OPEN ACCESS

International Journal of Science and Technology Educational Research

July- December 2019
ISSN: 2141-6559
DOI: 10.5897/IJSTER
www.academicjournals.org

ACADEMIC JOURNALS
expand your knowledge

ABOUT IJSTER

The **International Journal of Science and Technology Education Research (IJSTER)** IJSTER is an open access journal. Abstracts and full texts of all articles published in the journals can be read online without any form of restriction

International Journal of Science and Technology Education Research (IJSTER) International Journal of Science and Technology Education Research (IJSTER) is a peer reviewed open access journal. The journal is published monthly and covers all areas of the subject.

Contact Us

Editorial Office: ijster@academicjournals.org

Help Desk: helpdesk@academicjournals.org

Website: http://www.academicjournals.org/journal/IJSTER

Submit manuscript online http://ms.academicjournals.me/

Editors

Prof. S. C. Garg
School of Sciences
Indira Gandhi National Open University
New Delhi,
India.

Assoc. Prof. Anita Seth
Institute of Engineering and Technology
DAVV University
Indore,
India.

Dr. Christine Redman
The University of Melbourne
Melbourne Graduate School of Education
Australia.

Dr. Laban P. Ayiro
Curriculum Research Services
Nairobi,
Kenya.

Paola Forcheri
National Research Council
Institute for Applied Mathematics and Information Technologies
Italy.

Dr. Eduardo Galembeck
State University of Campinas
São Paulo,
Brazil.

Table of Content

Vol. 10(3), pp. 16-24, July-December 2019
DOI: 10.5897/IJSTER2019.0458
Article Number: 031A22E61655
ISSN 2141-6559

http://www.academicjournals.org/IJSTER

ACADEMIC JOURNALS
expand your knowledge

International Journal of Science and Technology Educational Research

Full Length Research Paper

Seismic risk management education: Its place in life and earth science textbooks for secondary schools in Morocco

Eddif Aâtika

Laboratory of Scientific Research and Pedagogical Development Regional Center for Education and Training Professions Fès- Meknes, Morocco.

Received 10 June, 2019; Accepted 5 July, 2019

This research is based on Life and Earth Sciences (LES) textbooks (El Moufid in LES and El Massar in LES) used in Morocco for second year of college. It is aimed at showing the place of seismic risks education in LES. The methodology used is based on the content analysis of seismic risk management education in these manuals. The results show that this approach is more or less neglected in these textbooks; yet Morocco has made considerable progress in the field of natural risk management. Following the analysis of LES textbooks, implications of this research include the importance of introducing a risk management culture in textbooks and in the practice of teachers and learners.

Key words: Life and earth sciences, natural risk management, practice, seismic risks education, textbooks.

INTRODUCTION

Morocco is a country exposed to many types of natural risks such as flooding, drought, earthquakes and tsunami, all of which affect numerous areas across the country. This study focuses on the manner of seismic risks infusion, specifically education to manage this risk. Thus, risk management education is the responsibility of everyone; however, schools play an important role in the formation, prevention and increased awareness. The general interest behind the present work is to contribute to the understanding of the role of textbooks in the life and earth sciences of the second year of college in teaching and learning seismic risk management education.

Textbooks are very important for both teachers and students as they are frequently used to support teaching and learning in many countries (Teters and Gabel, 1984; Sheldon, 1988; Sharp, 1999; Pepin and Haggarty, 2001). In the USA, Sheldon (1999) identified the main reasons: books are often the basis of a course and preparing classroom materials is difficult and time-consuming. They are recognized as one of the most effective factors for improving the quality of teaching by providing, if possible for each student, a tool that can accompany him directly in his learning both inside and outside the class, especially in states where the education system lacks resources (Gérard, 2010; Memaï and Rouag, 2017). In

E-mail: ndungoissa@yahoo.com. Tel: +256776428589/705686509.

the same perspective, confirms that the textbook is part of the teaching landscape of many countries, where it is a teaching and learning medium. For Gérard and Roegiers (1993), Benoit (1997), Bruillard (2005), Lebrun (2006), the textbook is both a special support for student learning, a guide for the organization of teaching as well as preparation of the course for teachers, and a way for students and families to support students in learning. However, this fundamental pedagogical tool is not a simple medium of transmission of knowledge, since by its content it participates not only in the instruction but also in the education 'by the transmission, in a more or less explicit way, of models of social behavior, norms and values' (UNESCO, 2008; 14). Many works highlight the importance of textbooks in the professional culture of teachers (Gérard and Roegiers, 1993).

Overtime, several researchers have devoted research to the analysis of textbooks as shown by all known studies. In this context, most risk management education projects have favored strategies that encourage awareness, reflection and awareness rising to promote the empowerment of children and adolescents to better make decisions to protect themselves and their families to help others. Such decisions have individual and collective consequences for risks. Risk management education in this new paradigm, therefore, becomes an education of autonomy and responsibility towards others. As Meirieu (1993) and Margueron (1993) specifies, that of the individual autonomy will leave a collective dynamics. Dussaux (2015) also specifies that risk education consists of "making pupils aware that everyone must be attentive to their own safeguarding and can also contribute to that of others, to develop the idea that responsible and supportive behavior makes it possible to deal with risk more effectively. There is currently a strong interest in raising awareness and educating the public about disaster risk reduction (UN-SPIC, 2005; Federation International, 2009). In addition, risk management is the responsibility of everyone; meanwhile, risk management education starts at school as part of its complementary educational missions and essential in the training of individuals according to the DREAL of Midi-Pyrenees. The seismic risk is the probability, during a period of reference and in a given zone, of loss of the goods, the activities of production and the human lives, due to an earthquake. While managing a risk is preparing to face it to prevent its effects, risk management education can therefore be considered as an emerging field of education and a set of interventions that aims to inform, motivate and help learners voluntarily adopt life-friendly behaviors, to form a reasoned opinion on vivid questions where the intimate and social are strongly linked (Harzalli, 2013). Risk management education aims to intentionally place learners in a process of behavior and attitude change. To our knowledge, it appears that no Moroccan research has yet been done on the analysis of secondary school textbooks on education in natural risk management in general and seismic risk in particular. Earthquakes are among the most devastating natural disasters in the world. According to Cherkaoui and Asebriy (2003), seismicity in Morocco is moderate compared to other countries of the Mediterranean Basin such as Algeria, Greece, Italy or Turkey and the seismic activity in the North of Morocco is largely due to an intense Plio-Quaternary and current tectonic activity generated by the approximation of the two African-Eurasian lithospheric plates whose approach speed is of the order of 0.5 cm/year in the Strait of Gibraltar.

Enlightened by these problems, through our work on student conception of earthquake (Eddif et al., 2015), the fact that the official guidelines stipulate that the teaching of the LES is intended to make the student actor responsible for his learning, able to develop essential skills that he needs to adapt to the different circumstances of daily life, and by the fact that Morocco is a country exposed to many and varied risks which can have serious consequences in case of disasters.

For our part, we have opted for analysis of the content of the textbooks of the LES in use in Morocco in particular (Al-Moufid in LES – 2004 to 2018 Edition and Al-Massar in LES 2004 to 2018 Edition) from the perspective of education to the seismic risk management conveyed in these textbooks. It should be known that in Morocco, the teaching of LES begins from the secondary school level. The objectives of teaching LES are cognitive, methodological and educational. As for the Earth Sciences they are organized in two units during this cycle: the unit of external geodynamics treated in 1st year college and the unit of internal geodynamics treated in second year of college. The objectives are notably:

(1) Exploring and explaining the geological phenomena related to the functioning of the Earth (External geodynamics: erosion, sedimentation ... and internal geodynamics.
(2) To relate the movements of the lithospheric plates, and the geological phenomena that accompany them: earthquakes, magmatism.
(3) Master the knowledge and essential skills that will help them understand the world, make informed decisions, as well as act responsibly and critically in their daily lives.

This study attempts to answer the following sub-questions:

(1) What kinds of seismic risk management education content have been compiled in the textbooks of LES in Morocco?
(2) What are the elements and indicators of seismic risk management education for second year college in Morocco?

Table 1. Analysis grid of two textbooks (Eddif this study).

Material safety data sheet	General information on textbooks
Description of the earthquake content	Objectives
	Number of pages concerning the earthquake concept
	Iconographic content concerning earthquakes
	Iconographic content concerning earthquakes in Morocco
	Content related to seismic risk management education: proportion of texts and pictures related to this task.

RESEARCH METHODOLOGY

Research design

The study focuses on elements and indicators of seismic risk management education for second year college in Morocco. We adopted the contrastive method, which is based on the comparison of several textbooks, in order to identify their structural differences and their similarities concerning a given theme. Indeed, we used one of the typologies proposed by Bernard et al. (2006) comparing several current textbooks dealing with the same content in the same country. This involved two steps as follows:

Stage 1

To study concept of earthquake from the documents in the textbooks of LES using a built-in analysis grid and to gather important information from these textbooks (Table 1).

Stage 2

To identify the elements and indicators of seismic risk management education for second year college in Morocco?

