Academic Leadership: The Online Journal

7-1-2011

Computer-Assisted Programmed Instruction Revisited: A Study on Teaching Typewriting in Nigerian Higher Institution.

Alaba Agbatogun

PeterAyo Ajelabi

M. Oyewusi

Juliet Inegbedion

Academic Leadership Journal

[Computer-Assisted Programmed Instruction Revisited: A Study on Teaching Typewriting in Nigerian Higher Institution.](#)

Introduction

In the last few decades, technology has been a significant tool in almost all human endeavour (Hancer & Tiizemen, 2008). The integration of technology into education is a growing phenomenon; hence huge amount of money is being invested into Information and Communication technologies (ICTs) in education across the globe in order to ensure improved students' academic performance (Trautman & Klemp, n.d.). Since the development of various ICTs, computer technology has come to play significant roles in instructional process, thereby transforming the learning environment (Efendioghi & Yelken, 2010; Rosenberg, Grad & Matear, 2003). The hope and quality of achievements of nations nowadays is dependent on the science of technology innovations and the integration of appropriate technological devices in education. To improve the standard of education, adequate attention must be given to instructional techniques employed by the teacher. Instructional methods are process of cognitive, affective and psychomotor development targeted at contributing to students' performance (Uhumuavbi & Mamudu, 2009).

Computer hardware and software have become integral part of typewriting, but in order to remove students' difficulties in understanding the concepts and skills of typewriting, it has become necessary to enter the new self-instruction technologies which play important roles in improving quality of education. According to Rosenberg, Grad & Matear (2003), one of the methods of providing self-instruction is through Programmed Instruction (PI). There has been no independent universally accepted definition of PI (Lockee, Moore & Burton, n.d). PI is an instructional strategy in which learners are presented with small learning frames or pieces of information in logical sequence (Lee, 2004). Kurbanoghi, Taskesengsl and Sozbilir (2005) perceive PI as a coordinated information that enables students to work individually while information needed by students is presented in a way he finds it most helpful. Uhumuavbi and Mamudu (2009) further explained that with PI, learners' positive response is immediately reinforced and allowed to move to the next stage of learning. Owusu, Monney, Appiah and Wilmot (2010) remarked that PI is a complement of other teaching approaches.

Instructional process in most school subjects is witnessing a shift from the teacher- centered methodology to student-centered instruction as a result of the inestimable value of technology in education. Meanwhile, Sisko, Antoniou, Papaioannou and Laparidis (2005) argued that the increased acceptance of technology in schools is on the assumption of its educational benefits in education. Earlier studies indicated that PI provides interactive ways of presenting curriculum (Rosenberg, Grad & Matear, 2003); enhances learners' active participation (Kurbanoghi, Taskesengsl and Sozbilir, 2005). Furthermore, Iserameiya & Anyasi (2008) in a study of 80 junior secondary school students in Nigeria found that students were more creative and more interested in learning during introductory technology lessons.

Governments of developing nations like Nigeria often make frantic efforts towards enhancing quality education by employing qualified teachers, providing laboratory equipment and prompt payment of wages, but students' academic performance in typewriting is yet to improve satisfactorily. Though several approaches have been explored in developed nations to salvage poor academic performance in school subjects, but it appears there is a dearth of research in Nigeria on students' learning typewriting through Computer Assisted Instruction. This study therefore is coined at investigating the differences of success of PI with the conventional teaching approach on learning typewriting in Nigeria..

Research Question and Hypotheses

In order to carry out this study, the following hypotheses and research question were raised:

(1).There will be significant difference in the pre-test mean scores of students in experimental and control groups.

(ii). There will be significant difference in the post-test mean scores of students in experimental and control groups.

(iii) There will be significant difference in the post-test mean scores of students exposed to Computer-Assisted Programmed Instruction (CAPI) based on gender.

(iv). What is the attitude of the students in the experimental group to CAPI?

Methodology

Sample

The sample for this study consisted of 66 undergraduates (Male = 29, Female = 37) of Lagos State University, Nigeria. All the participants were year one students enrolled in Secretarial Studies in the university's satellite campus at Anthony Study Centre in Lagos State. The participants were recruited from year one Secretarial Studies students who had no previous knowledge of typewriting. At first, all year one Secretarial Studies were given a pre-test (speed and accuracy test) in order to identify those without pre-knowledge of typewriting. Amongst the identified group of students, a simple random selection of sixty six of them was made to constitute the sample for the study. The selected sixty six students were then split into two groups as experimental and control groups.

