

EDITORIAL COMMENTS

JOSER congratulates all its contributors for their being part of this edition of **JOSER** Vol. 4 No 1 of June, 2018. **JOSER** will continue to promote the publication of scholarly articles in Science Education and Information Technology related fields of human endeavor especially as they relate to teaching and modern pedagogical trends.

The articles in this edition focus on: Leveraging Usage Patterns of Mobile Devices for Enhanced Learning; Radiological Assessment of Natural Radionuclides Exposure to Individuals in Motor Parks from Surface Soils at Ijebu - Ode in Nigeria: Prevalence and Intensity of Urinary Schistosomiasis in School Age Children in Yewa North Local Government Area of Ogun State, Nigeria: Nutritional Status of School Children in Ijebu-Ode Local Government Area, Ogun State, Nigeria: Using Some Conceptual Change Approaches to Strengthen Grade 11 Students' Conceptions about Acid Strength: Perceived Motivation for Students' Academic Performance in Vocational Education Career: ICT, Educational Development and Poverty Nexus in Africa: Proximate Analysis, Mineral Composition and Microbial Quality of Selected Edible Insects in Ijebu-Ode Local Government Area, Ogun State: Test Anxiety and Self-Efficacy as Predictors of Biology Pre- Service University Teachers' Attitude towards Diffusion and Osmosis in South-western Nigeria: Antimicrobial Activities and Phytochemical Analysis of the Water and Ethanol Extracts of the Fruits and Leaves of *Artocarpus Altilis* (Bread Fruit): Effect of Multimodal Instructional Approache on Students' Performance in Integrated Science. Second-Hand Clothing Retail in the Cape Coast Metropolis

The editorial board hereby calls for papers from the academic communities all over the world. As usual, preferences shall be given to empirical papers.

The journal is available online at:

<http://www.ghangol.org.gh>

Prof. S. K. Asiedu-Addo
Editor - in - Chief

CONTENTS

Editorial Board.....	iii
Notes to Contributors.....	iv
Editorial Comments.....	vi
Table of Contents.....	vii
List of Contributors.....	ix
Leveraging Usage Patterns of Mobile Devices for Enhanced Learning - Kwaa-Aidoo, E. K. & Agbeko, M.	1-10
Radiological Assessment of Natural Radionuclides Exposure To Individuals in Motor Parks From Surface Soils At Ijebu - Ode in Nigeria - Sowole, O. & Amodu F. R.	11-20
Prevalence and Intensity of Urinary Schistosomiasis in School Age Children in Yewa North Local Government Area of Ogun State. Nigeria. - Adewoga, T. O. S., Emikpe, B. O., Morenikeji, O. & Adediran O. A.	21-27
Nutritional Status of School Children in Ijebu-Ode Local Government Area, Ogun State, Nigeria - Akano, R. A., Sanusi, R. A. & Oladoyinbo, C. A.	28-35
Using Some Conceptual Change Approaches to Strengthen Grade 11 Students' Conceptions about Acid Strength - Ruby Hanson & Naledi Seheri-Jele	36-43
Perceived Motivation for Students' Academic Performance in Vocational Education Career - Oyenuga, A. O., Lemo, O. O. and Olunusi, P. A.	44-50
ICT, Educational Development and Poverty Nexus in Africa - Nosiru, O. M. O., Banjo J. O. S. & Odusina O. A.	51-61
Proximate Analysis, Mineral Composition and Microbial Quality of Selected Edible Insects in Ijebu-Ode Local Government Area, Ogun State - Banjo, F. M. & Sebiomo, A.	62-73
Test Anxiety and Self-Efficacy as Predictors of Biology Pre- Service University Teachers' Attitude towards Diffusion and Osmosis in Southwestern Nigeria - Oladipo, A. J., and Ogundiwin, O. A.	74-83
Antimicrobial Activities and Phytochemical Analysis of the Water and Ethanol Extracts of the Fruits and Leaves of Artocarpus Altilis (Bread Fruit) - Sebiomo, A., Banjo, F. M. & Fagbemi, F. T.	84-97
Effect of Multimodal Instructional Approache on Students' Performance in Integrated Science - Owiredu, J. K., Ankomah R., & Asamoah, E	98-104