Textbooks

A content analysis was made of a corpus of our research which focuses on two second year of college textbooks: El Moufid in LES and El Massar in LES used in Morocco since 2004.

Analysis of textbooks

Analysis of textbooks makes it possible to analyze documents (text, pictures,...) and their occurrences in textbooks, and uses criteria and indicators to detect in the text the pedagogical style used in themes related to seismic risk management education.

The following summary (Table 2) gives a clear idea of the results arrived at from the analysis of the two LES textbooks. It presents the objectives and a number of pages relating to the earthquake chapter or pictures dedicated to the didactic transposition of this concept in Moroccan textbooks of the SVT of the 2nd year of Moroccan college. The iconographic content relating to the earthquake in Morocco has been mentioned in the two textbooks analyzed.

On the two manuals analyzed, the earthquake concept is part of the unity of internal geodynamics. The latter reinvests and details the geological phenomena that occur on the surface of our planet among others (volcanism, formation of mountain ranges, deformations ...) and the consequences that they may have on human populations.

Topics covered by the course about earthquake include, definition of the earthquake, seismic wave propagation, the processes that cause earthquakes and consequences, as well as the methodologies used by seismologists to analyze seismograms, distribution of earthquakes in the World and Morocco, Earth internal structure, and the relationships between earthquakes and plate tectonics. These data are presented in a clear and concise manner (activities - know-how) as part of the competency-based approach in teaching LES. They encourage the active participation of learners, are guided by a set of documents (text, pictures, ...) related to the objectives of the activity and are called to study carefully with reference to questions of each activity and to know and master the scientific vocabulary encountered during the activities. However, each manual offers a different organization of contents.

In addition to the differences in the number of pages relative to this chapter, the number of

Table 2. Analysis of the content of the earthquake concept in both textbooks (Eddif's study).

Variable		General information on the two SVT textbooks in use in Morocco	
Material Safety Data Sheet	Textbooks	El Massar	El Moufid
	Year of publication	2004 at 2018	2004 at 2018
	Publishing house	Nadia	-
	language	Arabic	Arabic
	Cycle	College secondary cycle	College secondary cycle
	Level	second year of college	second year of college
	Number of pages	144	144
Presentation of the earthquake concept		**Unit dealing with the earthquake concept**	
		Internal geodynamics	Internal geodynamics
		Number of pages concerning the earthquake concept	
		10	12
		Objectives	
		-Know earthquake effects.	Know the manifestations and consequences of an earthquake
		-Know the characteristics of seismic waves propagation.	Identify the different types of seismic waves.
		-Analysis of seismograms and identification of the constituents of the lithosphere	Know how to measure the intensity of the earthquake.
		-Know the relationship between earthquake distribution and plate tectonics.	Distinguish the focus from the epicenter.
		-Awareness of the severity of earthquakes.	Understand the causes of an earthquake.
			Locate the epicenter of an earthquake.
			Know the Characteristics of Seismic Waves Propagation.
			Determine structure of earth from seismic waves.
			Definition of plate.
			Know the distribution of earthquake foci along a subduction zone and at midoceanic ridges.
			Know the phenomenon of subduction.
			Make a drawing of a fault at midoceanic ridges.
			Identify the relationship between plate tectonics and earthquakes at the midoceanic ridges and subduction zones.
		Total number of Pictures relating to the didactic transpositions of the earthquake concept: Pictures for questioning, additional knowledge and evaluation.	
		18	36
		Percentage and number of Pictures relating to the didactic transpositions of the earthquake concept in relation to the earthquakes in Morocco.	
		4 Pictures (22%)	7 Pictures (19%)

Table 2. Contd.

Iconographic content concerning earthquakes in Morocco: Documents for questioning and data to exploit	
3 Pictures**: (pp 16 and 17)**	5 Pictures**: (pp 21 and 23)**:
Picture 1: Photography: earthquake in Agadir, 1960.	Picture 4a: Earthquake Damage in Al Hoceima Imzouren.
Picture 2: Photographs of the Imzouren earthquake in El Hoceima, 2004.	Picture 4b 1: Deformation in the garden corridor.
	Picture 4b 2: The appearance of cracks in apave droad
Picture 3: Isoseismal map of the Agadir city 29/021960.	Picture 5: Isoseismal map of the Agadir city
	Picture 6: Isoseismal map of the Al Hocima city.
Iconographic content concerning earthquakes in Morocco: Knowledge supplement	
Picture 7: Picture: Morocco seismic zonation map (p 23) and an 11-line text that explains the contents of seismic zonation map	Picture 8: Map of seismicity in Morocco (p 30) and a text of 15 lines that explains the seismicity map content (P 30).
	Picture 9: Position map of Morocco between two African-Eurasian plates (p 29)
Research and documentation about:	
The El Hoceima earthquake in 2004 and p 23	
Construction taking into account seismic rules/standards p 23	
The composition of the seismic risk management content studied shows that the elements requested by the authors of the textbook are:	
The location (example of earthquake that has known Morocco) which holds (11 %).	The location (example of earthquake that has known Morocco) which holds (3%).
-Zoning which holds only 5%.	Zoning which holds only 3%.
Prevention that holds 5%.	Prevention that holds 3%.
Preparedness: earthquake safety measures, a simulation exercise on earthquake response preparedness (0%)	Preparedness: earthquake safety measures, a simulation exercise on earthquake response preparedness (0%)

Documentsregarding the way of handling this phenomenon is on both manuals. We noticed that the two manuals presented pictures of the earthquake experienced by Morocco in Agadir and El Hoceima for the textbook El Massar in LES (Pictures 1 and 2. p 16), the isoseismal map of 29th February 1960 Agadir earthquake (Picture 3. p 19), and only the El Hoceima earthquake for the textbook El Moufid in LES (Pictures 4a and 4b).

In the same vein, the textbook El Moufid presents: isoseismal map of the Agadir city (Picture 5. p 23) and isoseismal map of the Al Hocima city (Picture 6. p 23). Both earthquakes caused the loss of life, injury or human life disruption, property damage, social, economic, and political disruption, or environmental degradation.

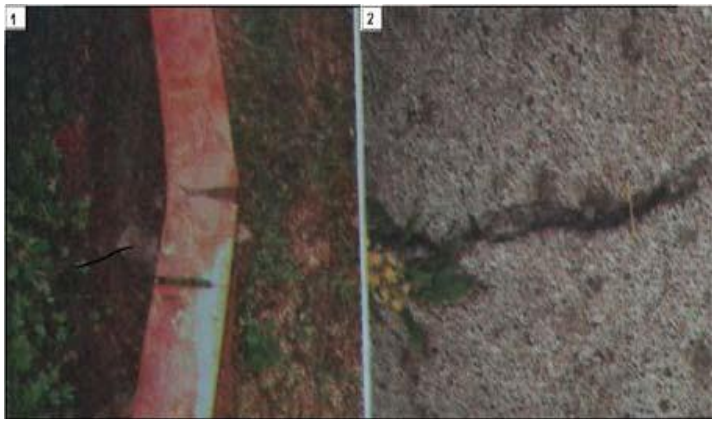
In the part of the knowledge supplement related to the earthquake concept, the two textbooks present Morocco maps; one is Morocco seismic zonation map (page 23) with a text of 11 lines that explains the contents of seismic zonation map for the textbook El Massar in LES (Picture 7. p 23) and the other, a map of seismicity in Morocco (Picture 8. p 30) with a text of 15 lines which explains the contents of this map for the manual El Moufid in SVT. In addition to the manual El Moufid, we note the presence of a map that illustrates the position of Morocco between African plate and Eurasian plate (Picture 9. p 29).

Picture 1. Earthquake Damage in Agadir, 1960 (p 16)

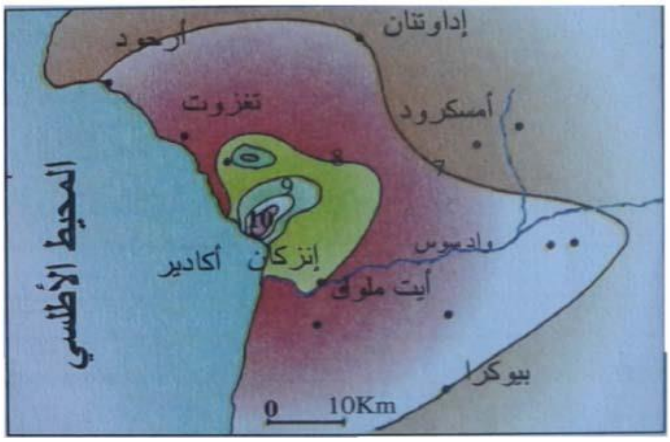
Picture 2. Earthquake Damage in Al Hoceima, 2004(p 16).

Picture 3. Isoseismal map of 29th February 1960 Agadir earthquake (p 19).

