

ORIGINAL RESEARCH ARTICLE

Reengineering the ASSURE Model to curbing problems of technology integration in Nigerian learning institutions

Theodorio Adedayo Olayinka^{a*}, Theodorio Francisca Jumoke^b and Morakinyo Temitayo Oyebamiji^c

^a*Department of Computer Science, Oyo State College of Agriculture, Igboora, Ibarapa Central Local, Oyo State;* ^b*Physics Unit, Oyo State School of Science, Idere, Ibarapa Central Local, Oyo State;* ^c*Department of Computer Science, Oyo State College of Agriculture, Igboora, Ibarapa Central Local, Oyo State*

(Received 10 August 2017; final version received 13 May 2018)

This article focused on reengineering the ASSURE Model in order to combat inadequacies of implementing the ASSURE Model in Nigerian learning institutions. Much emphasis was on physical problems militating against successful implementation of the model in Nigeria. These problems were thoroughly discussed by the author who later coined his own model out of the model for further experimentation in order to correct identified educational deficiencies and for the creation of a document that could be used as a blueprint.

Keywords: skills; technology; problems; teaching and knowledge

Introduction

An effective and productive teaching often goes along with practice and planning; sometimes, it involves the use of established model which had been tested and found to be relevant and objective-yielding. Models are abstraction of real life realities which are carved out to yield results (Coronel, Steren, and Peter 2011). Models help to form a layout for eventualities from an implicit view (Nonaka, Toyama, and Konno 2000) which can be integrated into teaching for successful objective delivery. In teaching, models such as SAME Model (*Substitution, Augmentation, Modification and Redefinition*. Created by Reuben Peuntudex), TPACK Model (extended from Lee Shulman's idea of Pedagogical Content Knowledge: PCK) and the ASSURE Model (the focus of the article) are used to create personalized learning experiences. These models help tutors or teachers to prepare adequately for convenient teaching and a professionally designed curriculum (Alli 2003). The importance of these models is that they help to integrate relevant technology into teaching. Technology integration, according to AACE (2003), is the use of computers and other technologies to support the task of teaching and learning. Ertmer, Rose, and Gopalakrishnan (2007) identified technologies such as media, e-portfolio, computers, images, internet, audio gadgets, visuals or combination of audio-visuals could be used as teaching enhancements that will foster quicker learning, collaborative learning and knowledge retention. Models and technology integration are two entities that are interrelated. A model gives direction for any procedure while

*Corresponding author. Email: theodoriodayor@yahoo.com

technology integration makes learning simple and direct (Theodorio 2016). Arising from the discourse, the author intended to showcase the challenges encountered by tutors when trying to use the ASSURE Model to integrate technology into their teaching exercises and finally, propose a new model called the TREASURES Model.

ASSURE Model in Focus

Robert *et al.* (1999) developed the model for systematic use of media and technology in any teaching environment. Since learning and development of human reasoning are in stages, the model is suitable for procedural learning. In the book *instructional media and technologies for learning*, Gagne described the ASSURE Model as a model that is capable of arousing students' interests through a hand-on experience, students are duly involved through the use of the media or technology.

The ASSURE Model in Figure 1 was developed to work for an ideal and Organized environment. An environment where facilities and materials are readily available for use, it was designed in such way that it supports blended learning, participatory learning and group learning approaches in technologically motivated classrooms.. Hassan (2014) posited that the model is very good for any teaching plan especially if the concept of retentive learning is given a strong consideration. He identified six steps involved which are:

1. *Analyze learners*: Planning for audience and their characteristics (e.g. age, sex, socio-economic background, mental readiness and learning styles).
2. *State objectives*: Tutors are encouraged to consider the class of audience, their behaviors and the type of degree they are studying for.
3. *Select technology/media/material*: Select from material pool or modify or create a new one.
4. *Utilize the material*: Preview the material and text the material/media or technology.
5. *Requires learners' participation*: Bring learners in to harvest their views and advise.
6. *Evaluate the media/technology* with stated learning objectives.

