**Digital Age:** Older Adults' User Experiences with Technology

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### Dr. Allegra W. Smith

Assistant Professor of English, Jacksonville State University (AL)

- Technical and Professional Writing
- Communication Design and User Experience (UX)
- English Internships
- Feminist Research Methodologies
- Online Writing Instruction (OWI)

Research is about making connections between things happening in your world, then forming questions to answer about those connections.

### **Research Trajectory**





# It all comes down to...

How do intersecting facets of our identities mediate our experiences with technology?



### A 3-Part Research Approach



#### Documentation

User education: how do we make the instructions and training better?

#### **Cultural Change**

Users and perceptions of users: how do we shift narratives and legacies?

# Stories and Research

Many great projects emerge from a moment of connection and question...



02

### A Personal Exigency...





A changing population pyramid...

Older adults are expected to outnumber children by 2035. 2020 was the first time that over one billion senior citizens were alive on the planet. ...but an unchanged research landscape?

Technical and professional communication (TPC) research overwhelmingly focuses on school and work (despite a 2004 call to attend to aging!)

#### What's Missing from the Research?



Users are depersonalized; the human element of HCI (human / computer interaction) is forgotten



No deep dives looking at individual older adult users or communities of older adult users



No work on retirement communities as subjects or sources of data (when they're ready-made networks of users!)

# Research Design

03

How did I pose questions and go about answering them? What roadblocks did I run into along the way?

# Research Site

The Villages, a central Florida retirement community

The United States' fastest growing city

Population doubled between 2010 and 2020 (51,000 to 114,000 residents)

Median community age of 67.4 (research sample median age was 82.2)





### **Research Questions**

What does "everyday" computer and internet use look like for older adults living in a residential senior community?

3

Which factors (e.g., material, infrastructural, embodied, cognitive, cultural, design, etc.) help or hinder older adults from realizing their technological goals? 2

What are the goals and purposes for technology usage articulated by older adults in this community? What motivations shape their usage?

4

How can we build a more inclusive experience architecture (XA), given this age cohort's experiences with and reflections on technology?

#### **Research Methods**



#### Semi-Structured Interviews: Answering questions about computing skills, learning, problems

15 participants, 7–30 minutes each



### Ethnographic Observations:

Walking through "everyday" computer use while "thinking aloud" (unstructured)

7 participants, 10–40 minutes each



#### Structured Task Analyses: Completing a series of (increasingly difficult) tasks to identify "pain points"

6 participants, 15–45 minutes each

### **Structured Task Analyses**

- 1. Access the internet on your computer
- 2. Set up a new homepage for your internet browser
- 3. Find a news story of interest to you about world events
- 4. Determine the distance between your home and the nearest Kohl's store
- Find a government document that answers this question: "How do I deduct medical expenses for transportation to and from doctors' appointments on my taxes?"



### (Analog) Data Reduction and Analysis

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Looke curry the, the laptop with me anywhere twent keyboard is a little harder to use for me than the other one was. Uh... and I'm not quite as happy with it as I was with the other one, It's faster—it does a lot of things quicker but this as far as word processing, it's not the best document to have.

AWS: Yeah. Because of the keyboard design, you think?

- Yeah, the keyboard. I had a separate keyboard on the other one, and I could bring the keyboard up close to the edge and so on. Part of it is I don't have as ince an area to work in here as I do., so some of it just has to do with space... tint as large as I had in the house. Because I had a computer room in the laundry room: the laundry room was where the computer was, and that's about all we did was laundry and the computer in there. Now I have the computer in the don, which is also a second bedroom. So it serves a different purpose than that.
- AWS: Right. Okay. The last question I've been asking folks is if they could tell the designer of their computer or their favorite website or maybe their email client one thing... what they'd tell them. So something... a change that could be made, or something that could be taken into consideration to make computing easier for you.

Dilos

· Gerald

I think probably the computer's a lot easier to use than I use it. I feel ignorant

technique with the family.

My wife is in memory care: she's over there full time. Kids are very concerned about her, so they come down every couple... three months. They take turns coming down to see her. But uh... they're interested in knowing the last-

# Noteworthy Findings

04

What are 70- and 80-somethings doing with technology? How can we improve that experience?