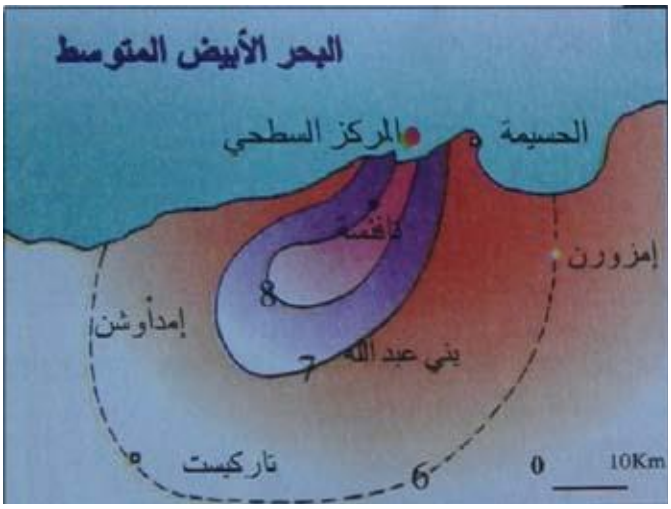
Picture 4a. Earthquake Damage in Al Hoceima, Imzouren (24 February 2004) Morocco (p 21).



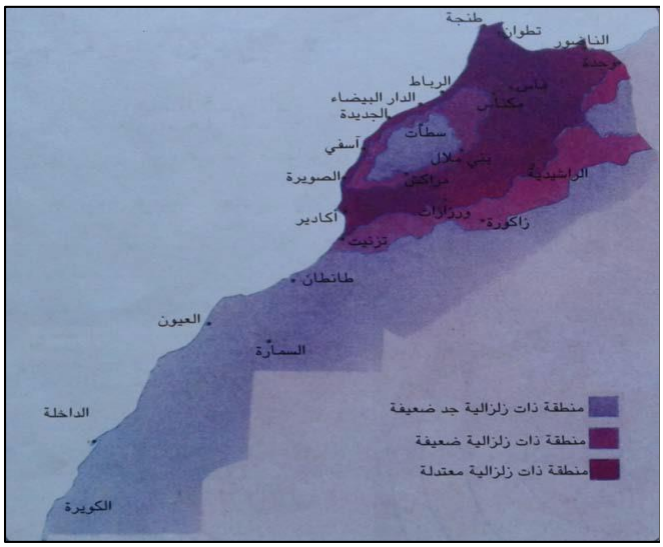
Picture 4b. Earthquake Damage in Al Hoceima Imzouren (p 21), (4b1): Deformation in the garden corridor (4b2): Appearance of cracks in a paved road (Harfani and Cherkaoui Institut scientifique Rabat).



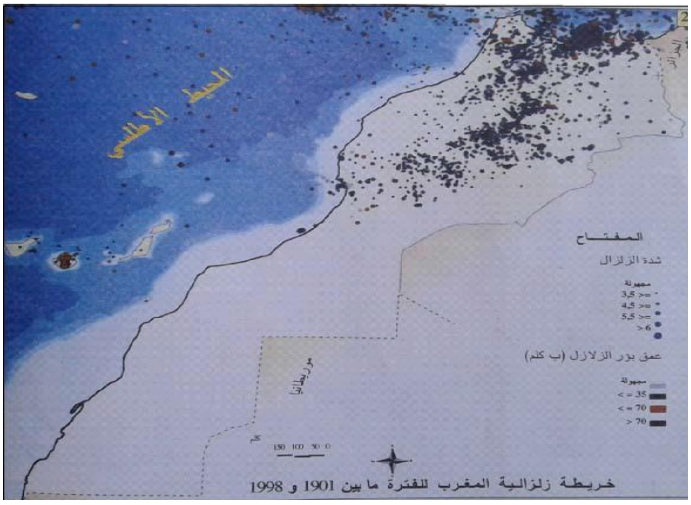
Picture 5. Isoseismal map of the Agadir city (Charkaoui, Scientific Institute Rabat).



Picture 6. Isoseismal map of the Al Hocima city (Geophysics Group Scientific Institute Rabat).



Picture 8. Seismicity of Morocco from 1901 to 1998 (p 30) (Cherkaoui, scientific institute Rabat).



Picture 7. Map of seismic zones in Morroco done by the Ministry of Housing from 1990 referring to scientific institute data (p 23).

Picture 9. Morocco's position between African plate and Eurasian plate (p 29).

The manual EL Massar in SVT devotes in this part of the supplement of knowledge a sentence "Construction taking into account the rules/seismic standards" (page 23). It therefore engages learners and teachers in investigation and realization activities based on research and documentation about seismic construction. As a result, the target population will participate in the construction of their own seismic building knowledge and profit from their curiosity and satisfaction. We will add that the two manuals do not report safety and seismic risk prevention instructions anywhere, although this is an important component of the awareness campaign and the prevention of seismic risk.

The composition of the seismic risk management content studied shows that the elements requested by the authors of the textbooks are:

(1) The location (example of earthquake that has affected Morocco) which holds 3% in the textbook El Moufid and 11% in the textbook El Massar.
(2) Zoning which holds only 3% in the textbook El Moufid and 5% in the textbook El Massar.
(3 Prevention that holds 3% in the textbook El Moufid and 5% in the textbook El Massar.
(4) Preparedness: Earthquake safety measures - a

simulation exercise on earthquake response preparedness 0%.

DISCUSSION

As a result of the above, we note therefore that despite the supplemental part of the course which presents pictures of seismic maps of Morocco, and challenges in the case of the textbook El Massar in LES, the learners of a research on earthquake-resistant constructions, as well as pictures or texts related to earthquake risk management education are almost absent in the two LES textbooks. However, this reduced number of pictures and texts proposed in the supplemental part of the course, to build knowledge, may or may not be used by teachers as well as learners and by engaging learners in a literature search to develop their information culture- not guided by precise documentation, and does not facilitate the active participation of learners in their learning in relation to seismic risk management education.

We also add that in the textbook studied, what is asked by the authors is mainly to lead students to discover what are earthquakes (definition, causes, characteristics: epicenter, hypocenter, types of seismic waves, magnitude, intensity...), from the risks they pose to the populations, from the exploitation of documents, and to consider the seismic activity as a set of phenomena reflecting an internal activity of our planet within the framework of plate tectonics.

All this testifies to the negligence in the Moroccan textbooks of the LES of the secondary school education seismic risk management while Morocco has presented progress in the system of actions for the prevention of natural disasters (evaluation of risks, forecasting, prevention, management, rehabilitation, feedback, training in risk culture...) (Constitution of July 2011, National Strategy for Environmental Protection and Sustainable Development, Water Resources Management Strategy). Actions in education for this management should also be based on management that also seeks to develop informed, autonomous learners; prepared for seismic risk and able to behave appropriately during an earthquake to integrate into the collective crisis organization.

The tasks of this preparation are the realization of plans and training through exercises. Such an education calls for an improvement of these textbooks in this concept as in the case of countries at seismic risk.

Conclusion

A content analysis for suitability of elements and indicators of seismic risk management education in the textbooks of the life and earth sciences of the second year of college of Moroccan**,** show that secondary school textbooks in the second year of the Moroccan secondary cycle, used by both teachers and learners for more than 13 years, emphasize a mastery pedagogy that provides a great deal of knowledge scientists relating to the concept of earthquake (its origin, types of waves and their interest in the determination of the internal structure of the earth, global distribution of earthquakes, ...), but ignoring a sensitive subject that of the practice of education in seismic risk management. It appears that the content of the two textbooks El Moufid and El Massar shows no signs of renewal over the years (2004 to 2018).

As a result, these manuals revealed serious management and risk prevention gaps. All this testifies to the negligence and the total absence of information (safety instructions and prevention of seismic risks) and practical activities of the good preparation of the learners (exercises of prevention in the schools) to react appropriately to the risks and to avoid panic during the first shock and limit the dangers of an earthquake. These manuals therefore do not fully fulfill their function in terms of risk management. This could represent real obstacles, the extent to which learners are unable to cope appropriately with an unforeseen event that disrupts their traditional rules of life. However, the prevention of natural hazards including earthquakes has become a major concern of various stakeholders, including the departmental departments, the private sector and insurance companies. This interest is rooted in the High Directions of His Majesty the King on many occasions. To this end, Morocco has made progress in the system of actions to prevent natural disasters (Constitution of July 2011, national strategy for environmental protection and sustainable development, water resources management strategy ...). Thus, numerous periodic reports in 2007 to 2008, 2009 to 2010 and 2011 to 2013 have been produced. These focused on the progress made in disaster prevention and management, as well as the challenges to be met in implementing risk reduction actions at the national level.

This study is suitable for those interested in seismic risk management education in the textbooks and seismic risk research as well as a more general audience of seismologists, geophysicists and Earth scientists. It is also useful for authorities responsible for public safety and natural hazard mitigation plans and for insurance companies and conceptual textbooks and teachers.

