White Paper:

Orienting Nursing Students to Clinical Sites

Veronica O'Neill

New Jersey City University

White Paper: Orienting Nursing Students to Clinical Sites

Introduction

Nursing students spend time in many different practice settings during their training program. They care for patients in long-term-care facilities, hospitals and in the community. In each of these settings, they must be familiar with the emergency procedures which are specific to the location, so they can assist as needed in a fire, evacuation, or medical emergency situation. This White Paper will examine the current practice of orientation in these clinical settings, and propose a solution using iBeacon technology to convey necessary information to nursing students.

Problem Statement

Interacting with and caring for actual patients in a clinical setting is an essential part of nursing education. The New Jersey Board of Nursing requires that Registered Professional Nursing programs provide an equal number of hours of theoretical study and clinical experience in the program (NJ Consumer Affairs, 2011). Some of this clinical time may be spent in a simulation lab, but the National League for Nursing has maintained that at least 50% of the clinical hours must be in an actual practice setting (National League for Nursing, 2015). To meet these requirements, nursing programs arrange for clinical placements for their students in many settings, including long-term-care facilities, hospital units, and community nursing sites. Each of these settings has specific emergency procedures, and it is imperative that all personnel at the location be aware of what to do in the event of an emergency.

Nursing students assigned to a clinical setting must be familiar with fire and evacuation procedures, and be aware of the location of medical equipment such as crash carts. Currently,

when a group of students begins a clinical rotation, their instructor provides a paper-based

scavenger hunt. As students locate each item on the scavenger hunt, they check it off their sheet.

There are some limitations to this process. Even in the best case scenario, students physically

locate all of the emergency equipment, such as the fire alarm box, fire extinguisher, and crash

cart. They do not have the opportunity to review the emergency procedures for that particular

equipment at the time of the scavenger hunt. In the worst case scenario, students can merely

check off that they visited all locations.

In discussions with faculty members at the New Jersey City University Nursing

Department, the possibility of building a more robust orientation experience using technology

was explored. There were several requirements identified during these discussions. First, there

could be no permanent installation of equipment at the clinical sites. Any equipment used must

be easy to transport, easy to set up, and easy to remove quickly at the end of the clinical session.

No additional staff could be utilized to deploy the equipment. Ideally, the technological solution

would allow for some sort of assessment at the end of the exercise, to ensure completion of the

exercise and understanding of the materials reviewed.

<div align="center">Proposed Solution</div>

iBeacon technology is an emerging technology that is being used in many settings. It uses

a low-power Bluetooth signal to transmit a signal to a nearby receiving device, such as a

smartphone or iPad. When the receiving device receives the signal, additional information is

transmitted to the device through the Internet, such as marketing material or information about a

museum exhibit. The technology is most familiar in retail settings, such as the Apple Store,

where iBeacons were introduced in 2013 to assist customers in selecting and paying for

merchandise (AppleInsider, 2013). This technology has also been utilized by libraries, museums

and other locations to assist and engage visitors and provide enrichment materials (Dempsey,

2016; Graceland, 2014; Kern, 2016). The devices are also being promoted for use in education

(Locly, 2014). Recently, iBeacons have been used in a self-guided tour of the A. Harry Moore

School, showcasing the school's history and present operations (AHMiBeacon Project, 2015).

There are several advantages to the choice of iBeacons for the Nursing Orientation

project. All of the NJCU nursing students are issued an iPad at the beginning of their program, so

there is no issue with availability of devices. The app needed to interact with the iBeacons, Locly

Sandbox, is free. The iBeacons are programmed using the free Project application on the

Locly.com website. Using this application, photos, video or audio can be uploaded and

associated with particular iBeacon devices. Each iBeacon can also link to supplemental material,

such as the procedure for operating a fire extinguisher. The content can also include embedded

Google forms, to capture feedback and assessment data. The information on the Project

application can be updated easily, with no programming required. Maintenance on the iBeacon

devices is limited to changing the batteries, which are expected to last 1 to 2 years.

The initial investment for the iBeacon devices for this initiative was $249, direct from the

manufacturer, for 8 beacons. However, these beacons can be reprogrammed for many different

clinical settings, by creating new Projects on the Locly website, so only one set of iBeacons is

needed. In most existing cases, iBeacons are installed in permanent or semi-permanent locations,

but in this situation, portability is a key feature. This problem was overcome by mounting the

iBeacons on a Lucite photo frame with Velcro. The frames are easily set up and collected in a

matter of minutes.

The project timeline for this application is available in Appendix A. To date, the

programming of the iBeacons for one specific clinical location has been completed, and the

project has passed initial acceptance testing by the Nursing Department. The next step will be a test in the Nursing Simulation Lab, assisted by current students, to gather feedback and reaction. Based on this feedback, the programming may be adjusted. In the Spring semester, the iBeacons will be deployed for live orientation of students.

Selected screenshots of the Orientation Project on the Locly Sandbox app are attached in Appendix B, as well as a copy of the Google form used for assessment and feedback, in Appendix C.

The project has been submitted to ISTE 2017 as a poster session. The proposal submitted is attached as Appendix D, and a link to the companion website for the presentation is included in Appendix E.

Conclusion

The Nursing Department is beginning a new initiative to enhance its students' experience during orientation to new clinical sites. This will be accomplished through the use of iBeacon technology, combined with the Locly Sandbox app. This technology will allow students to receive important information about emergency procedures in the clinical location, and will assess their retention of the information presented. This solution was chosen because it is flexible, content can be updated easily, and the iBeacon devices can be reused for multiple clinical sites.

Appendix A

Orienting Nursing Students to Clinical Sites with iBeacons

Project Timeline

September 2016	- Determine specifications with Nursing Department - Complete background research - Complete video tutorials to learn Locly applications - Submit proposal for poster presentation to ISTE 2017
October 2016	- Obtain clinical site content from Nursing - Load content to Locly Project site - Program iBeacons to link to Locly app - Test Locly app
November/December 2016	- Deliver iBeacons and Project application to Nursing - Testing in Simulation Lab by current nursing students
January 2017	Adjust programming based on feedback from students
February 2017	- Deploy iBeacons in an actual clinical rotation - Adjust as needed based on feedback and performance
Summer 2017/Fall 2017	Present project at a major conference

Appendix B

Screenshots of Locly Sandbox app:

Appendix C

Assessment

Clara Maass Tour Review   SEND

QUESTIONS   RESPONSES

Check your understanding

Please answer the following questions after your clinical site tour.

What is your full name?   *

Short answer text

What do you do in case of fire? *

○ PASS

○ SLAP

○ RACE

○ FLIP

In case of fire, *

Row 1. Remove patients from fire area   Column 1. Rescue

Row 2. Pull the alarm box   Column 2. Alarm

Row 3. Close doors as each area is evacuat   Column 3. Confine

Row 4. Use a fire extinguisher if you are con   Column 4. Extinguish

How do you operate a fire extinguisher? *

◯ PASS

◯ SLAP

◯ RACE

◯ FLIP

To extinguish a fire *

Row 1.	Pull the pin	Column 1.	P
Row 2.	Aim the nozzle at the base of the fire	Column 2.	A
Row 3.	Squeeze the handle	Column 3.	S
Row 4.	Sweep from side to side	Column 4.	S

We appreciate your feedback based on your tour experience: *

Long answer text

Appendix D

Proposal for poster presentation at ISTE

RONNIE'S ACCOUNT (/2017/ACCOUNT/DASHBOARD.PHP)   LOGOUT (/2017/ACCOUNT/LOGOUT.PHP)

FOR PRESENTERS   RONNIE'S ACCOUNT (/2017/ACCOUNT/DASHBOARD.PHP)   LOGOUT (/2017/ACCOUNT/LOGOUT.PHP)

(/)   FOR ATTENDEES   FOR EXHIBITORS

ISTE 2017 JUNE 25-28 SAN ANTONIO

proposal submission form

Proposal synopsis

Your proposal is complete and has been submitted for consideration.

Format

Session format	Participate and share (Poster)
Converted format	

Audience

Focus/topic	Digital age teaching & learning: Innovative learning environments
Subject area	Career and technical education
Audience role	Teachers
Grade level	Community college/university
Skill level	Beginner
Skill prerequisites	n/a

General information

Title	Take a Tour with iBeacons
Description	iBeacons are an emerging technology that broadcasts media rich content to participants' personal mobile devices. In this application, nursing students are oriented to a clinical site using an iBeacon tour. Data is collected to validate that each participant completed the tour, and formative assessment is included to demonstrate content understanding.

Special conditions	
Additional details	
Attendee resource	http://bit.ly/NJCUiBeacons
ISTE Standards	ISTE Standards T--2
Standards addressed	This application of iBeacon technology allows the instructor to link physical locations in the clinical site with relevant information delivered to participants' devices. This use of iBeacons supports ISTE Standard 2a for Teachers, using a technology that is common used to aid in marketing and for other commercial uses, to enrich the orientation experience for participants. Formative assessmen is included to ensure understanding of the supplemental materials. In most cases, iBeacons are used in a permanent installation. Th application is notable because the iBeacons are deployed on a temporary basis during the orientation session, and then collected for reuse.
Commercial presentation	
Presenter constraints	

Logistics

Attendee devices	Devices useful
Attendee device specifications	Smartphone: Android, iOS
Participant accounts, software and other materials	In order to view the supplemental material, the Locly app should be installed on attendees' personal devices.

Summary

Purpose and objectives	This iBeacon project was conceived to enhance the experience of nursing students as they complete their orientation to a clinical site. Even though most iBeacon installations are intended to be permanent, a series of temporary iBeacons is used to locate important sites on the nursing unit, such as the fire alarm and crash cart. Students access background information on each site through the Locly app, and answer questions in a formative assessment. At the end of this presentation, participants will be able to use their personal mobile devices to locate iBeacons and access supporting materials on the Locly app. Participants will be empowered to use iBeacons in their own practice settings.
Outline	An iBeacon will be incorporated into the poster site, which will permit participants to experience the use of the iBeacon and to see the supporting material provided on the Locly app. In addition, a participant website will be available to document the project in greater detail, and provide support for implementation of a similar project by educators.
Supporting research	Newman, N. (2014). Apple iBeacon technology briefing. Journal of Direct, Data and Digital Marketing Practice, 15(3), 222-225. doi:http://dx.doi.org/10.1057/dddmp.2014.7 Dani, A. S. (2015). Location monitoring application using iBeacon-simulating office environment (Order No. 10020635). Available from ProQuest Dissertations & Theses Global. (1771508833). Retrieved from http://search.proquest.com/docview/1771508833?accountid=12793 "Macworld/iWorld Leverages iBeacon and Passbook Technology." Professional Services Close-Up 27 Mar. 2014. Business Insights: Essentials. Web. 13 Aug. 2016. URL http://draweb.njcu.edu:2240/essentials/article/GALE%7CA362891326?u=jers45639 McFarland, M. (2014). How iBeacons could change the world forever. Washington: WP Company LLC d/b/a The Washington Post. Retrieved from http://search.proquest.com/docview/1476453796?accountid=12793 "CEA Features iBeacon Scavenger Hunt at 2014 International CES." Entertainment Close-up 7 Jan. 2014. Business Insights: Essentials. Web. 13 Aug. 2016. URL

http://draweb.njcu.edu:2240/essentials/article/GALE%7CA354876626?u=jers45639 "Eventbase Previews iBeacon Technology at SXSW." Wireless News 12 Mar. 2014. Business Insights: Essentials. Web. 13 Aug. 2016. URL http://draweb.njcu.edu:2240/essentials/article/GALE%7CA361835307?u=jers45639 "London's Guildhall Galleries rolls out iBeacon platform." Total Telecom Magazine 17 Dec. 2014. Business Insights: Essentials. Web. 13 Aug. 2016. URL http://draweb.njcu.edu:2240/essentials/article/GALE%7CA393912500?u=jers45639 Eng, S. (2015, December). Connection, not collection: using iBeacons to engage library users. Computers in Libraries, 35(10), 12+. Retrieved from http://draweb.njcu.edu:2048/login?url=http://draweb.njcu.edu:2175/ps/i.do?id=GALE%7CA437506702&sid=summon&v=2.1&u=jers45639&it=r&p=AONE&sw=w&asid=1ace151e3a62102fcb9ff6f0a458ea8b "Graceland Introduces Interactive iPad Tour." Professional Services Close-Up 24 Aug. 2014. Business Insights: Essentials. Web. 13 Aug. 2016. URL http://draweb.njcu.edu:2240/essentials/article/GALE%7CA379659731?u=jers45639 Deordica, B., & Alexandru, M. (2014). ADVERTISEMENT USING BLUETOOTH LOW ENERGY. Review of the Air Force Academy, (2), 65-70. Retrieved from http://search.proquest.com/docview/1528862696?accountid=12793 Dempsey, K. (2016, May). Bluetooth beacons are starting to shine in libraries: when a beacon recognizes an equipped smartphone, it pings out its message. Computers in Libraries, 36(4), 28+. Retrieved from http://draweb.njcu.edu:2048/login?url=http://draweb.njcu.edu:2175/ps/i.do?id=GALE%7CA451633160&sid=summon&v=2.1&u=jers45639&it=r&p=AONE&sw=w&asid=6340c75ea3e44589642b2d2a346624 Kern, J. (2014, Apr 17). App guides users through st. thomas stations tour. Intelligencer Journal / Lancaster New Era Retrieved from http://search.proquest.com/docview/1517079762?accountid=12793 Digital tour of sights cairns edition]. (2015, Mar 30). The Cairns Post Retrieved from http://search.proquest.com/docview/1667270333?accountid=12793

Presenter background

Kevin O'Neill, DNP, RN is the Chair and an Associate Professor of Nursing at New Jersey City University. Dr. O'Neill has presented extensively on the use of educational technology to support nursing education. Dr. O'Neill spearheaded the use of the iPad mini b students and faculty in the NJCU Accelerated BSN program iNurse Initiative. Dr. O'Neill is a 2016 Apple Teacher. Veronica O'Neill a Doctoral Student in the New Jersey City University Educational Technology Leadership program. One focus of this program is the application of emerging technologies to solve educational problems. She is a 2016 Apple Teacher. Her work on this project include providing the background research on the iBeacon project, programming the devices, creating the Locly site for the project, and designing the website for participants.

Presenters

Kevin O'Neill; koneill@njcu.edu (Presenter)
Veronica O'Neill; veoneill@optonline.net (Presenter)

REMOVE PROPOSAL

⊕ Return to presenter menu (speaker_menu.php)
Unsaved changes will be lost.

Menu
⊕ Return to your presenter menu (speaker_menu.php)
Unsaved changes will be lost.

Contact us

Submission questions:
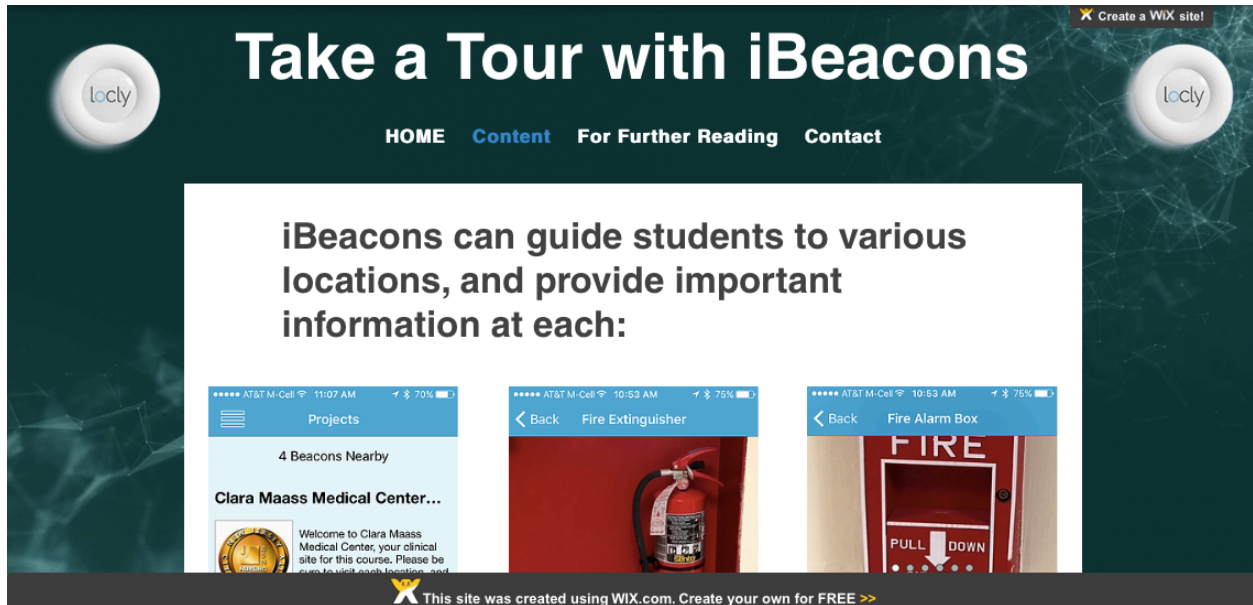conf-program@iste.org (mailto:conf-program@iste.org)

General conference questions:
iste@iste.org (mailto:iste@iste.org)

Appendix E

Companion website for ISTE presentation:

http://bit.ly/NJCUiBeacons

References

AHMiBeaconProject (2015). A. Harry Moore iBeacon Project. Retrieved from

> http://ahmibeaconproject.wikispaces.com

AppleInsider (2013). First look: Using iBeacon location awareness at an Apple Store. Retrieved

> from http://appleinsider.com/articles/13/12/06/first-look-using-ibeacon-location-
> awareness-at-an-apple-store

Dempsey, K. (2016, May). Bluetooth beacons are starting to shine in libraries: when a beacon

> recognizes an equipped smartphone, it pings out its message. Computers in Libraries,
> 36(4), 28+. Retrieved from https://www.questia.com/magazine/1P3-4071858121/blue-
> tooth-beacons-are-starting-to-shine-in-libraries

Graceland (2014). All new interactive iPad tour revolutionizes guest experience at Elvis

> Presley's Graceland. Retrieved from https://www.graceland.com/news/details/all-new-
> interactive-ipad-tour-revolutionizes-guest-experience-at-elvis-presleys-graceland/7519/

Kern, J. (2016). App guides users through Stations of the Cross tour at St. Thomas Episcopal.

> Retrieved from http://lancasteronline.com/features/faith_values/app-guides-users-
> through-stations-of-the-cross-tour-at/article_6c1329ce-c50b-11e3-98cb-
> 0017a43b2370.html

Locly (2014) Getting started with Locly Sandbox for education. Retrieved from

> http://www.slideshare.net/locly/getting-started-with-the-locly-i-beacon-app

National League for Nursing (2015). A Vision for Teaching with Simulation. Retrieved from

> http://www.nln.org/docs/default-source/about/nln-vision-series-(position-
> statements)/vision-statement-a-vision-for-teaching-with-simulation.pdf?sfvrsn=2

New Jersey Division of Consumer Affairs (2011). Information for Registered Professional

      Nursing Programs. Retrieved from

      http://www.njconsumeraffairs.gov/nur/Documents/Nursing-Programs/Information-for-

      Registered-Professional-Nursing-Programs.pdf