

Effect of Gender on Academic Performance of Maritime Trainees in Nigeria Taught with Web-Based Resources

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Abstract
A research project was undertaken into the effects of utilization of Web-based resources and the academic performance of maritime trainees in Nigeria. This paper reports on the results of the aspect of the research which investigated the effect of gender on the academic performance of maritime trainees in Nigeria when Web-based resources are used for instruction. Pretest posttest non-equivalent control group design was employed using a total of forty maritime trainees, twenty participants each in the experimental and control groups, from the maritime industry in Nigeria. Findings showed that no significant difference exists between the academic performance of male and female maritime security trainees.

Introduction

The use of Web-based instructions in the training and certification of personnel in the maritime industry had not been acceptable until recently. However, the 2010 amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 as amended has recently introduced guidelines for maritime administrations (authorities) of party states to consider in approving distance and e-learning for training and certification of seafarers (International Maritime Organisation, 2010). The objective of the research that is reported in this paper was to determine the effect of gender and the academic performance of maritime trainees in Nigeria when Web-based resources are used for instructions (Okonna, 2011).

In the maritime industry, the very low involvement of women in, especially offshore and deep-sea shipping operations has been a source of concern to the international maritime community. This has also adversely affected gender sensitive studies involving the industry personnel. The statistics of only 2 female participants out of a total of 140 in the Maritime Security Course for senior personnel in Maritime Academy of Nigeria, Oron between the inception of the course in 2007 and December 2009 reveals a very low percentage participation in this course (1.4%) by females (Maritime Academy of Nigeria, Oron, 2009a). The International Maritime Organisation (IMO) has therefore been implementing a policy aimed at drawing more women to the industry and encourages contracting governments to execute policies to attract female participation in shipping including seafaring.

In line with the IMO, the Maritime Academy of Nigeria (MAN), Oron also has a policy of encouraging the admission of females for training in the institution. The statistics of graduations at MAN, Oron show that despite the low percentage intake of females into the programmes of the Academy, female best graduating cadets have been recorded in all the programmes in various years (MAN, Oron, 2009b).

Previous studies into gender effect on Web-based learning include the research by Hsu, Liao and Chen (2001). The authors employed the quasi-experimental method along with semi-structured interviews to investigate the effects of a Web-based lesson on science learning in the senior high school level. Three classes of second-year students from two senior high schools in Taipei (Taiwan) were selected as the participants for the study. A total of 110 students participated, including 49 males and 61 females. The authors reported that statistical results indicated that there were significant differences between male and female students on their conceptual progress before and after the experiment. The report did not however state whether males or females performed better.

However, in another research, Astleitner and Steinberg (2005) examined the published findings from research studies dealing with Web-based learning (WBL) and measured gender effects. The authors reported that based on the theoretical model of WBL which distinguishes between human, technology, and course characteristics as basis for instructional events, a meta-analysis of 14 empirical studies dealing with WBL and gender effects was conducted and results suggested that gender effects are insignificant at all levels of the postulated model. These findings were contradicted by the report of Hsu, Liao and Chen (2001) and therefore justify the need for further studies.

Research Question

This research was based on a single research question: How do male and female maritime trainees in Nigeria differ on academic performance when Web-based resources are used for instructions?

Hypothesis
The research was guided by the following hypothesis: There is no significant difference between the academic performances of male and female maritime trainees in Nigeria when Web-based resources are used for instructions.

Methodology
This study utilised the experimental group, consisting of 18 males and 2 females, in the research to investigate the effects of utilisation of Web-based resources and the academic performance of maritime trainees in Nigeria. The pretest and posttest academic performance of male and female trainees in the Web-based Instruction in Maritime Security (WBIMS) were obtained using the pretest and posttest versions of the Maritime Security Academic Performance Test (MSAPT). The reliability of MSAPT was determined using Kuder-Richardson's formula-21 and the result showed a high reliability coefficient of 0.77 (Okonna, 2011).

Results
The research question developed to guide this study was answered using the results in Table 1.