Problems militating against full implementation of ASSURE Model in Nigerian learning institutions: A panacea for reengineering

Sanusi, Adelabu, and Okunade (2014) wrote that lack of basic amenities such as constant power supply, furniture, spacious and ventilated rooms, audio-visual tools, good remunerations for tutors, internet connections and government policies are seriously contesting against the use of media in schools in Nigeria. Furthermore, Olutola and Olatoye (2015) identified problems such as connectivity to online learning. There is lack of equipment such as computers and digital technology in schools. They pointed out that there is a lack of tutors' software in training colleges. However in Olutola and Olatoye (2015), Daniel (2009) opined that lack of adequate technological training in teachers colleges reduce the chances of having technological trained teachers teaching in schools. Dike (2011) identified the following as problems affecting the use of technology in schools:

1. *Funding by government*: Funds allocated to technology integration disappear without trace condemning teachers to old teaching methodology.

2. *Erratic electricity*: No constant power in some schools while some do not have at all.
3. *Bad policy on education*: Government position on schools to provide modern facilities that will enhance students learning abilities (The Daily Sun 2011 in Dike 2011).

More so, Adeyemi and Mary (2013) submitted that:

1. Students and academics are resistant to change from traditional pedagogical to technological-based teachings and methods in schools.
2. Lack of ICT personnel in schools and colleges.
3. Non-funding on the part of government (Iteboje and Okubote 2002) is reducing the use of technology in objective delivery.
4. Schools overdependence on government for everything instead of seeking alternative funding (Yusuf 2005).

Agbamuche (2015) posited that cultural and religious attitudes, school locations and equity/gender issues affect the use of technologies in schools as a supportive tool. Some teachers who are religious fanatics often decline mixing with opposite sex, they believe that for any learning exercise, a teacher must mix with the opposite sex. This act, according to them is disobeying their belief. Moreso, the poverty index in the country is alarming and worrisome. Agbamuche (2015) reported that an average Nigerian lives below one dollar while most people reside in the rural area. With this number, it is pretty difficult to have access to technological-inclined teaching and learning process. Also, Umeh and Nsofor (2014) highlighted that inadequate funding, ineffective teaching methods, insufficient school facilities, inadequate and inappropriate uses of instructional materials among other factors are problems militating against the use of educational technologies in Nigerian schools.

The TRES Model

The TRES Model represents the Teachers' Assessment Level which includes the following:

- T**: Teachers' Personal Assessment Level.
- R**: Relate the problems and alternatives to media with experienced colleagues.
- E**: Develop the blueprint for approval and endorsement.
- S**: Save the blueprint as a document for future use.

The TRES Model was conceptualized by the author to address the problems of unavailability of materials or technology, problems of teachers' inferiority complex (Adeyemi and Esere 2013), lack of technical know-how on the part of tutors and, lastly, the problems of electricity and technical assistance from the school management or government (Dike 2011). But how can the TRES Model reengineer potency of the ASSURE Model in institutions? First, teachers have to prepare on their own. This level includes assessing the level of technical know-how, motivation and interests of the tutor. This is done only by the tutor himself/herself. It includes assessing his/her emotional and psychological states especially in any difficult situations and bringing

