

# Nursing Education: Fully Utilizing Apps & Mobile Devices

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- Named Minnesota Nurse of the Year in Education
- Inaugural Nursing Faculty, University of St. Thomas
- Created [www.RNnext.com](http://www.RNnext.com)

# ***TODAY, WE WILL...***

**1. Briefly review the mobile revolution in health.**

- *“Will nurses passively watch or actively lead?”*

**2. Discuss how to thread/seed your program with mHealth opportunities to use & learn.**

- *Focus on learning objectives, not technology.*

**3. Engage in active learning using multiple apps.**

- *Guide by the side*
- *Innate tech skills + expertise as RN & educator*

# ***See Apps differently...***

## **Active learning**

- *interactive*
- *“in hand” and “hands on”*

## **Patient-centered**

- *take-home teaching you can take anywhere*
- *unprecedented patient data collection*

## **Professional Development**

- *easy-to-use filters bring most relevant EBP, research & news directly to your device*

## **Safety & Quality**

- *clinical decision support tools*
- *EHR access anywhere, anytime*

# The mobile revolution in healthcare is



***HERE NOW &  
ACCELERATING...***





# DID YOU KNOW...

- **More people in the world own a mobile device than a toothbrush.**
- **There are more mobile devices connected to Internet than human beings on earth.**
- **Smartphones today have more than 100 times the computing power of the average satellite.**
- **More email in 2017 is read on mobile than on desktop – 54%**

*(Fisher, 2014; NASA, 2012; Litmus, 2017)*



**Both are  
tools for  
better health.**



# We use it for everything else...

- ✧ Email
- ✧ Shopping
- ✧ Maps & Travel
- ✧ Music
- ✧ Camera
- ✧ Dating
- ✧ Alarm
- ✧ Sharing
- ✧ Tickets
- ✧ Home Security

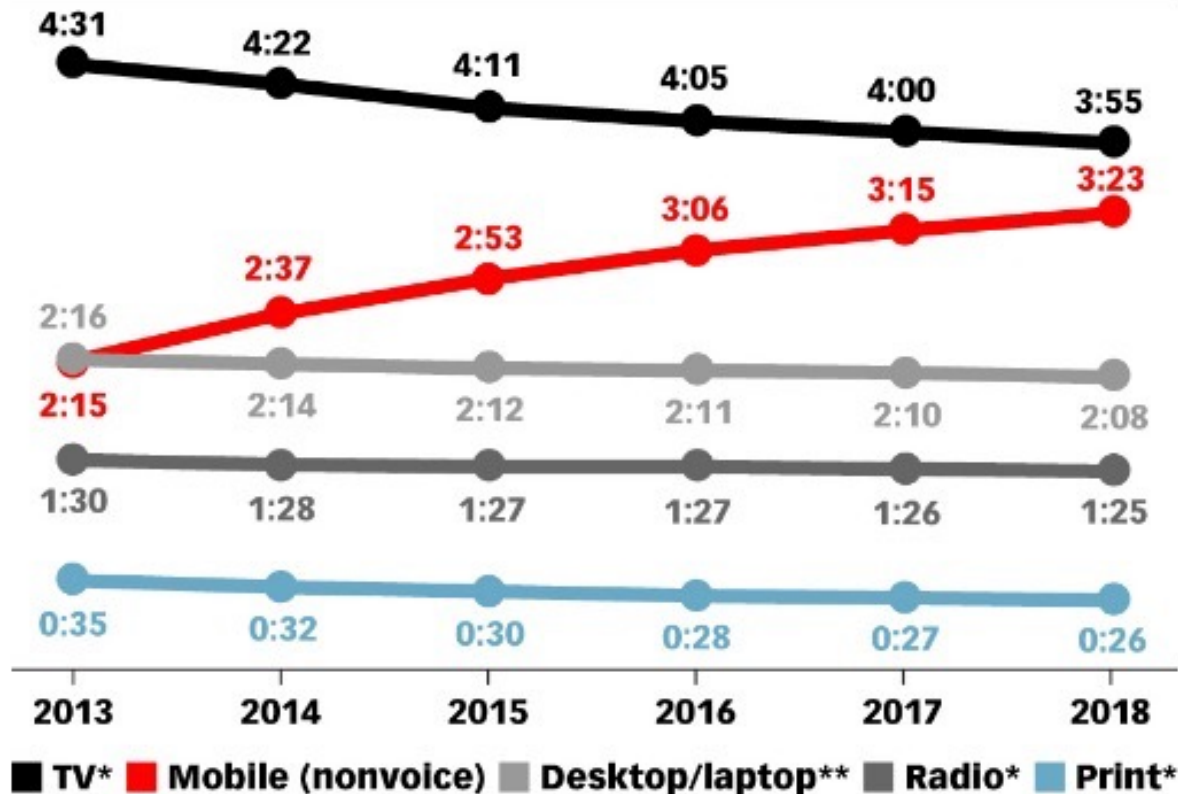


## why not health?



## Average Time Spent per Day with Select Media by US Adults, 2013-2018

hrs:mins



Note: ages 18+; time spent with each medium includes all time spent with that medium, regardless of multitasking; for example, 1 hour of multitasking on desktop/laptop while watching TV is counted as 1 hour for TV and 1 hour for desktop/laptop; \*excludes digital; \*\*includes all internet activities on desktop and laptop computers

Source: eMarketer, April 2016

Maximize use  
on the device  
most central  
to a person's  
life.

