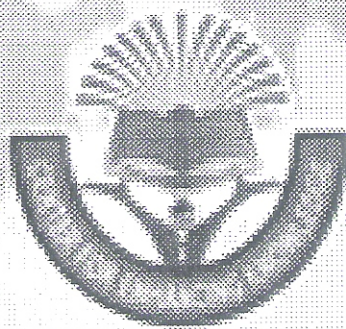


ISSN: XXXX-XXXX

European International Journal of Science and Technology



European International Journal of Science and Technology

Vol:1, No: 1

Vol: 2, No: 7 September, 2013

Selection of Polymer Based Packing Material in Packing of Hygroscopic Food Products for Long Period of Storage

[Full Text](#)
[PDF](#)

S. B Navaratne

REVISITING THE INVERTED PENDULUM ON A MOVING CART

[Full Text](#)
[PDF](#)

Spyros Andreou

Coagulation Efficacy of MoringaOleifera Seed Extract Compared to Alum for Removal of Turbidity and E. coli in Three Different Water Sources.

[Full Text](#)
[PDF](#)

P.N. Egbuikwem and A. Y. Sangodoyin.

The Application of Systems Theory in Teams of organization

[Full Text](#)
[PDF](#)

Michal Jenčo, Ph. D.

HEAVY METAL CONCENTRATIONS IN SURFACE WATER AND BIOACCUMULATION IN FISH (*CLARIAS GARIEPINUS*) OF RIVER OWAN, EDO STATE, NIGERIA.

[Full Text](#)
[PDF](#)

Enuneku, Alex^{1}, Ezemonye, Lawrence.I.², Adibeli, Frances³.*

PROBLEMS MILITATING AGAINST UTILIZATION OF ICT IN TEACHING OF BUSINESS EDUCATION IN NIGERIAN UNIVERSITIES

[Full Text](#)
[PDF](#)

¹Ohiwerei, Franklin Ohiole, ²Azih, N. and ³Okoli, B. E.

PROCESS OPTIMIZATION OF CRUDE PALM OIL BIODIESEL PRODUCTION BY RESPONSE SURFACE METHODOLOGY	Full Text PDF
<i>TanarkornSukjit, VittayaPunsuvon</i>	
Data Allocation and Transaction Processing in Distributed Database Systems	Full Text PDF
<i>Seyed H. Roosta</i>	
Demystifying Mathematics through Play: Lower Basic Education in focus	Full Text PDF
<i>OlaoyeAdetunjiAbiola (Ph.D)</i>	
Measuring of Light Polarization Patterns by Reflection	Full Text PDF
<i>JurajSlabeycius, Daniel Polčín</i>	
THE PUBLIC HEALTH RESPONSES TO HIV/AIDS IN VIETNAM	Full Text PDF
<i>Odyssey Tran Siu Fung Chung</i>	
MONITORING ROAD NETWORK GROWTH IN DEVELOPING COUNTRIES: A CASE OF ILORIN, NIGERIA	Full Text PDF
<i>Dr A.J. Aderamo</i>	
Using GIS and Remote Sensing in Urban Waste Disposal and Management: A Focus on Owo L.G.A, Ondo State, Nigeria	Full Text PDF
<i>Dr. Michael AjideOyinloye</i>	
Effects on Mouse Spermatogenesis and DNA Fragmentation Following Exposure to Cyclophosphamide	Full Text PDF

and Thymoquinone	
<i>SaheeraKamarzaman, MunirahSha'banandSuzanah Abdul Rahman</i>	
A review on the Spectroscopic Analyses of Biodiesel	Full Text PDF
<i>Sylvester O'Donnell, Innocent Demshemino, Muhammad Yahaya, IsiomaNwadike and Linus Okoro</i>	
Design of Air-Rover Undercarriage	Full Text PDF
<i>ManjulaGunawardenaBeng (Hons), Professor John E. Allan</i>	
Performance and Cost Evaluation of Finisher Broiler Birds fed Enzyme/yeast Supplemented Broiler Finisher Rations	Full Text PDF
<i>Obih .T.K., B.U. Ekenyem and M.D. GAGARIGA</i>	
DETECTION OF CRACKS IN LONG PAINTED OR RUSTED STEEL BEAMS USING ULTRASONIC RAYLEIGH WAVES	Full Text PDF
<i>Udaya B. Halabe¹ and Reynold Franklin²</i>	
Identifying Factors affecting the Severity of Asthma	Full Text PDF
<i>P.R.N.L. Peramuna¹, N.V. Chandrasekara², D.D.M. Jayasundara³</i>	
THE INTEGRATION INFORMATIONS SYSTEMS ON THE AIRPLANE	Full Text PDF
<i>FrantišekMartinec, Rudolf Volner</i>	
A Technical Analysis of Autonomous Floor Cleaning	Full Text PDF