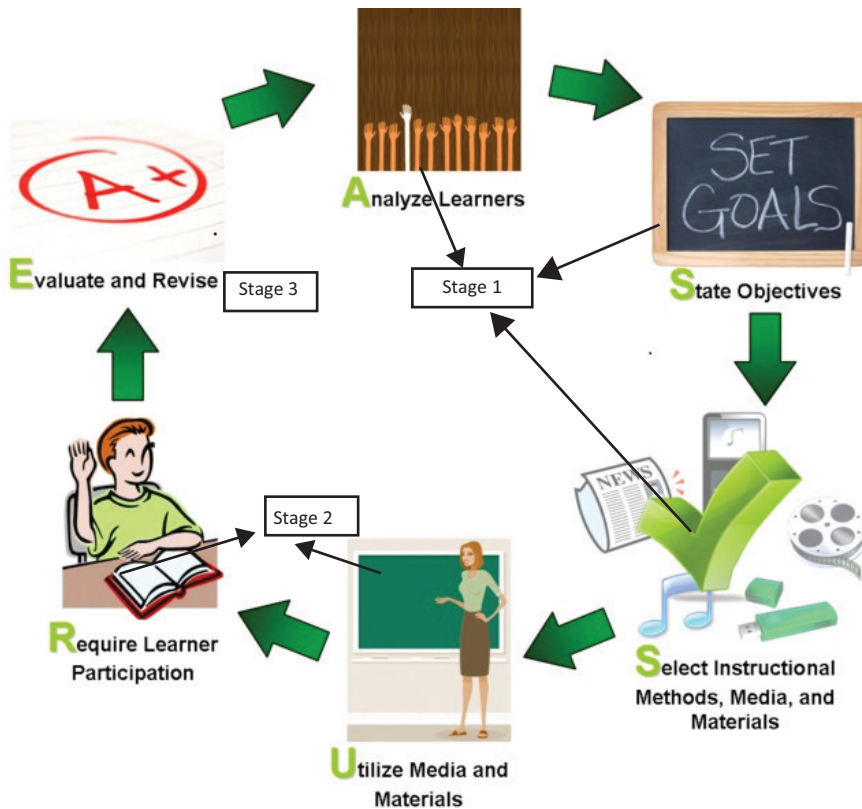


Figure 1. The ASSURE model.
 Source: insdsg619-F09 - A.S.S.U.R.E.htm.

out the best from his/her inner good heart (making himself/herself happy) in order to develop a good plan for his/her students. Another important condition here is that the tutor must conduct a requirement analysis of teaching needs especially for important technology or media needed for delivery of objectives. He/she should be able to conduct a survey on the material needed, the ones available, the ones he/she can improvise, the ones he/she can handle successfully and the ones she needs training on. Also, the problem of electricity can be managed through a joint effort of improvising electricity through alternative source of energy available and through personalized financial commitment. Lastly, a personal understanding of the community/school weaknesses should be identified through physical assessment. The problems identified should be discussed together with experienced colleagues and experts in order to identify present and future technical problems and the modalities of proffering solutions through effective alternative solutions (technology). The alternative solutions to be used should be workable, accessible and manageable. This sometimes should come from consensus approach which should be documented to form a blueprint. The outcome of technology/media tested should be documented and sent for further testing and approval by the policy-makers for endorsement and approval. If the blueprint gets an approval, the document should be saved for future use in any institutions of learning.

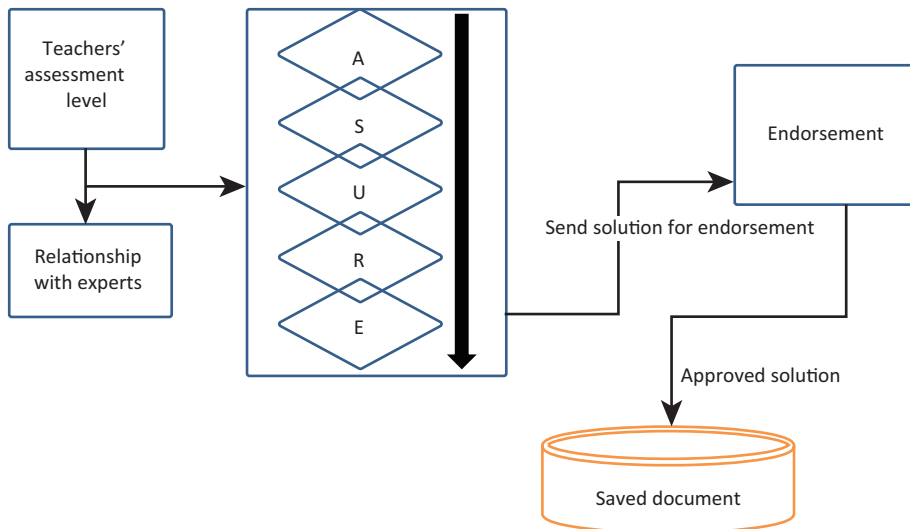


Figure 2. The TREASURES Model.