*Why wouldn't  
we?*

# How many apps are there?

OS	Total apps	“Health & Fitness” Apps	“Medical” Apps
Apple	<b>3.1 million</b> (↑ <b>397%</b> since 2013)	<b>93,100</b> (↑ <b>455%</b> since 2013)	<b>58,100</b> (↑ <b>352%</b> since 2013)
Android	<b>3.1 million</b> (↑ <b>502%</b> since 2013)	<b>93,829</b> (↑ <b>634%</b> since 2013)	<b>41,808</b> (↑ <b>641%</b> since 2013)

*(updated from Linck, 2013)*



Dec 3, 2012 - 6:50AM PT

**AliveCor's EKG monitoring case for iPhone gets FDA approval**



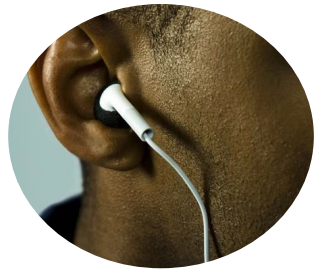


# AliveCor Kardia \$99

- FDA-approved, clinical grade mobile EKG monitor
- Connect with your Apple or Android mobile device
- Email results to yourself or your provider
- <http://alivecor.com>



# Mobile phone is now central repository of health data from multiple apps & wearables



- *Temperature*
- *Heart Rate*
- *Resp Rate*
- *Blood Pressure*
- *ECG*
- *Glucose Level*
- *Activity Level*
- *Sleep*
- *Carb Intake*
- *and much more...*





Since 2014,  
**wearable  
sensors** can  
flow data  
directly into  
**Epic MyChart**  
through iPhone



**MyChart**  
powered by **Epic**

(Hussain, 2016; McGary, 2016)





# Apple Health Records

**2018: Now leading EHRs**  
(Epic, Cerner, Athenahealth, Meditech, AllScripts)  
**can push out encrypted data to user's iPhones.**

(Mearian, 2018)





## **EARBUDS:**

- *Heart Rate*
- *distance, cadence, speed of run*
- *calories burned*
- *VO2max (max. oxygen consumption)*
- *TEE (total energy expenditure)*



## **FDA-approved ECG MONITOR:**

- *ECG*
- *Resp rate*
- *Heart rate (plus variability & reliability)*
- *activity level*
- *body position*



## **WRIST WATCH:**

- *Steps taken*
- *Calories burned*
- *Heart Rate*
- *Skin Temp*
- *Perspiration level*
- *Sleep (light, REM & deep)*

# What's next...

Share data  
with epilepsy  
researchers



Track  
your  
seizures



Compare  
results with  
other patients



Track  
your daily  
medications

Document  
your quality  
of life



Track  
possible drug  
side effects

*Focus on learning objectives,  
**not** technology.*

*Technology is a tool,  
**not** the goal.*

# 1. APP EVALUATION

*(any course, any level)*

Faculty chooses a condition.  
Student finds related app &  
assess in 3 areas:

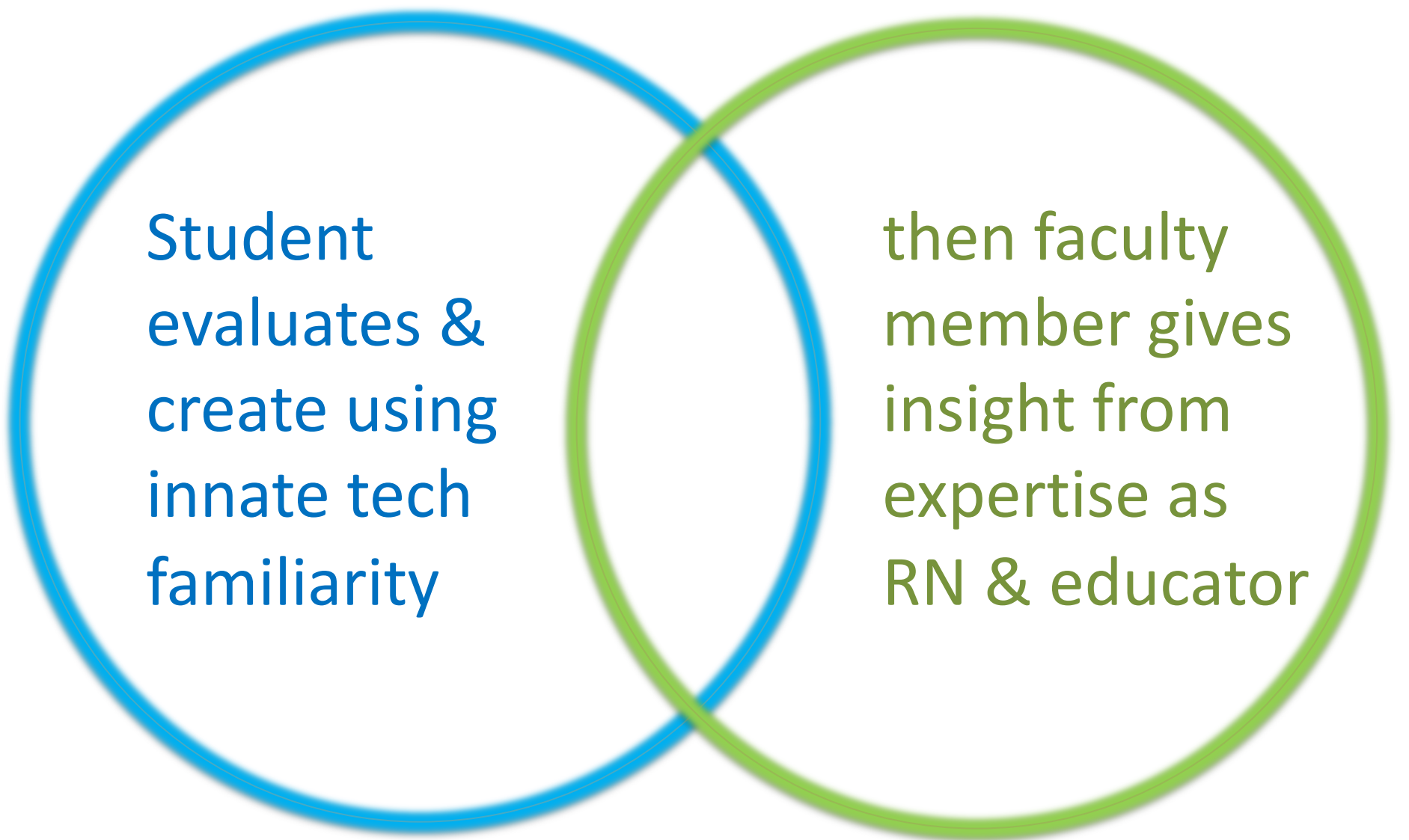
1. *content,*
2. *how well it helps self-management of condition*
3. *usability/technical performance*

Then post on disc. board & reply  
to 2 other students





# Active learning = Guide by Side



A Venn diagram consisting of two overlapping circles. The left circle is blue and contains the text 'Student evaluates & create using innate tech familiarity'. The right circle is green and contains the text 'then faculty member gives insight from expertise as RN & educator'. The intersection of the two circles is the central area where the two concepts overlap.

Student  
evaluates &  
create using  
innate tech  
familiarity

then faculty  
member gives  
insight from  
expertise as  
RN & educator

# Teach Concepts & Critical Thinking, Not Equipment

## AACN Competencies

- Advocate for use of new patient care technologies for safe, quality care (4.3)
- Recognize role of information technology in improving patient care outcomes and creating a safe care environment. (4.6)
- Apply patient-care technologies as appropriate to address needs of a diverse patient population (e.g., elderly). (4.9)

## QSEN Competency in Informatics

- Describe examples of how technology and information management relate to quality & safety of patient care (*K*)
- Apply technology & information management tools to support safe processes of care. (*S*)
- Value nurses' involvement in design, selection, implementation, and evaluation of information technologies to support patient care. (*A*)

*K = Knowledge   S = Skills   A = Attitudes*

*(QSEN, 2014)*



**BIG IDEA!**

**Data on elder care crisis**



**+**



***Assured Living* app  
(smart home program)**

**=**

**SYSTEM THINKING & REDESIGN**

# Projections on Elder Care Crisis



**1 in 5 Americans age 65+**

Shortfalls:

- *almost 1 million RNs, plus*
- *3.5 million health workers in long-term services & support (LTSS)*

**2050: Spending will double for LTSS**

**2060: 1 in 3 Americans age 65+**

# Seniors & technology today

## **AARP survey on tech & senior living:**

- 90% of seniors are willing to give up some privacy if they can remain at home longer
- Less than 10% are using the technology currently available

(Abrams, 2012)

## **Zulman (2013) Survey:**

- 35% of out-of-home family caregivers already using health information technology


– AND –

- use significantly increased with intensity of caregiving

# Who will bridge the gap?

Elders & family  
need tools to stay  
home safely

Specialized  
knowledge of  
tech tools  
available...