Second-Hand Clothing Retail in the Cape Coast Metropolis - Ogoe, J.	105-114
--	---------

TEST ANXIETY AND SELF-EFFICACY AS PREDICTORS OF BIOLOGY PRE- SERVICE UNIVERSITY TEACHERS' ATTITUDE TOWARDS DIFFUSION AND OSMOSIS IN SOUTHWESTERN NIGERIA

By

¹Oladipo, A. J., and ²Ogundiwin, O. A.

¹University of Lagos, Akoka, Lagos Biology Unit, Distant Learning Institute,

²National Open University of Nigeria, Department of Science Education

Abstract

This study investigated test anxiety and self-efficacy as predictors of biology pre- service university teachers' attitude towards diffusion and osmosis in Southwestern Nigeria. The study adopted the survey research type of correlational design, in which 350 Pre-service teachers participated. Three instruments were used which included: Pre-service Teachers Biology Test Anxiety (PTBTA), Pre-service Teachers' Self Efficacy in Osmosis and Diffusion Questionnaire (PTSODQ), and Pre-service Teachers Attitude towards Osmosis and Diffusion Scale (PTAODS). Inferential statistics of Pearson Product Moment Correlation (PPMC) and Multiple Regression Analysis were also employed. The study revealed that there was positive significant relationship between Pre-service Teachers attitude to Osmosis and Diffusion and Pre-service Teachers Test anxiety ($r = .411$; $P < .05$). Same can be said about Pre-service Teachers attitude to Osmosis and Diffusion and Pre-service Teachers Self efficacy ($r = .641$; $P < .05$). The joint effect of the Pre-service teachers' test anxiety and self-efficacy on Pre-service teachers' attitude towards Osmosis and Diffusion was also significant ($F(2, 349) = 25.285$; $R = .693$, $R^2 = .480$, adj. $R^2 0.461$; $p < .05$). The study also concluded that both Pre-service Teachers Test anxiety and Pre-service Teachers Self efficacy in the order of Pre-service Teachers Self efficacy > Pre-service Teachers Test anxiety predict Pre-service teachers' attitude towards Osmosis and Diffusion

Keywords: Pre-service teachers, Attitude towards Osmosis and Diffusion, Self- efficacy and Test anxiety

Introduction

Osmosis and Diffusion are unifying concepts in all domains of biology. The idea that all living beings obtain materials from one or more cells and that all the materials are transported from cell to another completely changed the way humans understood the living world, its constitution, and its functioning. The extraordinary growth of knowledge in molecular and cellular biology over the past decade has made a basic comprehension of Osmosis and Diffusion fundamental to scientific literacy. The central concepts of Osmosis and Diffusion allow us to manage available information effectively and to make better decisions in our everyday life as regards health, disease prevention and treatment, nutrition, and excretion. Considering the importance of these basic biological

concepts, teaching Osmosis and Diffusion in University for Pre-service teachers is a necessary task but also a great challenge. Students in both Secondary and University classrooms experience difficulty in understanding basic knowledge about Osmosis and Diffusion. Even after students have completed mandatory levels of schooling, their knowledge remains fragmentary and inadequately integrated on the level of Osmosis and Diffusion [Dreyfus and Jungwirth (1989), Verhoeff (2003), DiCarlo (2006), Oladipo and Ihemedu (2017) and Carlan, Sepel, and Loreto (2013).

The concepts of Osmosis and Diffusion in biology are abstract, and the structures involved are Hand lens, which creates an obstacle in the process of effective learning. For example, using their senses, students cannot directly perceive and apply the process to metabolic, biochemical, or biophysical processes. These abstract subjects are typically taught in lecture classes, where Pre-service teachers are required to memorize information for the purpose of examinations. In many cases, specific declarative knowledge is satisfactory for the usual evaluation process at school. However, difficulties arise when students are asked to explain the functional relation between Osmosis and Diffusion processes and the functions of more complex Physiological processes (Palmero and Moreira (1999), DiCarlo (2006), and Oladipo (2009). If the questions posed require students to associate concepts or apply them to new situations, the students often do not perform as well.