Robots Based on US Granted Patents	
<i>Liu, Kuotsan, Wang, Chulun</i>	
Variation in Spacing of Laser Induced Ripples due to Varying Surface Tension and its Effect on Electrical Properties of Si	Full Text PDF
<i>MuneebIrshad, M. ShahidRafique, M. Khaleeq-ur-Rahman, M. Rafique, ShahbazMajeed</i>	

Demystifying Mathematics through Play: Lower Basic Education in focus

Olaoye Adetunji Abiola (Ph.D)

Department of Science & Technology Education

Faculty of Education

Lagos State University, Ojo,

Lagos State, Nigeria

E-mail: adetunji_abiola@yahoo.com

Phone: +2348055818120

Abstract

The study was conducted to determine the effect of game simulation on pupils achievement, attitude and practical skills in geometrical shapes at lower basic school levels in Ojo local government area of Lagos State. As a quasi-experimental study 2 schools comprising of forty pupils were randomly selected from the attendance register and taught geometrical shapes with one research question and hypothesis raised over three independent variables of the study at 5% level of significance. Instruments in the study included Observations schedule ($r=0.69$), Pupils' Interview schedule ($r=0.71$), Achievement test questions on geometrical shapes ($r=0.68$) and Attitudinal scale ratings ($r=0.83$) with teaching strategies for which some mathematics teachers were trained. With Multiple Analysis of Variance (MANOVA) used results indicated that that selection of an appropriate teaching strategy coupled with maturity level and attitude of students were found to make learning more interesting and had a significant effect on the academic achievement, attitude and practical skills of pupils ($F_{cal} > F_{tab}$, $df(1,5)$; $P < 0.05$). Study revealed that quack methods of teaching employed by mathematics teachers as well as personal negative attitude of the teachers constitute a restriction to the freedom of pupils to communicate either inside or outside the classroom setting, and as such contributed to the pupils' dismal performance in mathematics in general. Study observed further that quack teaching strategies employed by mathematics teachers often strengthened negative attitudes that pupils have towards mathematics. Based on these discussions, implication, conclusion, recommendation and suggestion for further studies were proffered to justify the efficacy of play in demystifying mathematics at lower basic level

Key words: Demystification, Mathematics, play-by-simulation, lower basic educational level

Background to the problem

Mathematics reform curricula around the world proposes ambitious sets of learning outcomes and instructional objectives. To achieve those instructional objectives appropriate tasks have to be implemented. This would enrich learners' mathematical knowledge and improve their reasoning. Kilpatrick (2001) suggested five interwoven strands of proficiency, which include conceptual understanding, procedural fluency, strategic competence, adaptive reasoning and productive disposition. These strands add reasoning, connections and communication practices to the conventional construal of mathematics learning as procedural and conceptual. Mathematics researchers converge on the nurture of these skills in class, to promote mathematical reasoning and to nurture these skills is to select and implement tasks that afford their

development. Majority of the pupils that have difficulties in understanding the concepts in Mathematics among which is geometrical shape, existed as a result the past encounter in some mathematical concepts like recall in geometry, which many found as unpleasant and difficult experience. These two facets of learning often make the entire subject to be difficult for the students to show more commitment towards achieving the main goal of the Education in general. When students find it difficult/impossible to understand an aspect of a topic, they resort to rote memorization, and this experience is in total contrast to the expected experience which such topic was designed to achieve. This serves as a pointer why geometry is considered as one of school mathematics topics that is associated with unpleasantness and lack of comprehension. Various attempts to suggest the rationale behind this syndrome were attributed to the inadequate school geometry curriculum as well as the selection of inappropriate mathematics teaching strategies.