### **Diversity of Goals & Purposes**

- Email
- Search / reference
- Banking / finance
- News / media
- Craft / hobby
- Gaming
- Shopping
- Health / medicine
- Church / spirituality



### **Task Analysis Performance**

	Age	тı	T2	Т3	<b>T</b> 4	Т5
Holly	82	~	x	•	x	x
Peggy Sue	91	~	x	~	x	x
Gerald	82	<b>v</b>	x	V	x	~
Hank	90	V	x	<b>v</b>	•	•
Rose	86	V	x	V	<b>v</b>	•
Judy	78	V	~	V	~	~

- Success on internet access and news tasks
- Failure to change browser homepage
- Mixed results on mapping and tax information tasks

### **Forms of Technology Knowledge**

#### Declarative

- Involves facts and things
- Typically conscious and explicit



#### Procedural

- Involves how to do something or perform an activity
- Typically unconscious or automatic

e.g., 78-year-old Kitty was able to do things with her iPhone that I had never considered trying (*high procedural expertise*), but when I asked which apps she used, she asked, "Is mail an app?" (*low declarative expertise*)

# Why does this matter?

Declarative knowledge doesn't necessarily have to precede procedural knowledge, *but...* 

...the interplay between the two aids older adults in achieving their digital goals, *and* do so more safely (understanding the principles and mechanisms that underpin devices and sites, as well as helping them to request better assistance!)



### Search Strategy

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### Holly's User Journey



### Holly's User Journey

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SEARCHES

- Medical Expenses Medical Expense Quest ...

### What Can We Do About This?

**Revalue** older adults' technology engagement as literate activity, and older adults themselves as participants

#### Intervene through design, documentation / instruction, and cultural change

**Give back** to older adults in our regions and communities through our unique skills and positions

#### Incorporate

age and aging into the technology design process, **considering** users different from ourselves

### Carliner's (2000) Information Design Dimensions



## **Considerations Shaping Older Adults' User Experience (UX)**

Embodied / Material

#### Cognitive / Psychological

Educational / Training

Generational / Cultural

### **Embodied & Material Dimensions**

#### Optical Visual

Presbyopia, cataracts (make reading small text difficult)

#### Auditory

Reduced hearing capacity, partial or full deafness

#### Motor Skills & Control

Tremors; touch screens often preferred, since trackpads or mice difficult to use

#### Mobility

Difficulty moving body or device

#### Dexterity & Flexibility

Reduced range of motion, difficulty hitting targets precisely

Addressing these dimensions increases the productivity and satisfaction of all users! (universal design)

### **Cognitive & Psychological Dimensions**

#### Cognition

Memory, attention, decision-making ability decrease as age increases

#### **Mental Flexibility**

Moving between tasks or parts of a task, slowed information processing

#### **Sorting & Filtering**

Ability to disregard perceptual information that is unrelated to a goal

Addressing these dimensions increases the productivity and satisfaction of all users! (universal design) "I took a night course [in computers] at the high school with a friend of mine, and we were the oldest ones in the class. When they asked our age, we laughed... and that was a very basic course."

Minnie, 86 years old

### **Educational Dimensions**

"I didn't work for 25 years [after having children]. The school system asked me to come back, and they had computers. And without the secretary at another school, who helped me out considerably. I wouldn't have had a clue... because it never entered my lifestyle! Typewriting and all, but not a computer.

Holly, 80 years old

### **Educational Dimensions**

### Cultural / Generational Dimensions

**Curriculum of Aging:** The set of assumptions about what it means to be old or growing old in a society (Bowen, 2012)

In our current U.S. context, it's linked to bodily disrepair, supposed technological incompetence or refusal to learn new technology, etc.





organization with no success I am appealing to Corporate to solve my problem: I recently moved to a senior independent living apartment from my home. I no longer am able to use my former e-mail (djw1492@comcast.net) as they do not service this place for free. My new e-mail is djw1492@comcast.net) as they do not service this place for free. My new e-mail is djw1492@comcast.net) as they do not service this place for accept text messages as I have had problems with bad calls Go as a result your security won<sup>2</sup>t allow me to make the necessary change in my e-mail. At 83 years old, I am quite able to talk with a representative which now is impossible. Of all the docts, lawyers, company hospitals, and etc. you are the only company that is so unreachators, lawyers, company places help me to resolve this problem as soon as possible as I would like to participate in your services before I die. Computers are fine but sometimes a person that "talks" is important. Sincerely, Doris J, Woodward (Highsoprano10). 1490 Killingsworth Way, #340 The Villages, Fl 32162-2373 (DUMB PHORE #352-638-3646 Ko service on text). Home phore 352-674-3882

Or Just fix it and let me know, PS I am on FACEBOOK if security really wants photo ID

### Cultural / Generational

Single "points of access" for displaying content or achieving user goals = make assumptions about who the user is, how old they are, what access they have to technology and support, etc.

