

## Action Teaching Reports

# Art and Aging: Digital Projects for Individuals With Dementia

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### Abstract

In action teaching, assignments are created that simultaneously benefit students and society by directly connecting classroom material to a community intervention. We designed an entire course rooted in the principles of action teaching in which students facilitated the positive effects of art, nature, and music on the well-being of individuals diagnosed with dementia. Groups of three students worked with a local elderly couple, one member of whom had dementia, to create multimedia digital projects (e.g., online scrapbooks, interactive DVDs) involving experiences with art or nature tailored to the needs of their specific community partners. Students met weekly with their assigned couple to discuss their families' interests, goals for the project, and to obtain feedback on the impact of their project on their families' well-being. Through these weekly meetings, students took an iterative approach to designing and improving their final projects, applying material learned through classroom lectures to their projects. In this field experience, students went beyond traditional lecture learning by developing a customized project that promoted the well-being of someone experiencing dementia. This course fostered values of citizenship, developed students' research skills, and highlighted the reciprocal nature between knowledge learned in the classroom and knowledge acquired through real-world experiences.

**Keywords:** action teaching, service-learning, dementia, Alzheimer's disease, restorative environments

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In the fall semester of 2010, twelve University of Virginia undergraduate students participated in an inaugural course offered by the Department of Psychology, called Art and Aging. In this pan-university initiative, students with academic backgrounds in psychology, cognitive science, computer science, and art learned about aging, dementia, and the restorative effects of art and nature on afflicted individuals. For example, viewing nature and art is known to improve mood, reduce stress, and enhance individuals' abilities to direct attention (Kaplan & Berman, 2010; Ulrich et al., 2008). Students received instruction for each of these topics through traditional classroom lectures; however, these facts were then reinforced and expanded upon through a hands-on, service-learning project.

Groups of three students were paired with a local elderly couple – often a husband and wife, with one member who had dementia – to create digital applications that provided interactive experiences with art, nature, or other personal interests, and that would benefit and delight each couple. The elderly couples volunteered to participate and were recruited by the local Alzheimer’s Association. Students met weekly with their families to learn about their interests and goals for the project, to obtain feedback to inform how the project should evolve, and to evaluate the impact their project had on their family’s well-being. This collaborative and iterative effort allowed the family members to actively participate in the creation of the projects with their individual needs and interests in mind. Furthermore, the course had a profound impact on students, cultivating the skills needed to apply knowledge learned in the classroom to help community members suffering from dementia.

## Background

### Dementia

Dementia is characterized by a decline in cognitive functioning experienced primarily by individuals over age 60. Alzheimer’s disease is the most common form of dementia and is estimated to affect between 2.4 million to 5.1 million people in the United States (National Institute on Aging, 2003, 2010). Deficits often begin with memory loss, difficulty completing routine tasks, and poor reasoning and judgment (National Institute on Aging, 2010). As the disease progresses, individuals may lose the ability to recognize family and friends, have difficulty adapting to new situations, easily lose focus, and exhibit language problems. With these deficits often comes frustration, depression, and changes to emotions and personality. Currently, there is no cure for dementia, only symptom management, which necessitates methods for improving the quality of life for individuals suffering from various forms of dementia.

One method of reducing subjectively reported stress and improving mood for patients in healthcare settings is to modify the environment to include elements of nature and art. Research supports the contention that viewing natural scenes and pictorial depictions of nature provides an escape from negative thoughts, thus promoting personal reflection, stress reduction, improved mood, and restoration of previously depleted cognitive capacities (for reviews see Kaplan & Kaplan, 1989; Ulrich, 1991; Ulrich et al., 2008). For example, having a window view of nature reduces the length of hospital stays, decreases pain perception, and reduces the intake of pain medication for patients recovering from surgery (Ulrich, 1984). In addition, proponents of reminiscence therapy suggest that reflecting on and discussing past experiences has the potential to positively affect mood, cognition, and well-being in dementia patients, in addition to reducing caregiver strain (Woods, Spector, Jones, Orrell, & Davies, 2005). However, more empirical data is needed to support this claim as the existing literature is limited to a few studies with relatively small sample sizes. This research provided the motivation for students to design projects for their dementia patients that included elements of nature, art, and their personal lives, with the ultimate goal of providing an interactive activity for the dementia patients that may bring some positive change to their daily lives.