Assess patient & family,  
create a home care plan by  
matching needs w/ interventions,  
& educating family unit...

## 2. BUILD A SMART HOME FOR A SPECIFIC ELDER'S HEALTH NEEDS

*(Leadership course)*

- Assign a journal article & online resource on smart home tools & costs.
- Groups get a case study (*diabetes, early dementia, COPD, or heart failure*)
- Each group presents PowerPoint on smart home they created to address their patient's specific needs (within a budget).





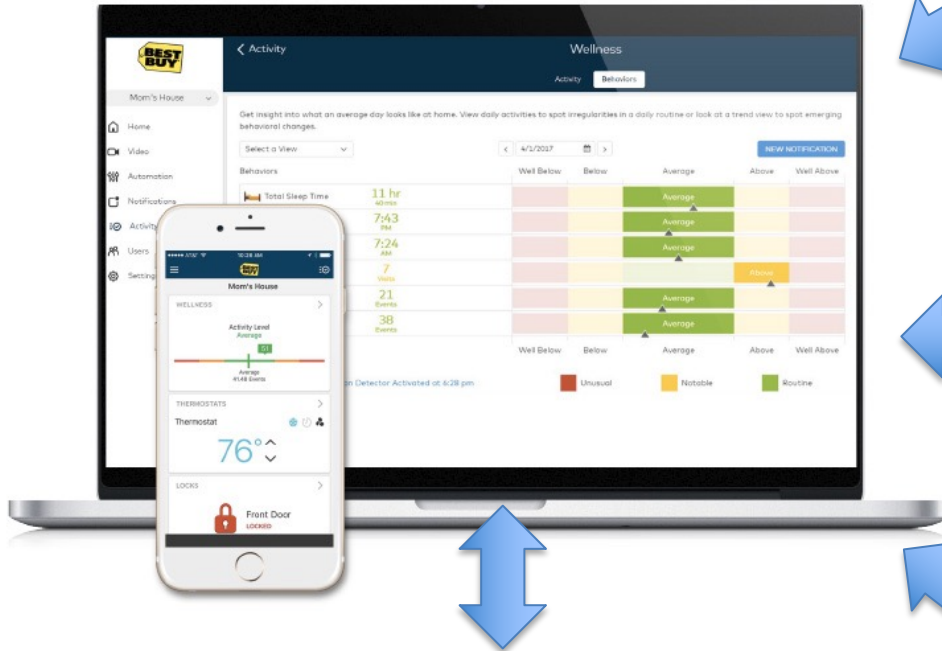
# ASSURED LIVING (smart home)