Design

The study explored quasi-experimental pre-test post-test non-equivalent control group design. The experimental group (N = 34; Male = 15, Female = 19) were exposed to Computer Assisted Programmed Instruction in the computer laboratory, while the control group (N = 32; Male 14, Female = 18) were taught in the typing pool using the conventional-traditional typewriters.

Research Instruments

The research instruments used in this study were:

Typewriting Achievement Test (TAT)

This test was designed by the researchers to test the learners' speed and accuracy, understanding of headings, paragraphs and business letters. TAT was administered to the experimental and control groups as pre and post achievement tests. Practical questions were drawn to cover the first four levels of cognitive domain as specified by Bloom (1956).

Typewriting Lesson Notes

This was prepared to guide the instructional process during typewriting lectures. The topics of the traditional lessons notes were structured to reflect the content of the Typewriting Programmed package of Mavis Beacon.

Typewriting Programmed Instruction

The Typewriting Programmed Instruction used in this study was prepared by Mavis Beacon in 1999. The Computer software is titled "Mavis Beacon teaches typing." This software was classified into five sections – general introduction, keyboard mastering, speed and accuracy, production work and audio typing. The programme was designed in a linear form, which gives opportunity to students to think and respond to instructions. It goes from simple to complex. Meanwhile, In order to ascertain the validity and reliability of this instrument, the software package was given to two lecturers of Business Education to ascertain its validity. It was observed that students might not be able to use the audio typing effectively because of the speaker's accent; hence it was suggested that students should be given phonic training before using the package and if not the audio typing section should be excluded from being part of the content. The latter suggestion was eventually adopted in the process of undertaking the study. Thirty-two (32) students who had no previous knowledge in typewriting from Mass Communication Department, Lagos State University, Ojo (Anthony Centre), Nigeria were randomly selected for the pilot study of the software. The students were given the compact discs (CDs) to work with for a period of three weeks. A test was conducted to reflect what has been learnt. From the scores obtained, the Spearman-Brown split-half reliability co-efficient was used to test for the reliability. A reliability estimate of 0.92 was obtained.

Students' Interview Guide (SIG)

Students' Interview Guide was a semi-structured interview guide constructed by the researchers. This instrument was designed to elicit information about the students' attitude towards the use of PI in teaching and learning typewriting. Meanwhile, ten students from the experimental group were randomly selected and interviewed individually by the researchers to find the impact of PI on instructional process from the students' points of view. Responses of the students were audio-recorded, transcribed and later analysed descriptively.

Administration

The treatment took place during typewriting classes and was completed in a total of in a total of twelve lecture hours in six weeks (two lecture hours per week). Each lecture lasted one and half hour. The control group was taught with the traditional method of teaching typewriting, which was mainly delivered by lecturing, and the use of traditional typewriters. In the experimental group, where programmed instruction was administered, the students did not receive any direct teacher instruction on typewriting; rather they interacted independently with the Computer Assisted Programmed Instruction "Mavis

Beacon teaches typing." in a computer laboratory with the presence of a researcher who did not give any guidance. When the treatment was completed, both the control and experimental groups were given achievement test as post-test. Moreover, students' views about the programmed instruction were gathered from the experimental group. For this purpose, Semi-structured interview was conducted on randomly selected students in the CAPI group..

Data Analysis and Results

The quantitative data collected in this study were analysed at 0.05 significant level using independent t-test, while the qualitative data were analysed descriptively.

Results

Table 1

Pre-test Means, Standard Deviation of Experimental and Control Groups

Groups	N	Mean	Std. Dev.	t	p
Experimental	32	41.30	7.04	1.66	$>.05$
Control	34	41.29	6.98		

The results in Table 1 indicated no significant difference in the pre-test mean scores of both experimental and control groups *(t = 1.66, p $>$.05)*. This implies that the experimental and the control groups have the same entry knowledge at the commencement of the study. The hypothesis that "there will be significant difference in the pretest mean scores of students in experimental and control groups" is hereby rejected.

Table 2

Post-test Means, Standard Deviation of Experimental and Control Groups

Groups	N	Mean	Std. Dev.	t	p
Experimental	32	57.00	8.32	4.20	$<.05$
Control	34	49.32	8.05		

The results in Table 2 indicated that there is a significant difference in the post-test mean scores of both experimental and control groups *(t = 4.20, p <.05)*. The implication of this result is that students exposed to Computer Assisted Programmed Instruction had higher mean score than those in the control group. The hypothesis which states that "there will be significant difference in the post-test mean scores of students in experimental and control groups" is hereby upheld.

