statistical measures of association and the development of measurement models are significant at this stage, the language used (Jean Lee, 1992) "becomes the language of variables.". Quantitative data analysis and interpretation is primarily deductive, a matter of proving or disproving the hypothesis or an assertion developed from a general statement. Indeed in any causal or predictive study when the cause and effect relationship has been demonstrated, or not, then the researcher has done their duty (Westmeyer, 1994). Therefore

reporting research results the findings are discussed, in a recognised format, as to the extent to which the data collected either confirms or dis-confirms the research question.

The Qualitative Research Paradigm

The initial steps in the qualitative research process are similar to that used by a positivist researcher. The research topic is identified, refined and clarified. A literature review is undertaken and the research problem takes form. However, interpretivist research is primarily exploratory and descriptive in purpose designed to discover what can be learned about the area of interest. The interpretivist researcher views the world as a socio-psychological construct where there are multiple realities forming an interconnected whole that can only be understood as these multiple realities.

High researcher involvement in data collection characterises this approach. The researcher is an active participant often immersing themselves in a setting, becoming part of the group under study in order to understand meaning and significance. Typical techniques include participant observation, in depth interviews, group interviews and documentation collection with an emphasis on fieldwork. Data analysis and interpretation is an ongoing activity for the interpretivist researcher. For the interpretivist what is meaningful emerges from the data, therefore the process is inductive. In presenting results it is the narrative of the participants that speaks.

It is easy to memorize a list of factors to use in distinguishing between quantitative and qualitative research paradigms. Quantitative research is objective; qualitative research is subjective. Quantitative research seeks explanatory laws; qualitative research aims at in-depth description. Quantitative research measures what it assumes to be a static reality in hopes of developing universal laws. Qualitative research is an exploration of what is assumed to be a dynamic reality. It does not claim that what is discovered in the process is universal and, thus, replicable.

The underlying assumption of interpretivism is that the whole needs to be examined in order to understand a phenomena. Interpretivism proposes that there are multiple realities, not single realities of phenomena, and that these realities can differ across time and place.

Qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings, such as “real world setting where the researcher does not attempt to manipulate the phenomenon of interest” (Patton, 2001, p. 39). Qualitative research, broadly defined, means “any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification” (Strauss and Corbin, 1990, p. 17) and instead, the kind of research that produces findings arrived from real-world settings where the “phenomenon of interest unfold naturally” (Patton, 2001, p. 39). Unlike quantitative researchers who seek causal determination, prediction, and generalization of findings, qualitative researchers seek instead illumination, understanding, and extrapolation to similar situations

Cresswell (1998) divides qualitative research into five main Qualitative Research Types and identifies the key challenges of each mode of inquiry.

1. The Biography
2. Phenomenology
3. Grounded Theory
4. Ethnography
5. Case Study

Qualitative Methods of Data Collection

People's words and actions represent the data of qualitative inquiry and this requires methods that allow the researcher to capture language and behavior. The key ways of capturing these are:

- Observation – both participant and direct
- In-depth interviews
- Group Interviews
- Written descriptions by participants; People asked to write descriptions of their experiences of phenomenon.
- The collection of relevant documents
- Photographs and Video Tapes

Conclusion

Quantitative and qualitative are terms used to describe the two main research methods applied to management, or organisational, research. The distinction is that the quantitative approach is objective and statistical, while the qualitative approach is subjective, using language and description rather then numerals and figures. Further research distinctions include research purpose, exploratory research that seeks to clarify the nature of general problems. Descriptive research which describes the characteristics of a known problem and causal or predictive research that identifies causality between variables. Quantitative and qualitative approaches to the research process are based upon differing assumptions that shape the whole research design and influence the role of the researcher. Although the quantitative/ qualitative dichotomy may appear obvious in the distinctions between the two approaches to research, the division may not be as clear cut as it seems. Increasing investigation into multiparadigm research including paradigm incommensurability, paradigm integration and paradigm crossing hint at a convergence of paradigms etc are needed. Paradigm convergence does, however, attest to the nature of research as a process that increases knowledge, and paradigms, as scientific achievements that only for a time provide problems and solutions to a community.

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INTEGRATING CLIMATE CHANGE ADAPTATION STRATEGIES INTO TEACHER PREPARATION CURRICULUM FOR NON-FORMAL EDUCATION IN NIGERIA

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Abstract

Climate change is a major phenomenon of the 21st century. World leaders, industrialists, Non-Governmental Organizations (NGOs), professionals and the Academia are all enmeshed in the debate and struggle for adequate climate change mitigation and adaptation options for survival of man. The low adaptive capacity and high vulnerability of the developing countries such as Nigeria make them adversely affected by climate change. For the Non-formal education clientele such as farmers, traders, businessmen, fishermen, road-side mechanics, market men and women and all other citizens outside the formal school system, adequate sensitization, awareness and clear understanding of the causes and effects of climate change and the need for adequate adaptation strategies become crucial for a conducive living environment and continued existence. The thrust of this paper therefore is the integration of climate change adaptation strategies into teacher preparation curriculum for non-formal education with a view to enabling the beneficiaries to cope with the challenges of climate change in a comprehensive and systematic manner for their survival and that of the nation at large. The paper thus recommends that non formal educators should be trained and retrained through workshops, seminars and conferences on the new information, knowledge, skill and pedagogy about climate change adaptation strategies

Key Words: *Climate Change, Curriculum, Non-formal Education, Adaptaion Strategies*

Introduction

Climate change is the most topical issue today and has presented itself as the biggest threat to the survival of man and the environment. It impacts on human life, social life, the economy, human security and health, population, industries, water resources and the entire ecosystems. The impact is more critical on non-formal education clientele who no longer have the opportunity and privilege of formal teaching and learning about climate change. They need sensitization, awareness, and understanding about climate change issues. The teacher preparation curriculum for non -formal education therefore should be refurbished,

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renewed and or reformed to include concepts; issues, impact of climate change and its adaptation strategies as a way of equipping the would be teachers with the knowledge, skills and other competencies for implementing climate change adaptation options during lesson delivery for the non-formal education participants. In doing this, the participants are well prepared to meet global challenges posed by climate change and hence be able to attain sustainable development.

The Concept of Non- Formal Education

Non – formal education is any form of organized educational activity, outside the formal school system, which is designed for identifiable learning clientele in a nation's population such as adults, youths, children due to some imposed economic, social and political conditions. Usually, non – formal education is community – based and it includes such programmes as functional literacy education, remedial education, continuing education, labour education, vocational education, extra-mural education and others.

The United Nations Organization (UNO) in Imhabekhai(1998:26) defines non-formal education as:

> An integral part of the entire system of education, lying institutionally and significantly outside the formal system of education and very much a supplement as well as a complement to it. It is the product of change and development in any society and it covers a wide range of activity depending on the prevailing social, economic and political circumstances.

Depending on the agencies and individual who organize non- formal education and the clientele, it could be certificate oriented or not. For those who award certificate or diplomas, and/or degrees, the non – formal education must adhere to the curriculum of the examining body. Participants who engage in non- formal education have the desire to satisfy some personal or social needs, particularly in those areas they experience some gaps. In this regard, the learning content/curriculum is expected to be functional. A functional curriculum is one that meets the needs of the participants, such that enables them acquire employable skills for either self or private/public employment; wealth creation/ poverty alleviation, potentialities or on- the-job training potentials.

Non- formal education programmes and initiatives are many, but McGivney and Murray, (1992: 12) identified five. The focus of this paper will be on two, mainly:

- Catching- up programme for school drop- outs, and
- Education programmes linked with development initiatives, eg. Agricultural extension training programmes, Health education, Climate Change Adaptation and Mitigation Strategies(my addition)

Teacher Preparation and Climate Change Curriculum for Non-Formal Education:

Generally, teacher education curriculum is the programme of study geared towards the preparation of teachers, for the various levels of educational ladder. In essence, for a particular group of learners in the society, there is a corresponding level of teachers.

The curriculum offerings determine to a large extent the fundamental variables which comprise teacher formative experiences, teacher – training experiences or teacher properties as well as the calibre and quality of teachers. (Mbakwem, 2000).

To the old non – professional educators, the term "Curriculum" is usually associated with a document such as textbooks, syllabus, teacher's guide, or learning package. With time, the field of curriculum expanded and the definition graduated from simple, myopic conceptualizations to more dynamic, broad definition as that propounded by Tanner and Tanner (197:45)"Curriculum is the planned and guided learning experiences and intended outcomes formulated through systematic reconstruction of knowledge and experiences, under the auspices of the school, for the learner's continuous and wilful growth in personal – social competence".

This definition is adjudged comprehensive by some educators (Mkpa, 1987; Olivia, 2003), in that it has brought to limelight, the dynamic nature of knowledge and has also streamlined the vital aspects of curriculum as learning experiences, as intended learning outcomes, as a plan and also as subject matter.

In the National Policy on Education(FRN, 1981: 39)curriculum components of teacher education in Nigeria are enumerated. They include:

- General studies (basic academic subjects)
- Foundation studies:(At primary school level for TC II teachers – Principle and practice of education) and at higher education level for NCE and B. ED – History, Sociology, Psychology and Curriculum Development.
- Studies related to the student's intended field of teaching (eg. Mathematics, English, History, Physics, Igbo etc)
- Teaching practice

Recognised institutions that produce teachers as specified in the NPE are:

- Colleges of Education
- Institutes and Faculties of Education in Universities
- National Teachers' Institute (NTI)
- Teachers' Centres.
- National Mathematical Centres(NMC)
- National Institute for Nigerian Languages(NINLAN)
- School of Education in Polytechnics (FRN,2004:40)

It is through this avenue of professional training that both pre – service and in – service teachers are equipped with the needed competencies, skills, knowledge, values, attitudinal dispositions and insights for efficient and effective output. The importance of teachers and teacher education was adequately captured in the National Policy on Education which states, "No education system can rise above the quality of its teachers" (FRN, 2004: 39).

The 21st century technological advancements have transformed the world into a global village. The rapid and drastic global change has rendered the old/former school curriculum impotent, or not good enough to address emerging global issues that are affecting the entire human race such as environmental degradation, poverty, over – population, Diseases such as HIV/AIDS, Climate change and global warming. The

focus of this paper is majorly on teacher preparation curriculum and climate change adaptation strategies.

Climate is the average weather of a place over a period of thirty years. It encompasses the statistics of temperature, humidity, atmospheric pressure, wind, rainfall, atmospheric particle count and numerous other meteorological elements in a given region over a period of time (Wikipedia, 2009). The Intergovernmental Panel on Climate Change (2007) defines climate change as any change in climate overtime, whether due to natural variability or as a result of human activity. In very recent times, the global concern of climate change centres on human – induced sources, which release carbon dioxide and other green (anthropogenic) house gases to the atmosphere.

- Bush – burning (for agricultural purposes) which produce carbon emission.
- Deforestation – rampant cutting down of trees, which leaves fewer trees to absorb carbon dioxide, thereby contributing to huge carbon emissions.
- Burning of fossil fuels (natural gas, oil and coal) which are used for cooking, heating homes, transportation and travelling, manufacturing etc, thus becoming major sources of greenhouse gas emissions. It increases the concentration of the gases that trap more heat and change the climate.

Thus, human activities have added extra carbon to the atmosphere putting the carbon cycle out of balance. Natural causes include variation in solar radiation received by the earth, Oceanic processes such as oceanic circulation and volcanic eruption which alter the natural ecosystem, causing global warming.

Impacts Of Climate Change In Nigeria

- Excessive flooding, erosion and water logging due to heavy rains leading to loss of life, flood refugees, breeding ground for pathogen, vectors and pests which in turn cause proliferation and spread of diseases – increase in cholera, malaria, respiratory disease and garbage blocking of roads and water channels which are barriers to road traffic.
- Unprecedented heavy rains in the south – east and South – south adversely affect the agricultural sector – the second mainstay of Nigeria's economy while drought claim their toll in the Northern part of the country. Reduced crop yields lead to hunger and malnutrition.
- Extreme weather events (heat waves, wind storms, dust storms) create heat stress for humans and livestock, most time leading to losses of livestock, plant and massive extinctions.
- Ocean acidification and coral reef bleaching.
- Increased Stalinization of fresh water source. These create high dependence on declining water supplies, poor health and sanitation system and high spread of water – borne and vector – borne diseases. It is worthy of note that climate change impacts on human lives, the economy, social life and human security. In essence, the already high population in Nigeria, high illiteracy level, high vulnerability and low adaptive

capacity due to poverty have added together to make Nigeria hardest hit by climate change phenomenon. It is important that while preparing teachers for climate change curriculum at the Non-formal education, the causes of climate change, impact and adaptation strategies should be well engrained in it for participants to gain adequate knowledge and understanding for informed decision making and practice.