- **DOOR SENSORS** for refrigerator & med cabinet



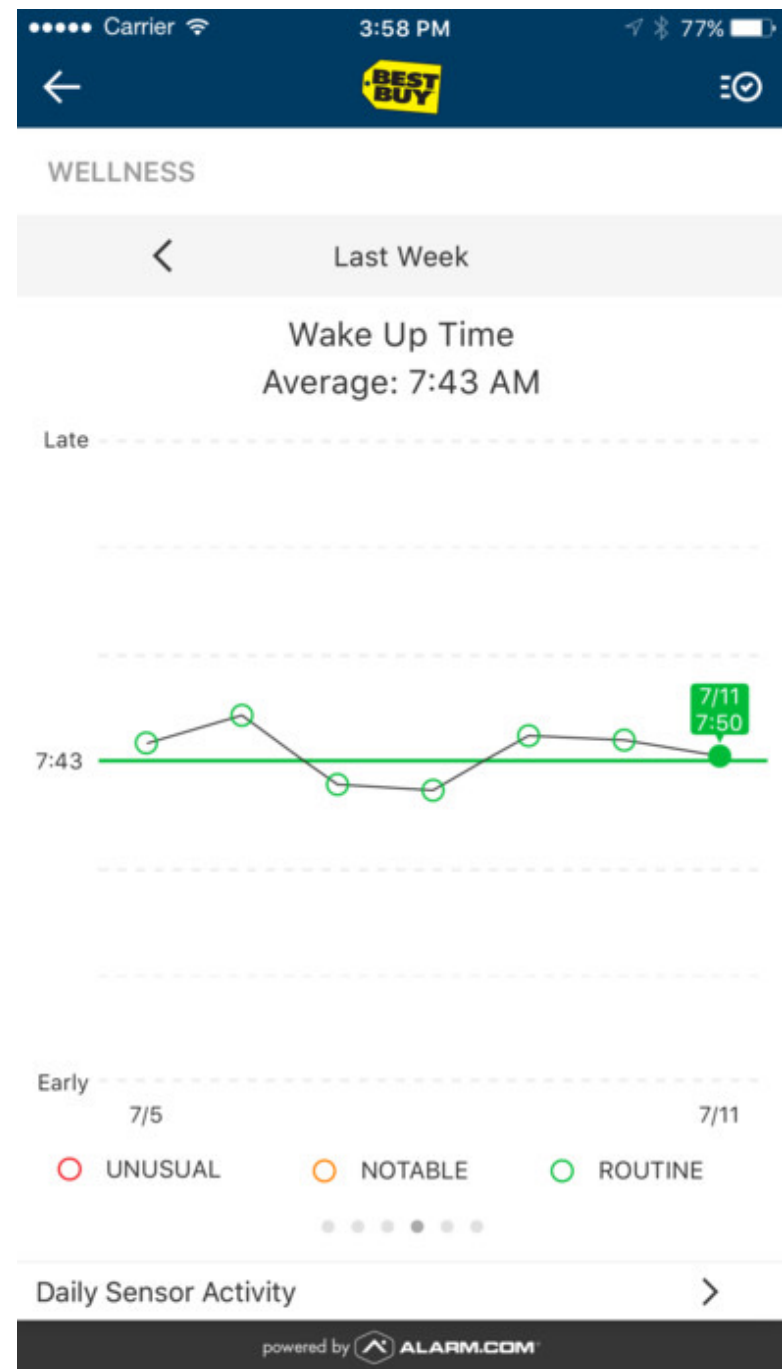
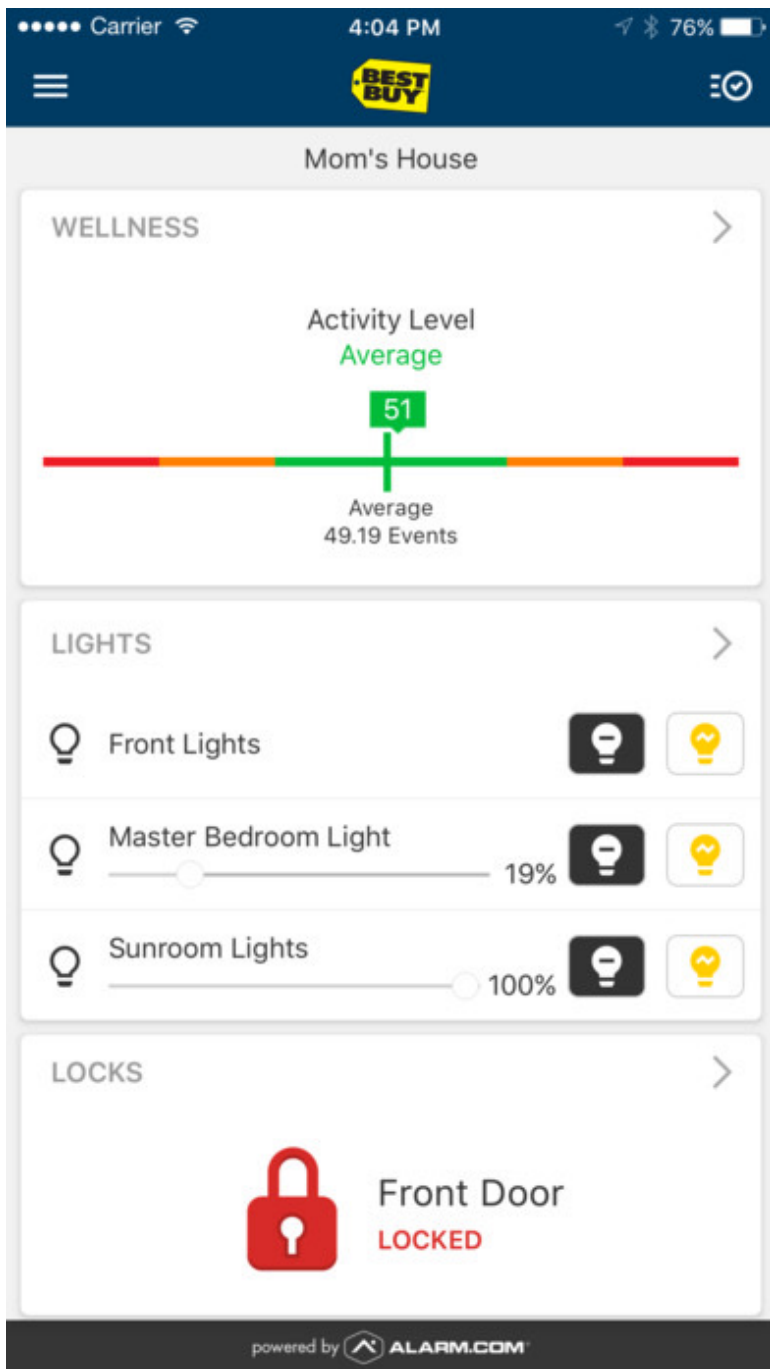
- **MOTION SENSORS** for activity – or lack of it – in commonly used rooms