### **Cultural / Generational**

ct three security o	questions below. These questions will help us v	erny your
entity should you fo	rget your password.	
Security Question	What was the name of your first pet?	¥
Answer		
Security Question	What is your dream job?	Ŧ
Answer		
Security Question	In what city did your parents meet?	¥
Answer		

#### Language & Identification "The" computer, or "my" computer?



#### **Indefinite Articles**

Allegra: 9 (30%) Participants: 52 (75%)



#### Possessive Determiners

Allegra: 21 (70%) Participants: 17 (25%)



#### Meaning?

Obtrusiveness is a key factor shaping technology perceptions and adoption for older adults!

# Applications and Growth Areas

05

What does this mean for working with older adults? What does this mean for teaching writing?

### **Working with Older Adults** (Methodological Considerations)



#### **Give Double Time**

Budget extra time into interview, observation, interaction sessions, etc.



Stories are Generative

Listen to tangents; map the experiences, motivations, and cultural logics that underlie them



Do Contextual Inquiry

Meet participants where they're at (literally and figuratively)

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### **Providing Tech Support and "Lo-Fi Documentation"**

all



### Why Does this Matter for Composition?

Knowing how older adults learn and their experiences/obstacles with technology helps inform our teaching. Everyone is always aging, and not all of our students are aged 18–25!

#### At JSU...

- 17% of students are over age 25
- Overall 8-year graduation rate is 51% and first-year retention rate 69%, but these numbers are significantly lower for students in marginalized or minoritized categories
  - Racial and ethnic minorities
  - Students with disabilities
  - Older and "non-traditional" students



#### Age-friendly University Global Network

### Moving towards "Age-Friendly Universities"

"Response to the educational needs and interests of this emerging age population calls for new opportunities and innovative practices of teaching, research, and community engagement that colleges and universities in communities are poised to offer."

- The Gerontological Society of America

### **Age-Friendly University Principles**

- 1. Encourage the participation of older adults in all the **core activities** of the university, including educational and research programs
- 2. Promote personal and career development in the second half of life and to support those who wish to pursue **second careers**
- 3. Recognize the **range of educational needs** of older adults
- 4. Promote **intergenerational learning** to facilitate the reciprocal sharing of expertise between learners of all ages
- Widen access to online educational opportunities for older adults to ensure a diversity of routes to participation

- 6. Ensure that the university's **research agenda** is informed by the needs of an aging society
- 7. Increase the understanding of students of the **longevity dividend** and the increasing complexity and richness that aging brings to society
- 8. Enhance access for older adults to the university's range of **health and wellness** programs and its **arts** and **cultural activities**
- Engage actively with the university's retired community
- 10. Ensure regular **dialogue** with organizations representing the interests of the aging population

### Incorporating Age and Older Adults into the Curriculum

- Integrate age into assignments
- Highlight age as a marker of difference and category of analysis
- Partner with local Area Agency on Aging or Senior Center through service learning and client-based projects
  - Conduct research
  - Host workshops
  - Create educational resources (tip sheets, videos, quick reference guides, etc.)
  - Collect and publish oral histories or memoirs





#### Target iPhone User: Older Adult

Doris Parker Retired Secretary, Homemaker

Age: 82 Location: Tampa, Florida

### "I get overwhelmed with new technology. I just don't know where to start."

#### About Doris

- High school education level
- Widowed
- Three children, eight grandchildren

#### **Physical Considerations**

- Has age-related macular degeneration that impacts her vision: large print and high contrast are important
- Older adults have a greater range of movement-control errors than their younger counterparts

#### **Behavioral Considerations**

- Like most other people her age, she prefers to read instructions on paper, not on a screen
- Difficulty focusing on a task or filtering out distractions
- Lack of a mental model for smartphone use or apps

