



# Digital Health Literacy

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- Assistant Professor of Health Informatics  
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- Research focus: Developing and validating consumer health informatics tools that engage consumers in the management of their healthcare
- Current member and chair-elect of the AHIMA Council for Excellence in Education (CEE)

# What is Consumer Health Informatics

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- “Consumer health informatics (CHI) is an emerging field that utilizes technology to provide health information to enhance health-care decision making by the public” [1].



# Digital Health Tools

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- Hospital systems, health insurance companies and healthcare providers are leveraging the power of digital health tools with more frequency to engage patients in their healthcare and to improve overall quality of care.

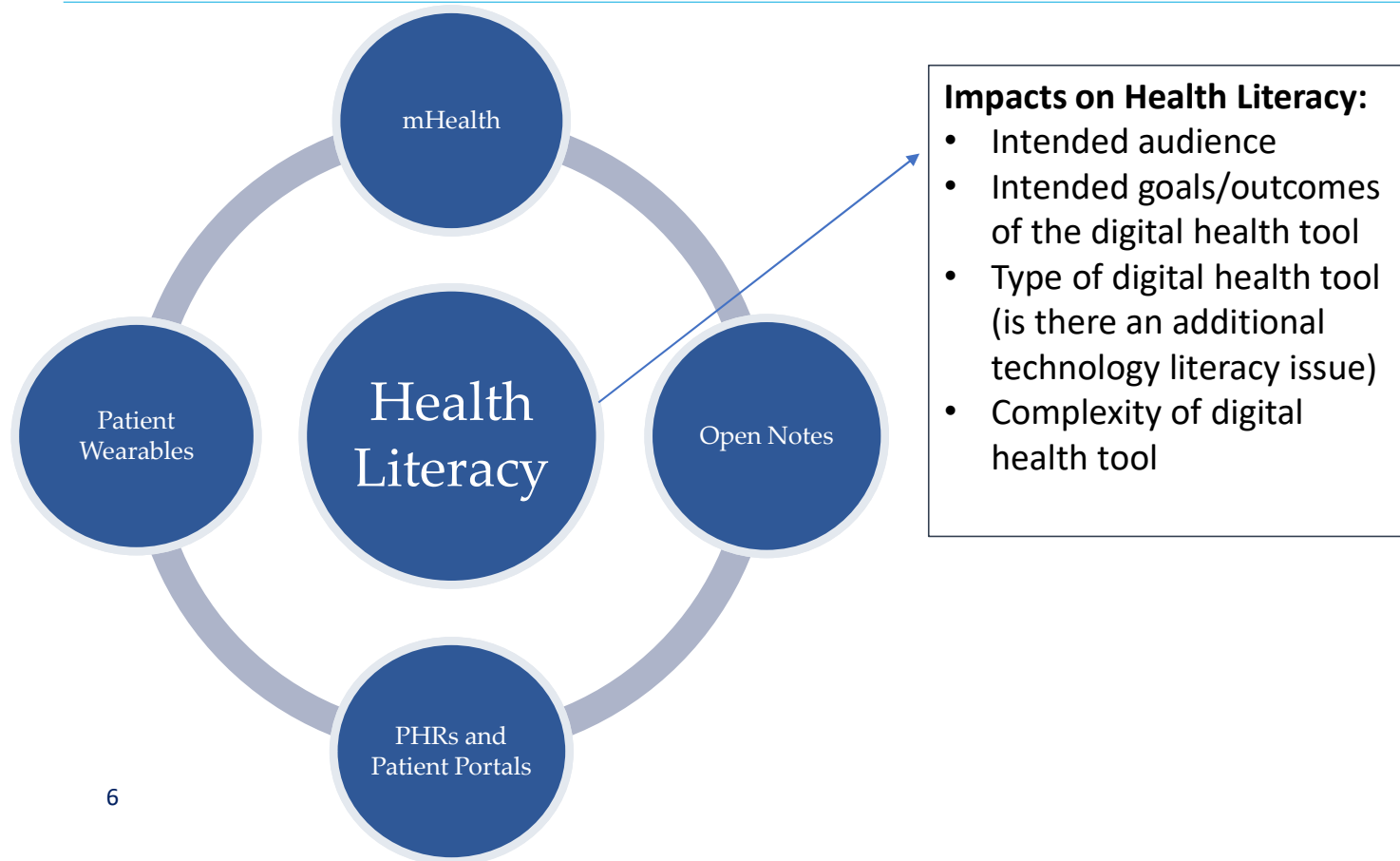


# Digital Health Tools

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- As of 2018, 95% of Americans adults own a cell phone and 81% own a smartphone [2].
- With the increase in smartphone utilization we are seeing an increasing use of mobile health (mHealth), wearable technology, and sensing technology.
- With the growing trend toward patient-centered care we are an increased dependency on consumers/patients to use digital health tools for self-care and self-management though.
- However, almost half of the U.S. population has limited health literacy!