The Philosophy of B. Sc. (Ed.) Biology Education programme is enshrined in the National Policy on Education and the Vision and Mission of the National University Commission (NUC) to produce quality Biology teachers. Specifically, the philosophy hinges on the production of high quality Biology teachers whose fundamental responsibility is to provide students with the knowledge and skills in Biological concepts and principles that will enable them make informed decisions regarding their environment notion, to maintain the ideals of our present society and to improve upon them for future purposes. In relation to this, Dignath, Büttner, and Langfeldt, (2008) concluded that, students with positive attitude towards the subject register better performance than those who had negative attitude. Those with positive attitude are motivated to work hard and this is reflected in the good marks scored in the examination.

Pre-service teachers' attitude towards Biology was viewed from the affective, cognitive and psycho-motive aspects of the learner's predispositions at school. The attitude of a learner to learning is a key to attitude without which low outcomes in the learner is inevitable. It generates mostly from within the learner but sometimes from external factors also. Some of these factors include test anxiety, self-efficacy, parental influence, personality of the subject teacher and the instructional strategy used for the teaching influences the intrinsic motivation of the learner, which is the attitude that comes from within, towards learning. Amongst them, the test anxiety and self-efficacy can make the subject appealing to the learners even if other factors are boring (Kristak and Nemec,2010). An unappealing classroom is virtually caused by the test anxiety created by the Pre-service teacher towards the subject, with low self-efficacy that do not encourage Pre-service teacher to contribute in the process of learning. This generates an attitude in them of not wanting to learn more and they virtually wish the lecturer leaves the classroom immediately and are always

happy when the course is skipped for the day. Also various researches carried out by Ukoh, (2012) in which students' attitude was affected by self-efficacy of Pre-service teachers in science show that the most presumption of the change in teaching Biology is the change in Pre-service teachers' attitude.

Test anxiety is one of the factors that is responsible for students' negative attitude towards learning of osmosis and diffusion sub-concept in Biology. A small level of anxiety is normal, but severe anxiety can be a serious problem (Huberty 2009) concluded that academic anxiety can become more detrimental over time, as a student's attitude towards subject suffers as the anxiety level related to certain academic tasks increases. A study carried out by Panadero (2017) on self-efficacy and test anxiety as correlates of academic performance among undergraduate Pre-service teachers of a University in Eastern Nigeria. Results showed a significant positive correlation between test anxiety and attitude and therefore recommend programs that will facilitate gains in self-efficacy as well as confident posture in approaching examination. According to Baxter (2010), irrational thought like this and their accompanying behaviour, play a big part in the onset of anxiety.

Test Anxiety is an overwhelming feeling of disturbance and distress among students globally and can be a devastating problem for them because it may impair their performance and their wellbeing later in life in the long run (Farooqi, Ghani, & Spielberger, (2012). As the anxiety levels of the students reduced through therapy their depression levels also reduced and this facilitated improved performance. This finding confirms the negative relationship between test anxiety and attitude, and agrees with the findings of Busari (2012), who also found anxiety to be negatively and significantly related to academic performance. The fact that the students' performance improved significantly after relaxation and cognitive therapy affirms their efficacy in managing test anxiety and improving attitude. A study carried out by Kumuyi (2014) on the relationship between test anxiety and attitude towards mathematics found that students exhibited higher anxiety levels before the examination in the subject. Pre-service teachers in the Biology education with anxiety problems tend to show lower levels of attitude, self-efficacy, and self-concept (Adeoye, 2014). Anxiety reduction requires the work of students, teachers, and parents together. According to Ibitoye, (2017), mindfulness meditation, metacognition, coping, teacher involvement, and test question order are anxiety reduction strategies that must be explored.