Reengineering the ASSURE Model to TREASURES Model

Based on the challenges identified earlier, the TREASURES Model is modeled to help curb the problems encountered in the adoption of ASSURE Model in Nigerian institutions. The educational sector in Nigeria has peculiar problems which are not in developed countries. So, a peculiar solution should be addressed internally with internalized solution. The TREASURES Model (as shown in Figure 2) is a combination of series of steps that would yield solutions to problems identified. The stages are Teachers’ Assessment Level, relationship with other experienced teachers on the choice of identifying right media and technology, the ASURE itself, endorsement of tutor’s improvised solution (media/technology process) stage and a database for documentation (blueprint). The model is represented in Figure 2. The first stage is Teachers’ Personal Assessment Level: A stage where the tutor personally assesses the teaching skills and technical know-how of available resources. He/she also does a refined assessment of his/her technical know-how of the technology to be used or on how to improvise a new technology/media in line with teaching objectives. At this level, the tutor is expected to become a learner not a teacher, a learner because he/she must demonstrate convincing skills before his/her intelligent learners. Having learnt how to handle the improvised technology/media, the tutor should endeavor to interact with experienced tutors in order to identify shortcomings or to correct perceived skills that are learnt wrongly. This process will further open up further possibilities in knowledge creation and skills acquisition. Next to this stage is the ASURE Model represented in spring mode. (It is represented in spring mode because all the processes must be done interrelated.) The ASURE means Analyze Learners, Select Materials/Technology, Utilize Materials, Review Materials and Evaluate the solutions.

It should be noted that learners’ attitude, learning styles, economic background and love for media and technology remain a crucial factor in analyzing a learner-A (**Analyze Learners**). The tutor must ensure that a physical, social, economic and motivation level of a student(s) must be given strong consideration before the choice of technology usage. The objectives stated must be designed from the class curriculum and should match the technology to be used or the improvised media/technology-S

(State Objectives). The process of media usage in classroom situation must be an all-inclusive exercise with intention of capturing students' attention and building in them the attitude of skills regeneration and mental development. The students must be allowed to pragmatically express themselves either theoretically or practically-**U (Utilize)**. Having allowed students to have a hand-on experience of the media or technology, the tutor must reaffirm his/her commitment towards effective teaching and with modern standard of teaching with technology. He/she must revise his/her teaching objectives together with his/her students and colleagues. This could be performed intermittently with teaching objectives-**R (Revise)**. One of the qualities of a good tutor is that he/she must possess evaluation skills. Evaluation is very important in knowledge impartation either directly or indirectly; evaluation works in three ways: first, to check for objective delivery; second, to ascertain level of students' understanding; and lastly, to establish tutors' expert rate-**E (Evaluation)**. Once the first three stages have been completed successfully, the actions and processes involved should be documented and sent for endorsement. During this stage, stakeholders such as administrators, tutors, computer experts, students and policy-makers must have an impact on the material, objectives and processes involved before it is documented.

Possibilities of TREASURES Model

With the author's solution to successful implementation of the ASSURE Model with a reengineered TREASURE Model, the following are the perceived importance and possibilities that the reengineered model will bring to combat current challenges facing a smooth integration of technology into teaching in Nigerian learning institutions:

1. *Knowledge is shared:* Tutors are confined to share their personal experiences as well as personal conviction on workable solutions with their students. At this level, problems are perceived to be different based on individual differences while the solutions to identified problems are formed from collective efforts. This act will make knowledge acquired from group discussion.
2. *More alternative pedagogy and technology are discovered:* With the effort of group assessment of problems and a cooperative effort towards identifying suitable media or technology to be integrated into teaching, one would be surprised that more methods will be discovered together with more technology. The beauty of this is that redundancies will be discovered and eradicated.
3. *Concentration on students alone:* The annotated model would yield a solution that is students-based and not tutors-based. It will remove tutors attitude of not considering students factors before technology integration.
4. *Love for inquisitive learning:* Tutors are motivated and condemned to inquire into alternative media recommended for integration. This would create the act of learning on the part of the tutors and also the love to attend training programs for cognitive development.
5. *Excuses are eradicated:* Tutors act of giving excuses such as lack of electricity, media or technology will be totally eradicated.

Conclusion

The ASSURE Model is a good model for technology integration as discussed by the author for a smooth, balanced and rich teaching exercise. Although recommended

for use worldwide, the peculiarity of a typical Nigerian Educational System militated against its implementation. Even though tutors try to use the model, much has to be said about the impossible use of the model in this part of the world for technological learning for free-will and self-development (Theodorio 2012). The author identified problematic areas such as tutors' problem, government policy, technological know-how of tutors, motivation as well as choice of technology use among students and tutors. The reengineered TREASURE Model was introduced in order to allow smooth implementation of the ASSURE Model for objective delivery.