Though classroom teachers may not be absolutely isolated from any lapse that might affect the level of achievement of pupils in the school system, and in particular concept in mathematics as the training purposively received has shown that best methods to teach geometrical shapes among must have been known to them while on the training level, yet most teachers might still be dumb-founded on how best pupils learn geometrical shapes, and which method or strategy of teaching geometrical shapes is most preferred to enrich learning by the pupils. There is no doubt that the knowledge of these methods might help in working out a teaching-learning strategy as recent research works have shown that it is not educationally sound for a teacher to commit oneself to any particular method. The merits and demerits of various methods should guide teacher and help to improve teaching skills. Teachers adopt an approach by considering the nature of the children, their interests, level of maturity and the resources available to enrich pupils' knowledge of a particular topic at a point in time. For instance in a lecture method, teacher speaks continually through the lesson while the pupils listen attentively and silently. The teacher may not even use the blackboard or any other teaching aid but he might not allow pupils to raise their doubts or ask questions for seeking clarification on any points mentioned during the lecture. Pupils take down notes on important ideas thereafter memorize them towards impending examination. As a traditional method of knowledge dissemination, lecture method is useful in introducing new topics in Mathematics where emphasis is based on previous knowledge of facts. This method could be used to teach topic requiring some previous knowledge of facts with large number of facts been presented in a short period of time. This method takes the form of "one man's (the teacher's) show" where the pupils remain passive. In the method, child's participation, experimentation and scope for enabling him to discover/explore are totally neglected. This method should be followed with care and for limited objective only as and when the teacher finds it unavoidable. Since the study of mathematics encourages thinking and reasoning and not mere memorizing bits of information through repeated practice or drill, this method might be appropriate for the slow learners. On the other hand, Inductive-Deductive methods allow for reasoning in which a general law is derived from a study of particular objects or specific processes. The child uses measurement, manipulates or construct activities, patterns etc. to discover a relationship which helps to formulate in symbolic form a law or rule. The law or rule formulated is the summation of all instances that lead to possible generalization that lead to credible and tentative conclusion. Deduction allow the acceptance of law, which in turn apply to number of specific examples. The child does not discover the law but develops skills in applying the law, proceeds from general to particular or abstract to concrete; and in actual practice, the combination of induction and deduction are practised to foster the laws discovered by pupils inductively, further verified deductively through applications to new situations.

Heuristic method named as the 'discovery method'. It is in contrast to the lecture method as teacher allows students find out everything for themselves. It demands complete self-activity and self-learning on the part of the student. Student learns to reason as teacher is not compulsorily required to guide, help or encourage

the student. It helps in the development of a scientific attitude in the learner, promotes self confidence, originality, independence of judgement and thinking power in learner and thereby make him an ever successful one. However, the method in its extreme form is not appropriate and desirable when one consider the relationship between maturity and age of child in learning specific cocept that demand adult guidance since a child might be ignorant of all various activities to could produce the desiable results.

Play is a natural instinct of the children, and commonly used for teaching among pupils to explore environment. While playing pupils recognize their own needs, help in planning activity, accept guidance, and set up their own goals. Through their mutual cooperation and participation maximum learning is achieved. During play, learning becomes real, interesting and easily adjustable to an individual needs. Learning process becomes interesting and the atmosphere is informal and familiar for children. Method helps in developing desirable attitudes and skills as it gives confidence to learners. Different types of games and toys available to children have their roots in mathematical concepts/ideas, and these games use patterns, quizzes and puzzles. Infact various types of dominoes, number checkers, and counting frames, patterns of magic squares, puzzle boards or blocks are commercially available to enhance learning among the children. These might be effectively used for teaching in the classroom. Method is often regarded as the activities based one that include a sort of fun or play and give joy to the pupils. Pupils do not realize that they are learning but in a way they are gaining knowledge through participating in different activities. This method helps to develop interest in mathematics, motivates pupils to learn more and reduces the abstract nature of the subject to some extent.

Effective learning environments plays an important role in supporting organizational learning, changing individual and social interpretation patterns of reality, developing knowledge and competencies, and changing the sociotechnical systems of an organizations. This describes game simulation as a design-in-the-small approach that has always been a powerful method and instrumental in modeling and changing social systems while aiming at their sustainable development. Game simulation as an interactive-learning environment that propels the principles of problem-oriented learning into action, and enhances a shift of existing organizational cultures and structures thereby contributes to the design-in-the-large processes of organizations (Kriz, 2003). A simulation game attempts to copy various activities in "real life" in the form of a games for various purposes: training, analysis, or prediction. There are no strictly defined goals in the game, just running around and playing as a character. Well-known examples are war games, business games, and role play simulation. This is why Twelker (1972) described the method as the best part of simulation that has potential for changing teachers into more creative instructors of their pupils. The study explored simulation as an interactive-learning environment and an aspect of play way method to ascertain the extent the approach could ameliorate difficulties encountered in understanding some mathematical concepts most especially geometrical shapes at primary school levels.