All students are entitled to an education in a positive environment. It is important for teachers to be aware of the signs of anxiety, and what can be done to ease students' anxiety. Furthermore, the severity of such anxiety increases as the examination approaches, and peaks on the night preceding the examination, (Tooranposhti 2011). According to Ibitoye (2017), evidences suggest that victims of anxiety in Biology suffer from lack of preparation for a test (as indicated by cramming the night before the examination, poor time management, failure to organize text information, poor study habit and worry about past performance in examinations) emanated from how friends and other students are doing and Perry, Stupnisky, Hall, Chipperfield, & Weiner, (2010) added the negative consequences of failure. According to Ibitoye (2017), test anxiety can affect the student by causing nervousness in terms of having difficulty in reading and

understanding the questions on the examination paper. It also involves having difficulty retrieving key words and concepts when answering questions and doing poorly in the examination even though the student knows the material. Bannert. (2009) had suggested that teaching student's self-regulation can reduce anxiety and improve attitude. Therefore, this study investigated the extent to which test anxiety and self-efficacy as predictors of biology pre-service university teachers' attitude towards diffusion and osmosis in southwestern Nigeria. The following questions were raised to guide the study:

1. What is the relationship that exists between Pre-service teachers' test anxiety, self-efficacy on Pre-service teachers' attitude towards Osmosis and Diffusion?
2. What is the joint contribution of Pre-service teachers' test anxiety, self-efficacy on Pre-service teachers' attitude towards Osmosis and Diffusion?
3. Which of the Pre-service teachers' test anxiety, self-efficacy on Pre-service teachers' attitude towards Osmosis and Diffusion?

Methodology

This study adopted the survey research type of correlational design. The population of the study comprised all the Pre-service Biology teachers in the Faculty of Education, Department of Science Education, Biology Unit in Southwestern Nigeria. Nigeria is stratified into six geo-political and Southwest was randomly selected from the six zones. One Federal University was selected from each of the seven states in the southwest geopolitical zone. From each of the University 50 Pre-service teachers were selected making a total of 355 Pre-service teachers participated in the study. The concept selected for this study was based on the curriculum contents approved by the Nigeria University Commission (NUC). Three instruments were used in this study. These are:

1. Pre-service Teachers Biology Test Anxiety (PTBTA)
2. Pre-service Teachers' Self Efficacy in Osmosis and Diffusion Questionnaire (PTSODQ)
3. Pre-service Teachers Attitude towards Osmosis and Diffusion Scale (PTAODS).

The internal consistency of the instruments was established using the Cronbach's Alpha formula and the values obtained were 0.968, 0.9561 and 0.82 respectively, indicating that the 3 instruments employed in the study were all reliable. Data were analysed using descriptive statistics of mean, standard deviation and simple percentage. Also inferential statistics of Pearson Product Moment Correlation (PPMC) and Multiple Regression Analysis were also used.

Results

Research Question 1: What is the relationship that exists between Pre-service teachers' test anxiety, self-efficacy on Pre-service teachers' attitude towards Osmosis and Diffusion?

Table 1 Correlation Matrix showing relationship between Independent Variables and dependent Variables.

Variables	Pre-service Teachers attitude to Osmosis and Diffusion	Pre-service Teachers Test anxiety	Pre-service Teachers Self efficacy
Pre-service Teachers attitude to Osmosis and Diffusion	1		
Pre-service Teachers Test anxiety	.411**	1	
Pre-service Teachers Self-efficacy	.641**	.259**	1
Mean	33.8000	28.9550	28.4600
S.D	5.9672	3.2490	7.0217

**Sig at 0.01 Level*Sig at 0.05 Level

The result in Table 1 shows that there is a positive significant relationship between Pre-service Teachers attitude to Osmosis and Diffusion and Pre-service Teachers Test anxiety ($r = .411$; $P < 0.05$). Pre-service Teachers attitude to Osmosis and Diffusion and Pre-service Teachers Self-efficacy ($r = .641$; $P < 0.05$). Also, the mean and standard deviation scores are shown.

