Computer Games for the Frail Elderly

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SUMMARY. The benefits of computer use by the elderly are named in this article. Described here is a project instigated to determine feasibility of computer use with frail institutionalized elderly. The four games used in this project are presented, as are participant reactions to these games. Computer use was found to be not only valuable as a learning tool, but a diagnostic one as well. The author looks to practitioners in the future to investigate the possibilities of using computer games in their work with the elderly.

KEYWORDS. Memory training, frail elderly, computer games, home computers

The widespread fascination with home computers and their capabilities is very evident in our society. Computer stores have sprung up in every shopping center; video game arcades are busy at all hours of the day and night. More and more people are finding that home computers can be used for fun, for learning, for home and business management, for recordkeeping, and many other uses. Schools are using computers even in classrooms for the youngest children. Professionals who work with special populations of physically and mentally handicapped children and adults have discovered that computers can teach, train, and amplify human abilities.

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Yet, nothing in the literature suggests that frail elderly residents in long-term care facilities can also benefit from the computer's unique capabilities.

Aged residents of nursing homes need stimulation, challenges to their thinking processes, exercises in hand and eye coordination, and opportunities to enhance self-esteem by mastering new material (Butler & Lewis, 1973; Solomon, 1982). The area of memory training is extremely important for many elderly, and the computer with its adaptable, repetitive, user-friendly, nonjudgmental approach is very well suited to programs of helping residents with moderate memory loss. The score-keeping abilities of the computer as well as its reliability as an impartial referee add to its value. Residents of nursing homes who rarely leave their families need to have additional opportunities to play games and experience excitement and stimulation (Feier & Leight, 1981; Goldfarb, 1973; Gottesman & Hutchinson, 1974; Stafford & Bringle, 1980). In addition, playing games is a way of learning laws of logic and methods of thinking. Older adults can benefit from these experiences as much as younger populations.

In the spring of 1982, a project was initiated at the Hebrew Home of Greater Washington to determine whether frail elderly institutionalized residents would be willing to play computer games, whether they would enjoy the experience, and whether handicaps such as impaired vision and hearing, tremors, or hemiplegia would interfere with their ability to play. The project was not funded or staffed; thus the findings can be viewed only as a preliminary effort to indicate whether further work should be done in this area.

Interest in this new application of computers helped compensate for the lack of funds. Dr. Elaine Eckels, Research Associate at the Georgetown University School of Community Medicine, and other members of the faculty helped to design a questionnaire to indicate whether specific mental or physical infirmities would interfere with the ability to use the computer.

Staff from the Hebrew Home and Georgetown University School of Medicine reviewed dozens of existing computer games to make a selection of four games that could be used in the project. It was soon apparent that this was no easy task. Most computer games depend on speed and quick eye and hand coordination, qualities which could frustrate elderly players who were just learning to play. Many games have multiple small objects moving about at once whereas the target population could better deal with one task at a time and needed to work with larger characters. Fortunately, a talented member of the local Apple Pi Club, a group of Apple computer owners, volunteered to modify four existing games, tailoring them and adapting them so that the project participants would have better chances of success and thus experience more enjoyment and feelings of accomplishment. The Apple Corporation showed its interest and support of the project by loaning Apple II to the Hebrew Home for 5 months.

Recruiting residents to play computer games was the first interesting experience. Approximately 20% of those who were invited to play refused to do so. Reasons given for refusal ranged from "I’m not interested" to "I never played any games," but it was apparent that some of the refusals were based on residents’ fear of exposing their deficits. Some needed encouragement and coaxing (approximately 10%), but the majority of those approached were willing and eager to try something new. They had seen advertisements and read articles in magazines and newspapers, and many had children or grandchildren who either owned computers or worked in computer-related fields. They were more than willing to try out this new, highly touted piece of modern technology.

At first, games were taught and played in a quiet room with a staff member and a resident working together. Soon we found that bringing the Apple into the residents’ coffee shop, with one person playing and several others gathered around, encouraging, cheering, and kibitzing, added to the excitement, fun, social atmosphere, and sense of self-worth that we were aiming for. The distractions did not affect scores or bother the participants.

Fifty residents, average age 85, played the games at least twice. Everyone who played once was willing to come back another day. Residents who were hemiplegic were able to use the equipment as were those with Parkinson’s Disease, multiple sclerosis, moderate senile dementia of the Alzheimer’s type, and moderate visual impairment. Two residents who had undergone lobotomies many years ago did well in the games. One woman who had had a cataract surgery five days earlier had no problem playing.

The four games adapted for use were chosen because each tapped a different kind of skill and ability. The games, in order of interest to the residents, were Little Brick Out, Ribbet, Country Driver, and Hangman.

The best game was Little Brick Out, which involved a “ball” appearing at various levels of the screen. The player must turn a knob on the paddle to the right and left to move a “bat” into position to hit the “ball.” If the “ball” is hit, it strikes a brick wall, knocking out some bricks. The object of the game is to knock down the whole wall. This game was slowed down, and the “bat” length was increased by our programmer.

Little Brick Out became the most popular game. It was suitable for adults and reminded residents of games that they had played in their healthier days such as baseball or tennis. They enjoyed the messages that
the computer sent them such as "Sam, your score is not so good; keep on trying." Everyone was able to achieve some success, and most residents improved with repeated trials.

