

EncoreLife: A Gamified Platform to Enhance Older Adults' Social Connections, Feelings of Accomplishment, and Daily Life Structure during Transition to Retirement

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Retirement is a significant life event that can have major impacts on well-being. Although demographic changes have led to longer post-retirement periods, the extended lifespan does not guarantee increased quality of life. Older adults may experience increased loneliness, loss of purpose, and adverse health outcomes. To assist older adults in making the transition to retirement, researchers developed a gamified app named EncoreLife, featuring collaborative local activities, digital social interactions, and a reminder system, with the goal of fostering social connections and reestablishing daily life structures. Results from a preliminary user study with four participants (average age = 74.3) indicated that enhanced opportunities for social engagement were the most strongly valued features of the app. Future research is planned to further enhance the interactive features of the app, evaluate its use with a larger and more diverse participant samples, and conduct a longitudinal study of psychological outcomes.

CCS CONCEPTS • Human-centered computing • Interaction design • Empirical studies in interaction design

Additional Keywords and Phrases: digital community, gamification, design thinking, transition to retirement

1 INTRODUCTION

The increase in life expectancy over the past few decades has led to a longer post-retirement period in the United States. Coupled with the trend towards early retirement, this phase of life is becoming a midlife experience rather than a marker of old age [6, 13]. However, the extended lifespan after retirement has sometimes associated with negative outcomes, such as increased loneliness due to shrinking of social networks and diminished social interactions [1], which may lead to adverse mental and physiological health outcomes [5]. Recent studies have found that healthy transitions to retirement were linked to strong family bonds, social connectedness, engagement, and establishing predictable structures for everyday life [7].

Technological interventions have the potential to support older adults' engagement in social activities and building social connections. Social networking platforms [18], video-conferencing tools [16], and virtual reality [3] have all been found effective in fostering social networks and reducing loneliness among older adults. In one notable study, researchers developed a personal reminder and information management system (PRISM) prototype that included internet access, a resource guide, an online classroom, and a calendar for older adults. The intervention group reported significantly less perceived loneliness and increased social support after using the platform for six months [4].

Gamification, defined as the process of enhancing everyday activities with affordances such as well-defined tasks and rewards to invoke game-like experiences, has been previously employed to enhance motivation and engagement in older adults for activities such as health interventions [19], cognitive training [11], and social interactions [9]. The use

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of game mechanics such as points, badges, and leaderboards, have been demonstrated to promote both greater engagement and a sense of achievement among older adults [10].

In the current study, our team designed a prototype technology to assist older adults who are transitioning into retirement, using a gamified approach to promote meaningful social connections and reestablishing structure in daily life. We developed the platform following a human-centered design approach (as discussed below), and then conducted a preliminary user study to solicit feedback about its features.

2 METHODS

2.1 Prototype Design

To develop the prototype, we used a model of human-centered design developed by The Hasso Plattner Institute of Design at Stanford [15], consisting of five steps: *Emphasize*, *Define*, *Ideate*, *Prototype*, and *Test*. In the *Emphasize* phase, we conducted in-depth interviews with six older adults to gain a deeper understanding of the challenges they faced shortly after retirement, and the way that they had overcome those challenges. The participants all identified as women (which is a limitation in the current instantiation of the project), and had an average age of 72.3 years. In analyzing the interview transcripts, three primary themes were identified. First, the participants confirmed that social connection were a central concern as they went through retirement. Some participants said that they focused on maintaining their existing connections, while others sought new friendship by engaging with organizations oriented toward older adults. Second, participants confirmed that they had struggled to establish new stable structures in their everyday routines. Although they were glad that retirement offered them the flexibility of free time, there was a strong perceived need to establish regularity in daily activities to avoid a sense of being adrift. Many of the participants used new work as volunteers or freelancers as means of establishing such schedules. Finally, the participants indicated that setting and accomplishing “small goals” had contributed to their sense of meaning and engagement as they moved into retirement. Defining and achieving minor everyday tasks was viewed by the older adult participants as one of the most effective ways of maintaining stability and motivation.