- **BED & CHAIR SENSORS**



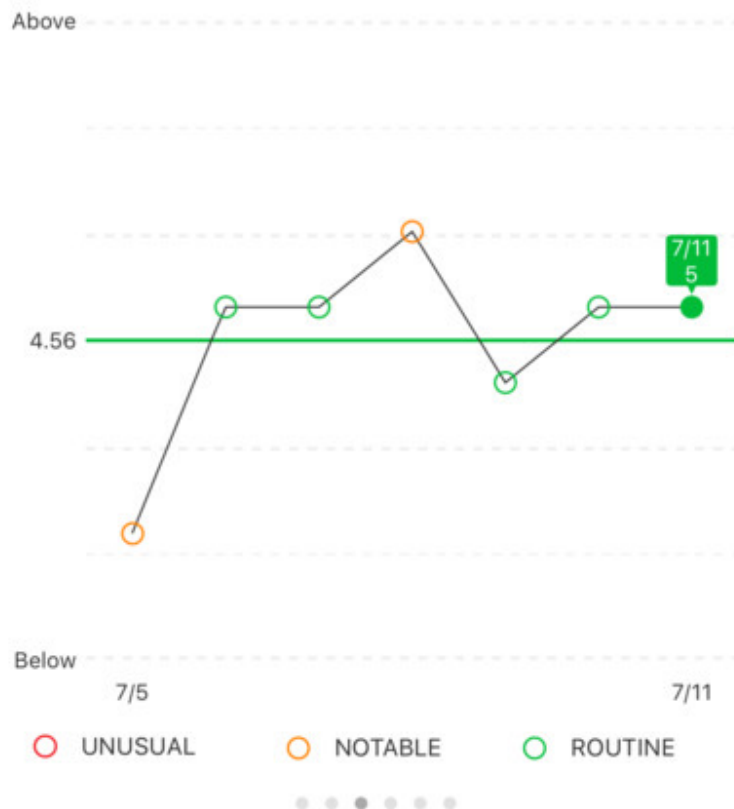
- **SMART THERMOSTAT**
- **SMART LIGHTING**  
and more...