All of the analyses reveal that the seismic risk management education in the textbooks content input has not received the due attention. So, these results pave the way for a set of reflections to be carried out which includes:

(1) Make available to teachers and learners an updated textbook periodically taking into account the particularities of the regions, and support on such textbooks is a guarantee of success for the teaching-learning of the

LES.
(2) Integrate into school curricula, including all cycles, seismic risk management education "simulation exercises" to ensure learning and behavioral learning for all learners and teachers in preparation for an event of real alert.
(3) Structurally improve most school buildings and develop school plans for seismic risk management,
(4) School authorities should take precautionary measures to avert risks to student's earthquake and safety,
(5) Establish, in schools, seismic risk education clubs and working groups, and train them as possible preparation for risk reduction. This implies that seismic risk management education in schools should be designed according to an interdisciplinary logic capable of preparing students to cope with uncertainties and to overcome any obstacles to risk. It would therefore be interesting to consider also the analysis of geography textbooks and scientific awakening.
(6) Make better communication of seismic risk management education information an urgent priority: Clear communication throughout the teaching cycles, is critical for successfully mitigating disaster risk.
(7) Prevention measures need to be taken into consideration in the Al Hoceima and Agadir areas, and to a degree in other areas of Morocco, which show less significant seismic activity.
(8) Foster multidisciplinary, multi-institutional, and multi-sectoral collaboration at all levels, and promote a culture of protection against seismic risks in risk areas, "distribute guides and posters safety instructions and seismic risk prevention, as well as develop public awareness and education activities to reduce seismic risks".

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

Benoit F (1997). Guide d'évaluation des manuels scolaires. Ministère de l'Education Nationale .1ere Edition, 1er trimester.

Bernard S, Clement P, Carvalho G (2006). Méthodologie pour une analyse didactique des manuels scolaires, et sa mise en œuvre sur un exemple. In: Lebrun J. (ed.), Le manuel scolaire d'ici et d'ailleurs, d'hier à demain, Actes du Colloque de Montréal mars.

Bruillard E (2005). Manuels scolaires, regards croisés. Caen: SCEREN-CRDP.

Cherkaoui T, Asebriy L (2003). Le risque sismique dans le Nord du Maroc. Trav. Inst. Sci.Rabat, sér. Géol Géogr. phys. 21:225-232.

Dussaux M (2015). Risques, citoyenneté et éducation. Actes du colloque "les éducations à..." levier(s) de transformation du système éducatif?. Nov 2014 Rouen, Mont Saint Aignan, France 2015 <halshs-01183403> pp. 144-158. https:// halshs.archives-ouverts.fr/ halshs-01183403.

Eddif A Touir R, Majdoubi H, Larhzil H, Mousaoui B, Ahmamou M (2015). The Initial Conceptions for Earthquakes Phenomenon for Moroccan Students of the First Year Secondary College. Journal of Education and Practice. ISSN 2222-1735 (Paper) ISSN 2222-288X 6:18. www.iiste.org.

Fédération internationale des Sociétés de la Croix-Rouge et du Croissant- Rouge, Stratégie 2020. Genève: Fédération internationale, 2009.

Fédération internationale, (2009). Sensibilisation et éducation du public à la réduction des risques de catastrophe : un guide. https://www.ifrc.org/Global/Publications/disasters/reducing_risks/1270200-

Fédération internationale des Sociétés de la Croix-Rouge et du Croissant- Rouge, Stratégie 2020. Genève: Fédération internationale, 2009.

Fédération internationale des Sociétés de la Croix-Rouge et du Croissant- Rouge, Cadre pour la sécurité et la résilience des communautés face aux risques liés aux catastrophes. Genève: Fédération internationale, 2009.

Gérard FM (2010). Le manuel scolaire, un outil efficace, mais décrié. Education et Formation Manuels scolaires et matériel didactique, 292:13-24.

Gérard FM, Roegiers X (1993). Concevoir et évaluer des manuels scolaires. Bruxelles: De Boeck-Wesmäel. Revue des sciences de l'éducation 20(2):399-399.

Harzalli F (2013). L'éducation à la gestion des risques naturels dans le manuel de géographie de la 1ère année secondaire en Tunisie : analyse didactique et propositions. Insaniyat / إتسانيناسند, 60-61:159-179.

Laaraj A, El Asri A, Takhalouicht M, Andalousi MSR, Ait Belhaj I (2004). El Massar in LES.Edtions 2004, Publishing house Nadia.

Lebrun M (2006). Le manuel scolaire - Un outil à multiples facettes. Montréal Collection éducation recherche, 20 : Presses de l'université du Québec. ISBN 2-7065-1406-4

Margueron P (1993). Travail autonome, pédagogie de l'autonomie, deux décennies, réflexions et bilans in Enseigner l'histoire et la géographie; un métier en constante rénovation, AFDG, Mélanges offerts à Victor et Lucile Morbeau. 8 Voir l'article auquel nous nous sommes déjà référé. Esquisse d'une théorie de l'autonomie, paru dans le journal des instituteurs.

Meirieu P (1993). Esquisse d'une théorie. JDI n°9mai Au-delà de l'outil pédagogique, l'objet politico-social, Éducation et socialisation. Consulté le 22 Mars 2019. URL: http://journals.openedition.org/edso/2014; DOI: 10.4000/edso.2014.

Newton DP, Newton LD (2007). Could elementary mathematics textbooks help give attention to reasons in the classroom? ESM 64 1 january 2007 http://journals.openedition.org/edso/2014 ; DOI : 10.4000/edso.2014

Memaï A, Rouag A (2017). Le manuel scolaire : Au-delà de l'outil pédagogique, l'objet politico-social », Éducation et socialisation. Consulté le 22 Mars 2019. URL : http://journals.openedition.org/edso/2014 ; DOI : 10.4000/edso.2014.

Pepin B, ve Haggarty L (2001). Mathematics textbooks and their use in English, French and German,classrooms. Zentrablatt fur Didaktik der Mathematik 33:158-175.

El Moufid in LES (2004). Edtions Publishing house Dar Attaqafa Sharp A (1999). Aspects of English medium textbook use in Hong Kong. New Horizons in Education 40:93-102.

Sheldon LE (1988). Evaluating ELT textbooks and materials. ELT Journal 42:237-246.

UN-SPIC (2005). Stratégie internationale de prévention des catastrophes des Nations Unies, Cadre d'action de Hyogo 2005-2015 : Pour des nations et des collectivités résilientes face aux catastrophes. Kobe, Japon: ONU-SPIC, 2005.

Teters P, Gabel D (1984). 1982-83 Results of the NSTA survey of the needs of elementary teachers regarding their teaching of science. Washington: National Science Teachers Association (ERIC Document Reproduction Services No. ED 253 398).

UNESCO (2008). Comment promouvoir l'égalité entre les sexes par les manuels scolaires ? Guide méthodologique à l'attention des acteurs et actrices de la chaîne du manuel scolaire. Paris, UNESCO.

Vol. 10(3), pp. 25-29, July-December 2019
DOI: 10.5897/IJSTER2019.0457
Article Number: 80DBF3861877
ISSN 2141-6559

http://www.academicjournals.org/IJSTER

ACADEMIC JOURNALS
expand your knowledge

International Journal of Science and Technology Educational Research

Review

Classroom science with everyday life: A means for improving performance in sciences and national development in Nigeria

Aniashi Sylvester O.*, Okaba Lydia A., Anake Emmanuel U. and Akomaye Maria U.

Department of Biology, School of Secondary Education Science Programmes, Federal College of Education, Obudu, Cross River state, Nigeria.

Received 31 May, 2019; Accepted 15 July, 2019.

Science is a body of knowledge about the natural world (the environment) that is testable, verifiable or falsifiable by using organized scientific methods and skills. It has been generally asserted that the rate of development of any nation depends on the level of her citizens' scientific literacy and competence in science process skills. The methods of teaching/learning science in Nigeria have hardly provided for the acquisition of these literacy and skills. There is also a reported dwindling in performance and enrollment in science. For Nigeria to be able to move forward and achieve sustainable development, more needs to be done in terms of scientific literacy and process skills of individual Nigerians. This paper posits that the dwindling performance and enrollment in science is as a result of the disconnection between classroom science and everyday life which makes the science learning uninteresting and irrelevant to the student. There are common phenomena in the student's environment that can be connected to classroom science by several planned and organized activities by the teacher. To promote meaningful learning, and thus empower the individual for national growth, this paper recommends a bridge of the disconnect (gap) between classroom science teaching and everyday life.

Key words: Everyday life, classroom, science, connecting.

INTRODUCTION

Science and scientific literacy has been acknowledged as the bedrock of development of any nation. Reports have it that there is a low enrollment as well as poor performance in science. This has been attributed to a number of factors including a disconnection between the science as taught in the class room and the practical problems a child faces in the home, market places etc. (Oloruntegbe, 2012). This paper proposes a bridge between classroom science and science in the home as a means of improving enrollment and performance in science in Nigeria. The paper takes a look at the meaning and importance of science, problems of science teaching in the classroom, scientific phenomena in the environment, the disconnect, and the way forward.

Meaning of science

The term science has been defined variously by several authors. According to Staver (2007), science is a way of knowing, a method of learning about nature. It is a body of knowledge in which human quests to understand natural phenomena and respond to challenges are conducted through processes by which the knowledge is

*Corresponding author. E-mail: slyaniashio@gmail.com.

testable, verifiable, or falsifiable. It comprises concepts and facts which are subsumed in laws; the laws being subsumed in theories (Eshiet, 2004). Alozie (1996) defines science as “a systematic process of obtaining knowledge through experimentation and empirical testing of speculations’. It is a “conceptual framework of interpreting the physical and its manifestation in terms of testable, falsifiable statements and theories supported by evidence and data” (Alozie, 1996).