Table 1: Mean and standard deviation scores of trainees' pretest and posttest performance classified by gender

Gender	N	$\overline{X}$		SD		Mean
		Pretest	Posttest	Pretest	Posttest	gain
Male	18	24.17	60.28	14.48	20.25	36.11
Female	2	30.00	57.50	14.14	24.75	27.50
Total	**20**	**24.75**	**60.00**	**14.17**	**20.00**	**35.25**

Data on Table 1 reveals that the mean gain score 36.11 of male trainees is greater than the mean gain score 27.50 of female trainees. In order to ascertain if this difference was significant the mean and standard deviation were further subjected to the Analysis of Covariance (ANCOVA).

The hypotheses formulated as the basis for this study was tested at 0.05 significant level. The hypothesis was tested using the results in Table 2.

Table 2: Analysis of covariance of performances of male and female trainees taught with Web-based resources using pretest as covariate

Source of variation	SS	df	MS	F	Sign. at $p<.05$
Pretest (covariate)	5120.79	1	5120.79	37.64	000
Main effect	166.08	1	166.08	1.22	.285
Model	5286.87	2	2643.44	19.42	.000
Residual	2313.13	17	136.07		
Total	**7608.00**	**19**	**400.00**		

As presented in Table 2, the calculated *p* value of main effect .285 is greater than the alpha level .05. Therefore, the null hypothesis four cannot be rejected. This implies that there exists non-significant difference between the academic performances of male and female trainees in Nigeria when Web-based resources are used for instruction.

Discussion of findings
The objective of this study was to determine if male and female maritime trainees in Nigeria differ on academic performance when Web-based resources are used for instruction. It is found from the results in Table 1 that male trainees performed better than the female trainees, however, the difference is not significant as shown by analysis of covariance of performances of male and female trainees taught with Web-based resources using pretest as covariate in Table 2.
This finding from this study is supported by the finding of Astleitner and Steinberg (2005) who reported that gender effects are insignificant at all levels of Web-based learning. The finding is also supported by the finding of Topcu (2006) who reported that there was no significant gender difference in the online asynchronous

discussion performance when pre-service teachers' prior service success and their computer and Web experiences were controlled. The finding is however not supported by the earlier finding of Hsu, Liao and Chen (2001) who reported that there were significant differences between male and female students on their conceptual progress before and after their experiment on effects of a Web-based lesson on science learning in senior high school in Taipei, Taiwan.

Conclusion

Based on the findings of this research, it was concluded that there exists no significant difference between the academic performance of male and female maritime trainees when Web-based resources are used for instruction.

Recommendation

More female maritime personnel in Nigeria should be encouraged by the industry, particularly the Women's International Shipping and Trading Association (WISTA), to participate in maritime security instruction through utilisation of Web-based resources.

References

Astleitner, H. and Steinberg, R. (2005). Are There Gender Differences in Web-based Learning? An integrated Model and Related Effect Sizes. *AACE Journal,* 13(1): 47-63. Available at: linkinghub.elsevier.com/retrieve/pii/S1877042810000674, Date accessed 28/8/2010.

Hsu, Y. S., Liao, K. C. and Chen, C. C. (2001). *A Web-Based Lesson with Situated Learning in Senior High School Level.* Available at: www.eric.ed.gov/ERICWebPortal/recordDetail?accno=ED466592 http://www.ehow.com/about_4740750_define-academic-performance.html, Date accessed 20/6/2010.

International Maritime Organisation (IMO). (2010). Draft Amendments to Part B of the Seafarers' Training, Certification and Watchkeeping (STCW) Code. In: *Proceedings of the Conference of Parties to the STCW Convention held in Manila, Philippines,* June 21-25.

Maritime Academy of Nigeria (MAN), Oron (2009a). *Annual Reports on Maritime Security Courses between 2007 and 2009.* Unpublished reports of Maritime Academy of Nigeria, Oron.

Maritime Academy of Nigeria (MAN), Oron (2009b). *Maritime Academy of Nigeria, Oron: About the Academy: Location of the Academy.* Available at: http://www.maritimeacademyoron.com/explore-maritime.html, Date accessed 15/2/2010.

Okonna, K. O. (2011). Effects of Utilisation of Web-based Resources and the Academic Performance of Maritime Trainees in Nigeria. *Unpublished Ph. D. Thesis,* University of Uyo, Uyo, Nigeria.

Topcu, A. (2006). *Gender Difference in an Online Asynchronous Discussion Performance.* Available at: www.tojet.net/articles/546.pdf, Date accessed 2/7/2010.