Research Questions 2: What is the joint contribution of Pre-service teachers' test anxiety, self-efficacy on Pre-service teachers' attitude towards Osmosis and Diffusion?

Table 2: Summary of Regression Analysis of the Showing composite contribution of Combined Independent variables to Dependent variables.

Source variation	Sum of squares	Df	Mean square	F	Sig
Regression	3398.948	2	1699.474	25.285	.000
Residual	3687.052	347	10.6255		
Total	7086.000	349			

The result shows that the joint effect of the two independent variables (Pre-service teachers' test anxiety and self-efficacy) on Pre-service teachers' attitude towards Osmosis and Diffusion was significant ($F(2, 349) = 25.285$; $R = .693$, $R^2 = .480$, adj. $R^2 = 0.461$; $p < .05$). About 46% of the variation in Pre-service teachers' attitude towards Osmosis and Diffusion was accounted for by the independent variables.

Research Question 3: Which of the Pre-service teachers' test anxiety, self-efficacy on Pre-service teachers' attitude towards Osmosis and Diffusion?

Table 3: Multiple Regression Analysis Showing Contribution of the Independent variable to the Dependent Variable.

	Unstandardized Co-efficient		Standardized Co-efficient Beta	T.	Sig.
	B	Std Error	B		
Constant	9.830	5.746		1.711	.089
Pre-service Teachers Test anxiety	.480	.103	.262	4.660	.000
Pre-service Teachers Self efficacy	.493	.049	.580	10.156	.000

Table 3 reveals the relative contribution of each of the independent variables on the dependent variable as follows: Pre-service Teachers Test anxiety ($\beta = .262$, $P < .05$); Pre-service Teachers Self-efficacy ($\beta = .580$, $P < .05$); on Pre-service Teachers attitude to Osmosis and Diffusion the β weight of the relative contributions of the variables are: Pre-service Teachers Test anxiety ($\beta = .262$), Pre-service Teachers Self-efficacy ($\beta = .580$) Both Pre-service Teachers Test anxiety and Pre-service Teachers Self-efficacy in the order of Pre-service Teachers Self-efficacy > Pre-service Teachers Test anxiety predict Pre-service teachers' attitude towards Osmosis and Diffusion.

Discussions

There was a positive significant relationship between Pre-service Teachers attitude to Osmosis and Diffusion and Pre-service Teachers Self-efficacy. This is in support of the findings of Wagner (2005) and Fend and Scheed (2005) who reported that self-efficacy is a major determinant of attitudinal change, Taylor (2012) concluded that the belief that one can control stressful events is related to emotional well-being, successful coping, health behaviours, better performance on cognitive tasks, and a good health. It has even been linked to a lower risk of mortality. Specifically, Chan, (2016) found that "self-efficacy to regulate work and life" helped to explain the relationship between attitude and satisfaction enrichment, work-life balance. Researchers suggest that social self-efficacy is strongly correlated with shyness and social anxiety. Academic self-efficacy in relation to the study refers to the belief that one can successfully engage in and complete Osmosis and Diffusion academic tasks, such as accomplishing its aims, satisfactorily completing assignments, achieving a passing with a good grade, and meeting the requirements to continue to pursue one's major course of study even at Post graduate level.

There was a positive significant relationship between Pre-service Teachers attitude to Osmosis and Diffusion and Pre-service Teachers Test anxiety. This is in support of the findings of Bensoussan (2012) in his research found that Pre-service teachers' willingness to work with their lecturers to repair poor test scores has a positive effect on reducing test anxiety. For the purpose of the study, repair behaviour refers to what Pre-service teachers would like to do to make

themselves feel better after receiving a low grade on a test. Pre-service teachers' rated the following choices (listed from highest rated to lowest rated): correct incorrect responses to improve grade, answer extra credit questions, take a different test, any of the listed choices, have a one-on-one discussion with the teacher, discuss the test as a class, nothing, and correct incorrect responses without improving the grade. The data show that Pre-service teachers' put the highest preference on improving their grades. In addition to rating the repair behaviours, Ukoh (2012) asked students to give suggestions about what would help their overall feels about testing. The results show that Pre-service teachers did not mind doing extra work if it meant improving their grades. When Pre-service teachers felt they were getting the attention and support of their lecturers, they felt less anxiety. Many Pre-service teachers suffer from test anxiety because of a lack of study skills. Teaching test taking skills and study skills address the issues before becoming big problems.