According to Miller and Levine (2007), the goal of science involves investigating and understanding the natural world, to explain events in the natural world and to make useful predictions from the explanations. “Science is an organized way of using evidence to learn about the natural world”. It can also refer to “the body of knowledge that scientists have built up after years of using this process” (Miller and Levine, 2007).

Generally speaking, science is concerned with finding out about our environment and how the various components relate with one another (Agogo, 2017). Science is the pursuit and application of knowledge and understanding of the natural and social world following a systematic methodology based on evidence. According to Science Council (2017), science involves a number of procedures known as methods or methodology which include: Objective observation (Measurement and data, possibly although not necessarily using mathematics as a tool); evidence; experiment and/or observation as benchmarks for testing hypotheses; induction (reasoning to establish general rules or conclusions drawn from facts or examples); repetition; critical analysis; verification and testing (critical exposure to scrutiny, peer review and assessment).

According to How Kids Learn Science Best (2017), real science is learning about the world through hands-on observation, experimentation, and discovery. Doing real science starts with a question, followed by activities to explore and to seek an answer. Real science is not just for the classroom but is part of everyday life. Real science develops skills, ability, and capacity, not just knowledge. Science therefore, from the various definitions, is a body of knowledge about the natural world (the environment) that is testable, verifiable or falsifiable by using organized scientific methods

Importance of science

The rate of development of any nation depends on the level of her citizens’ scientific literacy (Ador, 2017). Science education is very important to the development of any nation; that is why every nation must take it very serious in all institutions of learning. Many of the developed worlds were able to achieve so much in science and technology because of science education (Kola, 2013).

According to Samiksha (2016), development is linked to technology which can only take place by advancement in science. In other words, science and technology go together for development in an individual and the nation. Science gives rise to technology and technology forms the basis for development or under-development. Any nation therefore, whose citizens lack scientific knowledge is in danger of under-development (or remaining under-developed) because without proper science education, technology cannot advance (Kola, 2013). In fact, “a scientifically unsophisticated society means an under-developed nation in all sectors” (Samiksha, 2016). The advancement of a nation should manifest in the methods and equipment used in all sectors including medicine, agriculture, communication, textiles etc. Science, if properly taught (or learnt) in schools, can equip an individual enough for self-reliance (thus creating employment) in areas such as fishery, ceramics, chalk making, soap making etc. (Kola, 2013). In fact, in the 21st century, the word ‘science’ means ‘solutions’; it is the solution for all the world’s material problems (Oduor, 2013). Staver (2007) summarizes the purpose of science education into three as follows: Preparing the individuals to study science at higher levels of education; Preparing the individuals for the employment; and Preparing the individuals to become more scientifically literate citizens.

The disconnection problem

Learning is mediated by highly articulated tasks and activities in the social contexts of day-to-day living. Patterns of activity from school often do not fit the more articulated activities that children observe or in which they participate outside school. This disconnect can lead learners to perceive school learning as separate from life learning (Bouillion and Gomez, 2001). More so, up till today many teachers still hold onto the chalk and talk method of teaching which has been condemned as not appropriate, and cited as one of the reasons for Nigeria’s backwardness (Ushie and Anake, 2015). Consequently, the learners do not see science as it affects their everyday life and the teacher makes no effort to connect the concepts with the students’ everyday life. Thus the student’s interest is diminished which in turn affects performance.

Oloruntegbe (2012) confirms that there exists some tension between school science and home activities which form one important reason, out of many, why students’ performance in science is getting poorer by the day. There is a disconnection between schools and students' home communities. Schools are in communities but often not of communities. That is, teaching and learning are often disconnected from the day-to-day life of the community, and students do not see how the skills they acquire in school have currency in business, at home, and in other communities beyond school (Bouillion and Gomez, 2001). This is largely because science as

presented in school bears no relevance with daily activities carried out at home by the children. As important as these science subjects are, students' performance has not been encouraging.

According to Jatto (2004), formal education in Nigeria has not provided school learners with the functional education, rather, it has continued to turnout half-baked graduates with more certificates that are almost useless in most labour markets and industries.

Kola (2013) avers that over the years there has been low enrolment in the sciences in our institutions and, according to him, the causes of this low enrolment include society disdain, mockery of the teacher and low prestige of the teacher. This paper however feels that the main cause of low enrollment and low performance is rather disconnect between classroom science and the students' environments (the home, the market place, the farm, the church etc.). To confirm this, Mberekpe (2013) identified the use of abstract standardized materials as one of the most important. Imagine a biology teacher wishing to give examples of mammals and he goes to mention elephant or whale which he himself or the students have never seen, whereas there are abundance of common examples the students are familiar with such as dog, goat, rat etc. Presentation of science in this way creates a conception of science as abstract, and the students tend to learn by memorizing for the purpose of examinations without really acquiring the required skills.

Emphasizing the importance of science skills development, Benchmarks for Science Literacy avers that it prepares students to "make their way in the real world, a world in which problems abound-in the home, in the workplace, in the community and on the planet." In this technological age, knowing how to acquire and evaluate information and how to use it to understand and solve problems is a prerequisite for most jobs our students will have as adults (Valentino, 2000).

Usually when students or children ask questions on scientific phenomena in the environment, the tendency is for the teacher or parent to quickly provide the answer. This in turn results in stunted learning experience, whereby the child has to learn by memorizing the facts and which does not make for good science learning. Rather, the child's curiosity can be answered by in turn asking him questions to help him see what he already knows, what he thinks, what he needs to learn, or what he needs to do to answer his own question (Home Science Tools, 2017).

Scientific phenomena in the environments

The general objective of basic science education is to enable pupils observe and explore the environment using their senses and their hands. The recipients are able to meaningfully interact with the environment (Agogo, 2017). This will build a strong base for them to study science at whatever level, thus equipping them for meaningful contributions to national development. There are a lot of phenomena in the child's environment that have scientific connotations and can be used to teach science with hands-on experiences. This can make learning experience more meaningful and lasting as averred by Coolidge-Stoltz et al. (1993) that "science is everywhere. All around the child's environment, there are events, materials, and phenomena that the child interacts with, or observes on daily basis that have scientific connotations. Yet the child is not aware that these same things are connected to what the teacher is trying to impact to him in the class. Inyang-Abia (2001) affirms that "every community is filled with natural and man-made resources that provide worthwhile learning opportunities for all categories of students when relevant objectives are clearly stated". There are diverse phenomena that may be natural, activities of man on things and things on man that may be used in learning/teaching of science. Such resources include the people; places; culture; services/activities etc.

Eshiet (2004) lists some of such phenomena to include: Administration of coconut milk from the young fruit to revive somebody who is feeling weak; and the use of blow-pipe and charcoal by a blacksmith to smelt the iron then beat it up to the desired shape. Other common phenomena in the environment that can be used to enhance meaningful science teaching/learning include: Burning processes in the kitchen that can be used to teach energy conversion; pollution; chemical change; etc; boiling of foods (or water) that can be used to teach vaporization, condensation and states of matter; bush burning by hunters and farmers for teaching of desertification, climate change etc; refuse generation at home for teaching pollution and waste management (incineration, re-cycling etc.); electrification in the house for teaching circuits, conductors and insulators; fermentation of cassava (*akpo*) for teaching microorganisms, anaerobic respiration etc; a look at the various domestic animals for adaptive features; slaughtering of animals at home or a visit to the slaughter house for the learning of internal organs; food spoilage for teaching of microbes; smoking or drying of meat (or application of salt) as a means of preservation; observation of cockroaches in the house for the teaching of arthopods, insects, their habitats, characteristics etc; bicycles to teach levers, centripetal forces etc.; petrol in cars to teach energy types and energy conversion. The list can go on without end. All it requires is for the teacher to identify the everyday life event(s) that can be linked to the concept he wants to teach.

Connecting classroom science with everyday life

For meaningful learning to take place, the student must be interested, and Staver (2007) avers that the relevance

of the concept (to be learnt) to the student motivates interest. Relevance refers to how much satisfaction the student has, how much it connects with the students' interest and how much it connects with social issues, cultural back grounds. More so, cognitive theories of learning maintain that meaningful learning of a new thing depends largely on relating it to what is already meaningful and familiar. Therefore science teaching must be brought down to earth with things that are already familiar and important to the student (Staver, 2007).

In order for science learning to be effective and produce the desired effect on the individual and the nation, How Kids Learn (2017) informs that,

Kids learn science in a superior way when we direct their natural curiosity and build upon their developing science skills to actually do real science hands-on. Simply stated, the best way for kids to learn science is by doing real science. A child can get scientific facts or even knowledge from a book. However, they are fully immersed in the learning process when they do science.