## WELLNESS

< Last Week

### Kitchen Visits Average: 4.56 Visits



Daily Sensor Activity

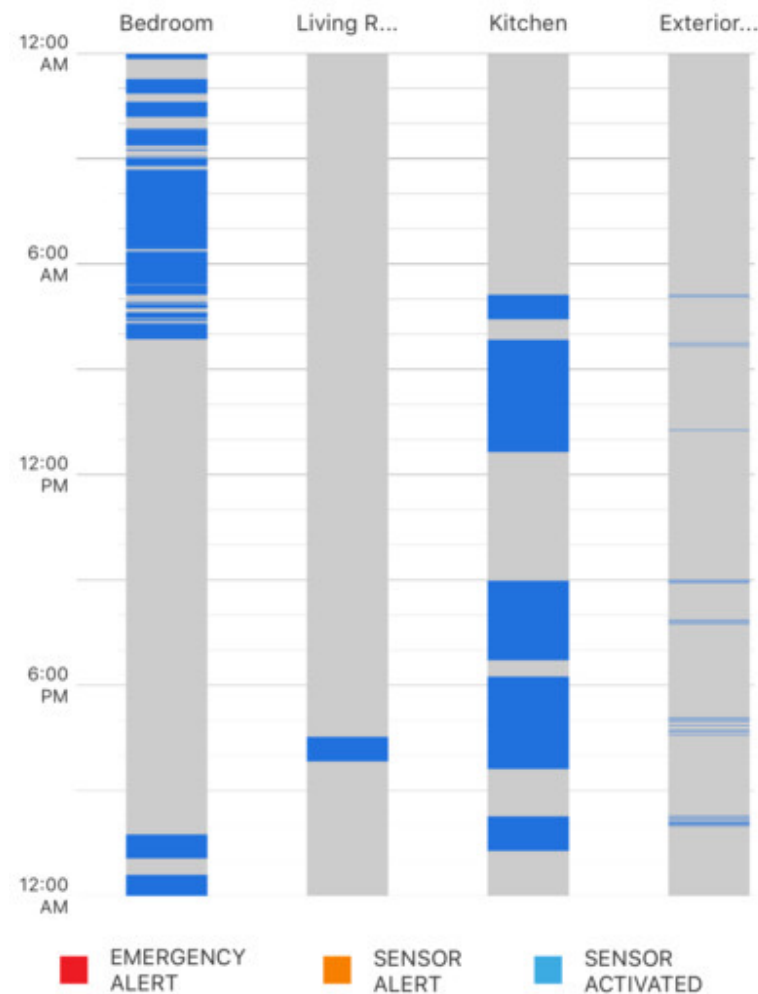
powered by ALARM.COM

## Daily Sensor Activity

Sensor

Room

< 7/6 >



powered by ALARM.COM



# GPS in shoes helps with wandering



# Electronic pill box with reminders & monitoring





# FYI: Therapeutic robot companion pets

**Joy for All**  
(cat or dog)



**PARO**  
(seal)



**AIBO**  
(dog)



# The mobile revolution in healthcare is



***HERE NOW &  
ACCELERATING...***

To develop nurse leaders in this area:  
***pre-licensure education is KEY.***

- 1. Integrate mHealth apps in coursework**
- 2. Choose approach: “Bring Your Own Device” or Apple iPad program**
- 3. Active learning**

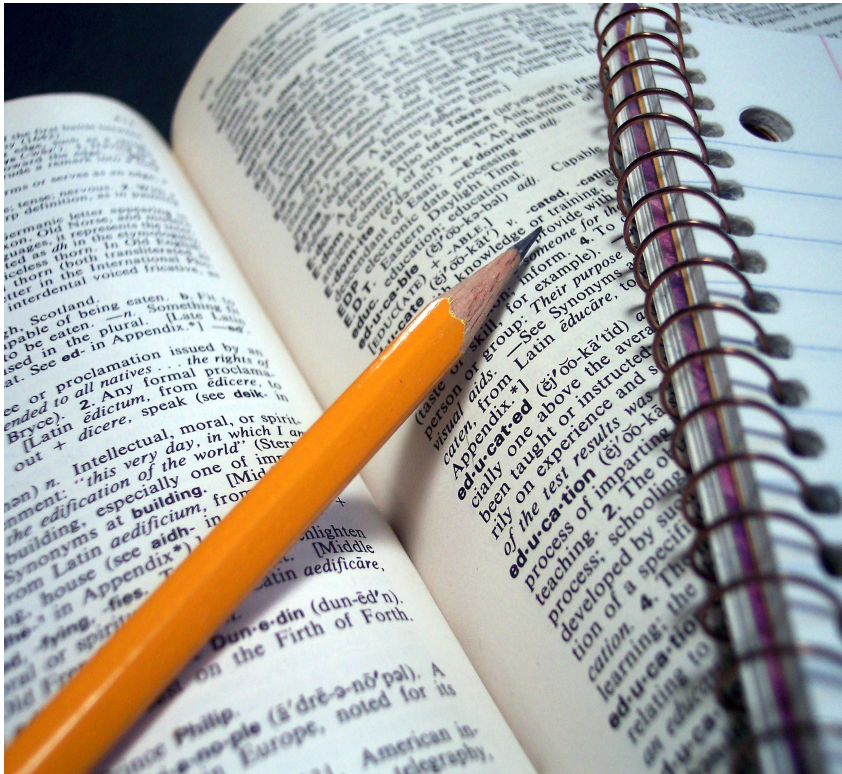


## 1. Integrate mHealth apps into coursework.

***ALWAYS use a “both and...” approach.***

# LOW TECH

# HIGH TECH



*NEVER “either or...”*

## 2. Choose approach: Apple iPad program or “Bring Your Own Device”

# APPLE



*Most advanced system of apps –  
leader in innovation*

# ANDROID

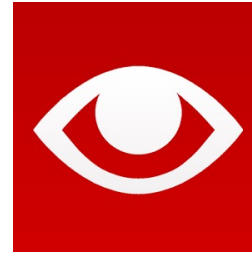


*Most often used system –  
over 1 billion active users globally*

*(Warren, 2014)*



*Audience  
Response/Quiz:*  
**Kahoot!**



*Clinical Decision Support:*  
**Eye Emergency  
Manual**



*A & P:*  
**Virtual Anatomy**



**Exposure  
Ed**



*Pediatrics:*  
**Simply Sayin'**



*Research:*  
**Read by QxMD**



**CDC: Solve  
the Outbreak**

*Population Health:*



**Within  
VR films**



# Example: Utilizing an app with Professional Career Development Plan

## Purpose

- Identify 3 components for your career development plan. Write a goal for each & a minimum of one action step to achieve that goal.

## Components of the plan can include:

- Professional education activities
- Engagement with one or more professional nursing organizations
- Plans for professional certification in a nursing specialty
- Engagement with a mentor
- Plans for engagement in the workplace (e.g. committees, quality improvement activities)
- **Reading professional nursing journal and/or website(s) that provide professional nursing information on an ongoing basis**



# Jonathan Allen from Skyscape booth...

*offering attendees a complimentary license:*

## **Nursing Pro Suite by Skyscape**

- Print books are bulky and not easily accessible. No Internet required.