### Action Teaching

This course is an example of action teaching, in which pedagogy is designed to simultaneously educate students and improve society (Plous, 2012). To achieve this aim, instructors bring traditional textbook material to life by engaging students in activities or assignments for which they must apply knowledge acquired in the classroom to address a community issue. For example, one professor taught students about different persuasion strategies

used to solicit donations and then asked students to empirically test the efficacy of each strategy by raising money for a Hurricane Katrina relief fund (Azar, 2008).

In theory, action teaching fosters a deeper understanding of psychological material by reinforcing learned concepts with hands-on, memorable experiences. Furthermore, students realize how their scholastic efforts are immediately relevant to non-academic domains (Azar, 2008; Plous, 2009, 2012). This contrasts with a traditional lecture format in which students learn material with, at best, an expectation that they might apply that knowledge in the future. Consequently, students who take part in an action teaching activity are highly engaged and intrinsically motivated to learn in order to make a positive change for society.

Action teaching can be implemented at a variety of scales, from a single classroom assignment to a semester- or year-long course. Furthermore, it may be applied to a wide range of social, psychological, cultural, or emotional problems. Students may work with groups such as the elderly, underprivileged teenagers, children with learning disabilities, or international groups, to form relationships among individuals of different age, class, or culture. Regardless of the size or content of the project, action teaching creates a supportive environment for students to go beyond lecture and textbook material by engaging in a highly interactive, immersive, and meaningful learning experience that impacts the larger community. Action teaching directly connects knowledge learned in the classroom to knowledge acquired through real-world experiences and thus provided an ideal model for designing the Art and Aging course.

## The Course: Art and Aging

### Course Objectives

The main objective of Art and Aging was for students to positively influence the lives of individuals with dementia while simultaneously acquiring knowledge about dementia and how the environment affects individuals' well-being. Within this objective, we aimed to foster values of citizenship and to build students' confidence in their abilities to help others. Relatedly, inter-generational relationships should form between undergraduate students and the elderly by them working towards common goals. More generally, the action teaching model supported our objectives for students to become intrinsically motivated to learn, to learn by doing, to effectively work in teams, and to develop research skills.

### Course Design

Twelve students were enrolled in Art and Aging and were assigned to teams of three based on their disciplinary backgrounds. We ensured that each group had at least one member with basic computer programming knowledge and one member with art or design experience. Being psychology and cognitive science majors, all students had a background in behavioral research. Four couples were recruited through the local Alzheimer's Association. One member of the couple had some form of dementia and the other member served as the primary caregiver. Each team of three students was assigned to one couple.

Students first received instruction about Alzheimer's disease and dementia. Through a series of lectures by the instructor and guest speakers, students learned the biological mechanisms underlying dementia, the behavioral and neurological impairments of the disease, the emotional impact dementia has on patients and their caregivers, and how to interact with patients who have various forms of dementia. Next, students learned how experiences

with art, nature, and music can positively benefit individuals suffering from dementia. For example, a professor of landscape architecture showed how to design healing gardens for memory care facilities and hospitals. In another lecture, a local artist shared her experience of teaching art lessons to dementia patients and the resulting book and gallery displays that she created using the patients' artwork.