Emphasizing this, Tamirat (2015) gives the following analysis: You remember 20% of what you hear, 50% of what you hear and see, 90% of what you hear, see and do, and with repetition close to 100% is remembered. With the abundance of community resources/events in the environment available for learning science, there is a lot to be done on the part of the pupils/students, teachers and the curriculum to achieve the desired meaningful and effective leaning that can bring about development of the individual and the nation at large. In agreement with this, Muoneke and Asagha (2015) stress that science teaching at all levels should be practical and society-oriented. Inyang-Abia (2001) also avers that the community is a significant catchment area for all forms of educational processes and materials. It is therefore the responsibility of the individuals (teachers and students) to use such resources, people and activities for teaching/learning. For meaningful learning of science, there must be an effective and deliberate integration of classroom science with the wider culture (or environment).

Inyang-Abia (2001) avers that children have the potentials of finding out and learning on their own, and that things found out in this way last longer in the memory, are easily recalled and are usually more meaningful to the person. According to him, the teacher should specify the objectives for the lesson and then allow students to observe the phenomena, ask questions, organize their findings and make decisions on their own (or with the guidance of the teacher). Phenomena based learning, according to Silander (2015), begins with observation of the real phenomena (which are abundant in the environment), asking questions and attempting to answer them. For instance, the child observes vapour from boiling water in the kitchen and will ask: where is the vapour coming from? As it is going into the atmosphere, where does it eventually settle? How is the vapour generated? Can it be made to return to the water?

As the children (students) ponder on these questions and attempt to provide answers, the teacher can lead them into scientific concepts such as kinetic energy, states of matter, laws of thermodynamics etc. This kind of learning follows the constructivism theory whereby learners build up complex knowledge from little pieces of information they would have observed in the environment (Silander, 2015).

Staver (2007) stresses that, as one of the techniques of an effective science teacher, science concepts and instructions should be connected to the learners' personal experiences.

For meaningful science learning to take place, which will then lead to development of the individual and the nation as a whole, the teacher should realize that real science is not just for the classroom but is part of everyday life. He should therefore move away from the usual "chalk and talk" method and begin to direct learners' attention towards the phenomena in the community that have scientific connotations. The teacher should encourage learners to ask questions on their observations in the environment. The teacher should guide learners to find out answers to their own questions by trying out things (How Kids Learn, 2017). Curriculum planners should incorporate specific activities in the curriculum that will assist teachers in directing students' attention to everyday life events to make science learning more meaningful.

CONCLUSION

The teaching/learning of science is very significant to the individuals, which in turn contributes to the overall development of any nation. "Science" in the 21st century is synonymous with "solution" to problems faced by mankind in everyday life (Oduor, 2013). Usually, science teaching in the classroom is not linked to the learners' everyday life, making the concepts appear abstract to the learner. This leads to disinterest and poor performance, as is evidenced in enrollment and performance in the sciences.

This paper suggests a bridging of the disconnect (gap) between classroom science and everyday life to improve enrollment and performance in science in Nigeria. There exists various phenomena in the environment of the learner that can be used to steer up the learners' interest and performance. The teacher should identify these phenomena and link them appropriately to the correct concepts. The curriculum planners should also produce materials that will guide the teacher on the appropriate association of the phenomena in the environment with science concepts in the classroom.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

Ador SI, Agabi DU, Ador VU (2017). Chemistry Education for Socio-Economic and Political Stability in Nigeria. Journal of contemporary scientific Innovations 2(1):211-216.

Agogo PO (2017). The Challenges of Science, Technology, Engineering and Mathematics (Stem) in Addressing Socio-Economic and Political Stability in Nigeria. Journal of contemporary Scientific Innovations (2):21-27.

Alozie P (1996). Technology, Science and Environment: A Current Overview. Calabar, AAU Industries.

Bouillion LM, Gomez LM (2001). Connecting School and Community with Science Learning: Real World Problems and School-Community Partnerships as Contextual Scaffolds. Journal of research in science teaching 38(8):878-898.

Coolidge-Stoltz E, Cronkita D, Graff-Haight D, Holtzclaw F, Jenner J, Jones LC (1993). Science Explorer: Life Science. New Jersey, Prentice-hall.

Eshiet IT (2004). Science, Technology and Society: A Global Perspective. Port Harcourt, Belpot (Nig) co.

How Kids Learn Science Best (2017). Retrieved on 12/10/17 from https://www.homesciencetools.com/learning-center/how-to-learn-science

Inyang-Abia ME (2001). Curriculum Technologies for Basic Education: Methods, Media & Their Utilization. Calabar, Wusen Publishers.

Jatto YA (2004). Challenges of Education in the Twentyfirst century. A lead paper presented at the 3rd Annual Conference organized by Federal College of Education, Katsina, Katsina State.

Kola AJ (2013). Importance of Science Education to National Development and Problems Militating Against Its Development. American Journal of Educational Research 1(7):225-229.

Mberekpe AC (2013). Effect Of Students Improvised Instructional Materials On Senior Secondary School Students' Achievement In Biology. An M. Ed. Thesis submitted to the Department of Science Education, university of Nigeria, Nsuka.

Miller KR, Levine J (2007). Biology. New Jersey, Pearson Prentice Hall.

Muoneke MN, Asagha EN (2015). Re-Thinking and Re-Engineering Quality Science Education for Sustainable Development: The way Forward. Journal of Contemporary Scientific Innovations 1(4):144-149.

Oduor R (2013). Can Science Solve all the Problems in the World? (For World Science Day for Peace and development). Redtrieved on 02/02/2018 from http://writeparagraphs.blogspot.com.ng/2013/11/can-science-solve-all-problems-in-world.html

Oloruntegbe KO (2012). Would Science Background Be a Factor in Parents Helping Students Establish a Match between School Science and Home Activities? Journal of Education 2(1):1-7.

Samiksha S (2016). Importance of Science and Technology in National Development-Essay. Retrieved on 12/10/2017 from http://www.yourarticlelibrary.com/technology/importance-of-science-and-technology-in-national-development-essay/8563/

Science Council (2014). Our Definition of Science. Retrieved on 17/10/17 from http://sciencecouncil.org/about-science/our-definition-of-science/

Silander P (2015). Rubric for Phenomenon Based Learning. Retrieved on 22/01/2018 from http://www.phenomenaleducation.info/phenomenon-based-learning.html

Staver JR (2007). Educational Practices Series-17. Geneva, International Academy of Education pp. 5-7.

Tamirat A (2015). Health Education Methods and Materials. Retrieved on 12/09/2017 from www.slideshare.net/abrish777/health-education-methods-and-materials2015

Ushie UG, Anake FA (2015). Science Education: Challenges and Prospects in National Development. Journal of Contemporary Scientific Innovations (JOCOSCIN) 1(4):179-186.

Valentino C (2000). Developing Science Skills. Retrieved on 13/02/208 from https://www.eduplace.com/science/profdev/articles/valentino2.html

Vol. 10(3), pp. 30-36, July-December 2019
DOI: 10.5897/IJSTER2018.0441
Article Number: FD94CA062066
ISSN 2141-6559

http://www.academicjournals.org/IJSTER

ACADEMIC JOURNALS
expand your knowledge

International Journal of Science and Technology Educational Research

Full Length Research Paper

Utilization of the internet by undergraduate students of the University of Ibadan, Nigeria

Olateju Jumoke Ajanaku

Department of Information Studies, University of KwaZulu-Natal, South Africa.

Received 10 August, 2018; Accepted 28 September, 2018

The internet technology over the past few decades has become an important tool in higher education for learning, teaching and research. The study investigated the internet activities engaged in, frequency of use of the internet and challenges limiting the use of the internet among the undergraduate students of the University of Ibadan, Nigeria. A survey research design was adopted. A close-ended questionnaire was used to collect data from 300 undergraduate students. Findings were analysed using descriptive statistics and the result indicated that the respondents had good computer skills and used the internet for various activities which vary across faculty of study. The respondents were dissatisfied with the high cost of accessing the internet and inadequate internet facilities. The major recommendation of the study is the provision of basic internet training for the students; equipping the university with adequate internet facilities; regular power supply and free internet access to all university students.

Key words: Utilization of internet, undergraduate students, University of Ibadan, Nigeria.

INTRODUCTION

Information and communication technologies (ICTs) especially the internet has been ushering in a new age in the information society and has become the potent force for transforming social, economic and political life globally (Gurumurthy, 2004). The internet is a series of technologies with varying meanings for users around the globe. However, Lebow (1995: 36) defined the internet as "a global network of linked computers that enables people to share and exchange information". The internet is not only a conduit for many innovations, but it is also dependent on other technologies and infrastructures to be in place such as computers and mobile phones (Putnam and Kolko, 2010).

The internet has become a necessity to a large portion of the world population today and has become the best, largest and most useful encyclopaedia of information. The internet has a far larger and serious impact on our society than the introduction of television, greater than the influence of the industrial revolution or the printing press (Ebersole 1999, 2000). The internet over the past few decades has thus become an important technological tool in the production, marketing and use of information worldwide. It has given a new approach to education where students are no longer dependent on their teachers and school libraries as their only source of information. A major cursory observation shows that the internet is a major means of communication and information among students of higher institutions.

E-mail: tejlad@yahoo.com.

Specifically, the internet is an invaluable tool being used in higher education for information access, learning, teaching research and development, as a communication medium, and for teaching and learning (Brändström, 2011). However, there are also many drawbacks in terms of access and use by the students.