References

- AACE. (2003) *Association for the Advancement of Computing in Education*, [online] Available at: <http://www.aace.org/>
- Adeyemi, I.I. & Esere, M. (2013) 'ICT and higher educational system in Nigeria', *Educational Journals and Reviews*, vol. 8, no. 21, pp. 2021–2025.
- Agbamuche, S. C. (2015) *The Use of Electronic Media in Nigerian Educational System: Principles, Practice, Problems and Prescription*. www.iste.org. Vol. 42, 2015.
- Alli, A. (2003) 'Faculty adoption of technology: training comes first', *Educational Technology: The Magazine of Change in Education*, vol. 43, no. 2, pp. 51–53.
- Coronel, C., Steren, M. & Peter, R. (2011) *Database Systems: Design, Implementation and Management*. Cengage Learning.
- Daniel, J. (2009) *E-Learning for Development: Using Information and Communication Technologies to Bridge the Digital Divide*. Common Wealth Ministers Reference. Henley Media Group.
- Dike, V. E. (2011) *Integration of Instructional Technologies in Education: Where Is Nigeria?* vdike@cwnet.com. [online] Available at: <http://www.gamji.com/article9000/news9448.htm>
- Ertmer, P., Rose, E. & Gopalakrushman, S. (2007) *Technology-Using Teachers: How Power Visions and Students-Centered Beliefs Fuel Exemplary Practice*, [online] Available at: <http://www.edci.purdue.edu/ertmer>
- Hassan, A. I. (2014) *The ASSURE Model Lesson Plan*. Department of Instructional Technology, Faculty of Education, University of Khartoum.
- Itegboje, A. & Okubote, A. (2002) 'Internet. A pragmatic aid to education and research', in *Deployment of Telemetric Systems: Trends, Techniques and Tools. Proceedings of the 16th National Conference of Computer Association of Nigeria*, eds C. O. Uwadia, H. O. D. Longe & A. D. Akinde, Jos, Nigeria, pp. 144–145.
- Nonaka, I., Toyama, R. & Konno, N. (2000) 'SECI, Ba and leadership: a unified model of dynamic knowledge creation', *Long Range Planning*, vol. 33, no. 1, pp. 5–34.
- Olutola, A. T. & Olatoye, O. O. (2015) 'Challenges of e-learning technologies in Nigerian University Education', *Journal of Educational and Social Research*, vol. 5, no. 1, pp. 301–306.
- Rob Nightingale. (2016) *Five Problems in Education that Technology Will Solve*. Technology Explained. MakeUseOf (MUO).
- Robert, H., et al., (1999) *Instructional Media and Technologies for Learning*, 7th edn, Pearson Education Limited, Upper Saddle River, NJ.
- Sanusi, B. O., Omowale, A. & Kayode, O. J. (2014) 'Adapting social media for formal learning in Nigeria: challenges and prospects', *Arabian Journal of Business and Management Review*, vol. 34, no. 2347, pp. 1–9.
- The Daily Sun. (2011) 'See Goddy Osuji: "Admission racketeering rocks Ebonyi Varsity"', *The Daily Sun*. 5 Sept.
- Theodorio, A. O. (2012) *Teachers' Perception of Integrating the Use of Mobile Phones into Teaching in Public Senior Secondary Schools in Oyo and Lagos States*, Unpublished M.Ed Dissertation, Department of Teacher Education, Faculty of Education, University of Ibadan.

- Theodorio, A.O. (2016). *Design and Implementation of Herbal Therapy Knowledge Management System*. An Unpublished Master of Science dissertation. Department of Computer Science, University of Ibadan, Ibadan, Nigeri.
- Umeh, A. E. & Nsofor, C. C. (2014) 'Modern trends in the use of educational technology in the classroom', *International Journal of Education Learning and Development*, vol. 2, no. 5, pp. 73–77.
- Yusuf, M. (2005) 'Information and communication technology and education: analyzing the Nigerian national policy for information technology', *International Journal on Education*, vol. 6, no. 3, pp. 316–321.