Climate Change Adaptation Strategies For Teacher Preparation Curriculum For Non – Formal Education

The term adaptation connotes process of introducing strategies which moderate harm or exploit beneficial opportunities (IPCC, 2007). "It is an adjustment in natural or human system in response to actual or expected climate stimuli or their effects" (Nwoke, Ogwo, &Ukaga, 2010: 115). In order to save life and maintain environmental sustainability, teacher preparation for non – formal Education should embody adaptation strategies that would counteract the adverse impacts of climate change. Many countries have focused on strategic adaptation plans and actions to reduce vulnerability of the community and economic sector. It is important that Nigerian communities should be made to imbibe some recommended climate change immediate adaptation actions for survival. The following are included:

- Rain Harvesting and Boreholes: Rainwater harvesting and boreholes will create immediate alternative domestic water supplies, thereby reducing the outbreak of these water and food – borne diseases caused by contamination of water supplies through the disruption of water and sanitation systems which can be caused by toxic runoff from increased rainfall and flooding. Implementation agencies are the communities, Local Government Authorities and even States.
- Immunization and Treatment: With climate change, vector – borne diseases such as malaria, schistosomiasis, river blindness, dengue yellow fever and other infectious diseases - are on the increase or projected to be so. The immediate immunization and/ or treatment of affected population will help to minimize mortality and morbidity associated with these diseases (Nwoke et al, 2010). Climate change curriculum for Non-formal education should incorporate this fact.
- Health Education and Awareness: Non – formal Education clientele should be sensitized into identifying and managing health disorders associated with climate change in Nigeria. In other words, building capacity is an essential preparatory step in adaptive strategy in climate change. Adapting to climate change requires education and awareness-raising which enables clientele to take well – informed sustainable decisions necessary to effectively adapt to health impacts of climate change.

Other adaptive strategies that should form part of the Climate change teacher preparation Curriculum for non- formal education are:

- Increase in the use of energy: Saving mechanism, that is, alternative use of solar and wind energy should be taught and encouraged.

- Reduction in the use of wood, kerosene stove etc for cooking should be encouraged as a way of reducing carbon emission.
- Reductions in the burning of fossil fuel (coal, oil, & natural gas) as these are huge sources of carbon emission.
- Use of cars and other vehicles that do not emit carbon and also avoiding use of big vehicles which consume more fuel. It is important to buy fuel-efficient vehicles which meet daily needs in other to reduce carbon footprints.
- Refresher courses for non- formal education teachers through workshops, seminars and conferences to train them in climate change adaptation teaching strategies and techniques, new methodologies and approaches in teaching climate change issues and concepts, should be put in place.
- Reforming, renewing or transforming teacher preparation curriculum to reflect climate change impacts and adaptation strategies (actions) at all levels of the education system especially, the non-formal education that is community-based. (Onwuzuruike, 2010).

Agricultural production, including access to food in Nigeria is projected to be severely compromised by climate variability and change. The agricultural farmer within the context of agricultural extension training should learn to adjust his planting and harvesting period in line with climate change challenges. About 70% of Nigerians rely in agriculture to live and if rains do not come at the right time, this can be devastating.

- The road side motor mechanic should be taught to know that much of their smelting of iron and the like emit carbon which enhances global warming.
- Climate change adaptation curriculum for non formal learners should incorporate the knowledge of planting trees to curb global warming.
- Composting of organic kitchen waste (fruits, vegetables, leaf and yard waste) to reduce the amount of waste in land fills while making for valuable fertilizer. This should form an integral part of the curriculum. Reducing waste produced and disposed reduces methane emissions and increases forest carbon removal.
- Reduce! Reuse! Recycle: Producing new paper, glass, and metal products from recycled materials saves 70 to 90 percent of the energy and pollution(Onwuzuruike, 2010)
- Renewable energy solutions such as wind and solar power can reduce reliance on coal-burning power.
- Instituting climate change adaptation programmes addressed by the stakeholders- eg flexible calendar that recognizes national variations in the temperature and rainfall regimes.

Non-formal education participants need to be taught to sign up for renewable energy for a healthier environment.

Challenges Posed by Adaptation Strategies to Non- Formal Education Teacher Preparation

1. Lack of adequate manpower to handle the programmes as well as lack of textbooks, reference books on climate change and adaptation, journals and magazines to support effective teaching.

2. High cost and scarcity of the books on climate change in Nigeria has adversely affected the implementation of the innovative curriculum programme (Climate change) that has been infused into the career subjects .
3. Biggest challenge facing teachers today lies in coping with an ever-growing class size, cramped up school time table and the ever-growing variety of subject matter contents, skills, techniques machinery/equipment, information.(Maduewesi,2005)

Summary And Conclusion

Major areas of concern in Nigeria are bush- burning by subsistence farmers in line with traditional agriculture, transportation, gas flaring associated with oil and gas exploitation. Enactment of legislation against practice will go a long way to curb ugly situations. (UNESCO -CCESP (2011).

It is important to use appropriate instructional strategies while teaching climate change issues, impacts, and adaptation and / or mitigation strategies. Such should include: direct instruction, interspersed with whole class discussion and protect man from climate hazards demonstration processes, seminars on causes and effects of climate change to mention but a few. Climate change is a reality. The Non-Formal Educators and their clienteles must not be left out in the scheme of things. Everyone should be involved in adapting to and mitigating the adverse effects of climate change.

Recommendations

The following recommendations are made;

1. There is need to build the capacity of Nigeria citizens to cope and adapt to climate change even through emergency preparedness
2. Teachers require help (in the face of new/emergent topic, issues & trends) to successfully mediate the new climate change curricula, the new attitude to learning and the new technologies to learn. In doing this, innovative strategies should be developed to help teachers cope effectively. Only very few have non-formal education knowledge about climate change adaptation strategies.
3. Integration and infusion of global issues and concerns such as environmental degradation and climate change into the curriculum continue to pose service challenges to curriculum developers and school textbook writers and publishers. Nigerian educational system (formal, non-formal) should begin to demonstrate flexibility and adaptability, in the effort to maintain relevance in a rapidily changing world.
4. Non-Formal Staff Development: There is need for training & retraining of non-formal education teachers through workshops and seminars, particularly on the new information, knowledge, skills, pedagogy about climate change strategies.
5. There is need to mainstream climate change education into policy across national and state level activities that should cover all areas and economic and social sectors.

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THE DOMAIN OF LEARNING: AN INTRODUCTION TO THE LAW OF ABSORPTION

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Abstract

Absorption is a part of the process of learning. It is affected by many factors like time, mental ability, motivation resources etc. A direct relation exist between times spent and quantity of the resources absorbed. The law of absorption of resources in the domain of learning states that data absorbed increases at a low rate grows rapidly and finally flattens out, as it passes through initial, drive and saturation levels respectively. A schedule based on this law gives shape to a total absorption curve. From the total absorption curve, marginal absorption and average absorption can be developed.. The nature and behaviour of these curves are also discussed. Proper idea regarding the stages in growth of absorption helps an individual to maximise his absorption.

Key Words: *Absorption, Learning, Intelligence, Momentum, Saturation point, Total absorption, Marginal absorption, Average absorption, etc.*

Introduction

The process of learning has been the hallmark of humans since birth of the race. Absorption of information from the stimuli is the primary step in learning, where the particular stimulus is converted to an input and through perception, taken up by our senses. Absorption refers to the inflow of data from an external source, say a book towards our brain. It refers to how well a person "understands" the material embedded in the stimuli, but not how well a person "recollects" , "connects", "conceptualises" or "applies" the material he understood. The source of absorption or the stimuli can be a person, an event a book, an experience or any kind of arousal to our five senses.

Study into the processes of learning reveals the importance of absorption in learning. It is because, only the knowledge

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or the skill absorbed can be processed by the human brain and thus can be applied to practical uses and for further developments. Being the most important process embedded within learning, it is a topic that needs to be addressed at a higher magnitude than the preceding stages of learning like recollection and application of the knowledge which was learned. It is because the data absorbed in its most rudimentary form provides for cognition and expansion of ideas .For self learners, students, teachers, and researchers ,a glimpse into the law of absorption can prove to be a great time saver and an effort reducer.

Absorption

It is defined as the process of grasping the material in the source, best compared to the soaking-up action of a sponge when immersed in water. It can be measured in units of data grasped at unit time. Reading, listening, feeling and sensing are the ways of absorption. Absorption is an important process in human resource management where latest knowledge and skills are to be acquired continuously. It is the only entry to our head that can be subject for further processes. The only way any intangible and abstract material, say information about a particular topic enters into our head. Greater importance is required on fields of rate of absorption and the levels of absorption. Absorption is a process omnipresent in normal life, whether it is learning of new topic, reading about a news item, or learning how to use a new mobile phone or even in learning how to swim.

Learning

It is the knowledge or skills gained by studying or being taught. It is the process of acquiring modifications in present skills, habits or tendencies through experiences, practices or exercise. David Kolb identified two separate learning activities in learning cycle; perception and processing. The perception of information can be through concrete experiences and feeling or by constructing mental and visual abstracts.

Learning is an inevitable process in development of human resource, the main steps involved in the process of learning has been classified briefly into Absorption, Recollection and Conceptualisation, Expression and Experience.

Absorption –It is the inflow of data from the external stimuli (e.g. book) to our brain. This is the primary step in Learning and is the only gate to a fortress called Learning.

Recollection and conceptualisation – It is the retrospection regarding the absorbed information and forming concepts on the data received by connecting it with earlier experiences.

Expression and Experience– expressing the processed information, in a book or dictation .Experiencing additional stimuli may add to the stock of data, thus completing the learning process.

Learning and Absorption

Absorption and learning are two words commonly misunderstood, but bearing entirely different meanings. Absorption is grasping of information where learning includes

recollection and conceptualisation along with absorption. Absorption is the beginning of a long process called learning. However absorption may be considered as the most important process in learning because, all the data processed in learning can enter the realm of learning through the only door, absorption. If absorption is lame so will be the whole learning process. Efficient absorption can reduce the total time requirement of learning process and thus can be a real effort reducer.

Factors affecting absorption

Absorption of skills or contents is affected by many factors which can be both internal and external

Internal factors

Mental ability (Ma)

Mental ability to absorb can include a person's intelligence, neuron transmission, hereditary traits that allow a faster grasping and sensitive ability. Sensitivity of people is highly related to their ability to absorption skill. Common notion that younger people absorb more than older people can be because of the changes in the mental ability that foster absorption.

Studies show absorption as a personality trait. Absorption as a personality trait refers to the tendency to get deeply immersed in sensory (e.g., smells, sounds, pictures) or mystical experiences. *Absorption* trait is defined as an arrangement for situations in which one's total attention fully engages to stimuli or in many cases, resources. The level of the absorption trait in individuals can increase their absorptive skills and foster an increased level of academic and non-academic absorption ability.

Motivation and interest (d)

A person must have adequate interest to study or grasp the particular subject. Motivation and interest coexist in normal cases. So he must dedicate himself for continuous study. If continuous study does not exist i.e. notable gaps occur in between the time spent, it can decrease the growth of marginal absorption. Motivation increase speed of work and a person tries everything to absorb to his maximum. It provides energy to achieve the task because of the direction and force to work consistantly.

Mental and physical health (H)

In order to establish a perfect span of absorption, a healthy mental and physical shape should be maintained. A sick or depressed person can underperform compared to his standards. A sound mind is said to live in a sound body. The subject must be physically and mentally capable of absorption. Inability to learn is a condition that is to a high extent, caused by lack of mental and physical health. If ability to concentrate, and absorb information is impeded by ill-nourishment or sedentary lifestyle, or are distracted by negative feelings, perception of data will be at a low scale.

Momentum (M)

Momentum is defined by Oxford as the force caused by development of something. Momentum can be of two types.

#Momentum of absorption

It checks whether person has a previous record of any absorption i.e. whether the person absorbed recently to give him a force to absorb quicker irrespective of topic. Example a student can absorb quicker than a person who hadn't exercised absorption for a longer time

#momentum of the topic

If a person has previous knowledge of the subject that help him connect two instances and thus help in faster absorption, he is said to have momentum of the topic. Example, a person having basis of mathematics will be more advantageous in learning calculus than a person without it.

External factors

Time (t)

It is the most important factor affecting absorption. More time will lead to higher level of absorption till a level. The co-relation between time and absorption is positive

Source (s)

The source of information must be effective in terms of legibility and of a known script. Ineligible and unknown materials cannot allow a person to absorb at a good rate. However general pictorial representations can be understood globally. Sources can be read, listened and felt. Source is the stimuli for the whole absorption process. Source can be a book we read, lecture we hear or demonstration of skill we witness.

Ambience (a)

Ambience and surroundings are important factors in absorption. Human beings are aware of their environment and need to be comfortable in order to concentrate on absorption of contents from a source, example, a book.

A suitable ambience should be provided for the subject. An over stimulant atmosphere should be avoided and a calm atmosphere should be adapted. Temperature, musical stimulation, fragrance, breeze are examples of stimulants that can change absorptive rate in individuals. However this alters from person to person. It can be concluded that affirmative ambiences can ensure a better absorption.

Absorption (A) = f (T, a, S, Ma, D, H, M)

In order to explain the law , it is assumed that all factors other than time (T) remains constant

Absorption (A) = f (T).

Before the statement of law the assumptions are

Assumptions

Mental ability, physical and mental health does not change.-All through the period, it is assumed that the above external factors do not change.

Motivation and interest to study does not deteriorate.-It is assumed that these perimeters may increase but will not decrease. Motivation may increase as greater emphasis is given to it, in terms of time or effort.