*Ribbet* is a game which is visually interesting and has sound effects that act as reinforcers or rewards for success. It required pushing a button to make a frog leap up and catch a passing butterfly with its tongue. This game proved to be valuable because everyone who tried it achieved success. The visual and auditory reinforcers were immediate after each successful catch of the butterfly. Every participant was able to push the button on the paddle to activate the frog. Even the hemiplegics managed to do this with no problem by using their "good" side. Residents who were more mentally intact were able to determine the lead time required to catch the butterfly. The more impaired worked in a more random way. The more mentally intact had better scores the second time they played whereas the less alert did not learn from their first experience. (It is not possible to know from this very short study whether repeated trials would have resulted in more learning).

The game *Country Driver* proved to be more difficult. In the middle of the study our programmer further modified the game, slowing it down even more so that it would give the participants a greater chance for success. This game involved keeping a car on a road with many twists, turns, and obstacles. A problem with this game was that a knob had to be turned to the left and right to keep the car on the road. For many people this turning movement was more difficult than pushing a button had been. Also, the car on the monitor came down from the top—that is, towards the player—but actual driving is done ahead of the driver. We believe that the game might have been better if the car moved from the bottom of the screen to the top. With all the problems, participants enjoyed this game and their attention was riveted to the monitor. It portrayed a more adult task (i.e., steering a car) and thus was more appropriate to this age group than catching a butterfly had been. Visually, this game could have been improved by making a car look more like an actual car and the obstacles look more like real objects.

The weakest game was a word game called *Hangman*. In this game, participants are given a number of blank spaces and they must guess a particular word with that number of spaces. Each time they guess a letter which is not in the word, a stick figure of a hanging man loses a part of his body.

This game created some anxiety and fear of failure. The first participant who tried the game said, "This makes me feel stupid." We then decided to give the participants the first letter of the word and provide clues each time they made a wrong guess. Since one of our goals in playing computer games with the elderly was to increase their self-esteem through a sense of mastery, it was important to offer them a good chance for success without "giving away" the game. As modified, this game was acceptable but not as much fun as the others.

Some of the comments from residents who had an opportunity to play the games were: "It clears the rust out of my brain," "It's a challenge and that's what we need," "It makes you think and concentrate," "It's fun," "You're never too old to learn something new," "Everyone's playing these games now," and "Wait till my son the computer that I'm a computer, too!" It was evident that the participants benefited from their feeling of mastery over the computer and considered it to be a learning experience.

The 50 nursing home residents who played computer games two or more times demonstrated that frail elderly people in their 70s, 80s and 90s could play the games. All the residents who tried them once liked them enough to be willing to play a second time.

Although we did not set out to use the games as diagnostic instruments, we learned that playing games with residents gave us many clues about their physical and mental deficits of which we had not been aware before. For example, several people were able to track the butterfly in the game *Ribbet* when the butterfly entered the screen from the right (or left), but when it entered from the opposite direction they could not follow its progress. Another example was a college educated resident who had suffered a stroke but who seemed to have regained all her mental functions. In the game *Hangman*, the resident was given a three-letter word beginning with T, the clue being "something you drink with your meals." When she replied "milk," the staff member asked for psychological tests to clarify the resident's mental status. Computer games, then, could be designed as a non-threatening tool to help staff in diagnosing physical and mental problems.

The games also seemed to encourage residents to concentrate and focus their attention. A videotape of the residents playing the games was shown to a wide audience on prime-time television. Many viewers remarked that it was rare to see old people looking so absorbed, intent, and interested in a task.

The most successful games are those which can be programmed so that the participants can start at a level that can easily be mastered and which progress in small increments to more advanced skill levels as the participant improves. The visual symbols in video games for the elderly must be large and well defined, and auditory clues should be distinct and clear.

Since few institutions or agencies would be able to commit the funds necessary to purchase a computer like Apple II for an activity program,
what is the likelihood that others will carry forward the intriguing possibilities of utilizing computer games to enhance the lives of the elderly?

First, it is entirely conceivable that the prices of home computers will continue to drop and that they will, in the near future, become as common as television sets or push-button telephones. At that point, interested practitioners will be able to design and program games to meet the specific needs and interests of their clients.

Furthermore, fairly inexpensive computer game sets such as Atari, Intellivision, and the like are marketed with a dazzling array of computer games. A small number of these games are suitable for the very old. For example, a poker game and a bowling game (Atari) can be played at the player's own pace. The characters in these games are large and clear, and the games are of interest to older adults. The computer game industry should be made aware of the potential of a market of elderly consumers. It may then be encouraged to research the needs of this ever-growing segment of society. Finally, it is hoped that psychologists and others who work with the aged will investigate the possibilities of using computer games to exercise and sharpen memory, improve hand and eye coordination, and increase ability to concentrate on a task.

Modern technology, which has developed home computers at affordable prices, has given our elderly clients a valuable new modality in which they can learn, have fun, master and control an aspect of their environment, and feel that they are part of the video age we all live in. As one of the resident-participants in the study observed, "If the whole world is going crazy over computer games, why shouldn't we get in on the fun?"

REFERENCES