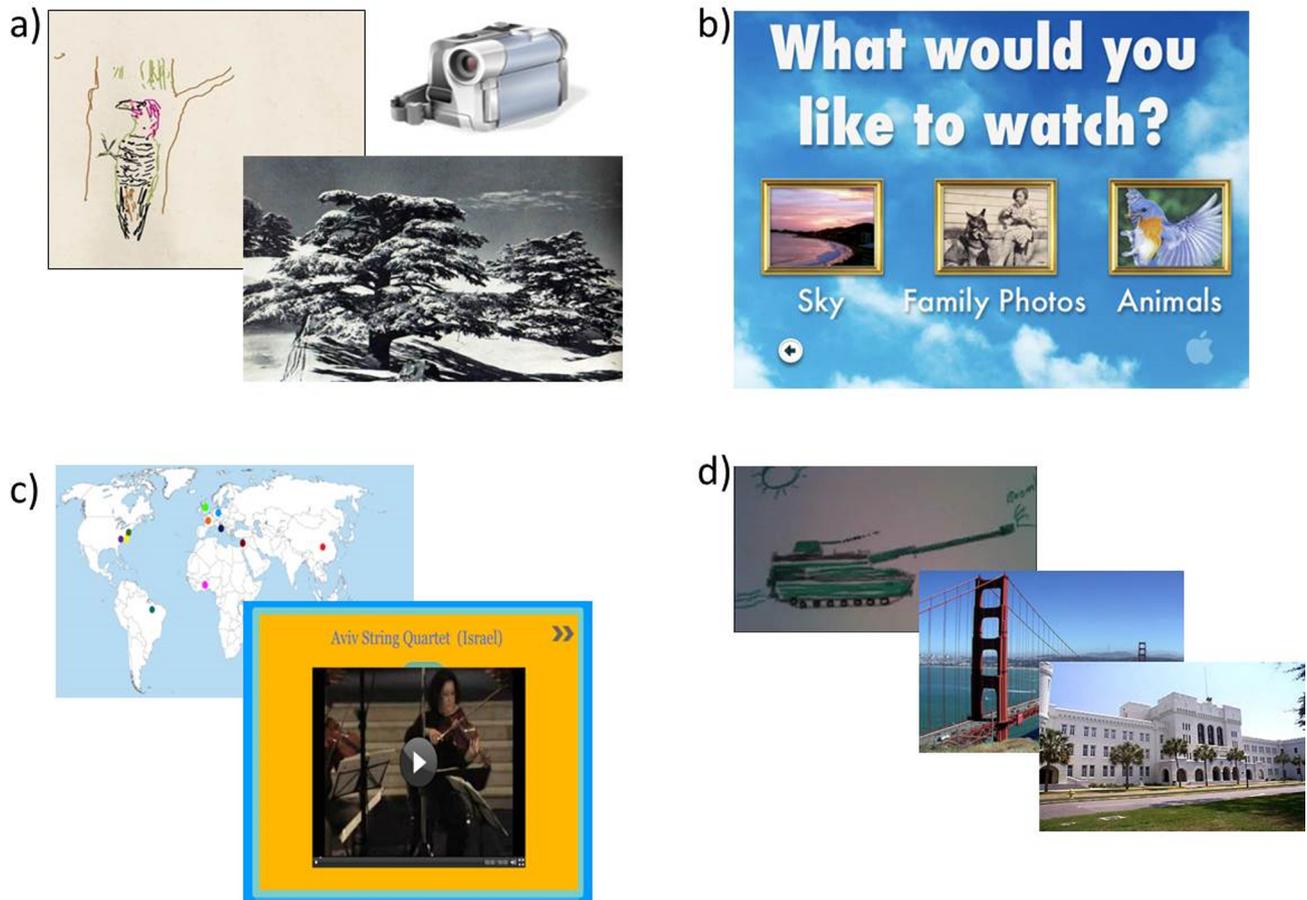
The course met twice each week. One day each week, students learned relevant background material through lectures and also developed their group projects. For the second class each week, students met with their assigned families. During these meetings, students gathered information about their family's goals for the project and their recreational interests, discovered the unique needs and behavioral challenges that confronted the individual with dementia, discussed project ideas, tested project prototypes, and collected feedback following usage of the project. This approach created an iterative process to the project design, with input from all members of the project.

Three times during the semester, students presented their projects to the class. For the first presentation, the groups pitched their initial project ideas before creating and testing the project with their community partners. This initial presentation was crucial to elicit early feedback on project design. The second presentation occurred mid-semester and provided an opportunity for students to share their progress with the class. In three cases, initial project development proved successful with their community partners, so each group spent the remainder of the semester improving their original project ideas. In the remaining group, the students learned that their initial project idea did not adequately meet the needs of their family; this group created a new project that they developed through the second half of the semester. In the final presentation, students discussed their completed projects. This included assessment data collected from their community partners and their own evaluations of the success of the project.

## Projects

Students learned from their hands-on experiences to be more aware of, and to understand, the impact that dementia has on afflicted individuals and their families, and also that dementia takes on a variety of forms. As a result, each group designed a unique project that catered to their specific family.

One participant suffered from frontotemporal dementia, a particular form of dementia with symptoms including language difficulties, personality and behavior changes, and impaired abilities to focus attention. The patient, along with his two caregivers, expressed their desires to be engaged in the creative process, to incorporate his recent interest in drawing, and to create a digital scrapbook that could be passed on to his children, including photographs, personal drawings, and video narratives outlining his life (see [Figure 1](#) for sample content of all four projects). The importance of this project to the patient was highlighted when he called this project his "bag of jewels." His caregivers remarked that this course allowed them to meet his needs in a way they could not do on their own. They said that when he was involved with this project, he was "animated and enthusiastic, and acted more like he used to before he was diagnosed with dementia." This sentiment was not lost on the students, who remarked on the strong bond formed with this family over the semester.