#### "I just don't want to get so hooked on my phone that it controls my life."

#### Environment

- Low internet bandwidth at home; is excited by the opportunities of a faster mobile internet connection
- Somewhat comfortable using a computer for basic email and social networking (Facebook posts and messages), as well as Microsoft Word

#### Frustrations

- Difficulty clicking and selecting items on a touch screen
- Lack of understanding of what constitutes an app versus a website

#### Goals/Tasks

- Set up her new iPhone
- Understand how to install, uninstall, rearrange, and access apps
- Install Facebook chat so she can video message her grandchildren

### Creating Personas

Asking students to make representations of users provides a good classroom activity for thinking about audience

### PROJECT THREE PITCHING A SOLUTION

#### **OVERVIEW & OBJECTIVES**

The sharks on ABC's popular reality series have distributed an open call for entrepreneurs across the US: can you come up with the next big startup targeting the growing silver economy?



No, they're not talking about a replacement for the gold standard—they're talking about grandma and grandpa.

When you think of a senior citizen, what mental picture comes to mind? Do you think of a sweet old grandma with lots of time on her hands? A grandpa with disposable income to spend on hobbies and doting on his grandchildren?

We have an idealized version of older adults as people who have more free time and disposable income than their younger counterparts, but there's actually a great amount of diversity across this population. Some elders don't get to retire, while others have 20 or more years of retirement after they leave the workplace. Some are taking care of grandchildren or adult children, while 42.8% of older adults are "aging alone"—that is, they don't have children, grandchildren, or a spouse to take care of them. Some have millions in the bank, while others are on a fixed income.

Older adults represent the fastest growing market segment in the country. Currently, one out of nine Americans is 65 or older: in a decade, 20% of Americans will be. By 2035, older adults will outnumber children, and over one billion senior citizens will be alive on the planet. This is the opportune moment to secure funds and resources to tap in to this market: with the sizable Baby Boomer generation retiring (the last Boomers turn 65 in 2029), it's the ideal time to develop products and solutions targeting elders.

From all-inclusive retirement communities, to websites connecting seniors in need to care providers, to autonomous vehicles to help elders maintain independence, to <u>VR for</u> <u>connecting residents of nursing homes</u>, to <u>platforms for recording end-of-life plans</u>, to Assignment Highlight: "Shark Tank for Seniors"

- Final project in a Business
  Writing course themed around "social and cultural entrepreneurship"
- Students collaborated in cross-disciplinary teams to propose and pitch a hypothetical innovation for \$1 million in startup funds

### The Results...

Our product: EASY-CALL, combines technology, efficiency and reliability in order to provide a solution for the constant worries that come along with aging. With a versatile and ergonomic watch design, complemented with features such as motion and solar energy powered, water and dust proof capabilities, we attempt to make the product completely worry-free. We designed the watch to have no need of taking it off at all, becoming the most reliable product for the elderly.

#### OUR SOLUTION: EASY-CALL

The purpose of our product is to become the bridge of communication between a senior citizen and their loved ones through localization and contact. It also includes an additional feature of an emergency button which contacts the nearest authorities when pressed, therefore providing 24/7 security for the wearer.

EASY-CALL has an ergonomic design, and utilizes an innovative ondly material which provid and feels like a otion powered product that is

#### and we will always gu

The product is perm satellites and serv worldwide access an that the wearer's love them anywhere and this is what makes ou competitors, and will of our product in the l

An updated alternative to Life Alert that leverages GPS technology to keep older adults independent and safe





#### Guide and Grow



between today's students and many elderly individuals, but continues the learning and teaching process for all those involved. The Harvard Medical School states that stimulating your brain through learning new skills or taking part in new experiences is essential for slowing the brain's aging process (Solan, 2016). The ability for elderly individuals to learn new content allows them to "exercise" their brains, therefore increasing activity and engagement overall. Similarly, as people grow older, it is more likely that they become isolated and begin to lack human interaction on a daily basis. Guide and Grow provides a professional learning and teaching base to create connections between people from many different walks of life.

This professional learning platform

not only helps to bridge the generation gap

Wireframes for a website connecting older adults with younger adults to combat isolation and learn new skills

### The Results...



Mock-ups and marketing for a home prescription management system



# Thanks!

Questions? Ideas?

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