Empirical Framework

Previous researches had shown that pupils's progress is as a result of direct experiences they have with geometrical concepts; and without appropriate experiences, this progress through their levels might not occur. Unfortunately school geometry curricula have until very recent included a few of the right kinds of experiences. Elementary and middle school geometry curricula have included too many low-level experiences in which learners are simply asked to learn shapes and names of other geometrical objects. In high school pupils are expected to learn geometric reasoning along with proofs. A typical elementary school curriculum keeps children at a low level of development while high school mathematics curriculum unreasonably expects pupils to jump to a high level of development. For most people this jump is impossible and their geometric development and thinking are thwarted. Until very recent when school curricula were

foundation of mathematics with the children as bad foundation laid could not be easily corrected by the professional ones later in life due to multiplier effect. What children learn at the tender age goes beyond that stage for anyone to correct at ease at later stage in life if not corrected immediately.

Suggestion for further studies

Different subjects constitute the nation curriculum so is the different topics that constitute the entire school subject, the study could be conducted in other school subjects where it has been identified with pupils' dismal performances. Apart from that study could be conducted in the same mathematics among different topics but at different levels to corroborate the findings of the present study. Also, intra-study of two related disciplines like Integrated Science and Mathematics, English and Literature could be used as blue print and use as case study towards the efficacy of simulation method teaching and learning, with a view to understand the relative contribution of the present study to knowledge.

References

- Ball, D.L. & Bass, H. (2003) Making Mathematics reasonable in school. In J. Kilpatrick, W.G. Martin & D. Schifter (Eds.), *A research companion to principals and standards for school Mathematics* (pp. 27-44) Reston, VA: National Council of teachers of Mathematics.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (1999). *How people learn: Brain, mind, experience, and school*. Washington, DC: National Academy Press.
- Cole, M. (1996). *Cultural psychology: A once and future discipline*. Cambridge, MA: Belknap Press of Harvard University Press.
- Dewey, J. (1916). *Human nature and experience*. New York: Holt.
- Geisel, T. S. (1960). *Green eggs and ham*. New York: Random House.
- Greenfield, P. A., & Cocking, R. R. (Eds.). (1994). *Cross-cultural roots of minority child development*. Hillsdale, NJ: Erlbaum.
- Grimes, N. (1994). *Meet Damitra Brown*. New York: Lothrop, Lee & Shepard.
- Hollins, E. R. (1996). *Culture in school learning: Revealing the deep meaning*. Mahwah, NJ: Erlbaum.
- Kennedy, M. M. (1999). The role of preservice teacher education. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 54-85). San Francisco: Jossey-Bass.
- Lave, J. (1988). *Cognition in practice*. Cambridge: Cambridge University Press.
- Luria, A. R. (1928). The problem of the cultural development of the child. *Journal of Genetic Psychology*, 35, 493-506.
- Portes, P. (1996). Ethnicity and culture in educational psychology. In D. C. Berliner & R. C. Calfee (Eds.), *The handbook of educational psychology* (pp. 331-357). New York: Simon, Schuster Macmillan.
- Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.
- Rogoff, B. (2003). *The cultural nature of human development*. New York: Oxford University Press.
- Sheets, R. H. (1997). Racial and ethnic awareness: Affirming identity. In J. Carnes and R. H. Sheets (Eds.), *Starting small: Teaching tolerance in preschool and the early grades* (pp. 16-21). Montgomery, AL: Teaching Tolerance Project.
- Sheets, R. H. (1998b). *Ethnic identity behavioral displays and competence in an urban kindergarten: Implications for practice*. (Unpublished Sheets 2005)

- Sheets, R. H. (2005). *Diversity pedagogy: Examining the role of culture in the teaching-learning process*. Boston: Allyn & Bacon.
- Sullivan, P., & McDonough A. (2002). Teachers differ in their effectiveness. In A. D. Cockburn, & E Nardi (Eds.), *Proceedings of the 26th conference of the international group for the Psychology of Mathematics Education* (Vol 4, pp. 249-256). Norwich, UK: PME.
- Zimmerman, B. J., & Schunk, D. H. (Eds.). (2001). *Self-regulated learning and academic achievement: Theoretical perspectives*. Mahwah, NJ: Erlbaum.