*Figure 1.* Sample project content: a) Video scrapbook narrated by community partners, consisting of family photographs, drawings made on an iPad, and photographs chronicling family history and important achievements; b) “virtual window” of favorite things, displayed on large screen with headphones to address hearing and vision impairments; c) interactive map that showcased music from around the world, linked to video performances on YouTube; and d) digital scrapbook highlighting time in the military, favorite travel destinations, coloring book, sing-along picture books, and army games.

Another participant had severely impaired vision and hearing, as well as moderate dementia with symptoms including difficulty speaking, memory loss, and confusion. Students learned in class that her particular type of dementia made it difficult for her to make decisions or to sustain attention for long periods of time. In designing a project that focused on her interests yet respected her limitations, three students created a DVD that included pictures of her three favorite interests: family, birds, and clouds. To address her hearing and vision problems, the students used a projector to present the video on a large wall, creating a “virtual window,” and used headphones to amplify the sound. Her caregiver stated that this project appealed to her because it “respected [her] mother as an adult, whereas other activities seemed too childish” and that “this process has been totally positive for us; creating a product so specifically for Mom is beyond anything I could have hoped for.”

The third participant suffered from Alzheimer’s disease, including aphasia and memory loss. His students created a virtual museum application with galleries for family photos, favorite vacation destinations, and artwork. Mid-semester, the students learned that their community partner was reluctant to engage in an activity that required him to sit in front of a computer. Furthermore, he had trouble initiating the activity and making choices, so his

caregiver suggested creating a project that could be enjoyed in a more passive manner. She suggested that the project focus on music, as the couple regularly attended concerts. In response, the students created an interactive music map in which the couple could click a location on a map and then view YouTube videos of concert performances representative of that region of the world. In addition, they customized a radio station using the online music-streaming program Pandora<sup>®</sup> to include the couple's favorite music. These latter two projects were more well-received by the couple, though the caregiver suggested that "actually going to a gallery or museum and looking at the art together, taking a walk on the Rivanna trail and looking at nature, or attending a rehearsal or concert might have been better."

The final participant also had Alzheimer's disease, with memory loss and speech difficulties. His students created a portfolio of iPad games, sing-along slideshows, digital coloring books, and photo albums for their family to enjoy. The students drew upon the couple's favorite vacation destinations, songs, and the patient's history in the military. Rather than creating one project with relatively unchanging content, this group took a more dynamic approach by introducing new iPad applications at every group meeting. The couple enjoyed these interactions so much that they purchased their own iPad when the course ended. Of their experience, the participant's caregiver stated: "We appreciated so much the sensitivity of each of the ladies in wanting to understand and address [his] needs in a way that would be appealing. They gladly made changes or added material to improve the presentation."

The families took their projects home each week so that they were not limited to use during class time. Students updated the projects during and outside of class time based on partner feedback and then presented the revised project to their community partners at their next meeting. All families kept their projects after the semester ended.

## Assessment

### Learning Outcomes

The action teaching model had a variety of positive outcomes for students. First, action teaching fostered values of citizenship and built students' confidence in their abilities to help others. Each week, students directly experienced the positive benefits that emerged from their digital projects. This real-time reinforcement empowered students to continually build upon and improve their projects. Many of the students retained relationships with their community partners after the course ended.

Second, students learned the value of collaboration and developed problem-solving skills by working in teams in which each member contributed a unique skill set to the project. In Art and Aging, all students majored in either psychology or cognitive science, such that each student had a background in behavioral research. However, each group consisted of students with a background in art, architecture and design, or computer programming. Bringing people together from different academic disciplines can often lead to creative problem-solving strategies and is an experience valued in many careers.

Third, students learned by doing. A community-based project highlights the reciprocal nature between knowledge learned in the classroom and knowledge acquired through real-world experiences. Students acquired fact-based knowledge about dementia in the classroom and used that information to successfully interact with their community partners and to develop their projects. Furthermore, their interactions with community partners reinforced these classroom lessons and led them to investigate more details about their partner's specific form of dementia, which strengthened their research skills.

Fourth, students were intrinsically motivated to learn. This course cultivated intergenerational relationships between undergraduate students and the elderly by working towards common goals. This personal connection and the ability to immediately apply classroom knowledge to a real problem pushed students to work hard, not for a high grade, but to create an enjoyable experience for their community partners. Students often stayed late after class to work on their projects and several groups created extra projects for their community partners after the semester ended.

Students completed a reflection paper as a final assignment to describe their learning experiences throughout the semester, which echoed the learning outcomes. For example, students commented that:

- “It was truly wonderful to be part of an academic class that not only benefited me as a student and future psychologist, but also benefited the community.”
- “We used the information we learned in class to inform our project design and the way we interacted with [our community partners], and we used our interactions with [our community partners] to enforce and deepen our understanding of what we learned in class.”
- “I believe that the hands-on model gave me more motivation and initiative to learn and solve the problems presented to us because I was personally involved with the projects.”
- “The entire experience has been extremely rewarding... I found myself putting in an extra effort because I felt my group mates and I could truly make a difference in our patient's life.”

### **Community Participants**

Students designed questionnaires to measure various aspects of their projects including usage frequency, enjoyment, and the families' reflections and satisfaction with the overall course experience. For example, questions included, “How would you describe your mood before, during, and after using the project?”; “Did using the project stimulate conversation?”; “How many times per week did you use the project?”; and “Do you have any suggested changes or did you encounter any technical difficulties when using the project?” Students administered these questionnaires every week and the families filled out the forms whenever they used their projects at home. Students used this data in their final reports and presentations to measure the success of their projects and to make decisions about how their projects should evolve each week.

The amount of feedback received through the questionnaires varied widely among the four groups and was limited to qualitative data. As such, the data could not be statistically analyzed, but some general themes emerged from participants' reports. Overall, the community participants responded positively to their experience with the course. Participants reported positive moods during and after project use, an increased sense of autonomy, increased interactions between care giver and care receiver, and a sense of pride in creating a unique project.

### **Implementation**

This type of course, in which students work directly with specific members of the community, requires extensive planning and organization. To ensure an optimal experience for both students and community participants, it is essential to form reliable partnerships with community organizations, such as we did with the local Alzheimer's Association. This organization assisted in recruiting participants, scheduling, and training students on how to appropriately interact with community members.

Maintaining a flexible plan and designing back-up activities will also facilitate a successful learning experience. For example, on several occasions, community participants needed to cancel their student meeting that was

scheduled during class time. Students may feel that their project is not progressing at an optimal pace if they are unable to receive their weekly participant feedback. In those circumstances, students should be provided with structure and specific goals to work towards in the absence of their community partners and provided with the option to reschedule their meeting. While we did not encounter this specific problem, it is possible that community partners will decide the course is not a good fit and opt to withdraw from the course. With strong ties to a local organization, a new community partner can be recruited for that student group to begin a new project.

For two groups, making technology the central focus of the project proved challenging, whereas for the remaining two groups, the families enthusiastically embraced the use of technology. For variations on this course, it will be important for students and instructors to realize this variability in preferences and to provide alternative project mediums or content. For example, rather than creating a virtual museum, students could partner with a local art museum to schedule a private gallery visit.

One aim of this course was to strengthen students' collaboration skills by enrolling students from different academic backgrounds with unique skill sets such that students gain perspective from unfamiliar disciplines. To achieve this goal, the course should be advertised to multiple disciplines and students can submit an application to enroll in the course in which they detail their skills and interests. It is also important to consider limiting group size to two or three students, and adapting group size to individual participant needs, as one group in our course stated that three students could sometimes overwhelm the participant.

Instructors should scaffold students' hands-on experience with sufficient background knowledge and equip them with the necessary tools and training to most effectively develop their projects. This can be done through lectures from expert researchers, workshops on designing and developing technological projects, and providing resources for seeking computer programming assistance or accessing computer software.

Finally, efforts should be made to empirically assess the efficacy of the action teaching model. To date, assessments of action teaching are limited to qualitative feedback from students. However, it would be informative to know whether action teaching activities support lasting learning outcomes.

## Conclusions

This course serves as an example of how to engage students in classroom material at a deep level while simultaneously impacting society. Such service-learning courses provide a means for students to learn how to research a problem, imagine possible solutions, design and implement those ideas, and test the efficacy of their projects by collecting and analyzing qualitative and quantitative data.

For students in Art and Aging, learning went beyond traditional lecture material through the development of a customized project that promoted the well-being of someone experiencing dementia. This course fostered values of citizenship, developed students' research skills, and highlighted the reciprocal nature between knowledge learned in the classroom and knowledge acquired through real-world experiences, all while benefiting members of the local community. In many courses, students learn information with the expectation that they may use that knowledge at some point in the future. In action teaching courses such as Art and Aging, the delay between learning and applying knowledge is eliminated, resulting in a deep understanding of the material and an enriched learning experience.

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## Competing Interests

The authors have declared that no competing interests exist.

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## Notes

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