Features include:

- Smart Search
  - Dose Calculations
  - Bookmarks Audio and Test Notes
  - History of Viewed topics
  - Audio Pronunciations
- Request Copy
    - [Education.skyscape.com/nurproeval](https://www.skyscape.com/nurproeval)



# Bibliography

- AARP Public Policy Institute. (2015, July). *Valuing the invaluable: 2015 update*. Retrieved from <http://www.aarp.org/content/dam/aarp/ppi/2015/valuing-the-invaluable-2015-update-new.pdf>
- Abrams, S. (2012). *Independent living for the aging Is possible with new technology*. AARP. Retrieved from <http://www.aarp.org/technology/innovations/info-04-2012/living-laboratories-aging-place.html>
- American Association of Colleges of Nursing. (2008). *The essentials of baccalaureate education for professional nursing practice*. Retrieved from <http://www.aacn.nche.edu/education-resources/BaccEssentials08.pdf>
- Colby, S.L., & Ortman, J.M. (2015, March). Projections of the size and composition of the U.S. population: 2014 to 2060. *U.S. Census Bureau*. Retrieved from <https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf>
- Congressional Budget Office. (2013). *Rising demand for Long-Term Services and Supports for Elderly People*. Retrieved from <https://www.cbo.gov/publication/44363>
- Fisher, N. (2014). 10 things hospital leadership need to know about social media and marketing. *Forbes*. Retrieved from <http://www.forbes.com/sites/nicolefisher/2014/07/15/10-things-hospital-leadership-need-to-know-about-social-media-and-marketing/>

- Husain, I. (2016). *Epic redesigns MyChart app, the most popular medical app right now*. Retrieved from <http://www.imedicalapps.com/2016/09/epic-mychart-app/>
- Institute of Medicine. (2008). *Retooling for an aging America: Building the health care workforce*. Retrieved from <http://www.nationalacademies.org/hmd/reports/2008/retooling-for-an-aging-america-building-the-health-care-workforce.aspx>
- International Society for Gerontechnology. (2018). *About ISG*. Retrieved from <http://www.gerontechnology.org/about.html>
- Juraschek, S. P., Zhang, X., Ranganathan, V., & Lin, V. W. (2011). United States registered nurse workforce report card and shortage forecast. *American Journal of Medical Quality*, 27(3), 241–249. doi:10.1177/1062860611416634
- Linck, R. (2013). The mobile revolution is here – What every nurse needs to know. *RNL: Reflections on Nursing Leadership*, 39(2). Retrieved from [http://www.reflectionsonnursingleadership.org/Pages/Vol39\\_2\\_Raney\\_apps.aspx](http://www.reflectionsonnursingleadership.org/Pages/Vol39_2_Raney_apps.aspx)
- Linck, R. (2014). Wearable biometric monitoring comes of age. *Digital Trends in Nursing blog for RNL: Reflections in Nursing Leadership*. Retrieved from <http://digitaltrendsinnursing.blogspot.com>
- Litmus. (2017). *2017 state of email report*. Retrieved from <https://litmus.com/lp/state-of-email-2017>

- McGarry, C. (2016, September 26). Apple's big plan for HealthKit would put all your medical data in one spot. *Macworld*. Retrieved from <http://www.macworld.com/article/3124485/ios/apples-big-plan-for-healthkit-would-put-all-your-medical-data-in-one-spot.html>
- Merian, L. (2018, April 11). A tale of two hospitals that adopted Apple's Health Record app. *Computer World*. Retrieved from <https://www.computerworld.com/article/3268467/healthcare-it/a-tale-of-two-hospitals-that-adopted-apples-health-record-app.html>
- NASA. (2012, November 23). *This week @ NASA*. Retrieved from [https://www.nasa.gov/multimedia/podcasting/TWAN\\_11\\_23\\_12.html](https://www.nasa.gov/multimedia/podcasting/TWAN_11_23_12.html)
- Quality and Safety Education for Nurses (QSEN). (2014). *QSEN Competencies*. Retrieved from <http://qsen.org/competencies/pre-licensure-ksas/>
- U.S. Census Bureau. (2016, September 13). *Income and Poverty in the United States: 2015*. Retrieved from <http://www.census.gov/library/publications/2016/demo/p60-256.html>
- Warren, T. (2014). Google touts 1 billion active Android users per month. *The Verge*. Retrieved from <http://www.theverge.com/2014/6/25/5841924/google-android-users-1-billion-stats>
- Zulman, D. M., Piette, J. D., Jenchura, E. C., Asch, S. M., & Rosland, A.-M. (2013). Facilitating out-of-home caregiving through health information technology: Survey of informal caregivers' current practices, interests, and perceived barriers. *Journal of Medical Internet Research*, 15(7), e123. doi:10.2196/jmir.2472