Source remains unchanged-Source of information does not expand or contract, but it remains the same. The source of information remains valid thorugh out the process of absorption.

Statement of the law

Rate of absorption is slow in the beginning; it later grows at a high rate and finally flattens out as it closes to saturation.

From the law, three stages for absorption can be recognised, namely initial, drive and saturation.

Stage I

Initial

This is the primary level. Here the amount of absorption is relatively low. The reasons behind the phenomena are the following

#1. Momentum of subject.

As the person is introduced to a completely new topic, he lacks momentum of the subject. Momentum of subject is a condition where a previous dev?elopment in the particular subject fosters further growth. A person having no momentum of subject will have to study the basics of that particular discipline or subject. Basics of a discipline account for a less denser school of knowledge compared to the vast amount of information and material embedded in that particular discipline, but takes more time for complete absorption and apprehension.

#2. Methods and study techniques.

Methods and study techniques may not be pre-developed. Different subjects may have different study methods or absorption strategies that help to increase the level of absorption. These methods can only be developed in the next level. Lack of strategy leads to a lesser level of absorption. Example, connecting and deriving mathematical equations can prove to a better strategy rather than byhearting the mathematical equations.

#3. Momentum of absorption

Momentum of absorption could be low. Momentum of absorption refers to the previous absorptions and developments in his absorption skills that may spur further absorptions in future. For example, a student who is regularly used to continuous and rigorous absorption may have a strong momentum of absorption that may help in absorption across genres. We notice that people who are employed in absorption linked works like researcher or teacher, may have a higher rate of absorption than a labourer when the stimuli for absorption is reading. However the latter group can score better when absorption is regarding a manual skill like operating particular machinery.

#4. Motivation & interest

Motivation and interest might be low. It is because subject is introduced to a completely new topic. Motivation and interest can only increase when a person keeps on devoting his time for absorption.

Stage II

Drive

It is in this level that majority of the absorption occurs. Absorption increases at an increased level. The reasons behind the increased rate of absorption are many.

#1 Increased momentum of subject.

As basis and an overall understanding is obtained regarding the nature, scope and contents of the subject, it gives a momentum of subject. Earlier developments on that particular subjects gain a force to study the subject further. The brain roots itself to absorb similar contents. Also absorbed information of the particular subject adds to his knowledge and helps him understand the topic which follows. Growth spurs growth.

#2 Increased momentum of learning.

The experience and developments from absorption in stage 1 helps him gain a momentum that will boost his further absorption. Momentum of learning increases as time is used more.

#3 New study techniques and strategies get developed.

Subject specific strategies get developed. It helps a person absorb more.

#4 Increase in motivation and interest.

A marginal increase in motivation and interest once the subject is familiar and understood is a normal trait in majority of people

Stage III

Saturation

It is final level where one witness a drop in marginal absorption rates followed by a drop in the average absorption. A flattening of total absorption occurs, where total absorption increases a decreasing rate till it reaches a saturation point. Saturation point is maximum absorption capacity or limit

Saturation Point

In some cases saturation point exists. It is a point where marginal absorption is zero. Nothing can be absorbed in this stage. Its existence depends on two conditions.

Subject

Subject or source is relatively small. A small and coverable size of a subject allows a person to absorb 100% of its contents. In such a case saturation point exists. There is nothing new to absorb, but only what is already absorbed. But for a limitless and vast subject, there is no saturation point. Example, in physics there are limitless amount of information that cannot be absorbed by a single person. A book, say "Wealth of Nations" by Adam Smith has a limited amount of information printed as the contents of the book. So saturation point exists, but not for a vast topic like Macro economics.

Personal Capability

To be capable for large absorption, a person must have ability and must be competent for absorption of a large quantity and density of topic. The limits of the internal and factors except time and subject limits his absorption skills and ability. Thus he is forced to a saturation point where he cannot absorb anything new.

So for existence of saturation point, the subject and personal capabilities are to be favourable.

The reasons for STAGE III (i.e. SATURATION) are;

(a) In the existence of a saturation point

A saturation point if existent will force the total absorption curve to flatten and thus enter level III. As a person gets near to saturation point, he reaches level III because he has less to absorb, given the source and the factors other than time remains the same. Even if he has increased motivation, interest, momentum, and appropriate study techniques, he is unable to absorb anymore because of limitations laid by saturation point.

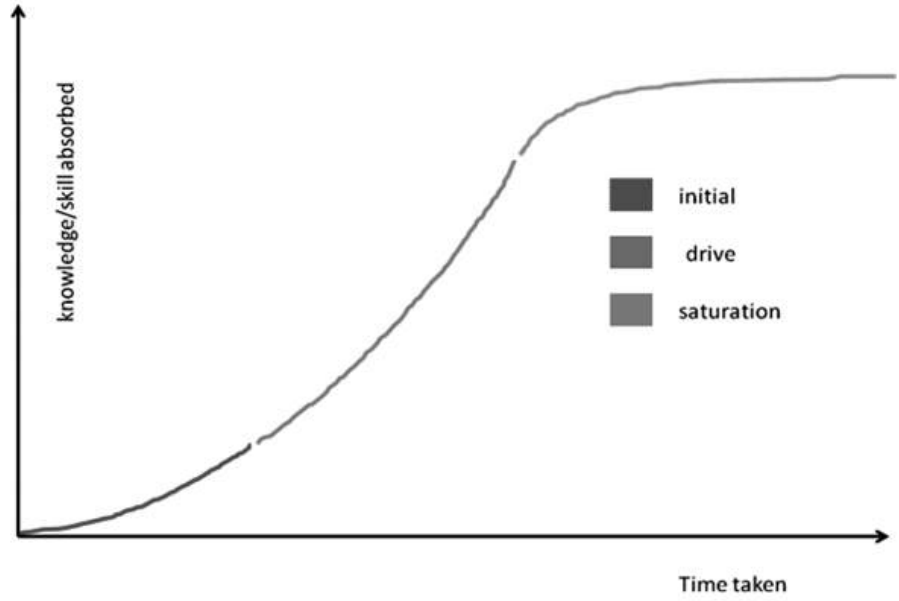
(b) if there is no saturation point

He becomes incapable to absorb anymore because any further absorption is made impossible as subject becomes more complex and narrow. He is unable to absorb with his current conditions like mental ability. Motivation, momentum etc which spurred in earlier stage becomes invalid as his is unable to decipher the subject with the current setup.

Absorption curves and their nature

Total absorption

Figure 1.
Nature of Total Absorption curve in different stages



It is the aggregate of all absorption gained from the sources.

Its behaviour in different stages is as follows;

Stage #1 -grows at a slow rate

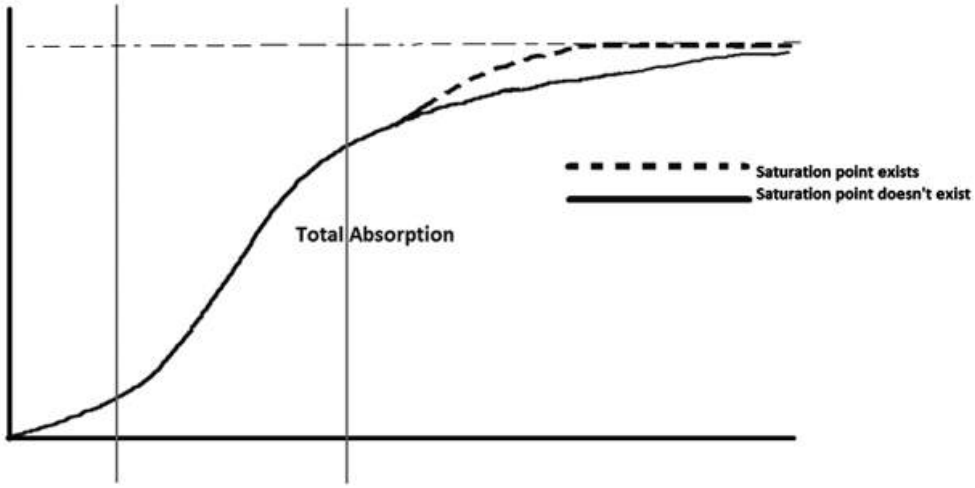
Stage #2 –grows at s faster rate

Stage #3 – (a) **saturation point does not exist** - TA keeps on increasing but at a decreasing rate. As time progresses, the growth of TA keeps on decreasing but never becomes a constant as no saturation point exist. But TA tends to a constant (called saturation value) or in other words TA '! saturation value

(b**) Saturation point exists**. - TA increases at a decreasing rate and finally TA becomes a constant which is the saturation value or in other words TA limits itself to a saturation value.

Figure 2

Shape of Total absorption curve when saturation point exists and otherwise.



Marginal absorption

It is the addition made to total absorption as one more unit is time is employed for absorption. Its behaviour in different stages is as follows;

Stage #1 -grows at an increasing rate

Stage #2 –grows at a much faster rate than that of stage 1

Stage #3 – (a) **saturation point exists** - If a saturation point exists, MA becomes zero but never becomes negative. If a person devotes his further time for absorption MA will move along the X axis towards the right.

(b**) Saturation point does not exist** - If no saturation point exists, MA never becomes zero, but tends toward zero i.e. MA'!0. If a person continues to employ his time, MA will be a decrease further toward zero, but never actually reaching it. It is because for each unit of time devoted he gets a decreasing amount of material for absorption.

Average absorption

It is the average of amount absorbed at a point of time. It never can become zero as Marginal Absorption never gets to be negative.

Stage #1 –increases at a very small rate

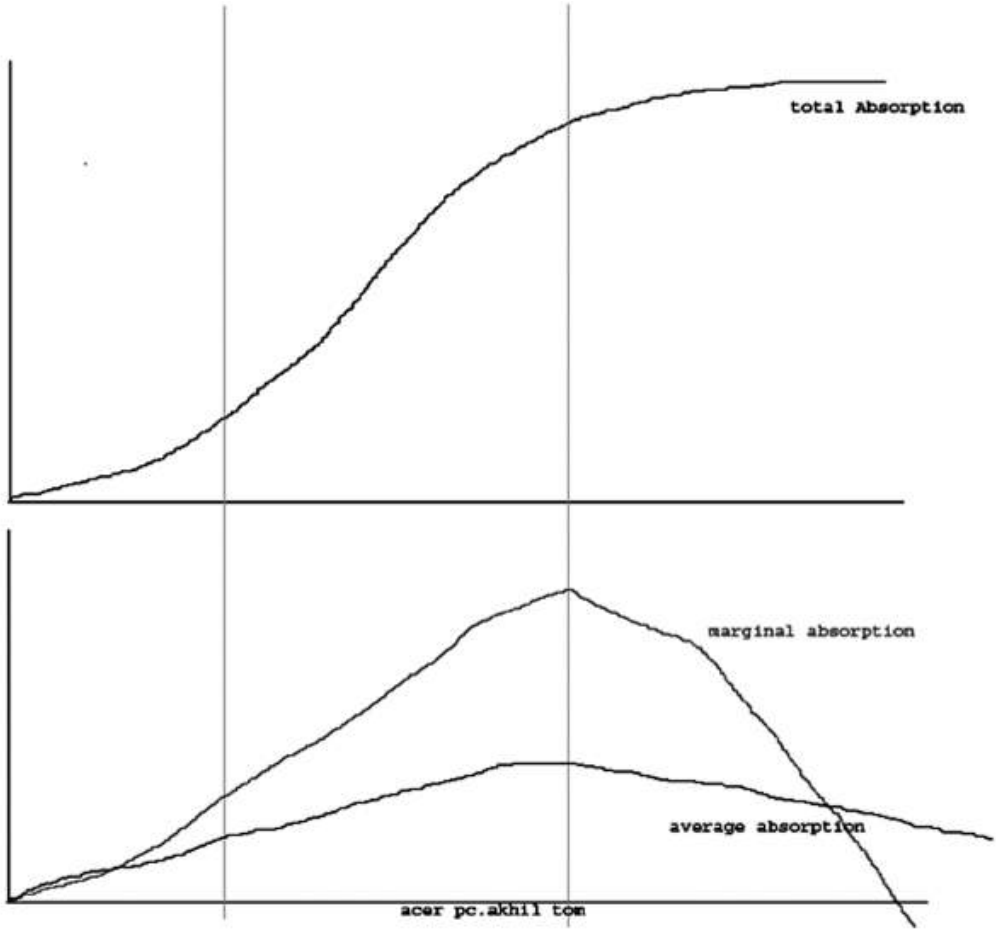
Stage #2 –grows at a relatively faster rate than that of stage 1

Stage #3 – (a) **saturation point does not exists** - it a saturation point does not exists, AA decreases at a slow rate after AA=MA. AA'!0 (AA tens towards to zero) at a slower rate.

(b**) Saturation point exists** - it a saturation point does not exists, AA decreases at a slow rate after AA=MA. AA'!0 (AA tens towards to zero) , but at a higher rate.

Boundaries

Figure 3
TA, MA and AA curves and their shape in different stages.



Stage # 1 Initial

Starts from beginning till the point where MA becomes double of AA (2xAA>MA).

Stage # 2 Drive

Starts from point where MA >2xAA till where MA is increasing.

Stage # 3 Saturation

Starts from point where MA starts decreasing till AA becomes zero (imaginary situation).

