

Interactive Educational Multimedia, Number 17 (October, 2008), pp. 20-28
<http://www.ub.edu/multimedia/iem/> / iemjornal@greav.net

University students' differences on attitudes towards computer use. Comparison with students' attitudes towards physical activity

Evangelos Bebetsos & Panagiotis Antoniou

empempet@phyed.duth.gr

Democritus University of Thrace
Department of Physical Education and Sport Science

Summary

The aim of this study was to discover the differences on attitudes of Greek Physical Education students towards the subject of computers, in comparison with their involvement in physical activities (PA). The sample consisted of 165 freshmen students, 93 males and 72 females. They completed the "Computer Attitude Scale" questionnaire (Selwyn, 1997) of 21 items which consist four factors (affect, perceived usefulness, perceived control and behavioural). Additionally, each student received a diary where s/he should write down his/her daily physical activities (Samouel & Lee, 2001) for 26 days. The diary was related to the computer usage and the occupation with physical activity. The results indicated gender differences on two factors, "affect" and "perceived usefulness". No gender differences were indicated on PA. The students spent more of their free time on computer usage than doing a PA. Overall, the study supported previous results on gender differences and indicated that students turn into computer usage rather than enjoying other activities.

Keywords

Attitudes; computers; physical activity.

Introduction

Attitudes are a personal factor and they are referring to one's positive or negative judgement about a concrete subject. Attitudes are determined by the analysis of the information regarding the result of an action and by the positive or negative evaluation of these results (Ajzen & Fishbein, 1980). Aizen (1988) specifies the word 'attitude' as an inclination which can be taught and can make people react to

a matter either in a positive or negative way. Attitudes can be taught either through imminent experience or by other people. They reflect the way people think of, feel and intend to react under certain circumstances. The development of different human activity sectors and consequently behavior, are effected by computers and information communication technology in general. Past research indicated that computer confidence and computer attitudes (Smith, Caputi, Crittenden, Jayasuriya, & Rawstorne, 1999). Garland and Noyes (2005) pointed out that in the educational context, confidence should lead to more positive attitudes towards computers, and this will enhance learning and associated activities. Woodrow (1994) mentioned that the primary goal behind the implementation of computers in education is the utilisation of them by the students.

Additionally, information technology and computers dexterities constitute a major part of educational programs (Thomas & Stratton, 2006). Previous research in relation to gender differences in computer-related attitudes in general, has shown that male students have more positive attitudes towards computers, including anxiety, confidence, and liking, than female students (Aljabri, 1996; Tsai, Lin, & Tsai, 2001). Another study indicated that most females tend to view technology as a tool while males tend to view technology as a toy. Men try to compete and win, while women use the computer only to help them attain their goal (Eck, Hale, Ruff, & Tjelmeland, 2002). Nigg (2003) indicated that technological advantages have helped the development of highly physical activity interventions, allowing large populations to participate in them.

Physical activity (PA) also is an integral part of education. According to the curriculum, one of its main aims is to get students to have positive attitudes towards PA so that they will adopt a permanent athletic lifestyle. The theories about attitudes mentioned above (Papaioannou, Theodorakis & Goudas 1999) explain to us how students can adopt a healthy way of life.

Kruscas' (1999) survey, aimed on the examination of senior high school students' attitudes towards physical education (PE) programme. Another aim was to specify these program points which seem to contribute to the development of the positive and negative attitudes towards PE and PA, in senior high school. Results showed that the positive attitudes towards PE and PA were decreased between the last class of primary school (around 12 years old) and the second class of junior high school (around 14 years old). Such a result was more obvious to girls rather than boys.

The surveys conducted in the field of PE and PA are influenced by the field of technology. Access to World Wide Web (www) and personal computers highlight the meaningfulness of this development (Nigg, 2003). Nigg (2003) examined the influence of technology on different aspects regarding physical activity. After retrospection in bibliography, it was shown that technology contributed to a temporary decrease in the occupation with physical activity. However, technology plays an important role in the field of business, as far as physical activity is concerned. There are several web pages which are occupied with issues about health and physical activity. Hence the role of technology is important since it offers information about physical activity and a healthy lifestyle.

Samouel and Lee (2001) conducted a survey whose target was to determine the models of personal computers' usage among adolescents in Hong Kong and to examine whether it is connected to less PA

and less occupation with the social relations among adolescents. A number of 2.110 junior high school students were questioned. The results of the survey showed that the male students who used a computer in order to do their homework or school projects and have access to the Internet were occupied with physical activities in the form of team sports. On the other hand, those who used a computer to play computer games were not social enough and did not work out very often. As far as the female students were concerned, their occupation with computers did not influence their lifestyle.