Conclusion

The findings of these study show that the Self-Efficacy and Test anxiety are important factors to reckon with if we want to develop positive attitude towards the teaching and learning of Osmosis and Diffusion, Hence, they must be adequately taken into consideration in Pre-service Biology class.

Recommendations

Based on the findings, the following recommendations are made:

1. Lecturers of Biology Education should be exposed to periodic in-service training programmes, seminars, workshops, and conferences to develop their skills in identifying Pre-service teachers with Test anxiety and low self-efficacy, thereby provide antidote that will reduce the test anxiety and raise the self-efficacy of the concerned Pre-service teachers. Training cognitive change techniques, how thoughts create feelings, techniques of differentiating thought from fact, emotional and cognitive factors of test anxiety
2. Lecturers should get the attention of their Pre-service teachers, and support them in order to solve the Test anxiety and low self-efficacy problem. Working on emotion symptoms, identifying negative self-talk, conflicting negative automatic thoughts, recording thinking skills.
3. Many Pre-service teachers suffer from test anxiety because of a lack of study skills. Discussing the test after the class with Pre-service teachers, identifying automatic thoughts, negative and irrational self-talk irrelevant to the task and test can also help. Lecturers need to create more tutorial classes for the low self-efficacy and test anxiety Pre-service teachers.
4. Anxiety evaluation techniques must be involved while teaching Pre-service teaches; this must also include techniques of ignoring the problems. Lecturers should select techniques and strategies sensitive to levels of self-efficacy, these strategies could be used in selecting Pre-service teachers during entrance examinations and during interviews where different self-efficacy levels are required

5. Pre-service teachers should change and correct faulty beliefs in order to replace negative thoughts with positive ones.

References

- Adeoye, T. O. (2014) Effects of Pictorial and Written Advance Organizers on Students' Achievement in and Attitude to Biology in Selected Senior Secondary Schools in Ibadan, Nigeria. Unpublished M.Ed Thesis, University of Ibadan, Ibadan. Pgs 10-17.
- Bandura, A. (1989). "[Human Agency in Social Cognitive Theory](#)" (PDF). *American Psychologist*.44 (9): 1175–1184. doi:10.1037/0003-066X.44.9.1175. PMID 2782727.
- Bandura, A. Self-efficacy in changing societies. Cambridge; New York: Cambridge University Press.
- Bannert,M.(2009) "Promoting self-regulated learning through prompts," *Zeitschrift fur Padagogische Psychologie*, vol. 23, no. 2, pp. 139–145, 2009. View at Publisher · View at Google Scholar View at Scopus
- Bensoussan, M. (2012). Alleviating Test Anxiety for Students of Advanced Reading Comprehension. *RELJ Journal*, 43(2), 203–216. doi:10.1177/0033688212449511
- Busari, A. O. (2012). Evaluating the relationship between gender age depression and academic performance among adolescents. *Scholarly Journal of Education*, 1, 6-12.
- Carlan, F. A., L. M. N. Sepel, and E. L. S. Loreto, "Explorandodiferentesrecursosdidáticos no ensino fundamental: umapropostapara o ensino de célula," *RevistaActa Scientiae*, vol. 15, pp. 323–338, 2013. View at Google Scholar
- Chan, Xi Wen; (2016)."[Work–family enrichment and satisfaction: the mediating role of self-efficacy and work–life balance](#)". *The International Journal of Human Resource Management*.27 (15): 1755–1776. doi:10.1080/09585192.2015.1075574. ISSN 0958-5192.
- DiCarlo S. E. (2006) "Cell biology should be taught as science is practised," *Nature Reviews Molecular Cell Biology*, vol. 7, no. 4, pp. 290–296, View at Publisher · View at Google Scholar · View at Scopus
- Dignath, C., Büttner, G., and Langfeldt, H. (2008). How can primary school students learn self-regulated learning strategies most effectively? A meta-analysis on self-regulation training programmes. *Educ. Res. Rev.* 3, 101–129. doi: 10.1016/j.edurev.2008.02.003
- Dreyfus A. and E. Jungwirth, "The pupil and the living cell; a taxonomy of dysfunctional ideas about an abstract idea," *Journal of Biological Education*, vol. 23, no. 1, pp. 49–55, 1989. View at Google Scholar
- European Journal of Scientific Research (2011), ISSN 1450-216X Vol.49 No.3 pp.421-425 © EuroJournals Publishing, Inc. 2011 <http://www.eurojournals.com/ejsr.htm>
- European Scientific Journal May edition vol. 8, No.10 ISSN: 1857 –7881 (Print) e -ISSN 1857-7431 173