Table 3

Post-test Means, Standard Deviation of Computer-Assisted Programmed Instruction Group by Gender

Groups	N	Mean	Std. Dev.	t	p
Male	15	40.05	7.03	1.65	>.05
Female	19	41.32	6.59		

The results in Table 3 indicated that there is no significant difference in the post-test mean scores of both male and female students exposed to Computer Assisted Programmed Instruction *(t = 1.65, p >.05)*. It is however obvious from the above table that the female students obtained a slightly higher post-test mean score which does not make any significant difference when compared to that of male students. The implication of this result is that the academic performance of students exposed to Computer Assisted Programmed Instruction is not gender determined. The research hypothesis which states that "there will be significant difference in the post-test mean scores of students exposed to Computer-Assisted Programmed Instruction based on gender" is hereby rejected.

Interview Results for CAPI Group

Notable findings from interview with the students exposed to Computer Assisted Programmed Instruction are described below:

Students were asked if they had been engaged in learning typewriting with such software. All the students indicated that they had never been engaged in learning through the use of such software.

Students were asked if learning typewriting through the software has increased their interest in typewriting. 95% of the students indicated positive disposition towards learning typewriting as a result of their exposure to CAPI.

Students were asked of their feelings about the mode of feedback received while being exposed to CAPI during typewriting lessons. 97.6% of the students interviewed agreed that the programmed instruction mode of feedback improved their understanding and performance in typewriting because they had opportunity to repeat given tasks until satisfactory attempt was made.

Students were also probed of their views about learning satisfaction derived in CAPI environment. 96.8% of the students claimed that CAPI environment was a comfortable and an enabling learning environment. And that they would have shown interest in learning typewriting if learning typewriting through CAPI has been its mode of teaching and learning; hence they preferred learning typewriting through the use of CAPI.

Discussion

This study investigated the effects of Computer Assisted Programmed Instruction on Nigerian students' learning outcomes in typewriting. Summary of findings are:

- There was no significant difference in the pre-test mean scores of experimental and control groups.

- There was a significant difference in the post-test mean scores of both experimental and control groups.

- There was no significant difference in the post-test mean scores of students exposed to Computer Assisted Programmed Instruction based on gender.

- Majority of the students were positively disposed to learning typewriting using CAPI.

It is obvious from the analysed results of this study that no significant difference in the pre-test mean scores of experimental and control groups was observed. This outcome corroborates the research finding of Hancer and Tiizemen (2008) which indicated that the entry performance of both intervention and control groups were at par. One major factor that might have contributed to this research outcome was the fact that the participants in the two groups were homogeneous, because all of them were greenhorns in typewriting; hence the tendency of the two groups sharing a common ground of typewriting experience is not strange.

The results of the study showed that there was a significant difference in the post-test mean scores of students taught typewriting through CAPI and those that were taught typewriting conventionally. This finding corroborates the research outcome of Hancer and Tuzemen (2008) which observed that there was a significant difference in the post-test scores of students exposed to computer assisted instruction and those of the control group. Similarly, the outcome of this study is in congruence with the findings of some other researchers which indicated that students who were exposed to computer programmed instruction showed progressive improvement in their academic performance when compared to their counterparts who were taught by traditional methods (Davis, Bostow & Heimisson, 2007; Emurian & Zheng, 2010; Iserameiya & Anyasi, 2008). Conversely, the outcome of this study is at variance with the research outcome of Owusu, Monney, Appriah and Wilmit (2010) which indicated that the introduction of programmed instruction to learners did not make any significant difference in their pre and post intervention performances. That CAPI made significant difference in learners' performance in typewriting in this study unveils the deficiencies inherent in the traditional instructional method; limited interaction between the learners and the teacher as well as amongst learners and ineffective feedback to the students.

Another finding of this study was that there was no significant difference in the post-test mean scores of students exposed to Computer Assisted Programmed Instruction based on gender. That the performance of students exposed to CAPI was not gender driven tallies with the findings of earlier researcher (Efendioglu & Yelken, 2010; Hanzer & Tiizemen, 2008; Kurbanoglu, Taskesenligil & Sozbilir, 2005). Meanwhile, the outcome of this study might have been so because students in developing nations such as Nigeria irrespective of gender are striving to acquire appreciable level of literacy in Information and Communication Technologies' (ICTs) use in view of the labour market demands for computer-technology literate workforce. To this end, the digital divide that was so pronounced among male and female students is gradually fading away.