Finally, another research was conducted by Selwyn (1997) and its aim was to develop and testify a theoretical parameter concerning students' attitudes towards personal computers. There was shaped a scale which consisted of four sub-scales: a) the emotional factor, b) the perceiving usage, c) the perceiving control and d) the behavioural element. The results of the research showed that the scale had a high-level internal credibility and validity. The researcher claims that the scale can be used for the record of the attitudes towards computers in different fields of education. Moreover it can be used for the tracking down of the main differences among the children's attitudes, regarding their sex and socioeconomic status.

The aim of the present survey was twofold: (a). To examine the university students' differences on attitudes towards computers, and (b). To examine whether or not the use of new technologies (computers) affect students' physical activity.

Method and procedure

Sample

The sample consisted of 165 freshmen university students, 93 males and 72 females between the ages of 18-22 ($M \pm 19.3$).

Instruments

The questionnaire 'Computer Attitude Scale' (Selwyn, 1997) were allocated to all students. The questionnaire was translated into Greek in an earlier study (Antoniou, Patsi, Bebetos, & Ifantidou, 2006). Additionally, each student received a diary where s/he wrote down his/her daily physical activities (Samouel & Lee, 2001) for 26 days. The diary was related to the computer usage and the occupation with physical activity. Because the students belonged to the Physical Education Department, it was made clear to them before the completion of the diary, that physical activity included activities only in their free-time (after university class hours).

The questionnaire 'Computer Attitude Scale' consisted of four sub-scales. They included:

1. 6 questions about "affect" (emotions about computers), (eg. Using a computer does not scare me at all)

2. 5 questions about "perceived usefulness" (opinions and information regarding computers), (eg. Computers help me organise my work better)
3. 6 questions about "perceived control" (intentions and actions in which there is shown a respect towards computers) (eg. I can make the computer to do what I want it to) and,
4. 4 questions about "behavioural" (perceiving inactivity or difficulty in using a computer), (eg. I will use computers regularly throughout college).

The answers were given on a 5-point scale, ranging from 1=Strongly Disagree to 5=Strongly Agree.

In parallel, a diary for tracking down activities (Samouel & Lee, 2001) was allocated to all students. The diary included four questions regarding computer use and seven questions regarding the occupation with physical activity. The former ones are given below:

(Computer use) How much time did you spend:

a) doing your homework? b) playing games? c) surfing the Net? d) communicating with others through e-mail or chatting with them?

(Occupation with physical activity) How much time did you spend:

a) cycling? b) doing aerobics? c) doing weight-lifting? d) doing any sport? e) working out in a gym? f) working out at home? g) walking e.g. in a park?

Procedure

The questionnaire and the diary were handed in all students. The students filled in the questionnaire and returned them straightaway. Yet, the diary was completed daily – for a total of 26 days – while they were at home, recording in minutes the time they spent for computer use and the time they spent doing any physical activity.

Statistical analyses

There were used the following analyses: Reliability analysis, independent t-test analysis (the verification statistic of variation among averages for independent specimens) in order to find any possible gender differences on attitudes towards exercise, and univariate analysis in order to find any possible gender differences on attitudes towards computers.

Results

Psychometric characteristics

Using the Cronbach coefficient α internal consistency, the results showed that for "Effect" was .83, for "Perceived Usefulness" was .72, for "Perceived Control" was .76, and for "Behavioral" was .79. All values are over .70 so reliability is accepted.

Gender Differences on attitudes towards computers

Univariate analyses were conducted in order to find any gender differences. The analyses revealed statistical significant gender differences:

(a) For the variable of *affect*: $F(1,159)=5,43, p<.01$. Men had higher scores ($M=5,44, SD=.68$) than women ($M=5,03, SD=.72$).

(b) For the variable of *perceived usefulness*: $F(1,159)=4,47, p<.05$. Men had higher scores ($M=4,12, SD=.59$) than women ($M=3,91, SD=.61$).

No other gender differences were found.

Gender differences on attitudes towards exercise

By considering the analysis independent t-test, it was shown that there was no statistical variation between male and female students in the attitudes towards physical activity ($t = 0,777, p > .05$).

Table 1
 Means, standard deviations noticed by male and female students among the attitudes towards physical activity

Gender	No of students	Mean	SD
Male	93	6	0,94
Female	72	5,7	0,99

Deviation between the computer use and the occupation with physical activity in relation to the time spent

The time spent for computer use and the time spent for the occupation with physical activity were studied. The results of the study – through the descriptive analysis which was used– showed that students were occupied more with their computers (mean = 68) and therefore less with physical activity (mean = 84).

Table 2
 Deviation in the time spent in computer use and the time spent in physical activity.

Subject	No of students	Mean
Computer Use	65	84
Occupation with physical activity	65	68

Discussion

The aim of the present survey was twofold: (a). To examine the students' differences on attitudes towards computers, and (b). To examine whether or not the use of new technologies (computers) affect students' physical activity.

The analyses in the present study have shown that there were statistical significant differences on two variables due to gender, perceived usefulness and affective. More specifically, men were more positive in the idea to use computers than women. Previous research has shown mixed results. Robertson, Calder, Fung, Jones and O'Shea (1995) identified that female students had less positive attitudes towards computers. Such attitudes include anxiety liking and confidence. Schumacher and Moharan-Martin (2001) underlined that women generally have less computer experience than men, with result to have negative attitudes towards computers. Also, Ho and Lee (2001) concluded that male students have more computer experience than female students, and boys tend to have less computer anxiety, more positive attitudes toward computers and higher computer confidence than girls. In an earlier study, Nash and Moroz (1997) found out that the gender of a person does not have an effect on the persons' attitudes towards computers, rather than his/her actions do have the effect. Tsai and his colleagues (2001) indicated that computer experience and more specifically internet experience were positively related to students' affection, control and behavior. Their results indicated that male students had more positive attitudes than female. Finally, in a previous study in a sample of Greek high school students, Antoniou, Patsi, Bebetos and Ifantidou (2006) found no gender differences.

The results of the present study have also shown that there was no variation between the two genders in the attitudes towards exercise. An explanation for this attitude is probably that both men and women being Physical Education students adopt the same positive attitude towards exercise.

What's more, students spent their time mostly in using computers (mean = 84 hours per week) and not in being occupied with physical activity (mean = 68 hours per week). Due to the accelerating development of new technologies, computers are attractive to students. Almost each student uses one for school work or even has got a personal computer. Nonetheless sometimes the frequent occupation with computers affects negatively the occupation with sports. Probably, students prefer surfing the Net and playing computer games to doing any exercise. However, the variation between the two activities, i.e. computers and PE, was not large. According to Nigg (2003), technology has played a role in the temporary decrease in the occupation with physical activity. In addition, the survey conducted by Stranger and Gridina (1999) has reached the conclusion that children aged from 2 to 17 were occupied with computers for about 1 hour and 37 minutes daily. Yet there have not been conducted any surveys on whether or not the time spent in computers puts aside other activities, such as watching TV programmes, playing sports and having social relationships (Subrahmanyam, Greenfield, Kraut & Gross, 2001).

Research has shown the direct relationship between the use of computers and physical activity. Thomas and Stratton (2006) in their study on the importance of use of information communication

technology in physical education classes showed that Physical Education teachers had very positive opinion on the integration of information communication technology into their classes and believed that the use of technology as is a valuable tool in promoting effective teaching and learning. Nigg (2003) argued that the use of technology is related to a decline in physical activity. However, he made some very important points on how technology can influence positively physical activity. He pointed out that technology can help on the large of recruitment of populations, can individualize interventions and promote different physical activity interventions on large populations in different ways.

Other research supported the opinion that computer use can enhance physical activity. Ho and Lee (2001) in their research on computer use and its relation to adolescent lifestyle in Hong Kong found some very interesting results. Their sample consisted of 2110 secondary school students. The results indicated that the total amount of time spent on computers was not associated with any social or physical lifestyle. More specifically, their data showed that computers users have more active lifestyle including more exercise and recreational activities. Additionally, they found out that the boys who were heavier computer users, exercise more than boys who just use computers to play games. Koezuka, Koo, Allison, Adlaf, Dwyer, Faulkner, and Goodman (2006) supported the above results. Their results showed that computer use was a protective factor against inactivity among males and was not significantly related to physical inactivity among females. More specifically, males using computers for less than six hours/week, were about 40% less likely to be inactive compared to nonusers. Their results suggest that the time spent on computers may not necessarily replace time spent on physical activity.

Overall, the study indicated possible gender differences. As Christensen, Knezek and Overall mentioned in an earlier study (2005), educators must monitor very closely equity issues within the education system. The instructional model must include many types of female preferences. Possible limitations should be mentioned. The sample of the study was university students and more specifically students at a Physical Education Department. Future research should continue investigating similar and other aspects that effect students' attitudes towards computer use and physical activity.