Drawing from these insights, we sought to integrate the themes of social connection, daily scheduling, and small goals into a gamified application for adult adults who are transitioning into retirement (*Define* phase) After multiple rounds of brainstorming and mapping out potential design solutions, we settled on a set of activities that we could implement in the collaborative design tool Figma v.116.8.5 (Figure 1) (*Ideate* phase). An interactive prototype of the application was then developed for user-testing and evaluation (*Prototype* and *Test* phases).

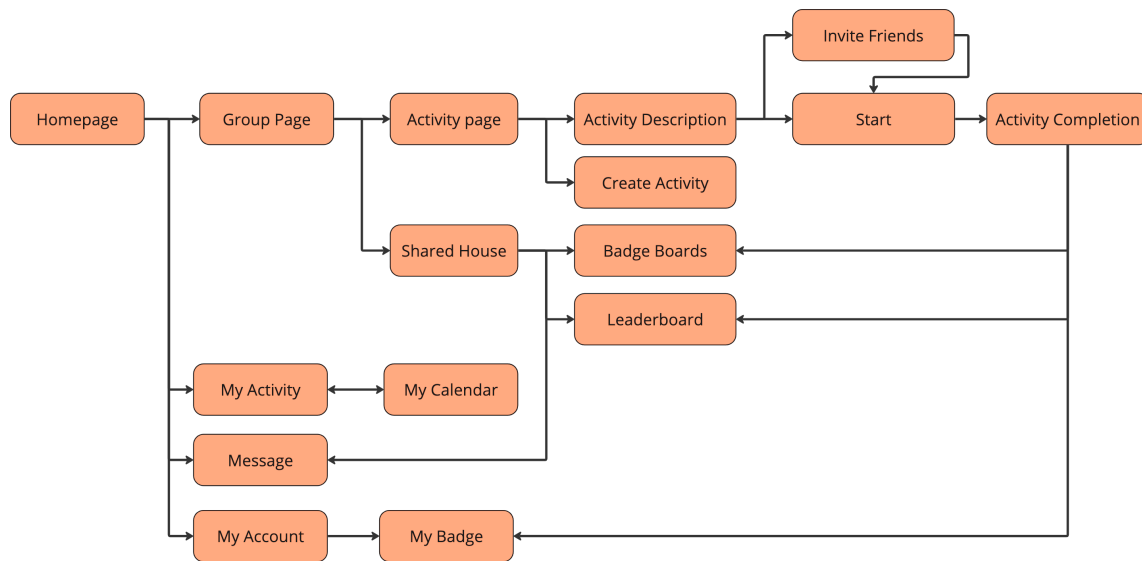


Figure 1: The information architecture of the EncoreLife app

The app includes three main components. In the *Collaborative Local Activity* component, older adults are prompted to join nearby social interest groups based on their preferences, which takes them to a curated list of local activities. They can then engage in the specified activities, which includes items such as meeting new friends in a coffee shop or with group members to create an art project, following detailed step-by-step instructions. Upon completion of an activity, users will advance to “higher levels” and earn badges that showcase their accomplishments. Additionally, they will receive various incentives such as local shop coupons to encourage continued involvement in the app’s activities.

In the *Hybrid Social Interaction* component, users interact with each other in a digital environment. These activities are designed around a “house” concept where each member can contribute to the house’s development. As members complete more activities and the group becomes more active, the “house” can evolve and feature increasingly intricate designs and advanced amenities. Each user has their own “decoration wall” within the house to showcase badges and decorations earned, which can be viewed by other members of the house. Designated rooms can also be created to host specific group activities. These interactions are intended to enhance the users’ sense of belonging within the digital community and allow them to connect with other older adults outside of their local geographic area.

Finally, in the *Activity Management* component, users can activate multiple notification methods to help keep track of their planned daily activities and schedule. Notifications can be set up and sent to various devices, as well as displayed on in-app banners. In the “My Activity” tab, the users can track scheduled events through both “list” and “calendar” views (Figure 2). The goal of this system is to support users in maintaining a structured daily routine, especially for social activities.

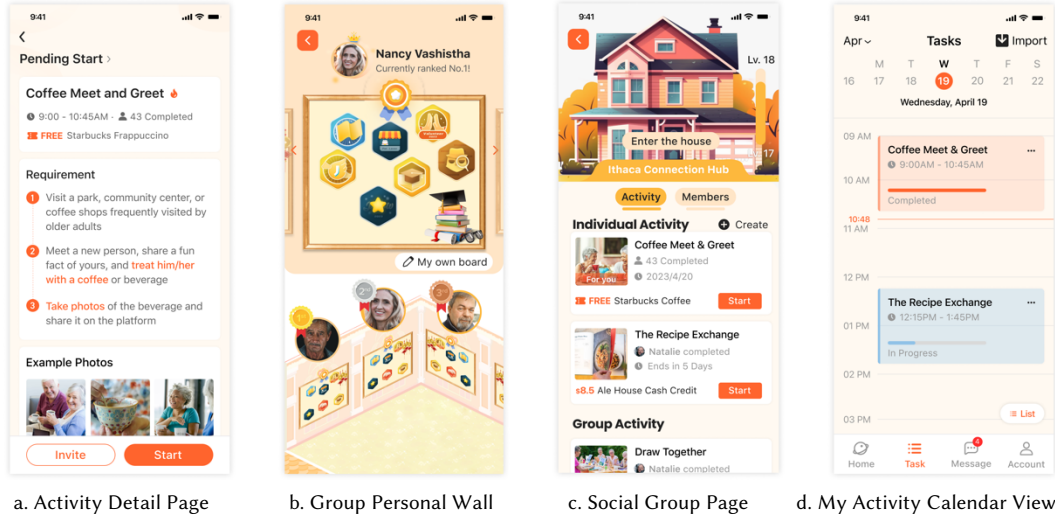


Figure 2: Prototype design of EncoreLife pages

2.2 User Study

For the preliminary testing of the EncoreLife app, we recruited a convenience sample of four older adults who indicated they had experienced changes in social relationships and struggles with daily schedules after retirement. Recruitment was performed by sending an invitation e-mail to a local older adult organization. Each participant was compensated for their time with a \$10 gift card. Demographic information about these participants is shown in Table 1. User sessions were conducted separately for each participant either in their home or in a local coffee shop, with two researchers presented. After signing a consent form and filling out a demographic questionnaire, the participants were asked to walk through the prototype application in a specified order of activities, including each of the three major components (The prototype app was coded to allow only a specific forward progression through these activity areas). The app was presented to the participants on an iPhone 12 Pro Max provided by the researchers. While examining each component of EncoreLife, participants were asked to talk out loud about what they were thinking and observing. This “thinking-aloud” method helps in producing relatively unfiltered reactions to the product, which is useful in identifying its strengths and weaknesses [17]. The participants were also instructed to complete one local activity achievement by offering a coffee or other drink to the researchers and sharing a fun conversational fact. Finally, after examining all three components of the app, the participants were asked to complete the System Usability Scale [8] questionnaire and then a 15-minute semi-structured interview with the researchers about their reactions to EncoreLife. All interviews were recorded with the consent of the participants and were later transcribed for qualitative analysis.

Table 1: Demographic information of participants

Participant	Age/Gender	Employment Status	Living Arrangements	Years after Retirement
1	72/F	Not employed	Living with partner	More than 3 years
2	68/F	Employed	Living with partner	1-3 Years
3	85/F	Not employed	Living with partner	More than 3 years
4	72/F	Employed	Living alone	1-3 years

3 RESULTS

Scores on the System Usability Scale ($M = 66.2/100$, $SD = 4.8$), indicated that the overall user experience was moderately good and has potential for improvement [8]. Additional insights emerged from the “thinking-aloud” data and the interviews were as follows.

3.1 *Sense of Accomplishment*

Participants reported that they felt sense of accomplishment after completing the sample social activity with the researcher, and they indicated that engaging with EncoreLife app would improve their motivation. One participant stated: “Since I invited them or they invited me, I better show up. I would feel bad if I didn’t.” (P4). This was regarded by the participant as an important challenge to confront, because: “A lot of people are sitting at home and doing nothing” (P4). This participant showed a great deal of attention in interacting with the app, such as creating a new group activity for “Learning Spanish.” Another participant acknowledged that accomplishing meaningful activities could become more challenging as one ages, and noted that even simple social activities, such as passing a coffee to a new person help maintain engagement (P3). Finally, a third participant focused on the coupon rewards offered by the system as strong incentive to engage in the suggested activities (P1).

3.2 *Sense of Belonging*

Participants emphasized the importance of having a local social group of similar peers, as it allowed them to share their progress and feel connected with others who participated in the same activities. One participant stated: “You have to have a social group. It’s like playing games with your friends, and you have interesting things to do.” (P1). The participants were particularly intrigued by the concept of a shared virtual space that would grow and develop over time, and one emphasized that they would like to invite their family and friends to join (P2). They also appreciated the idea of earning badges and being able to display them in different areas, as well as decorating their personal spaces. One participant was motivated by the competitive aspect of the leaderboard, saying: “I want to be on the top!” (P4). Some participants favorably compared the virtual social interactions with traditional local communities, indicating that in the online social groups they would likely have more “in common with other members” (P1) and that such groups can engage people who otherwise feel like they do not feel belong (P3).

3.3 *Structure of Daily Life*

The flexibility of activities in the app was seen as beneficial, in that it would allow the older adults to fill gaps in their schedules without feeling overwhelmed or having to commit a great deal of time. One participant indicated that her willingness to engage in activities had begun to vary as she aged, depending on how she felt on a particular day. Because of this, she greatly preferred a flexible framework of available activities with only few regular scheduled weekly activities (P1). Participants found the notification and reminder system useful for tracking activity progress. The calendar format was preferred over the list format for viewing activities, due to its familiar similarity to existing appointment books and paper calendars (P1, P2). Participants mentioned that the value of the calendar and reminder system for organizing commonplace activities such as doing laundry, taking meditations, or visiting the doctors (P1, P4). One participant noted overtly that a structured lifestyle can make daily life easier and prevent activities from feeling chaotic or overwhelming (P2).

3.4 Usability

Participants were satisfied with the overall user experience of the three features, complimenting the large font size, simplicity of layout, and well-curated visuals for their readability and comprehensibility (P4). While some aspects of the prototype initially presented a learning curve as some participants admitted to needing some time to fully understand certain terminologies during their first interaction, it provided opportunities for user growth and discovery. For instance, one participant was initially uncertain about the meaning of “invite” friends option and the progress bar’s function on the activity page. However, after a detailed explanation from the researchers, she became excited about engaging in activities with friends (P1). The same participant also sought clarity on the concept of “house” and how to contribute towards building the “house” in a social group. She also expressed privacy concerns with the personal decoration wall whether it was automatically visible to others. Participants were satisfied with toggling between the list and calendar to manage their activities, and suggested the idea of displaying activities from their joined social interest groups in a calendar format as well (P4).

4 LIMITATIONS AND FUTURE WORK

Findings from the study indicate that there is a great potential for the positive reception of a gamified lifestyle app for older adults in transition to retirement. However, there are limitations in the current research and a great deal of additional study is needed. First, all of our participants were women, in both the initial exploratory research and the subsequent user testing for the app. The fact that everyone who responded to our recruitment efforts were women may indicate that this type of product is of particular interest to women, and that men might not be as likely to use the tool or benefit from it. However, more research is needed to evaluate the relevance of gender to the social and technological needs of recent retirees, and to ascertain if there are systemic gender differences in user responses to the app. Second, our user testing restricted participants to a single flow from one component of the app to the next, technologically requiring them to proceed according to this path. This constraint may have affected the perceived usefulness of the design and prevented participants from exploring the app’s features in a more natural and intuitive manner. Finally, longitudinal outcomes such as impacts on social engagement, sense of belonging, perceived loneliness, and daily scheduling over time were not captured in this study. Longer-term research will be needed to evaluate these potential impacts of the app in the lives of older adult users. In future work, we plan to further develop the interactive features of the EncoreLife app, and then conduct a more robust study to evaluate its impacts in the lives of diverse older adult users.

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