Table 1

Absorption schedule showing total absorption, marginal absorption, and average absorption with respect to the units of time employed.

Units of time	Total absorption	Marginal absorption	Average absorption
1	1	-	1
2	2	1	1
3	4	2	1.33
4	7	3	1.75
5	11	4	2.2
6	16	5	2.67
7	23	7	3.28
8	33	10	4.12
9	48	15	5.34
10	65	17	6.5
11	85	20	7.73
12	93	8	7.75
13	99	6	7.65
14	101	2	7.21
15	102	1	6.8
16	102	0	6.375
17	**102**	**0**	**6**

Here, **'initial'** level exist from units of time 1 to 6, **'drive'** exist from units of time 7 to 11 and **'saturation'** exist from 12 units of time onwards.

Educational Implications

While conventional studies in the domain of learning revolve around the reflection and expression of the learned material, absorption of the stimuli has been forced out of focus. Emphasis current curriculum provides to absorption is meagre in quantity. Any piece of data can only reach the recollection, reproduction and research engines if they are inhaled by the absorption system. Therefore being the first and the most crucial part of the learning process, absorption is to be given importance. It must be noted that all processes of learning are dependent to a high extent on the rate of absorption of information.

The influence of external factors such as ambience and source of material is large on absorption. Therefore providing an affirmative external factor can help the subject reach the saturation level of absorption. It should be noted that even with unfavourable ambience it is possible to reach the saturation point if the source is valid. But the time taken for such a process will be too long compared to a case when all external factors are affirmative. It can be helpful to provide a positive ambience for absorption especially in classes.

Having supportive internal factors can help a person to absorb in a much faster pace. Motivation is a variable factor that will cause a higher rate of absorption when favourably high. Getting motivated can stimulate our senses and lead to higher rate of absorption.

Absorption should never stop on the second stage of absorption, 'drive'. It is the most productive of all stages and accounts for the highest rate of absorption. Once the third level is reached and saturation point is obtained, one can strategically shift toward the further processes of learning like retrospection. The first stage of absorption, 'initial' is the most difficult stage in absorptive process. Subject may feel having made lesser progress and might plan of abandoning his work. It can later prove to be a foolish action. The lesser pace of absorption in the initial phase is natural and it should be remembered that once 'initial' phase is over and you are in 'drive' the growth will be exponential. Spending more time for absorption once the saturation level is reached can be the most unproductive of all tasks. However in cases where so saturation level exist it is best to absorb as much as possible till there is positive marginal utility over your time spent in relation to the material you absorb.

Conclusion

The process of absorption exercise great importance in the domain of learning. Being the primary process in learning, the magnitude of absorption to great extent affects the magnitude of learning. Internal and external factors that affect absorption and perception are also identified. The rate of absorption increases at a high rate, slows down and finally saturates. The process of absorption passes through three stages which are characterised by changes in total absorption, marginal absorption and average absorption. Enquiry into nature of these curves helps the study evolve to a more scientific and logical one. Proper idea regarding the stages in growth of absorption helps an individual to maximise his absorption and thus increase the learning pace. It can also help him correct unscientific notions regarding absorption. Any effort of absorption should aim at reaching the saturation level (and if existing, saturation point) to get maximum within your limits.

The main focus behind the study was to emphasis on the process of absorption, earlier left unexplored. It brings out a law that applies to any kind of absorption of knowledge irrespective of the location or the person. It aims to free the concept of absorption from the domain of learning, to ensure development and better emphasis for the topic. Being a visible part of the process of learning, absorption as an individual topic has the capacity and potential to undergo further studies and research.

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GEOGRAPHIC INFORMATION SYSTEM: A CONSTRUCTIVIST TOOL FOR GEOGRAPHY CLASSROOM

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Abstract

Geographic Information System (GIS) with its interactive, student-centred nature provide an avenue for creating constructivist learning environment in Geography education. The present study attempts to ascertain the appropriateness of GIS as a constructivist teaching and learning tool in secondary level Geography education. The study employed an experimental method and the sample consisted of 140 students studying in standard nine, following Kerala State syllabus. The experimental group was taught the topic 'Continents' with the help of GIS, while the control group was taught the same topic with the prevailing method with paper maps. The presence of constructivist characteristics as, perceived by students, in the two methods were identified by employing a questionnaire to students. The results of the study indicated that students perceived more constructivist characteristics in GIS based method compared to the prevailing method. The study concludes by giving suggestions based on the results of the research.

Keywords: *GIS, Constructivism, Geography Education, Teaching with GIS*

Constructivism, which has replaced the traditional, teacher centred instructional frameworks, has become one of the most influential trends in the whole field of education. The wide acceptance of this philosophy has changed the traditional role of teachers and students and shifted the emphasis from the content area to the processes involved in the acquisition of information. Another important field that has revolutionised the domain of education is technology. It has already been recognised as a vehicle for accomplishing constructivist teaching practices (Rakes, Flowers, Casey, & Santana, 1999). With the popularity of digital technologies, present-day students have a wide variety of learning and information gathering tools at their disposal.

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Geographic Information System (GIS), a powerful technological tool that fosters higher order analytical and synthetic thinking (Kerski, 2003) is far in tune with the current educational trend of constructivism.

Although the potentials of GIS as a constructivist teaching and learning tool have been widely recognized, very few studies have been done so far to empirically prove this and the present study aims to fill this gap. The study was intended to compare the presence of constructivist characteristics in a GIS incorporated teaching method and the prevailing method with paper maps based on the seven components of constructivist teaching and learning namely, (1) arguments, discussions, debates, (2) conceptual conflicts and dilemmas, (3) sharing ideas with others, (4) materials and measures targeted toward solutions,(5) reflections and concept investigation, (6) meeting student needs, and (7) making meaning, real-life examples (Tenenbaum, Naidu,Jegede, & Austin,2001).

GIS, the computer based tool for geographic data analysis and spatial visualization has began to infiltrate into school education scenario worldwide. Though GIS is not a technology originally developed for constructivist educational practices, it provides useful tools for creating constructivist learning environment. It has now accepted as one of the 21st century tools for creating a computer based constructivist learning environment for Geography education (Lui & Zhu, 2008). Many studies have shown the potential of GIS for supporting constructivist and inquiry-based learning (Baker, 2005; Keiper, 1999; Kerski ,2003; Lloyd 2001). According to the study by Keiper (1999) a GIS learning project based upon constructivist pedagogy provided students considerable opportunity to practice geographic skills and was highly motivating. The GIS based learning environment supported multiple representations and multiple linkages of information, and facilitated interactive learning and knowledge construction (Liu & Zhu, 2008).

Demirci (2008) evaluated the implementation and effectiveness of GIS-based application in secondary school geography lessons. The study revealed that the use of GIS increased students' success on geography lessons. Similar findings were also reported by Patterson, Reeve, and Page (2003) suggesting that GIS does aid in the learning of geographic principles. Incorporation of GIS in teaching is found to be useful in many subjects like Science (Baker & White, 2003), Environmental Education (Hagevik, 2002), History etc.(Lo, Chang, Tu, & Yeh, 2009) . Moreover using GIS supports the development of important job and career skills by introducing students to emerging technologies (National Research Council, 2006).

As indicated by the literature reviewed, integration of GIS within Geography classroom has broad-reaching educational benefits for students. But to fully exploit the promise of this technology more research is needed to understand the relationship between using this technology and different aspects of learning and the present study aims to contribute to this research need.

Purpose of the study

GIS is not widely applied in secondary education in India. The primary reason for this is that it does not have a place in the national curriculum. Evidence for the

suitability and effectiveness of GIS incorporation in classrooms is required before it can be suggested as a beneficial teaching and learning tool. But empirical studies on GIS incorporation in Indian classrooms are limited. Moreover GIS needs to be verified as constructivist tool suited for the contemporary classrooms. The present study was aimed at addressing this research need and the research question examined was;

Does a GIS-incorporated Geography teaching method has more constructivist characteristics compared to the prevailing method with paper maps.

Objective of the Study

The objective of the present study was:

- To compare the presence of constructivist characteristics in GIS based instructional method and the prevailing method with paper maps.

Hypothesis of the Study

The hypothesis of the study was:

- There is significant difference between GIS based instructional method and the prevailing method with paper maps in their constructivist characteristics.

Method

The present study was experimental in nature. The sample consisted of 140 students from ninth standard, following Kerala State syllabus with 70 students each in the experimental group and control group. The groups were randomly assigned as experimental and control and the numbers of boys and girls in the two groups were nearly equal. Investigators prepared lesson transcripts and supporting materials on the topic "Continents" for both the groups.

The entire topic Continents was divided into four sub units namely Introduction to Continents, Australia, North America and South America. These subunits were further divided into lessons of 45 minutes duration. For the experimental group investigators prepared GIS data and worksheets and collected other supporting materials like images and video. Lessons for the experimental group, which incorporated GIS was based on the five steps of geographic inquiry process namely, ask geographic questions, acquire geographic resources, explore geographic data, analyse geographic information and act upon geographic knowledge (Environmental Systems Research Institute, 2003). Contents to be learned were transformed into the form of questions and were given to students in worksheets. These questions ranged from, that can be answered directly (eg: which is the largest continent?) to those required the understanding of more complex geographic relationships (eg: How rain and physiography influence agriculture?).

Lessons based on the prevailing method with paper maps were prepared for the control group. The experimental group students were expected to work in pairs on computer and the control group students in groups of 3-4 students on traditional paper maps to find answers to the geographic questions in the worksheet. The same teacher taught both the experimental and control groups.

Tools and Materials Used in Research

a. Learning Materials and Procedure for the Experimental Group

The GIS based method developed for the experimental group included lesson plans

for the topic, student worksheets, digital maps, images, online digital earth software and text book. The GIS software used was 'Quantum GIS Copiapo', an open source GIS software that runs on various versions of Linux and Windows operating systems. Among the numerous GIS functions available only basic functions, such as adding vector and raster data, showing and hiding data layers, altering the sequence of map layers, adjusting layer properties such as symbology, colour, map labels etc., identifying and selecting features, zooming in and out, opening attribute table, querying and buffering were used, to make the software accessible to students. GIS data required were prepared by investigators using software ArcGIS 9.2 and Quantum GIS Copiapo. Data that were readily available in internet were also downloaded and used.

Since the students were new to GIS software, initially they were given simple tasks with guidance in order to be successful with the software. Guidance needed for working on the software was given by the teacher with the help of LCD projector. Students were also allowed to ask questions and clear their doubts. There were common discussions in the class on the answers found with teachers' help.Instead of learning content directly from the text books, GIS provided opportunity for students to explore geographic data and construct knowledge by themselves. It was by answering the geographic questions in the worksheet that students learned the content and attained the curricular objectives.

b. Learning Materials and Procedure for the Control Group

Lessons plans for the same topics based on the prevailing method with paper maps were prepared for the control group. Teaching materials for the control group included textbook, traditional maps, atlas, images, reference books related to the topic and student work sheets. Geographic questions in the worksheet were same for both the groups. While developing the lessons special care was taken to ensure student participation in the teaching and learning process. Students worked in groups and found out the answers for geographic questions with the help of paper maps. The control group was also expected to learn the content by answering the geographic questions in the worksheet. Here also, instead of learning content directly from the text books, students were supposed to explore paper maps and reference books and construct knowledge by themselves. There were group as well as common discussions on the answers found under the supervision of the teacher and students were also allowed to ask questions and clear their doubts.

c. Questionnaire

For assessing the presence of constructivist characteristics in the two methods, investigators employed the questionnaire developed by Tenenbaum et al. (2001). It was a five point Likert-type instrument, scores ranging from 1 to 5 , for identifying quantitatively the presence of constructivism as perceived by learners. Questionnaire had 30 statements based on the seven components of constructivist teaching and learning, namely, (1) arguments, discussions, debates, (2) conceptual conflicts and dilemmas, (3) sharing ideas with others, (4) materials and measures targeted toward solutions,(5) reflections and concept investigation, (6) meeting student needs, and

(7) making meaning,real-life examples.

With the help of the tools and materials developed investigators conducted the study. The questionnaire was administered on both the groups immediately after the treatment and the scores of the students were analysed with SPSS (Statistical Package for Social Sciences version 16.0). The details of analysis and interpretation of the collected data are given below.

Data Analysis and Results

The research hypothesis stated that there is significant difference between GIS based instructional method and the prevailing method with paper maps in their constructivist characteristics. For the purpose of analysis the research hypothesis was converted into a null hypothesis, which stated that there is no significant difference between GIS based instructional method and prevailing method with paper maps in their constructivist characteristics.

In order to test the null hypothesis, the scores obtained by administering the questionnaire on the experimental and control groups were subjected to independent sample t-test analysis. The questionnaire was intended to find out how students perceived the seven constructivist factors in their learning experiences in class. The comparison of the presence of constructivism as perceived by learners in the two groups is presented in Table 1.