The finding of this study further revealed that majority of the students had positive disposition and attitude towards learning typewriting through the use of CAPI. The outcome of this study tallies with the

finding of Efendioglu and Yelken (2010) which indicated that learners were positively disposed to learning through programmed instruction.

Conclusion

In view of the increase in technology innovations and advancements, the demand for typing education has been on the increase. People are beginning to realize the fact that competency is required in typewriting skill in order to succeed as Information and Communication Technology users. A lot of people are getting more interested in typewriting, not only because of the demand, but also because of the simulations built into it.. Moreover, it is obvious that with CAPI as a teaching device during typewriting lessons, students can learn at their own pace, rate and convenience. That students had positive attitude towards learning typewriting through CAPI is an indication that hope is not lost on the teaching and learning of typewriting which is almost loosing patronage in schools and higher institutions of learning.

References

Beacon, M. (1999). *Mavis Beacon Teaches Typing*. United Kingdom: Winter Tree Software Inc.

Davis, D. R., Bostrow, D. E., & Heimisson, G. T. (2007). Strengthening scientific verbal behavior: An experimental comparison of progressively prompted and unprompted programmed instruction and prose tutorials. *Journal of Applied Behavior Analysis*, 40, 179-184. doi: 10.1901/jaba.2007.93-05.

Efendio_glu, A., & Yelken, T. (2010). Programmed instruction versus meaningful learning theory in teaching basic structured query language (SQL) in computer lesson. *Computers & Education*, 55, 1287-1299. doi:10.1016/j.compedu.2010.05.026

Emurian, H. H., & Zheng, P. (2010). Programmed instruction and interteaching applications to teaching Java: A systematic replication. *Computers in Human Behavior*, 26 (5), 1166-1175. doi:10.1016/j.chb.2010.03.026

Hançe, A. H., & Tüzemen, A. T. (2008). A Research on the Effects of Computer Assisted Science Teaching. *World Applied Sciences Journal* 4 (2), 199-205. Retrieved from http://www.idosi.org/wasj/wasj4(2)/8.pdf

Iserameiya, F.E., & Anyasi, F. I. (2008). Effect of programmed instruction on the academic achievement of students in introductory technology. *The Social Sciences*, 3 (5), 371-375. Retrieved from http://findarticles.com/p/articles/mi_m0FCR/is_2_43/ai_n31977589/

Kurbanoglu, N. I., Taskesenligil, Y., & Sozbilir, M. (2005). Programmed instruction revisited: a study on teaching stereochemistry. *Chemistry Education Research and Practice*, 7 (1), 13-21. Retrieved from http://www.rsc.org/images/sozbilirpaper_tcm18-46452.pdf

Lee, V.S. (Ed.) (2004). Teaching and learning through inquiry: A guidebook for institutions and instructors. Sterling, VA: Stylus Publishing

Lockee, B., Moore, D. M., & Burton, J. (n.d). Foundations of programmed instruction. Retrieved from http://institute.nsta.org/scipack_research/AECT_Foundations_Programed_Instruction_20.pdf

Owusu, K. A., Monney, K. A., Appiah, J. Y., & Wilmot, E. M. (2010). Effects of computer-assisted instruction on performance of senior high school biology students in Ghana. *Computers & Education*, 55, 904-910. doi:10.1016/j.compedu.2010.04.001

Rosenberg, H., Grad, H. A., & Matear, D. (2003). The Effectiveness of Computer-Aided, Self-Instructional Programs in Dental Education: A Systematic Review of the Literature. *Journal of Dental Education*, 67 (5), 524-532. Retrieved from http://www.jdentaled.org/cgi/content/abstract/67/5/524

Siskos, A., Antoniou, P., Papaioannou, A., & Laparidis, K. (2005). Effects of multimedia computer-assisted instruction (MCAI) on academic achievement in physical education of Greek primary students. *Interactive Educational Multimedia*, (10), 61-77. Retrieved from http://www.raco.cat/index.php/iem/article/viewFile/204573/273107

Trautman, T. (n.d.). Computer Aided Instruction and Academic Achievement: A Study of the *A+nyWhere Learning System* in a District Wide Implementation. Retrieved from http://www.amered.com/docs/dist159.pdf

Uhumuavbi, P. O., & Mamudu, J. A. (2009). Relative effects of programmed instruction and demonstration methods on students' academic performance in science. *College Student Journal*. Retrieved from http://findarticles.com/p/articles/mi_m0FCR/is_2_43/ai_n31977589/pg_10/

VN:R_U [1.9.11_1134]