# Digital Health Tools and Health Literacy



# Does it Impact Health Literacy in Digital Health?

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- Acronyms

Yes

- Clinical language

Potentially

- Screen size

Yes

- Condensed screens

Yes

- Computer/Smart devices literacy

Yes

# Health Literacy Challenges in Digital Health

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- ONE SIZE DOES NOT FIT ALL
- Creating adaptive technology to meet the user's health literacy needs is paramount to ensuring the effectiveness of the digital health tool
  - This includes integration of standardized measurement tools to assess individual's health literacy
- Finding the balance between content validation and appropriate health literacy interpretation



# Improving Health Literacy in Digital Health

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- Utilize frameworks and theories that focus on interpretation of data/information.
  - For example: The Interactive Health Communication Applications framework is the interaction between a consumer (patient) with an electronic device/communication device (mHealth) to access/transmit health information or receive guidance and support on a health-related issue [3].

# Improving Health Literacy in Digital Health

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- Utilize media (videos and images) to support text content such as delivering short videos on cooking and exercise tips to promote new behavior [4].
- Utilize principles from persuasive technology such as tunneling design.
  - This design ensures that all participants have the same digital health experience and are exposed to specific information that they might not have seen otherwise
  - These designs have also been shown to reduce cognitive load, which is important in more complex or information heavy mHealth apps such as capABILITY [4].

# Case Example: mHealth app for Type II Diabetes

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- capABILITY was a mHealth app designed to improve knowledge, self-care measures and self-efficacy in individuals with type II diabetes.
- Steps used to ensure appropriate health literacy:
  - Pre-development focus groups with patients and clinical experts
  - Implementation of a true user centered design approach which included content validation by patients and clinical experts
  - Utilization of valid measures and content (American Diabetes Association, Summary of Diabetes Self-Care Measures)

# Case Example: mHealth app for Type II Diabetes

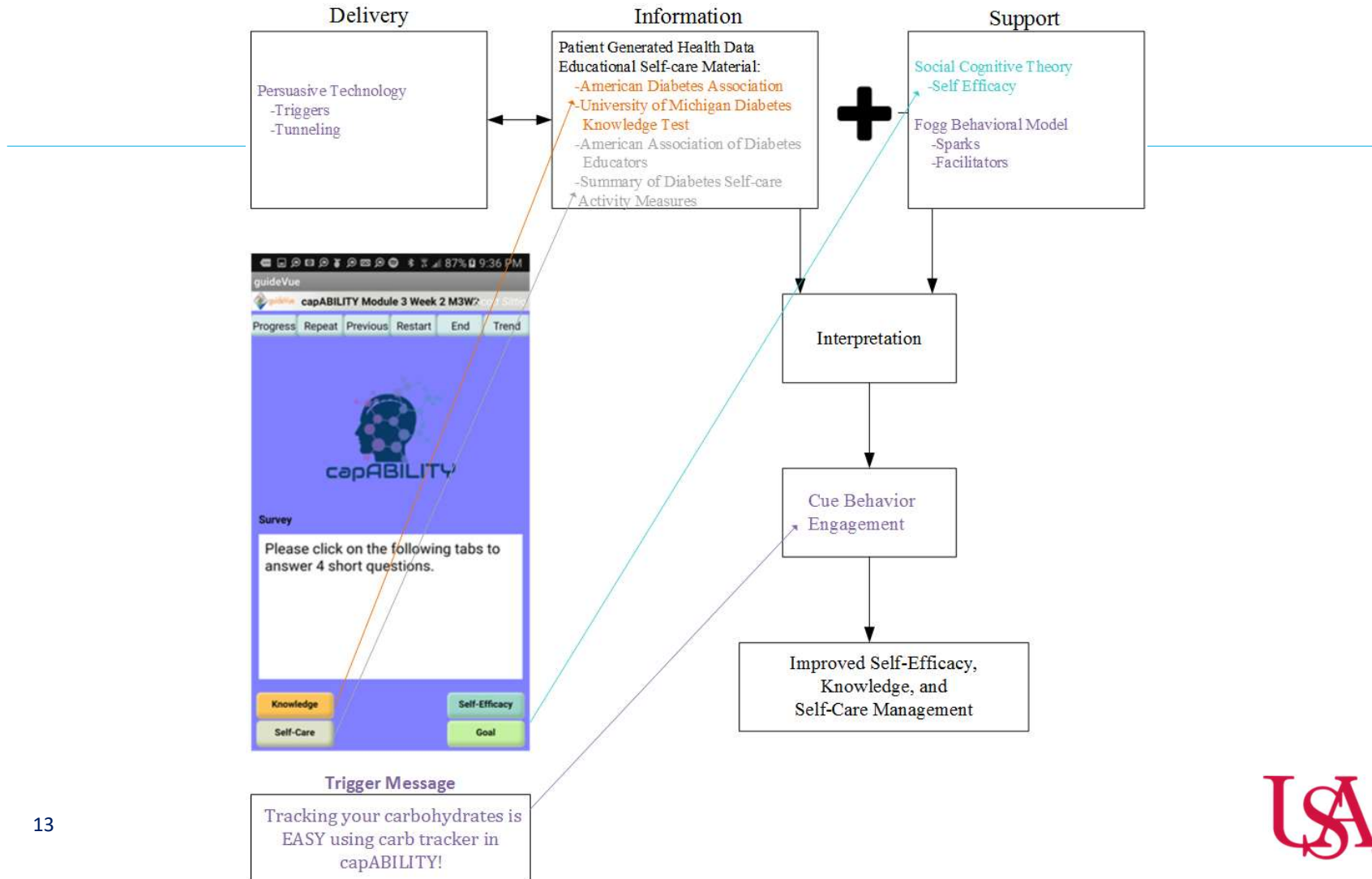
- Iterative design of behavioral trigger messages to ensure content and health literacy validation.