The higher education sector in developing countries such as Nigeria is imperative in improving economic and social status of such countries. Therefore, in the present knowledge economy, seamless information access by the students is a major key to academic improvement in the universities. Globally, different studies have been carried out on students' use of the internet which depends on various associated factors such as the available internet facilities, purposes and students' skills (Fasae and Aladeniyi, 2012).

REVIEW OF LITERATURE

The review of literature discussed here were identified following a search on scholarly databases and search engines such as Library and Information Science Abstract (LISA), EBSCO host, Google Scholar, Emerald Insight, Wiley Online Library, Science Direct, google, etc. Scholarly databases were used in this study since it contains peer reviewed and current researches about internet use by students while search engine such as google was also used to capture literature that are peer reviewed and published on open source journals. The review of literature is obtained from both print and electronic resources and material selection was based upon the relevancy to the objectives of the study.

Previous studies on internet use by students

Parameshwar and Patil (2009) investigated the use of the internet by faculty and research scholars at Gulbarga University's library in India. The study revealed that the challenges faced included downloading problems, information overload and finding relevant information. As part of the "PEW Internet Life Project", Jones et al. (2007) examined a sample of 7421 undergraduate students across the United States. Parameshwar and Patil (2009) revealed that the students reported using the internet for academic purposes and the internet had positively impacted their academic lives.

A study conducted by Patel and Darbar (2016) on internet usage among students of CK Shah Vijapurwala Institute of Management Library, India revealed 100% of the respondents use the internet and majorly for their studies and social networking. More than half of the students were satisfied with the WIFI access on their campus and a major problem to internet use is the low speed internet connectivity. Similarly, Kumar (2017) using a survey studied the internet access and use among face to face program students of Indira Gandhi National Open University, India. The study revealed majority of the respondents use the internet for academic purposes and social networking. The respondents also reported that the internet improved their professional competence and improved their research process.

A review of literature shows several other studies in Africa that have established a high degree of internet use among university students and inadequate internet access. A study by Badu and Markwei (2005) on awareness and use of the internet at the University of Ghana showed that the students were aware and use the internet. The results showed that e-mail was the commonly used internet service followed by information search.

In Nigeria, Anasi (2006) highlighted that the low pattern of internet use among undergraduates' students from the Faculties of Education and Law at the University of Lagos. Furthermore, the study revealed that though most of the students browsed the internet, many of them lacked search strategies skills even though their Internet use had very high impact on their academic or career related activities. Olufemi (2006) in the investigation of internet use among undergraduate students of Obafemi Awolowo University, Nigeria reported a high level of use of the internet and their major access was through the commercial cybercafés where they paid for access time. The study also showed that problems experienced by the students when using the internet include slowness of the server and high payment of the access to the internet. Similarly, Awoleye et al. (2008) examined the level of penetration of internet usage among undergraduate students of Obafemi Awolowo University in Nigeria reported that the students had high level of internet usage and use the internet mostly for email, information research and online-chat.

Mishra (2009) studied the use of internet at the University of Maiduguri, Nigeria. The findings showed that 74.6% of the students using the internet for research and academic purposes; and concluded that necessary facilities should be put in place for faculty and students to make optimal use of information resources available on the internet. Furthermore, Ani (2010) in his study which examined the extent and level of internet access in Nigerian universities submitted that undergraduate students extensively use the internet. However, majority of the respondents indicated that they relied on commercial internet services and cybercafés due to poor internet infrastructure in the university. The results showed that most of the students use the internet for academic purposes.

Adekunmisi et al. (2013) in their study on the internet access and usage by undergraduate students of Olabisi Onabanjo University, Nigeria indicated that majority of the respondents had access to the internet. The students accessed internet facilities from the privately-owned cybercafés in town despite the fact that the university

Table 1. Gender of respondents.

Gender	Frequency	Percent
Male	151	50.3
Female	149	49.7
Total	300	100

grossly lacks internet facilities. Furthermore, the students use the internet mostly for emails, academic purpose and getting information while the high cost of browsing, slow internet access speed, power outage and few internet facilities are challenges identified as impediments to internet by the students.

A review of related literature shows that there have been many studies on internet use globally and most of them reached a consensus that internet usage is most prevalent among university students', but no in-depth study has been reported on the use of internet in the university under study. Therefore, this study was carried out to ascertain internet use in the selected university in Southwest Nigeria.

Research objectives

The aim of the study is to investigate the use of the internet among the undergraduate students of the University of Ibadan.
The specific objectives of the study were:

(1) To identify the computer and internet skills of undergraduate students.
(2) To find out the type of internet access the undergraduate students use in connecting to the internet.
(3) To find out the frequency and duration of internet use among the undergraduate students.
(4) To analyse the on-line activities engaged in by the undergraduate students through the internet.
(5) To recognize the challenges encountered by undergraduate students in internet usage.

METHODOLOGY

A survey research design was used to achieve the purpose of the study. The targeted population of the study was the undergraduate students of the University of Ibadan, Nigeria. A close-ended questionnaire was adopted as the research instrument and stratified random sampling was employed for on the spot selection of students. The questionnaire was designed by the researcher and consisted of two sections. The first section contained questions aimed at eliciting information about the demographic characteristics of the respondents while the second section consisted of questions related to the study. The questionnaire was based on a five-point Likert scale from (1 -strongly disagree, 2 -disagree, 3 -neither agree nor disagree, 4 -agree, 5 -strongly agree). Reliability and validity of the questionnaire was ensured by carrying out a pilot study and restructuring the questions based on suggestions and comments of two experts. The pilot study was conducted on 30 undergraduate students of The Polytechnic, Ibadan. Reliability of the questionnaire was measured using the Cronbach's coefficient alpha with value of 0.87.

Data was collected from 350 undergraduate students in the University of Ibadan during academic session. The researcher personally distributed the questionnaires with the help of a research assistant. Out of the 350 questionnaires that were distributed, 50 questionnaires had incomplete responses and were discarded. Thus, 300 questionnaires were usable. The generated data was analysed by using SPSS Statistics 22.0.

DATA ANALYSIS AND INTEPRETATION

Gender of respondents

The result as presented in Table 1 shows that 50.3% of the male and 49.7% of female respondents participated in the study. This result specified that there were more male internet users than female users in the sample studied.

Age of respondents

The respondents' age range was distributed from ≤18years to 36^{+} years as shown in Table 2. The result revealed that the majority (47%) of the respondents' age were 19 to 24 years old followed by the respondents (34%) in the age range of 25 to 30 years old. Only 1% of the respondents' age were 36^{+} years old. According to Recchiutti (2003), age is an imperative demographic variable in studies on the internet use.

Computer and internet skills

Computer literacy is very important for the optimal use of internet services (Okello-Obura and Magara, 2008). The respondents were asked whether they have computer and internet skills. Their responses as depicted in Table 3 reveal the majority 97.33% of the respondents indicated they have computer and internet skills while only 2.67% indicated they do not have the skill. The findings of this study agree with that of Muniandy (2010) who reported that the respondents had a good level of computer and internet skills study in their study entitled "academic use of internet among undergraduate students in a Malaysian University".

Table 2. Age of respondents.

Age group (years)	Frequency	Percent
≤18	30	10
19-24	141	47
25-30	102	34
31-35	24	8
36^{+}	3	1

Table 3. Computer and Internet skills.

Parameter	Measure	Frequency	Percent
Computer and Internet skills	Yes	292	97.33
	No	8	2.67

Type of internet access

The responses of the respondents about their access to the internet facilities are depicted in Table 4. Majority (91.33%) of the respondents stated that they accessed the internet from the cybercafé, followed by access through their mobile phones (83.67%) and from modems (80%). The least of the respondents (13.3%) indicated access to the internet from the School LAN. This result suggests that the cyber-cafes play a major role in the provision of internet services to the undergraduate students while the university has inadequate internet facilities. The proliferation of data services to mobile phone users by telecommunication companies also caused an explosion of internet use among the undergraduate students. This could be a reason why mobile phone topped second in the list of internet access. According to Ehikhamenor (2003), non-use of internet in Nigeria is often attributed to the problems of accessibility and cost. This finding is consistent with that of Ani (2010) and Waithaka (2013) in which most of the respondents indicated they accessed the internet from the cybercafés. This study also agrees with Adekunmisi et al. (2013) who reported that the universities under study lacked internet facilities and the students accessed internet facilities from the privately-owned cybercafés.

Frequency of internet use

The students were asked to indicate their frequency of internet use. As shown in Table 5, 76% of the respondents stated that they used the internet every day, 19.33% weekly, and 14.67% monthly. This result agrees with that of Adekunmisi et al. (2013) who reported that most of the respondents in their study use the internet every day. The finding is also consistent with that of Awoleye et al. (2008) and Ani (2010) who reported that the students had high level of internet usage. Furthermore, the results of this study indicate that the internet is no longer anonymous as the present age of information explosion has revolutionised the use of the internet. Majority of the students use the internet daily and the internet is no more a mystery to them.