- Fend, H and Scheed, K (2005). Engaging students; an examination of the strategies on self-efficiency and course climate in a no majors physics course. Division of Educational Studies at Ebony University
- Farooqi, Y. N., Ghani, R., & Spielberger, C. D. (2012) Gender differences in test anxiety and academic performance of medical students. *International Journal of Psychology and behavioural Sciences*, 2, 38-43.
- Gbolagade, R.O. (2009). The impact of constructivist-model based learning programs on preservice teacher's knowledge and attitude; classroom practice and students teaching outcome in junior secondary school mathematics: an unpublished Ph.D. thesis, University of Ibadan
- Hanc J. and Degro J, (2007). Standardized conceptual and altitudinal test in biology education
- Huberty, T. J. (2009). Test and performance anxiety. *Principal Leadership*, 10, 12–16. Retrieved from <http://www.nasponline.org/>
- Kristak,I and Nemec, M. (2010). Modern methods applied in Teaching Biology. *Communications: scientific letters of the University of Zilina*, 12.3: 72-74
- Kumuyi T.O (2014) The effects of visual spatial and tactile learning strategies on secondary school student mathematics learning outcome in Ondo state Unpublished M.Ed Thesis, University of Ibadan, Ibadan.pg 23-32
- McAlister, A. L, Perry, C. L, Parcel, G. S (2008). "How Individuals, Environments, and Health Behaviors Interact: Social Cognitive Theory". *Health Behavior and Health Education: Theory, Research, and Practice* (4th ed.). San Francisco, CA: John Wiley & Sons, Inc. pp. 169–188.
- Nelson, J. M., & Harwood, H. (2011). Learning disabilities and anxiety: A meta-analysis. *Journal of Learning Disabilities*, 44 (1), 3–17. doi:10.1177/0022219409359939
- Owens, M., Stevenson, J., Hadwin, J. A., & Morgate, R. (2012). Anxiety and depression in academic performance. An exploration of the mediating factors of worry and working memory. *School Psychology International*.doi:10.1177/0143034311427433
- Ogundiwin, O. .A. (2013); Effect of pre-theoretic intuition quiz and puzzle-based critical thinking motivation strategies on students learning outcomes in selected environment related concepts, in biology. Unpublished Ph.D Thesis University of Ibadan. Pg. 38-40
- Oladipo, A. J. (2009). Enhancing senior secondary school students' cognitive achievement in selected Biology concepts using Mercedes Model with embedded assessment strategy Unpublished Ph.D Thesis, Faculty of Education, University of Lagos
- Panadero E (2017) A Review of Self-Regulated Learning: Six Models and Four Directions for Research. *Front. Psychol.* 8:422. doi: 10.3389/fpsyg.2017.00422
- Palmero M. R. L. and M. A. Moreira, "Modelos mentales de la estructura y el funcionamiento de La célula: dos estudios de casos," *Investigações em Ensino de Ciências*, vol. 4, no. 2, pp. 121–160, 1999. View at Google Scholar

- Perry, R.P.; Stupnisky, R.H.; Hall, N.C.; Chipperfield, J.G.& Weiner, B.(2010). “Bad starts and better finishes: Attributional retraining and initial performance in competitive achievement settings”. *Journal of social and clinical psychology*. 29(6): 668-700
- Taylor, E.W. (2012). *Transformative learning theory*. New Directions for Adult and Continuing Education. Jossey-Bass. pp.5–15.
- Tooransposhti, M. G. (2011). A new approach for test anxiety treatment, academic achievement and meta cognition. *International Journal of Information and Education Technology*, 1, 221-229.
- Ukoh, E. E. (2012). Effects of problem-based learning and interactive- intervention instructional strategies on NCE pre-service teachers’ achievement in physics; *A journal in research in curriculum studies*, 9.1.
- Vauras, M., and Volet, S. (2013). “The study of interpersonal regulation in learning and its challenge to the research methodology,” in *Interpersonal Regulation of Learning and Motivation*, eds S. Volet and M. Vauras (London: Routledge).
- Verhoeff R. P., *Towards Systems Thinking in Cell Biology Education*, Coeur d'Alene Press, Utrecht, The Netherlands, 2003.
- Wagner, K.V. 2005. Self-efficiency – psychology definition of the week. In Wang, I. Spalding, E. Odell, S. Kleckae and Lin, E. 2010. Bold ideas for improving teacher education and teaching: what we see, hear and think. *Journal of teacher Education*. Retrieved 15 Feb. 2011.
- Wiśniewska, M., Goryńska, E., & Strelau, J. (2011). Mood change in a stressful exam situation: The modifying role of temperament and motivational tendencies. *Personality and Individual Differences*, 52, 839–844. doi:10.1016/j.paid.2012.01.009

CONTENTS

Leveraging Usage Patterns of Mobile Devices for Enhanced Learning - Kwaa-Aidoo, E. K. & Agbeko, M.	1-10
Radiological Assessment of Natural Radionuclides Exposure To Individuals in Motor Parks From Surface Soils At Ijebu - Ode in Nigeria - Sowole, O. & Amodu F. R.	11-20
Prevalence and Intensity of Urinary Schistosomiasis in School Age Children in Yewa North Local Government Area of Ogun State. Nigeria. - Adewoga, T. O. S., Emikpe, B. O., Morenikeji, O. & Adediran O. A.	21-27
Nutritional Status of School Children in Ijebu-Ode Local Government Area, Ogun State, Nigeria - Akano, R. A., Sanusi, R. A. & Oladoyinbo, C. A.	28-35
Using Some Conceptual Change Approaches to Strengthen Grade 11 Students' Conceptions about Acid Strength - Hanson, R. & Seherri-Jele, N.	36-43
Perceived Motivation for Students' Academic Performance in Vocational Education Career - Oyenuga, A. O., Lemo, O. O. and Olunusi, P. A.	44-50
ICT, Educational Development and Poverty Nexus in Africa - Nosiru, O. M. O., Banjo J. O. S. & Odusina O. A.	51-61
Proximate Analysis, Mineral Composition and Microbial Quality of Selected Edible Insects in Ijebu-Ode Local Government Area, Ogun State - Banjo, F. M. & Sebiomo, A.	62-73
Test Anxiety and Self-Efficacy as Predictors of Biology Pre- Service University Teachers' Attitude towards Diffusion and Osmosis in Southwestern Nigeria - Oladipo, A. J., and Ogundiwin, O. A.	74-83
Antimicrobial Activities and Phytochemical Analysis of the Water and Ethanol Extracts of the Fruits and Leaves of <i>Artocarpus Altilis</i> (Bread Fruit) - Sebiomo, A., Banjo, F. M. & Fagbemi, F. T.	84-97
Effect of Multimodal Instructional Approache on Students' Performance in Integrated Science - Owiredo, J. K., Ankomah R., & Asamoah, E	98-104
Second-Hand Clothing Retail in the Cape Coast Metropolis - Ogoe, J.	105-114

ISSN 2508 - 1144



9 772 508 114 008