<b>Iteration 1 - Spark Trigger</b>	<b>Iteration 2 - Spark Trigger</b>
Thinking about your meals ahead of time allows for snack substitutes. Swap the regular bread on your sandwich for low-calorie bread and add a couple small cookies (your total carb count remains the same for the meal). Incorporation of snacks can be fun and rewarding!	You can still have snacks while managing your diabetic diet. Snacks can help curb hunger while adding a nutritious energy boost to your day!
<b>Iteration 1 - Facilitator Trigger</b>	<b>Iteration 2 - Facilitator Trigger</b>
A properly stocked pantry makes creating healthy snacks easy! Stock your pantry with the following to create great snacks that are 5 grams of carbohydrates or less: 15 almonds, 3 celery sticks + 1 tablespoon of peanut butter, 1 hard-boiled egg, 1 cup sliced cucumbers + 1 tablespoon ranch dressing or 10 gold fish crackers.	In order to cook quick diabetic friendly meals at home your pantry must be stocked appropriately. Click the menu icon to review an article on how to stock your pantry/kitchen! A quick easy solution!

- Process and Findings:**
- 3 rounds of iterative development using patients and clinical experts.
  - Cognitive load was 35 words.
  - Usage of the same words across messages
  - Avoid clinical jargon.



## Interactive Health Communication Applications Framework



# Additional Tools to help with Digital Health Literacy

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- Transactional Model of eHealth Literacy
- eHEALS: The eHealth Literacy Scale
- The Digital Health Literacy Instrument
- Short Test of Functional Health Literacy in Adults
- Rapid Estimate of Adult Literacy in Medicine
- Medical Term Recognition Test
- Web Performance Test

# Conclusion

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- Digital health has the potential to change the landscape of patient and caregiver self-management.
- Health Literacy needs to be a critical component to digital health design.
- Adaptative digital health technology needs to be utilized in digital health tools.
- Currently, many digital health tools fall short of providing content and delivery that meets the needs of the population for which it is intended to serve.

# References

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2. Smith A. Record shares of Americans now own smartphones, have home broadband [Internet]. Pew Research Center. 2017 [cited 2018 Mar 12]. Available from: <http://www.pewresearch.org/fact-tank/2017/01/12/evolution-of-technology/>



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3. Murray E, Burns J, See TS, Lai R, Nazareth I. Interactive Health Communication Applications for people with chronic disease. *Cochrane Database Syst Rev* 2005 Oct 19;(4):CD004274. PMID:16235356

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