Duration of internet use

The researcher sought to determine the duration of internet use by the respondents. As shown by the data in Table 6, the majority of the respondents (39.67%) browsed the internet for 1 to 2 h, 34% for more than 2 h and the least respondents (26.3%) spent 30 min to 1 h. This may be explained by the fact that most of the respondents have different internet access through the cyber café, mobile phone, school LAN and modems. It is obvious from the results that the respondents tried to variegate their internet access points by making use of different available points since one access point could not satisfy internet needs. The majority of the respondents spend 1 to 2 h on-line followed by the respondents who browse for more than 2 h. The result is summarized in Table 7. The finding of this study agrees with that of Khan et al. (2011) and Waithaka (2013) who reported that majority of the respondents specified they required 1 to 2 h.

Internet activities

The students used the internet to perform a variety of internet activities as depicted in Table 8. Among these, academic work (75.6%) topped the list followed by information search (66%). While the least (21.7%) used the internet for software download. This finding agrees with Mishra (2009), Ani (2010) and Adekunmisi et al. (2013) who found out that majority of the students using the internet mostly for research and academic purposes.

Table 4. Internet access.

Type of access	Measure	Frequency	Percent
Modem	Yes	240	80
	No	60	20
School LAN	Yes	40	13.3
	No	260	86.7
Cyber-café	Yes	274	91.33
	No	26	8.67
Mobile Phone	Yes	251	83.67
	No	49	16.33

Table 5. Frequency of internet use.

Internet usage	Frequency	Percent
Everyday	228	76
Weekly	58	19.33
Monthly	14	4.67

Table 6. Duration of internet use.

Duration of use	Frequency	Percent
30 min-1 h	79	26.33
1-2 h	119	39.67
>2 h	102	34

Table 7. Internet activities.

Purpose	Frequency	Percent
Email	170	56.7
Instant Messaging	125	41.7
Information search	198	66
Academic work	227	75.6
Software download	65	21.7
Music/movie download	74	24.6

Patel and Darbar (2016) in India similarly reported the use the internet for academic by students. Khan et al. (2011) also reported in their study that the majority of the respondents used the internet for their study followed by those that used it to prepare for assignments.

Challenges encountered in internet use

The respondents were asked to indicate the challenges encountered in using the internet. Erratic power supply was identified by the majority of the respondents (82%) as the greatest challenge followed by inadequate internet access in school (77%), and high cost of browsing (68.7%). The results are shown in Table 8. The findings of Mishra (2009), Ani (2010) and Anasi (2006) on the use of the internet among university students in Nigeria is similar to the findings of this study regarding the challenges encountered in using the internet. From the result in Table 8, it is evident that erratic power, inadequate internet access in school, and high cost of browsing are part of the crucial challenges faced in

Table 8. Challenges encountered in internet use.

Challenges	Frequency	Percent
High cost of browsing	206	68.7
Slow internet speed	178	59.3
Erratic power supply	246	82
Inadequate information retrieval skills	85	28.3
Inadequate browsing skills	45	15
Overload of information	150	50
Inadequate internet access in school	231	77

accessing the internet in Nigeria which was reported by previous researchers. Another challenge encountered was slow internet speed which may be due to the bandwidth capacity and/or several users browsing at the same time. This challenge was also reported by Okello-Obura and Magara (2008), Mishra (2009), Ani (2010) and Waithaka (2013) in their studies on internet use. The findings of this study also agree with that of Adekunmisi et al. (2013) who reported high cost of browsing, slow internet speed, inadequate browsing skills, overload of information and power outage as the problems encountered by students of Olabisi Onabanjo University in the use of internet.

In summary, the key findings of this research are as follows:

(1) The students had good basic computer and internet skills.
(2) Majority of the students accessed the internet from the commercial cybercafés.
(3) There is inadequate provision of internet facilities by the university.
(4) The students used the internet mostly for academic purposes and information search. Other activities included email, instant messing, software download and music/movie download.
(5) The major challenges hindering internet use by the students were erratic electricity, high cost of browsing and inadequate access to school LAN. The university lacked adequate Wi-Fi connection.

RECOMMENDATION

Globally, the use of the internet is becoming an increasingly important part of the educational system and students are heavy users of the internet. Academic achievements depend on the ability to read and share information effectively. Like other developing countries there is proliferation of the internet in Nigeria and its use has become very common among university students. It is clear that erratic electricity and inadequacy of internet infrastructure in the university are the major challenges faced in utilizing the internet by the students. The study recommends that adequate internet facilities such as adequate computers and Wi-Fi connection be provided by the university for maximum use of internet as this will have impact on academic productivity of the student; an alternative means of regular power supply should be installed by the university; and finally, the government needs to address the issue of erratic electricity.

Conclusion

As this study has shown, more students are relying on the internet for their academic needs than any other areas. Unlike the developed countries where students have access to internet facilities on the campus, most students do not have access to internet on the campus in Nigeria. The revelation of this study may be useful for the university regarding the provision of better internet facilities for more efficient use of the internet for their students.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

REFERENCES

Adekunmisi SR, Ajala EB, Iyoro AO (2013). Internet Access and usage by undergraduate students: a case study of Olabisi Onabanjo University, Nigeria. Library Philosophy and Practice (e-journal), Paper 848. Retrieved April 10, 2017 from http://digitalcommons.uni.edu/libphilprac/848

Anasi S (2006). Internet use pattern of undergraduate students at the University of Lagos, Nigeria. University of Daes Salaam Library Journal 8(1):1-15.

Ani OE (2010). Internet access and use: A study of undergraduate students in three Nigerian universities. The Electronic Library 28(4):555-567.

Awoleye MO, Siyanbola WO, Oladipupo OF (2008). Adoption Assessment of Internet Usage Among Undergraduates in Nigeria – A Case Study Approach. Journal of Technology Management and Innovation 3(1):84-89.

Badu EE, Markwei ED (2005). Internet awareness and use in the University of Ghana. Information Development 21(4):260-268.

Brändström C (2011). Using the Internet in Education-Strengths and Weaknesses: A Qualitative Study of Teachers' Opinions on the Use of the Internet in Planning and Instruction.

Ebersole SE (1999). Adolescents" use of the World Wide Web in ten public schools. A useand gratification approach. PhD thesis, Colorado State University, Fort Collins.

Ebersole S (2000). Uses and gratifications of the web among students. Journal of Computer-Mediated Communication 6(1):JCMC614.

Ehikhamenor FA (2003). Internet resources and productivity in scientific research in Nigerian universities. Journal of Information Science 29(2):107-116.

Fasae JK, Aladeniyi FR (2012). Internet use by students of faculty of science in twoNigerian universities. Library Philosophy and Practice (e-journal) P 763.

Gurumurthy A (2004). Gender and ICTs overview report, Brighton, England, University of Sussex, Institute for Development Studies. Retrieved May 4, 2017 from http://www.bridge.ids.ac.uk/reports/cep-icts-or.pdf

Jones S, Johnson-yale C, Pérez FS, Schuler J (2007). The Internet landscape in college. Yearbook of the National Society for the Study of Education 106(2):39-51.

Khan SA, Khan AA, Bhatti R (2011). Internet access use and gratification among university students: a case study of the Islamia University of Bahawalpur, Pakistan. Chinese Librarianship: An International Electronic Journal 32:1-14.

Kumar D (2017). Internet Access and Use among Face to Face Program Students of Indira Gandhi National Open University: A Survey. International Research: Journal of Library and Information Science 7(1):1-15.

Lebow I (1995). Information highways and byways: From the telegraph to the 21st century. New York: IEEE Press.

Mishra MK (2009). Use and importance of the Internet at the University of Maiduguri, Nigeria. First Monday 14(3):1-7.

Muniandy B (2010). Academic use of internet among undergraduate students: a preliminary case study in a Malaysian university. International Journal of Cyber Society and Education 3(2):171-178.

Olufemi OB (2006). A survey of Internet access and usage among undergraduates in an African University. The International Information and Library Review 38(4):215-224.

Okello-Obura C, Magara E (2008). Assessment of the problems LIS postgraduate students face in accessing e-resources in Makerere University, Uganda. Collection Building 29(3):98-105.

Patel K, Darbar M (2016). Internet Usage among Students of CK Shah Vijapurwala Institute of Management Library, Vadodara: A Study. International Research: Journal of Library and Information Science 6(2).

Parameshwar S, Patil DB (2009). Use of the internet by faculty and research scholars at Gulbarga University Library. Library Philosophy and Practice. Retrieved April 20, 2017 from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1268&context=libphilprac&sei

Putnam C, Kolko B (2010). The social meaning of ICTs: patterns of technology adoption and usage in context. In Proceedings of the 4th ACM/IEEE International Conference on Information and Communication Technologies and Development P 34. ACM.

Recchiutti JK (2003). College students uses and motives for e-mail, instant messaging and online chat. Unpublished Masters Thesis, University of Delaware,Newark.

Waithaka MW (2013). Internet use among university students in Kenya: a case study of the University of Nairobi. Masters dissertation submitted to the University of South Africa. Retrieved April 20, 2017 from http://uir.unisa.ac.za/handle/10500/13284.

Related Journals: