MEDINFO 2007
HISA Ltd Australia
© 2007 The authors. All rights reserved.

Virtual Aging Class for College Students Using Multimedia Simulations and Activities

Myonghwa Park[a], Seok-Jo Yang[b]

[a]*College of Nursing, Keimyung University, Republic of Korea*
[b] *Chungnam National University, Dept of Mechatronics Engineering, Republic of Korea*

Abstract and objective

The purpose of this study was to develop and apply a virtual class for healthy aging education for college students. A class for healthy aging and health management was established based on Network Based Instructional System Design(NBISD), using the following five process: 1) Analysis stage 2) Planning stage 3) Content Framing and development stage 4) Program application stage 5) Evaluation stage. The class homepage consisted of lecture room, discussion, assignment, activities, reference room, question & answer, bulletin board, and announcem

ent. In the application of virtual class, HTML, Javascript, multimedia (image, audio & video, simulation, and game) were utilized. Content and technical validity tests were done by experts. The completed program was applied to college students and showed the positive responses from the target students. Virtual class with multimedia such as simulation and games could be an effective teaching media of aging education for college students in the information age.

Keywords:

virtual, education, aging, multimedia

Introduction

The need to include aging education in curricular for college students has been acknowledged and recommended recently [1]. Rapid increase of old population has prompted an interest in preparing the young generation to better lead the future aged society. Healthy aging education is one method of sensitizing the young generation to the need of aging society [2]. Aging education for college student is one area that could benefit from the use of multimedia interactive virtual class to attract the users who are used to web based teaching environment [3].

Virtual class is one method that can be used to supplement or replace the traditional class room education [4]. Interactive virtual class allows the user to control the computer program, so they may learn at their own pace, provide an interactive learning environment in which materials can be targeted or tailored, and provide a variety of multimedia formats including graphics, video and audio, games, and simulations [5].

The purposes of this study were to develop and apply virtual class of healthy aging education for college students using multimedia simulations and activities.

The specific aims are as follows:

1) to analyze the learning need of the target students, learners' learning and computer related characteristics, and technical and environmental need.
2) to design the information, interaction, motivation, and evaluation mechanisms.
3) to develop the content using multimedia such as graphics, animation, video & audio, games, and simulation.
4) to operate the developed program
5) to evaluate the program

Methods

Virtual aging class was developed in the following five steps. 1) The learning needs of the target students, the learners' general learning and computer related characteristics, and technical and environmental needs were analyzed. 2) The education contents, interaction and motivation method, and evaluation mechanisms were designed using the results from the analysis. 3) The content using multimedia such as graphics, animation, video & audio, games, and simulations were developed. 4) The developed program was demonstrated to the experts and the sample group of students and revised according to their comments. 5) The program was uploaded on the web and operated for 16 weeks. 6) The evaluation was done with the users about learning function, display structure, and system function.

Results

In analysis stage, the topics of virtual class were developed based on a survey about the college students' knowledge and attitudes of aging and literature review. According to the target students' needs for aging education, the following list of contents were determined for aging education: 1) Theory of aging, 2) Aging process, 3) Genetic and environmental effects on aging, 4) Physical and Psychosocial aging, 5) Issues related to the elderly such as elderly abuse, sexuality, alcohol and substance abuse, 6) Successful aging, 7) Nutrition and exercise for

aging, 8) Internet information related to aging and longevity, 9) Social welfare system in Korea and other country, 10) Long-term care system for the elderly. The topics selected were validated with the experts in aging and gerontological area. The education information (cyber lecture, reference room), interface between learner and contents, learner and instructor, learner and learner (question & answer, bulletin board, e-mail, discussion), motivation (game, simulation, video & audio), and evaluation (quiz, test, assignment) were designed with the detailed functions. In development stage, contents frames were constructed based on the order of contents, technical stability, and user interface. Forty five cyber classes, 10 videos, 104 images, 4 simulations, and 4 games based teaching materials were included in the program. Simulations were designed for visual, mobility, and other functional changes during the aging process (Figure 4). Games were designed for brain, family tree, lifeline for student, and lifeline for the elderly (Figure 5). The instructor can check the students' participation using the administrator mode and provide the feedback for each student.

The final program was operated and over 100 students were registered in the aging class as an elective course. The evaluation was done about users' satisfaction of learning function, system function, and screen construction on the web and showed the positive responses from the users using 5 point Likert scale. The students responded that the class helped them to be concentrated and interested in the contents. Also, they gave the high scores on attractive graphics and variety of multimedia. Convenience and speed of the system were scored least and need more improvement. The majority of students reported that this class was very useful and made them feel sympathy for the elderly.

Table 1 - Evaluation of user satisfaction

Category	*Item*	*Mean*
Learning Function	Easy to understand	4.00
	Convenient	3.80
	Satisfied	4.10
	Interested	4.50
	Accurate	4.00
	Concentrated	4.20
Display Construction	Appropriate letter size	4.30
	Logical construction	4.10
	Attractive graphic	4.40
System Function	Variety of multimedia	4.30
	Exact learning guide	4.00
	Fast up & download	3.50
	Appropriate interface	4.00

Discussion

This project aims at developing and applying virtual aging class for college students using multimedia simulation and activities. The study results reveal that the virtual aging class with multimedia interaction is an effective learning tool for college students. Students learned the topic more interestingly using the multimedia learning materials. In addition, the class develops positive attitudes about aging.

A majority of subjects indicated a preference for the multimedia instruction of aging. The study results demonstrate that virtual class with multimedia such as games and simulation can be an effective tool for improving comprehension and eliciting interest in the lessons.

Consistent with previous reports[6], the present investigation found that experience with virtual class and multimedia activities was interesting and holding attention of the students in the information age. Multimedia interaction such as video, audio, games, and simulation can clarify instruction by allowing students to visualize and experience the complex and dynamic process of aging.

Conclusion

Based on the findings of this study, further investigation is required to evaluate the effect of the virtual aging class in more detail. Remaining questions to address include the following:

· What aspects of aging process can be effectively simulated for teaching?

· How would virtual only aging class compare with blending virtual and traditional offline learning experience?

· What are the best strategies for incorporating multimedia into aging education?

The ultimate objective of this line of research will be to determine how best to prepare the multimedia such as simulations and games on aging education for successful aging and health promotion for the different age group such as middle age or old age group.

References

[1] Han JR. The study on undergraduate students' knowledge and attitudes toward aging. Research of Yonsei Education. 2000;13(1): 191-206.

[2] Lee YS, Park KR. Effects of an undergraduate gerontology course of the students' attitudes about older adults a quasi-experiment. Journal of the Korea Gerontological Society. 2002;21(3): 29-41.

[3] Luce J. The blackboard or virtual reality: Suggestions and caveats for the use of instructional technology. Gerontology & Geriatrics Education. 2000;21(1/2): 49-66.

[4] Lee IK. The evaluation of web-based education program. 1996. Yonsei Univerity, Seoul. 3.

[5] Robinson SB, Rosher RB. Effects of the "Half-full aging simulation experience" on medical students' attitudes. Gerontology & Geriatrics Education. 2001;21(3): 3-12. 4.

[6] Robinson SB, Rosher RB. Effects of the "Half-full aging simulation experience" on medical students' attitudes. Gerontology & Geriatrics Education. 2001;21(3): 3-12. 4.

Acknowledgments

This work was supported by the Korea Research Foundation Grant funded by the Korean Government(MOEHRD) (KRF-2006-E00394).