References

- Aijen, I. (1988) *Attitudes, personality, and behavior*. Bristol: Open University Press.
- Ajzen, I., and Fishbein, M. (1980) *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, NJ: Prentice- Hall.
- AlJabri, I. M. (1996) Gender differences in computer attitudes among secondary school students in Saudi Arabia. *Journal of Computer Information Systems*, 37, 70-75.
- Antoniou, P., Patsi, H., Bebetos, E., & Ifantidou, G. (2006) Validity of scale and evaluation of students' attitudes toward computers. Compare with students' attitudes toward physical education and physical activity. *Inquiries in Sport & Physical Education*, 4 (1), 114-124.
- Christensen, R., Knezek, G., & Overall, Th. (2005) Transition points for the gender gap in computer enjoyment. *Journal of Research on Technology in Education*, 38, 23-37.
- Eck, J., Hale, M., Ruff, S., & Tjelmeland, M. (2002) *An educator's guide to access issues* [Online document]. Available: <http://lrs.ed.uiuc.edu/wp/access/index.html>

- Garland, K. J., & Noyes, J. M. (2004). Computer experience: a poor predictor of computer attitudes. *Computers in Human Behavior, 20*(6), 823-840.
- Garland, K. J., & Noyes, J. M. (2005) Attitudes and confidence towards computers and books as learning tools: a cross-sectional study of student cohorts. *British Journal of Educational Technology, 36*, 85-91.
- Ho, S. M. Y., & Lee, T. M. C. (2001) Computer usage and its relationship with adolescent lifestyle in Hong Kong. *Journal of Adolescent Health, 29*, 258-266.
- Kozuka, N. M., Koo, M., Allison, K. R., Adlaf, E. M., Dwyer, J. J. M., Faulkner, G., & Goodman, J. (2006) The relationship between sedentary activities and physical inactivity among adolescents: Results from the Canadian Community Health Survey. *Journal of Adolescent Health, 39*, 515-522.
- Krousas, J. A. (1999). Middle school student's attitudes toward a physical education program. Doctorate of Philosophy in Curriculum and Instruction. Virginia.
- Nigg, C. N. (2003) Technology's influence on physical activity and exercise science: the present and the future. *Psychology of Sport and Exercise, 5*, 57-65.
- Papaioannou, A., Theodorakis, G., and Goudas, M. (1999) *For a better teaching of Physical Education*. Thessaloniki. Salto. (In Greek).
- Robertson, S., I., Calder, J., Fung, P., Jones, A., & O'Shea, T. (1995) Computer attitudes in an English secondary school. *Computers & Education, 24*, 73-81.
- Samouel, M. Y. and Lee, T. M. C. (2001) Computer usage and its relationship with Adolescent lifestyle in Hong Kong. *Journal of adolescent health, 25*, 258-266.
- Selwyn, N. (1997) Students' attitudes toward computers: validation of a computer attitude scale for 16-19 education. *Computers education, 35*, 35-41.
- Schumacher, P., & Moharan-Martin, T. (2001) Gender, Internet and computer experiences. *Computers in Human Behavior, 17*, 95-110.
- Smith, B., Caputi, P., Crittenden, N., Jayasuriya, R., & Rawstorne, P. (1999). A review of construct of computer experience. *Computers in human Behavior, 15*, 227-242.
- Stranger, J.D. and Gridina, N. (1999) *Media in the home 1999: The fourth annual survey of parents and children*. Norwood, NJ: Annenberg Public Policy Center of the University of Pennsylvania.
- Subrahmanyam, K., Kraut, R., Greenfield, P. and Gross, E. (2001) The impact of computer use on children's and adolescents development. *Applied Developmental Psychology, 7*, 7-30.
- Thomas, A., & Stratton, G. (2006) What we are really doing with ICT in physical education: a national audit of equipment, use teacher attitudes, support, and training. *British Journal of Educational Technology, 37* (4), 617-632.
- Tsai, C., Lin, S. S. J., & Tsai, M. (2001). Developing an internet attitude scale for high school students. *Computers & Education, 37*, 41-51.
- Woodrow, J. E. J. (1994) The development of computer-related attitudes of secondary students. *Journal of Educational Computing Research, 11*, 307-338.

In order to reference this document

Bebetsos, E. & Antoniou, P. (2008). University students' differences on attitudes towards computer use. Comparison with students' attitudes towards physical activity. *Interactive Educational Multimedia*, 17, 20-28. Retrieved dd/mm/yyyy, from www.ub.es/multimedia/iem

Copyright

If the opposite does not indicate itself, the texts published in Interactive Educational Multimedia, IEM, are under a license *Attribution-Noncommercial-No Derivative Works 2,5 Spain*, of *Creative Commons*. All the conditions of use in: http://creativecommons.org/licenses/by-nc-nd/2.5/es/deed.en_US

In order to mention the works, you must give credit to the authors and to this Journal.

Interactive Educational Multimedia, IEM, does not accept any responsibility for the points of view and statements made by the authors in their work.

Subscribe & Contact IEM

In order to subscribe to IEM, please fill out the form at www.ub.es/multimedia/iem (link: REGISTER)