Table 1
Comparison of the Presence of Constructivist Characteristics in GIS Based Instructional Method and the Prevailing Method with Paper Maps

Groups	Number	*M*	*SD*	*t*(138)	*p*
Experimetal	70	111.33	16.38	3.75	< .001
Control	70	100.51	17.76		

The independent-samples *t*-test revealed that learners perceived more constructivist characteristics in GIS based method (M =111.33, SD = 16.38) compared to the paper maps method (M = 100.51, SD = 17.76), a statistically significant difference, $t(138) = 3.75$, $p < .001$, 95% CI [5.10 , 16.52].

The independent-samples *t*-test on the total scores revealed that there is a significant difference between the two methods in their constructivist characteristics and learners perceived more constructivist characteristics in GIS based method. Therefore, the null hypothesis, there is no significant difference between GIS based instructional method and prevailing method with paper maps in their constructivist characteristics was rejected. So it can be interpreted that the teaching method incorporating GIS has more constructivist characteristics compared to the prevailing method with paper maps.

For getting a deep insight into presence of constructivist characteristics in the two methods a component wise comparison on the presence of the seven factors of constructivism in the two methods was also done. Results of this analysis are presented in Table 2.

Table 2
Component wise Comparison of the Presence of Constructivist Characteristics in GIS Based Instructional Method and the Prevailing Method with Paper Maps

Constructivist Elements	Groups	*M*	*SD*	*t*(138)	*p*
arguments, discussions, debates	Experimental	19.63	3.83	4.76	<.001
	Control	16.36	4.28		
conceptual conflicts and dilemmas	Experimental	6.76	2.65	0.59	.555
	Control	6.51	2.18		
sharing ideas with others,	Experimental	15.94	3.31	2.95	.004
	Control	14.09	4.09		
materials and measures targeted toward solutions	Experimental	12.11	2.29	1.63	.105
	Control	11.47	2.37		
reflections and concept investigation	Experimental	22.43	4.46	1.59	.113
	Control	21.23	4.46		
meeting student needs	Experimental	18.79	4.11	3.20	.002
	Control	16.40	4.70		
making meaning,real-life examples	Experimental	15.67	2.73	2.37	.019
	Control	14.46	3.30		

The independent *t*-tests performed on the presence of seven dimensions of constructivism as perceived by students ,between the two instructional method groups were significant for four dimensions namely, arguments, discussions, debates t (138) = 4.76, $p < .001$, 95% CI [1.91, 4.63] , sharing ideas with others $t(138) = 2.95$, $p = .004$, 95% CI [0.61, 3.10] , meeting student needs t (138) = 3.20, $p = .002$, 95% CI [0.91, 3.86]. , making meaning, real-life examples t (138) = 2.37, p = .019, 95% CI [0.20, 2.23] but not significant for three dimensions namely, conceptual conflicts and dilemmas t (138) =0 .59, p =.555, 95% CI [-0.57, 1.05] , materials and measures targeted toward solutions t (138) = 1.63, p = .105, 95% CI [-0.14, 1.42], reflections and concept investigation t (138) = 1.59, p = .113, 95% CI [-0.29, 2.69].

Discussions and Conclusion

The results of the study show that students perceived more constructivist characteristics in GIS based method compared to the method with paper maps. Moreover, the component wise comparison revealed statistically significant difference between the two groups in the presence of four constructivist factors namely; 1) arguments, discussions, debates, 2) sharing ideas with others, 3) meeting student needs *and 4)* making meaning, real-life examples, with GIS based method showing more of them. The benefit of GIS stems from its ability to provide interactive learning environment, allowing students to engage in more sophisticated inquiry by mixing and comparing the map layers, modifying symbols, colours and patterns, zooming in and

out and seeing only needed data or all the information available.The GIS tools allowed students to read, visualize, manipulate, query and analyse digital geo-data and this interactivity, which is difficult with the traditional maps, enabled more learner centred approaches in delivering the content. Since learning with GIS involves the manipulation of GIS maps and data by students they take the role of active learners and are actively building knowledge structures (Kinniburgh, 2010).

The study also showed no statistically significant difference between the two groups in three constructivist factors, 1) conceptual conflicts and dilemmas, 2) materials and measures targeted toward solutions and 3) reflections and concept investigation. The active learning and constructivist approaches present in the prevailing method at schools ensured the implicit and natural integration of constructivism in the control group also. But the dynamic nature of GIS maps, as opposed to static traditional maps, facilitated improved visualization and exploration of spatial information and helped students to become active discoverers and constructors of knowledge (Pang, 2006).

In the light of the result of the present study, it can be suggested that GIS must be used in secondary school Geography lessons. But their effective utilization demands willingness and preparation on the part of teachers to use them. They must be equipped not only to acquire new technological skills but also to use them constructively in the teaching and learning process along with their students. Simply providing technology does not guarantee that teachers will use it in instruction. It requires the linking of GIS with geographical content and pedagogical strategies (Doering & Veletsianos, 2007). For this necessary training is needed for teachers both at the pre-service and in-service levels.

Since students are the early adopters and explorers of new technological tools, learning process incorporating GIS will result in increased interest in learning. Thus it contributes to creating an environment conducive for learning. Students find working with computers interesting and three-dimensional images and interactive maps attract their interest. The dynamic nature of GIS allows learners to become active participants and creators of knowledge. Given the positive contributions of GIS to the subject Geography in general and to students' learning of the subject Geography and constructivist practices in particular measures should be taken for the extensive use of this technological tool in secondary school Geography lessons.

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PEACE VALUES OF ELEMENTARY SCHOOL STUDENTS

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Abstract

Education serves as a vehicle for culture and values and creates a conducive environment for socialization. School is the formal agency established by the society to shape the personality of future citizens according to its unique culture and traditions. The study aimed to identify the Peace Values of Elementary School Students. It is a descriptive survey on a sample of 332 Students of Standard Seven of Kottayam district. The descriptive statistics Mean and Standard Deviation and the inferential statistics ANOVA were used for analyzing the data. The Peace Value Identification Scale, prepared by the investigator was used for the study. The findings of the study reveals that there is significant difference in the Peace Value scores of boys and girls and that the Peace Values scores do not significantly differ with respect to Locality

Key Words: *PeaceValues, Love,Harmony,Tolerance,Interdependence,Empathy and Compassion*

Introduction

Education is no education unless it extracts the milk of human kindness, kinship and brotherhood and makes for a universal diffusion of this feeling. The moment a human being realizes the importance of another human being, feels empathy for him, shares warmth of emotions and feelings with others, all hostility, prejudices, man to man conflicts will vanish into air. Violence is emerging in an unprecedented manner in human society. Looking at the world today any sensible person feels disheartened and even horrified to see the kind of violent acts being committed by man against man and nature. The saddest part of the story is that this state of disorder and confusion in the society is affecting the children's innocent minds. Children naturally absorb the spirit of violence in this atmosphere and will soon grow to be the next generation of

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perpetuators of violence. Under the present predicament there is a growing realization in the world of education today that children should be educated in the art of peaceful living. As a result, more and more peace concepts, attitudes, values and behavioural skills are being integrated into the school curricula in many countries (Learning the Way of Peace, A Teachers' Guide to Peace Education- UNESCO, 2001).

There is a well-known saying that values are caught rather than taught. Rohidekar (1998) points out that if values are to be caught there should be some role models. How can we expect that values to be caught unless there are some role models in the family and society? Here comes the necessity of value education. Peace is not just a state of mind. Peace is not just an attitude. Peace is a philosophy. It is the total understanding and the total tolerance and the total love of that which surrounds us. For if we can understand and appreciate that which is happening, without any resentment, even though we may not agree, if we can tolerate the actions of others, finding qualities in their sins, we will be close to peace. Peace mandates the practice of values such as love, truth, justice, equality, tolerance, harmony, humility, togetherness and self-control. Values and attitudes are the building blocks of the culture of peace (NCERT, 2004)

National Curriculum Framework (2005) - Education for Peace

The preamble of the National Curriculum Framework for School Education (2005) states – peace is generally understood as absence of conflicts and violence in society. The action for nurturing peace must be located in the education system. Moral education has always been viewed as an important subject to be included in the curriculum, to help children make the right choices. The NCF takes this a step further, the goal is now to consciously give the child an environment that builds sensitivity to others' cultures, perspectives and rights. The NCF speaks of the compelling need for peace education, clearly stating that education must be oriented towards values associated with "peaceful and harmonious coexistence'' (NCF 2005:9).

Prominent Indian philosophers like Mahatma Gandhi, Sri. Aurobindo, Vivekananda, Rabindranath Tagore and many others had placed a premium on the role of education in building peace and harmony, right from childhood. In line with the thinking prevailing in the cultural ethos, the Indian constitution had laid down Fundamental Duties, Articles 51(A) wherein there is a directive for the promotion of harmony and abstaining from violence. The Report of the Education Commission of 1964–66 lays utmost emphasis on the importance of the school environment in inculcating values in students. The school atmosphere, the personality and behaviour of the teachers, the facilities provided in the school have a large say in developing a sense of values. The school environment must be envisaged as a microcosm of the more peaceful and just society that is the objective of education for peace. The messages of the curriculum can thus be validated and reinforced by the school setting. Some of the pertinent issues in this regard are: how

children's rights and needs are either upheld or denied in school, how discipline is understood and practised, and how decisions are made and teaching is transacted in the classroom. School life needs to reflect peace values (Ways to Peace, A Resource Book for Teachers NCERT, 2010).

Need and Significance

Peace is an attitude towards life which by restraining violence, strengthens social cohesion and makes life worth living. Education is a means of building a culture of peace. Peace is a way of living together, in which people give their fellow creatures the space and, if necessary, the natural support to live their lives to the full. If education could teach human beings to become the most sophisticated annihilators of the human beings and life on earth, it is also education alone that can and must educate human beings to live with peace and dignity. Learning to live with and in peace is emerging as a premise of peace education. Learning about peace means learning the skills, attitudes and values that one needs in order to contribute to peace and help to maintain it. UNICEF (2012) refers to Peace Education as the process of promoting knowledge, skills, attitudes and values to prevent conflicts and violence. The core values required for peace are clearly mentioned in the book Learning to Live togethar in Peace and Harmony (UNESCO-APNIEVE Source book for Teacher Education and Tertiary Level Education). The book states a number of values required for peace such as Love, Tolerance, Harmony, Caring and Sharing, Spirituality, Gratitude, Compassion, Interdependence and Empathy. Of these values the investigator has selected six values for the study. They are: Love, Tolerance, Harmony, Compassion, Interdependence and Empathy. In order to identify the Peace Values among the Elementary School Students a survey was conducted by the investigator.

Definition of the Key Term

Peace Values: Peace Values are the values which are the foundations to live together in harmony for peaceful resolution of conflicts. **Learning to Live togethar in Peace and Harmony.** (***A UNESCO-APNIEVE Source book for Teacher Education and Tertiary Level Education, 1998).*** In this study the investigator has selected six values required for Peace. They are Love, Tolerance, Harmony, Compassion, Interdependence and Empathy.

Objectives of the Study

- To identify the select Peace Values of students of Standard Seven
- To identify the select components of Peace Values of students of Standard Seven
- To find out the significant difference in the Peace Values of students of Standard Seven with respect to gender
- To find out the significant difference in the Peace Values of students of Standard Seven with respect to locality

Hypotheses of the Study

- There is a significant difference in the Peace Values of boys and girls.

- There is a significant difference in the Peace Values of students of Standard Seven with respect to locality

Methodology of the Study

The investigator adopted the descriptive survey method for the study.

Tool used

The Peace Value Identification Scale - constructed by the investigator. The tool was prepared on the basis of the guidelines given in **Learning to Live together in Peace and Harmony** –(***A UNESCO-APNIEVE Source book for Teacher Education and Tertiary Level Education (1998)).***

Sample for the study

The sample of the study covers 332 students of Standard Seven belonging to the aided schools in Kottayam District.

Analysis and Interpretation

The analysis of the data and interpretation of the results are given below.

1. Distribution of Peace Value scores of students of Standard Seven

To find out the distribution of the Peace Value scores the investigator used the Frequency distribution table of Peace Value scores and the descriptive statistics Mean, Standard deviation and Skewness. Table 1 shows the frequency distribution and Table 2 describes the descriptive statistics.

Table 1
The frequency distribution of Peace Value scores of students of Standard Seven

Class Interval	Frequency	Percentage
251-270	9	2.72
271-290	23	6.92
291-310	50	15.07
311-330	65	19.57
331-350	68	20.48
351-370	69	20.78
371-390	36	10.84
391-410	10	3.02
411-430	1	.30
431-450	0	0

Table 1 show that 69 Pupils that is 20.78% fall in the class interval 351-370 which is the highest frequency class interval. 14.16% students have Peace Value scores above 370 and 62.34% students fall below 351.

Table 2
Number, Mean and Standard deviation (SD) of Peace Value scores of students of Standard Seven

Number	Mean	S D	Skewness	Minimum obtained	Maximum obtained
332	334.55	32.68	-.139	256	411

Table 2 shows the Mean Value is 334.55 and Skewness -.139 which shows that majority of the students fall into the higher end of the distribution.

2. Distribution of the scores on the components of Peace Values of students of Standard Seven in terms of frequency and percentage

Table 3
Component wise Frequency Distribution of Peace Value scores of students of Standard Seven

Class Interval	Peace Value Components											
	Love		Harmony		Tolerance		Interde pendence		Empathy		Compa ssion	
	F	%	F	%	F	%	F	%	F	%	F	%
30-39	4	1.20	7	2.11	8	2.41	4	1.20	2	.602	5	1.50
40-49	85	25.60	67	20.18	17	23.19	39	11.75	50	15.06	60	18.07
50-59	245	73.79	154	46.3	172	51.81	35	10.54	107	32.2	190	57.23
60-69	47	14.16	91	27.41	68	20.48	136	40.96	150	45.18	77	23. 19
70-79	1	.301	6	1.81	8	2.41	18	5.42	23	6.93	0	0

Note: F = Frequency & % = Percentage

From table 3 we can observe that among the components of Peace Values, Love has the highest frequency which falls in the class interval 50-59.

Table 4
Number, Mean and Standard deviation (SD) of the Peace Value components of students of Standard Seven

Peace value Components	Number	Mean	SD	Skewness	Minimum obtained	Maximum obtained
Love	332	53.35	6.15	-.178	37	73
Harmony	332	55.19	7.24	-.257	38	71
Tolerance	332	54.05	7.23	.086	38	72
Independence	332	58.38	7.78	-.406	34	73
Empathy	332	58.38	7.97	-.458	41	73
Compassion	332	54.7	6.25	-.511	37	69

The mean values of the Peace Value components are 53.35, 55.19, 54.09, 58.38, 58.38, and 54.7. From the above table the skewness depicts that out of 332 sample, majority falls into the higher end of the distribution.

3. Distribution of Peace Value scores of students of Standard Seven with respect to Gender

To find out the distribution of Peace Value scores of students of Standard Seven with respect to Gender, the investigator used the descriptive statistics, Mean, Standard Deviation, Standard Error and 95% confidence interval for mean. The data and results are given in table 5.

Table 5
Estimated Peace Value scores of students of Standard Seven with respect to Gender

Gender	N	Mean	SD	STD Error	95%C.I. For Mean	
					Lower Bound	Upper Bound
Boys	119	330.81	35.93	3.29	324.92	336.68
Girls	213	336.64	30.61	2.10	332.24	341.02
Total	332	334.55	32.68	1.866	330.05	337.4

Table 5 shows that Mean Peace Value scores of boys is 330.81 that of girls is 336.64. From this it is observed that girls have higher Peace Value scores than boys.

Difference between the Means of Peace Value scores with respect to Gender

To find out the significance of difference between the Means of Peace Value Scores with respect to Gender, the investigator formulated the following null hypothesis.

H_{01}: There is no significant difference between the Means of Peace Value scores of boys and girls of Standard Seven.

The level of significance was fixed at .05 with degrees of freedom 330. Table 6 gives the result.

Table 6
Data and results regarding difference between Means of Peace Value scores with respect to Gender

Gender	Number	Mean	S.D	STD	df Error	t	Level of Significance
Boys	119	330.81	35.93	3.29	330	1.56	.05
Girls	213	336.64	30.61	2.10	330		

Table 6 explains that the obtained 't' value (t_{330}= 1.56, P<.05) is significant at .05 level. This reveals that mean Peace Value scores of boys and girls are significantly different .It is concluded that girls have higher Peace Value scores than boys. Therefore the null hypothesis formulated by the investigator is not accepted.

4. Difference between the Means of Peace Value scores of students of Standard Seven with respect to Locality

To find out the significance of difference between the Means of Peace Value scores with respect to Locality the investigator formulated the null hypothesis.

H_{02}: There is no significant difference between the Means of Peace Value Scores of students of Standard Seven with respect to Locality. The null hypothesis H_{02} was tested using the statistical technique ANOVA. The level of significance was fixed at .05 with degrees of freedom 2/329. Table 7 gives the estimated result.

Table 7
Data and results regarding difference between Means of Peace Value scores of students of Standard Seven with respect to Locality

Source of Variance	Sum of Squares	df	Means Square	F	p
Between groups	501.292	2	250.646	.234	.792
With in groups	353108.837	329	1073.279		
Total	353610.130	331			

Table 7 shows that between groups sum of square is 501.292 and within group sum of square is 353108.837. The corresponding means squares are 250.646 and 1073.279 respectively. The calculated F Value ($F_{(2,329)}$ = .234, P>.05) is not significant at .05 level. This reveals that the Peace Value scores of Students of Standard Seven do not significantly differ with respect to locality. Thus the null hypothesis is accepted.

Findings of the study

1. The study reveals that out of the 332 sample of Elementary School students majority of the students fall in the high end of the distribution.
2. There exists significant difference in the Peace Value scores of boys and girls.
3. The Peace Values scores of the Elementary School students do not significantly differ with respect to Locality.

Conclusion

The National Curriculum Frame Work for School Education (2000) has taken value development as an important part of the education system. The School Curriculum contains certain components that communicate the essential values in their totality. Every teacher has to be a teacher of values. Every activity, unit and interaction must be examined from the view point of value identification, inculcation and reinforcement and then deciding appropriate strategy for a balanced and judicious implementation. Learning to make a living is not the sole reason for getting education; there is another, equally important byproduct; learning to make a life, a life that is beneficial, useful and peaceful. However, it is not by do's and don'ts that children can be oriented towards the values of peace; rather it is through enabling children to make choices and decisions about what is right and best for the common good. Students' age is a crucially important period which enriches one's personal life, nurtures social adjustments, fosters friendship and understanding and affects one's whole life pattern. Seen from this perspective, one could well understand the critical necessity of

teaching students the art of living together in mutual respect, justice, love and peace.

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OPINIONS OF HEADS AND STUDENTS OF SECONDARY ENGLISH MEDIUM SCHOOLS OF THE DISTRICT OF SINDHUDURG, MAHARASTRA, TOWARDS SCHOOL ASSEMBLIES

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Abstract

School assemblies are part and parcel of the school curriculum. It's the first thing they do by gathering together to prepare themselves to begin the school day effectively. Better the quality of school assemblies better the preparation for school life and an effective bonding. School assemblies are at the heart of school life and activities. The data is collected by Random sampling method from fifteen Heads of English Medium School belonging to the Private Aided Convent Secondary Schools and Private Unaided Non-Convent Secondary schools and 300 students from these fifteen schools. The tool used for the study is a self constructed opinionnaire. The finding of this study is an eye opener. Majority of the students find the School Assemblies very helpful, relevant and beneficial. It prefers shorter duration assemblies but more effective ones. School assemblies help them to develop a sense of belonging to the school and the Nation as a whole. It also benefits their overall personalities, leadership qualities and intellect. It also helps them to build a better bond between themselves. It is also found that all the Heads of Institutions conduct assemblies daily but of shorter duration. It is interesting to know that the girls benefit more than the boys when it comes to their personality development. The popularity and relevance of school assemblies will continue to benefit the personalities of the students as well as help them grow in the sense of belonging to the schools and the nation.

Key Words: *Opinions, Head of School, English Medium, School Assemblies.*

Introduction

This paper attempts to find some answers to the few of the following research paper:

What was the relevance of school Assemblies?

I. Are School Assemblies helpful for the integral development of the students?

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II. Does the School Assemblies bring about change in attitude, values and discipline in the students?
III. How far will the opinions of the students help in finding out the effect of School Assemblies on them?
IV. Is there a difference in the opinion between the male and female students as regards School Assemblies?
V. Is the opinion of the Heads of Schools and the students the same on School Assemblies?

Need for the Study

Every school is called to conduct school assemblies, be it daily, weekly or frequently. Though there are certain broad guidelines for conducting school assemblies, yet every assembly could be either same or very different from each other. How effective are these school assemblies is the need of the hour and my prime concern. School assemblies have drastically changed over the years. School assemblies are very important form of co-curriculum activity. The values of school assemblies are many, but its main function which is the self actualization of the pupils, has yet to find a rightful place in the school. The present day situation has not changed very much from the past for the betterment of the students. The teachers carry on the old dry and drab methods of conducting school assemblies, whereby the students play a very passive or mechanical role or else the student's participation is negligible.

Teachers and parents today lay great stress on academics and hence for most of them co-curriculum activities and assemblies are seen as a waste of time or as distraction from the regular studies. The child is bombarded with school work, tuitions, coaching classes, home work etc. The Education Commission of 1964-66, clearly envisage the importance of co-curriculum activities for the all round development of the pupils.

Title of the Study

Opinion of Heads and Students of Secondary English Medium Schools of the District of Sindhudurg, Maharashtra towards School Assemblies.

Objectives of the Study

The objectives of the present study are:

1. To analyze qualitatively the opinion of the Heads of the Secondary English Medium Schools, in the district of Sindhudurg, by means of an open-ended questions based on School assemblies, regarding:
   i. Timing of the School Assemblies
   ii. Frequency of the School Assemblies
   iii. Place where the School Assemblies are conducted
   iv. Sections attending the School Assemblies
   v. Important Functions of the School Assemblies
   vi. Items that constitute the School Assemblies
   vii. Benefits to students through the School Assemblies
   viii. Development of Students through the School Assemblies
   ix. Suggestions on Innovations in School Assemblies
2. To Collect and Analyze the Opinions of Students of the Secondary English

Medium Schools of Sindhudurg District towards School Assemblies according to:

i. Duration of School Assemblies and if they prefer longer Assemblies.
ii. Frequency of School Assemblies and if they prefer more frequent Assemblies.
iii. If Prayer is part of the School Assemblies does it help their growth and Development.
iv. If Pledge is part of the School Assemblies does it contributed towards the feeling a sense of belonging to the country.
v. If message of good thoughts is part of the School Assemblies does it contribute towards their value education?
vi. If Singing of the National Anthem is part of the School Assemblies does it contribute towards their sense of belonging to the Nation?
vii. If Activities like Skits is part of their School Assemblies does it develop in them Leadership qualities?
viii. If Reading of the News is part of their School Assemblies does this helped them to developed their knowledge and intelligence?
ix. If Singing of the School Anthem is part of their School Assemblies does it help them to develop a love for the School?
x. If the School Assemblies is conducted by the Heads or by the Teacher.

3. To Find the Difference between the Means of Scores of the Opinions between Girls and Boys Students, Private Aided and Private Unaided, and between Covent Managed Schools and Non-Convent Managed Secondary Schools towards School Assemblies.

Operational Definitions

Opinions

According to Wikipedia, In general, an **opinion** is a judgment, viewpoint, or statement about matters commonly considered to be subjective, i.e. based on that which is less than absolutely certain, and is the result of emotion or interpretation of facts. What distinguishes fact from opinion is that facts are verifiable, i.e. can be objectively proven to have occurred. Opinions rarely change without new arguments being presented. It can be reasoned that one opinion is better supported by the facts than another by analyzing the supporting arguments. In casual use, the term *opinion* may be the result of a person's perspective, understanding, particular feelings, beliefs, and desires. It may refer to unsubstantiated information, in contrast to knowledge and fact.

Baseer C.H Muhammad 1998) conducted a study on the opinion of primary school teachers of Karargod towards district primary education program (DPEP). His findings showed that there was no difference between the opinion of male and female teachers towards the DPEP.

Mendonca Cheryl Sonai (2000) conducted a study on the opinion of the B.ED students on the admission procedures to obtain government stats in the colleges of education of Karnataka State for the year 1999-2000. Her findings were that there were no significant difference between the means

of scores of rural and urban students, students of Arts and Science categories, in their opinion about the admission procedure.

Head of School

Popularly known as the Headmaster or Headmistress are the ones who manage and animate the entire running of the school. These Heads of the schools are either appointed by the Government for Government run Schools, Private management run by convent management schools or Private management run by non-Convent management schools.

Secondary Schools

In India the school is divided in to three sections for its administrative efficiency. The Lower Primary school, which caters to students from STD first to standard IV. The Middle school which caters to the students of standard 5th to the 8th, and the Secondary School which cares to the students studying from 8th to the 10th standard.

English Medium Schools

English Medium Schools refer to the secondary schools form the district of Sindhudurg, Maharashtra that has English as their medium of Instruction.

School Assemblies

The other words in the dictionary (R.E.Allen, 1990), 'gathering of the entire members of the School.'' School assembly is when the school community, or a part of it, Meets together to share aspects of life that is of worth. It acts as a medium for communicating matters of significance from one generation to another. According to (Johnston Edgar & Faunce Roland C, 1952), "The high school assemblies had its origin in the 'morning chapel' or 'opening exercises' of the early colleges." This was the original motif of the colleges in the early nineteenth century.

The faculty usually sat on the stage, most often garbed in academic gowns while the president offered prayers, read from the Holy Scriptures, made announcements and normally delivered a moralistic message. Gradually these college chapels' changed due to academic, but the programs were more tedious, formal and didactic. They were totally planned and presented by the principal. Assemblies business then developed to provide outside talent. (Johnston Edgar & Faunce Roland C, 1952, P. 26)

Every School is called to conduct School Assemblies. It is highly recommended by the founders of Associations and the Educational Departments. Abroad too, School Assemblies have reached great heights of quality and perfection. School Assemblies are very important form of co-curriculum activity. The values of School Assemblies are many but its prime function is the Self Actualization of the students Teachers and parents lay great stress on academics and hence for most of them co-curriculum activities and assemblies are seen as a waste of time and as a distraction from the regular studies. The Education Commission of 1964-66 (Aggarwal J.C. *1997),* clearly envisages the importance of co-curricular activities for the all-round development of the students.

Methodology of the Study

The present study is a descriptive Survey study. The data is from students of

the Secondary English Medium Schools of the district of Sindhudurg, Maharashtra, and the Heads of these respective Schools to find out their opinion on School Assemblies.

The present study is carried out in five phases.

Phase I,	Construction of the tool
Phase II.	Validation of the tools
Phase III.	Selection of the population and the samples
Phase IV.	Collection of Data
Phase V.	Analysis of the data

Hypotheses

Three null hypotheses have been framed for this study. They are:

i. There is no significant difference between the means of scores of the Girls and Boys on their Opinion on School Assemblies of the Secondary English Medium Students, of the district of Sindhudurg, Maharashtra.

ii. There is no significant difference between the means of scores of Opinion of the Private Aided Secondary English Medium School students and the Private Unaided Secondary English Medium School Students of the district of Sindhudurg, Maharashtra.

iii. There is no significant difference between the means of scores of the opinion of Convent Managed Schools and the Non-Convent Managed Secondary English Medium School Students of the district of Sindhudurg, Maharashtra, towards School Assemblies.

Populatiion of the Study

In the present study, the population consists of fifteen Heads and 300 students of the Secondary English Medium Schools of the district of Sindhudurg, Maharashtra. These schools belonging to the Private Aided Secondary Schools, the Private Managed Convent Secondary Schools and Private Managed Non-Convent Secondary Schools.

Tools used in the Study

The tools used in the study are:

i. A self constructed Open-Ended Opinionnaire in the form of interview for the Heads of the Secondary English Medium Schools of the district of Sindhudurg.

ii. A self constructed Opinionnaire titled, *"A rating scale for the opinion of students of secondary English Medium Schools towards School Assemblies"*, is prepared to find out the opinion of the English Medium Secondary School Students of the district of Sindhudurg, Maharashtra.

Analysis and findings of the Study

The major findings of the study are listed under the following headings.

i. Major Findings from the Heads of the Secondary English a Medium Schools.

ii. Major findings from the Students of the Secondary English Medium Schools.

iii. Other Findings.

Major Findings from the Heads of the Secondary English a Medium Schools

a. 100% of the Heads of the Secondary Schools conducted School Assemblies on daily bases. This is irrespective if the

Headmaster was from a private Aided, Private Unaided, Covent Managed or Non-Convent Managed School.

b. The duration or time allotted for the school Assemblies is found to be short as 43% of the Heads conducted School Assemblies for just 5-10 minute. Compared to the number of items on the School Assembly this duration is considered to be too short. This is in contrast to the Opinions of the Students of Secondary Schools, who wanted fewer School Assemblies but of longer duration.

c. 100% of the Schools have facilities for conducting School Assemblies outdoors, with either a stage or a platform.

d. 100% of the Heads of Secondary Schools conducts School Assemblies for all the sections: Primary, Middle and Secondary.

e. Only 14% of the Heads use skits during the School Assemblies. This is surprising because while suggesting innovations in School Assemblies 42.85% of the Heads suggests introduction of skits during the School Assemblies.

f. It is unanimously agreed by all the Headmasters that the most important function of School Assemblies is to bring about unifying feeling among the entire staff, management and students.

g. As regards the most important item of the School Assembly according to the Headmasters 42.85% mention Prayer, 28.57% mention National Anthem, while 28.56% mention Message/Thought for the Day.

100% of the Head of Secondary Schools are of the opinion that School Assemblies catered to the overall development of the students.

Major findings from the students of Secondary English Medium Schools

a. Nearly 96.53% of the students are of the opinion that singing of the National Anthem help in their growth and development. The value that develops in them is an increased love for their country, singing of the National Anthem also helps in improving the quality of their voice. This item that is the National Anthem scores the highest among all the other items of the School Assemblies.

b. The item that scored the second highest is the development that takes place due to the recitation of the pledge during the school Assemblies. It scores nearly 95.45%.

c. The item that scores the third highest 95.45%, just close behind the Pledge, is the development that takes place due to the recitation or singing of the prayer during the School Assembly.

d. It is interesting to find that there are four questions if development took place due to School Assemblies with regards to intelligence, relationship, leadership and over all development. All these items scores high. 92.20% of the students are of the opinion that their intelligence has developed on account of school assemblies. 92.39% are of the opinion that school assemblies has helped in their relationships with others in the school. 82.03% of the students agree that the school assemblies have helped in

developing their leadership qualities. While 93.72% of the students which is the highest in this category are of the opinion that the school assemblies helps them in their overall growth and development.

e. 39.93% is the second lowest score. This is the opinion of the students regarding the duration of the school assemblies being 30 minutes. This shows that 60.07% of the students have shorter school assemblies. What is surprising is to find that 58.65% of the students prefer school assemblies to be longer.

f. Another important finding is on the frequency of the school assemblies. 82.35% of the students agree that their schools conduct school assemblies daily. But only 74.89% of the students are of the opinion that school assemblies be conducted on daily basis. These schools the students prefer fewer school assemblies with longer duration.

g. Another item that scores less is skits used during the school assemblies. Only 45.56% of the students are of the opinion that skits are used during their school assemblies. Whereas

h. 74.45% of the students agree that the skits instils in them values and inspire them to behave better.

i. It is also surprising to find that only 30.51% (lowest score) of the students sing their school anthem during the school assemblies. Whereas nearly double, that is 68.39% of the students agree that singing of the school anthem during the school assemblies has increased their sense of belonging to the school and also help improve their voice.

Other Findings

a. The opinions of the Heads of the Secondary Schools are the highest (100%) for the following items: Frequency of the School Assemblies, Outdoor, Stage facilities, School Assembly for all the Sections, prayer as the item for school Assembly, Message, Announcements and above all the development through the School Assemblies.

b. The lowest percentage that is 14% go to the following items: School Anthem, Singing of the patriotic Songs, Speech by students, builds leadership qualities and helps intellectually.

c. It is observed that the mean scores of the opinions of Girls of the Secondary English Medium Schools are higher than that of Boys. The girls have responded better than boys. It shows that the School Assemblies have been more beneficial to the Girls and besides it has helped them more in their overall development.

d. It is observed that the mean scores of the opinions of Private Unaided of the Secondary English Medium Schools are higher than that of Private Aided Schools. The Private Unaided Secondary School students have responded better and have scored better. It shows that they have benefited more and has helped them more when it came to their development due to the School Assemblies.

Conclusion

School Assemblies are no longer considered by Heads as means of conveying

moralistic messages or to make routine announcements. The main purpose of School Assembly is to develop the student's skills, unify the school and provide opportunity for democratic participation in school activities. School Assemblies also enrich the instructional programmes of the school by providing an outlet for creative stimulating presentations. School assemblies will continue being relevant and will definitely keep on improving not just the standard of its performance but much more the standard of the schools and its' students.

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DR. KALAM'S VISION ON EDUCATIONAL NEEDS OF MODERN INDIA WITH RESPECT TO CONVERGENCE OF TECHNOLOGIES: BIO- INFO- NANO-ECO-EDUCATION

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Abstract

Today's society shows tremendous progress by fast advancing technology with its outpouring information. Processing of information to make life more convenient is seem in every walks of life. Education today, has a far greater responsibility than it had ever before. It has to meet the demands of a dynamic world which changes its character every day. Indian educational system is failing to prepare them for rational and creative living. As is generally observed, many students seem to possess the seeds of creativeness but the environment fails to provide full nourishment of their growth. Dr. A.P.J. Abdul Kalam is the first scientist to have been elected as the President of India. After Dr. Kalam's nomination to the presidency, there have been several articles written on him. They have dealt with his career, technological achievements, his vision for India, his philosophy, educational thoughts, etc. For children he is the wings of inspiration to spread the glow of goodness. Dr. Kalam's views on education for a developed India can be achieved through promotion of and participation in e-education inside and outside India and convergence of bio-info-nano-eco-education. The aim of the present study was to identify the educational thoughts of Dr. A. P. J. Abdul Kalam and its relevance on Indian school system

Key Words: *Advancing technology, Educational Heritage, Knowledge Society, wings of inspiration, multi connectivity, Autonomous learner', PURA, VISION 2020, Indian School System, Biotechnology, Information Technology, Nanotechnology, Ecology, convergence of bio-info-nano-eco-education, etc.*

Introduction

Education is now a driving force for economic and social change. This identity has emerged in today's Knowledge linked society and economy. The nation's growth path is linked to its capacity to generate new knowledge and the process of certain of knowledge is more the monopoly of any nation. The ICT revolution has made the world a communicative village. ICT revolution is affecting every aspects connected with growth of India. For an

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emerging nation like India, 'knowledge society' is a core and vital infrastructure. Our education system should adopt new strategy in the ever changing dynamic educational scenario in the world. The major challenge before the Indian Higher Education is now create a new strategies, policies and programs of revisionary nature that helps the qualitative improvement, equality, inculcation of values and commitment, integration of social-cultural nature and involvement of all people in the process development. The 21st century has been widely acclaimed as "Knowledge century Era". The conceptual ideas of our former President of India, 'Autonomous learner', PURA, VISION 2020, *Bio- Info-Nano -Eco-Education* has more relevance in the mission to become India will be a Developed nation. The investigator hopes that the findings of the Study would help to improve the present educational practices in an efficient manner. In its technical sense education is the process by which society deliberately transmits its accumulated knowledge, skills and values from one generation to another. Education must be for mobility, for flexibility of thought and action, for the production of individuals with a high general level of culture calculated to make them adaptable to changing economic and social conditions. Education has tremendous potential to bring about any kind of change. It should be used as an instrument for bringing a harmonious healthy society.

India's Educational Heritage

Education is integrally linked with the development process. There has been considerable progress in this sphere. The literacy rate increased from 18.3 per cent in 1951 to 52.2 per cent in 1991. The results of 2001 census reveal that there has been an increase in literacy in the country. The literacy rate in the country is 64.84 per cent, 75.26 for males and 53.67 for females. According to the results of 2011 census, there has been an increase in literacy in the country. The current literacy rate in our country is 74.04 per cent, 82.14 for males and 65.46 for females.

Education is not only an instrument of enhancing efficiency but also an effective tool of augmenting and widening democratic participation and upgrading the overall quality of individual and society. India has a vast population and to capture the potential demographic dividend, to remove the acute regional, social and gender imbalances, the government is committed to make concerted efforts for improving the quality of education as mere quantitative expansion will not deliver the desired results in view of fast changing domestic and global scenario. In line with the commitment of augmenting resources for education, the allocation for education has over the years increased significantly. The plan outlay on education Rs.151 cores in the First Five Year Plan. The 11th Five Year Plan (2007-12) is Rs. 2, 69,873 cores. Of which Rs. 84,943 cores is for the Department of Higher Education and Rs. 1, 84,930 cores is for the Department of school Education and Literacy.

The Context of 'Knowledge Society'

India has the largest education system in the world after China. However, issues of quality education and access remain challenges in some parts of the country. The Right to Education (RTE) is now fundamental rights for all children in the age group of 6 to

14 years. In simple words, it means that the government will be responsible for providing education to every child up to the eighth standard; free of cost; irrespective of class and gender. However, it will take at least five more years before the target reached. This is because the infrastructure has to built, and lochs of teacher recruited. The RTE is the first legislation in the world that put the responsibility of enrollment, attendance and completion of education on the government. Though the National Education Policy of 1968 talked of a free and compulsory education, the right to education came into effect only in April 2010.

The role of education in facilitating social and economic progress is well accepted. Access to education is critical to emerge opportunities that accompany economic growth. India viewed education as the best way of bringing social change. Soon after gaining Independence in 1947, making education available to all had become a priority for the government. Still issues of quality and access remain areas of concern particularly in the sphere of rural education in India in the sphere of rural education in India. Children in rural areas continue to be deprived of quality education owing to factors like of competent and committed teachers, lack of textbook of teaching –learning materials, and so on. A large number of teacher refuse to teach in rural areas and those that do, are usually under-qualified.

The Right to Education Act (RTE Act 2009) came into force in the entire country from April 1, 2010. It is now legally enforced for every child between the age of six and fourteen years to demand free and elementary education. The Act makes education a fundamental right of every child between the age of 6 and 14 and specifies minimum norms in elementary schools. It requires all private schools to reserve 25% of seats to children from poor families. According o government estimate, there are nearly 220 million children in the relevant age group, of which 4.6% or nearly 9.2% million, are out of schools. It is estimated that 1.71lakhs core rupees will be needed in the next five years for implementation of the RTE act.

Indian School System

The educational system in India has faced a basic dilemma ever since its introduction by the British. With more than 7, 40,000 schools, India operate the biggest education system in the world. Literacy rates have increased within the last decades, up to 74% in 2011. Since local boards are in control of education, there are big differences in quality of education in India. The term "teacher" refers to one who teaches the prescribed content to the students. Teaching is the process of helping student acquires knowledge, skills, attitudes, and appreciations by means of a systematic method of instruction. According to Dr. A.P.J. Abdul Kalam, "a good teacher, with meticulous planning, prepares himself for teaching and the student for acquisition of knowledge" (2006). According to Dr. A.P.J. Abdul Kalam, the most important part of education is to inculcate in the students the spirit of "*We can do it*".

Need and Significance of the Study

According to Aurobindo, "true education is that which develops the hidden powers of an individual and provides him with the necessary competencies for leading a happy life. True education should enable one to understand the real meaning of life and soul."(1978) According to Dr. A.P.J. Abdul Kalam, "true education is a spiritual journey.

It helps the learner to established connectivity with cosmos. Establish connectivity with the cosmos is the mission of education" (2006). But, the prevailing education is creating disconnections between teacher, the subjects and the students or love can bridge the individual that is separated out from the web of life around. Generation of such knowledge should be the task of education.

In the present Indian society we see pride, greed, bribery, corruption, cheating, dishonesty, prejudice, hatred, violence, selfishness, insensitivity to others' suffering, exploitation, the oppression of the poor and weaker caste, etc. These are the outcomes of our modern education, which has deviated from the golden path shown by our ancestors. The so-called educated individuals, who are mere self-centered instead of co-operating with other individuals, collide with them. They stress individual freedom and also the rights occurring from it. They are not bothered about their social responsibility and the duties flowing from it. They very beautifully forget the fact that they are not only in India, but also India and for India. They have no sense of national loyalty. They do not develop the capacity to love and to be loved. They are confined to their own dislikes, desires and ambitions. They fail to go beyond themselves. In modern education teachers are service providers, students are consumers, industry is the master and education is a commodity or an end product.

We have become material pleasure-seekers, greedy and self-centered. We thus happen to live in a world with little care for others and little concern for the entire Earth and its complex natural system of life. To borrow from the terminology of the Bhagavat Githa, this education makes '*asuras*' (demons) of us. Fully developing this demonic nature within us and giving it the opportunity for free play is at the root of most of our modern social and communal ills. The steady increase in criminality, escalation of suicide and unmindful and behavior towards the helpless are a few examples. In order to save this grave situation, we have to change the prevalent system of education.

Research questions

1. Does the thoughts of Dr. A.P.J. Abdul Kalam Influence students and teachers in India?
2. Whether the thoughts of convergence of technologies- bio-info-nano-eco Education are applicable in the present Indian education scenario?

Methodology of the Study

Since the present study is of a historical, analytical, critical and interpretative in nature, the investigator adopted a combination of the historical method and the survey method for the study. The investigator tries to find out the solutions the problem through content analysis, philosophical inquiry, web analysis, and Opinionnaires.

Content analysis

Content analysis is a research tool used to determine the presence of certain words or concepts within texts or sets of textsTexts can be defined broadly as books, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, informal conversation, or really any occurrence of communicative language. Content analysis or textual analysis is a methodology in the social sciences for studying the content of communication. Earl Babbie defines it as "the study of recorded human communication, such as books, websites, paintings, and laws" (1989).

Web Analytics

Web analytics is the measurement, collection, analysis and reporting of internet data for purposes of understanding and optimizing web usage. There are two categories of web analytics: off-site and on-site web analytics. Off-site web analytics refers to web measurement and analysis regardless of whether you own or maintain a website. It includes the measurement of a website's potential audience, share of voice, and buzz that is happening on the internet as a whole.

Philosophical Inquiry

Inquiry, the search for truth is a rational process of settling doubt. The settling of doubt leads to the fixating of belief. Belief can be arrived at in other ways, such as through personal experience or appeals to authority. Philosophical inquiry can provide methods for examining the things that we so often take for granted during our daily routines.

Objectives of the Study

1. To highlights Dr. A.P.J. Abdul Kalam's views on education for developed India with respect to Knowledge, Technology, Science, Environment.
2. To study systematically the educational thoughts expressed by Dr. A. P. J. Abdul Kalam through his Autobiography, Books, Letters, Articles, Journals, Interviews and other incidents.
3. To investigate the relevance of Dr. A. P. J. Abdul Kalam's Educational Thoughts in the present Indian School System.

Sample

The purpose of the present study was to study the educational thoughts of Dr. A.P. J. Abdul Kalam and its relevance on the Indian school system in India. The sample for this study comprised teacher educators (experts) and school teachers randomly drawn from different government, aided and unaided educational institutions and schools from Kottyam district of Kerala state. The educators' age from 25-58 years and their teaching experience between 2-30 years. They were selected from all courses of study.

Statistical Techniques Used

In order to achieve the objectives of the study, the data collected were statistically analyzed using various methods. Content analysis is the most important method used in this study. The major works of Dr. A. P. J. Abdul Kalam and the other relevant content and studies were taken into account. The descriptive statistics is used for analyzing the data with respect to the relevance of educational thoughts of Dr. Kalam. The number and percentages were used to describe the relevance of the different educational thoughts of Dr. A. P. J. Abdul Kalam based on the opinionnaire given to the expert teacher educators and school teachers.

Knowledge Society

Knowledge society is an advanced and modern era that demands for higher standard of Living, better Infrastructural facilities, better Health facilities, better Educational Facilities, etc. As from the past where the human resources and capital resources were the super power of the world has now lapsed and replaced by power artistic skills and knowledge. In the early 1900 A.D the industrial trend, later the information Technology trend has now been replaced by the accurate efficiency of working with

proper knowledge. Efficient utilization of this existing knowledge can create comprehensive wealth of nations and also improve the quality of life- in the form of better health education, infrastructure and other social indicators. Whether a nation has arrived a stage of knowledge society is judged by the way the country effectively deals with knowledge creation and knowledge deployment in all sectors like Agriculture and Food processing, IT, Industries and Health care. Creation of such knowledge society will further trigger developments nationally and globally.

Biotechnology and Education

Biotechnology is a research oriented science, a combination of biology and technology. It covers a wide variety of subjects like Genetics, Biochemistry, Microbiology, Immunology, Virology, Chemistry and engineering and is also concerned with many other subjects like health and medicine, Agriculture and Animal Husbandry, Cropping system and Crop management, Ecology, Cell Biology, Soil-Statistics, plant psychology, Seed technology, etc,. Biotechnology is the use of living things, especially cells and bacteria in industrial process.

Joyce and Weil (1998) have defined teaching as a process by which teacher and students create shard environment, sets of values and beliefs which in turn color their views of reality. The quality of science teaching has also to be raised considerably so as to achieve its proper objectives and purposes namely to promote an ever deepening understanding of basic principles, to develop problem solving analytical skills and a ability to the apply them to the problems of the material, environmental and social living and to promote the spirit of inquiry and experimentation. Only then can a scientific outlook become part of our way of life and culture.

Information Technology and Society

The modern world is characterized by knowledge explosion through the wide use of Information Technology. Even in the extreme rural area, its use is increasing day by day. This made a people know more about the world as well as the incidences occurring in the nukes and corners of the world as soon as it occurs. Today's children are backed with more information than in the earlier days, but whether these information are processed and utilized properly considering the social norms and values is doubtful. An analysis of mass media reveals that the crimes and corruptions are increasing beyond our prediction. Almost all are victimized by others and this happens to a deplorable frequency.

The information society is a society where the creation, distribution, diffusion, uses, integration and manipulation of information is a significant economic, political and cultural activity. The aim of the information society is to gain competitive advantage internationally, through using information technology (IT) in a creative and productive way. The knowledge economy is its economic counterpart, whereby wealth is created through the economic exploitation of understanding. People who have the means to partake in this form of society are sometimes called 'Digital Citizens'. This is one of many dozen labels that have been identified to suggest that we are entering a new phase of society. The markers of this rapid change may be technological, economic, occupational, spatial, cultural, or

some combination of all of these information society is seen as the success of industrial society. Closely related concepts are knowledge society, post modern society, and telemetric society.

Nanotechnology and Education

Nanotechnology education is being offered by more and more universities around the world. Generally, nanotechnology education involves multidisciplinary natural science education with courses in nano technology, physics, chemistry, mathematics and molecular biology. This modest, fairly low- tech application of nanotechnology is just the small tip of a vast iceberg. By application of nanotechnology a new era of robotic exploration of the solar system is in the coming among other technologies through the development of small economical spacecrafts with high autonomy and improved capabilities. Furthermore, nano technological diagnostics and therapy procedures will improve life support systems and an autonomous medical supply of astronauts, which will pave the way for long –term and more complex manned space missions. In educational field, multi-dimensional achievements can see by the effective use of nano technology.

Ecology and Education

The mark of an educated person, Plato wrote in *The Republic*, is the willingness to use one's knowledge and skills to solve the problems of society. Education must imbue children with proactive social conscience. No one can become fully human or attain dignity and fulfillment outside the web of relationships and responsibilities presupposed in society. Thus education must train and equip individuals to live creatively, responsibly and peaceably in a society. Education- in the broad sense of the term-is the principal means of building a Eco-friendly culture in each and every one through a systematic manner.

It is the task of educators to educate stewards of nature as education meant for life. We have to integrate an ethics of responsibility for the protection and nature of present and future life on earth into research, teaching and learning and thus to provide education for stewardship of creation. Education for stewardship of creation calls for an ethics which gives top priority to the preservation of life and of the possibility of future life. It does not separate protection of biosphere from social issues. Stewards of creation address the ecological crisis as well as the scandal of mass-poverty and violations of human rights.

Various environment friendly activities like field trips, local survey programs, community service visits to polluted and natural calamity affected areas should be promoted in the curriculum to develop the problem- solving ability in pupils. The environmental educational programme will be successful only if the instructional materials on Environmental Education are produced according to the local needs. The textbook and teaching aids should be developed to supplement instructions. Writing of textbooks on Environmental Education should be encouraged.

Broadly speaking, environment is defined as the sum total of all conditions and influences which affect the development and life of all organisms on earth. The living organisms such as bacteria, fungi etc. to the highest including man. Each organism has its own environment. Environment has multi-dimensional aspects- the perception varies from man to man. To some, it is scenic

landscape; to others, it is natural resources or vanishing forests or industrial pollution, etc.

Convergence of Technologies: bio-info-nano-eco-education

The information technology and communication technology have already converged leading to Information and Communication Technology (ICT). Information Technology combined with bio-technology has led to bio-informatics. Similarly, Photonics is grown out from the labs to converge with Classical Electronics and Microelectronics to bring in new high speed options in consumer products. Flexible and unbreakable displays using thin layer of film on transparent polymers have emerged as new symbols of entertainment and media tools. Now, Nano-technology has come in. It is the field of the future that will replace microelectronics and many fields with tremendous application potential in the areas of medicine, electronics and material science. When Nano technology and ICT meet, integrated silicon electronics, photonics are born and it can be said that material convergence will happen. With material convergence and biotechnology linked, a new science called Intelligent Bioscience will be born which would lead to a disease free, happy and more intelligent human habitat with longevity and high human capabilities. Convergence of bio-nano-info technologies can lead to the development of nano robots. Nano robots when they are injected into a patient, my expert friends say, it will diagnose and deliver the treatment exclusively in the affected area and then the nano-robot gets digested as it is a DNA based product. I saw the product sample in one of the labs in South Korea where best of minds with multiple technology work with a target of finding out-of-the-box solution.

Constraints of time and space together with the rapid obsolescence of knowledge in some areas of science and technology have created a huge demand for different courses from different institutions in the distance mode. There is a need for a working digital library system that alone can, in the long run, provide the kind of access required for a knowledge society. Technology enhanced learning is a solution. It attempts to exploit the rapid developments in information and communication technology. Virtual classrooms of the future will have students from many locations taught by a team of geographically distributed through tele-education delivery system. Our schools, both in urban and rural areas, lack experienced teachers and the per capita availability of teachers is very low. Classes are loaded with forty to sixty children with one teacher and it is impossible for the teacher to pay attention to each student in the available forty-minute period. The result is dilution of quality and non- recognition of creative students, sometimes leading to dropouts. Technology can assist in overcoming these problems and the gap can be bridged by marrying technology tools and connectivity with quality teachers, which will create and maintain the interest of the students in the learning process.

The model that Dr. Kalam envisages is the following: every state can identify certain number of quality teachers of primary and secondary schools. Using these teachers as resource, through tele-education, we can provide quality education to thousands of students instead of forty or fifty students in a normal classroom.

Conclusion

The writers and philosophers are the actual teachers who often express their ideas

for the benefits of the society. In other words they are informal agents of education. The relationship of philosophy and education should be sought in different fields of education, such as the aims and objectives, the method of teaching, curriculum, the school administration, discipline and finally the evaluation. Education cannot be separated from life and people having different outlooks understand the life from different angles of vision. The entire world realizes that education is a major vehicle to create a human society, which will value the lives of human beings and provide opportunities to live in harmony with fellow beings and also with nature. For this they need to know others-the diversities, the pluralities and also the need to respect others and otherness. We need to expand and, extend education to banish ignorance of every variety. Education is bound up with human race. Its boundaries are as wide as those of life. Its implications are rich and varied. Just as it is difficult to squeeze life in a few words, in the same way it is difficult to give a single meaning or definition of education.We need the practical education that rebuilds the moral fiber in our world. At a better world, we focus on youth and their potential to change the world. We must give the entrepreneurship and leadership training to youth which creates a ripple effect of positive social change- empowering them to become agents of change.

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