A New Learning Design Using Alexa Voice User Interface

Case Study of How a Simulated Conversation for Giving Developmental Feedback Was Developed

This Alexa skill won the 2017 Brandon Hall Group Excellence in Technology Silver award for:

Best Advance in Leadership Simulation Tool

Providence St.Joseph Health

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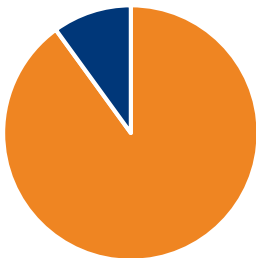
What learning designs best support Alexa Voice User Interface?

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CASE STUDY PROFILE

Industry:　　Healthcare

Employees:　115,000 in six states

Services:　　Hospitals, physician clinics, senior services, supportive housing, and many other health & education services

Revenue:　　22 billion

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7,000+ frontline leaders manage approximately 90% of all caregivers (employees).

BUSINESS OVERVIEW

The Business Need

Providence St. Joseph's Health has five strategic pillars that support not only our mission but our organizational goals. The first strategic pillar is "Inspire and Develop Our People." It is the Talent Management and Learning (TM&L) department's mission is to support our caregivers and our company's strategic goals with solutions that support our caregivers' performance and development.

In doing so, TM&L has identified six Big Bets that focus our efforts to drive key business outcomes. One of our highest priorities is to decrease first-year turnover (FYTO) of our caregivers. We believe the reduction of turnover starts with our leadership.

Our number one Big Bet is Frontline Leadership Development. TM&L continually develops and implements learning interventions and talent support that include a variety of blended learning activities that allow frontline leaders to learn, practice, and apply best practices. One of the first courses all core leaders must take is Communicating for Leadership Success (CLS). We recognize the fast-paced environment our core leaders are in and have identified a need for developing a just in time solution to provide on-demand support in this development area.

Learning Area

The CLS course focuses on how to lead engaging conversations that meet both the practical and emotional needs of the people with whom core leaders communicate. This course is offered in both an instructor led and an eLearning course format. There are a number of supplemental tools to help accelerate and sustain the skills taught in the course. These include:

- Job Aid
- STAR Feedback Form
- Feedback Survey
- Discussion Planner
- Self-Assessment
- Online Simulation

Although the material in the CLS course is high quality, it is generic in nature in that it can be applied to different businesses and sectors. It is also presented in traditional learning formats (such as a two-hour online learning course, downloadable surveys/assessments, and articles).

The Alexa skill was designed to be one of many learning experiences that support and enhance the core course content.

Identification of Learning Need

In order to make the course materials more engaging, relatable, and relevant to the specific needs at Providence St. Joseph's Health, we are developing supplemental micro learning experiences that tailor the content to the needs of our frontline core leaders. Decades of brain research have shown that learning and retention are more effective when more areas of the brain are engaged in the learning process, such as when speaking, listening, and higher order decision-making are activated. The micro learning experiences we are developing support the [Universal Design for Learning](#) (UDL) guidelines of incorporating multiple means of representation, expression, and engagement. When multiple representations (such as conversations, text, videos, concept graphics, etc.) are used, learners can make connections within, as well as between, concepts. Core leaders must be able to transform the information into usable knowledge, which requires active information processing. This includes mastery oriented feedback that is frequent, timely, and specific.

In that light, we developed a micro learning experience that approaches the material in an innovative way that allows core leaders to quickly practice the skills they learned in the CLS course and then get immediate feedback. Traditionally, this could be done during a role-play with someone who has mastered the skill. However, it is challenging to find and schedule time to practice with an expert. Alternatively, they could complete an online conversation simulation activity. However, looking at a screen and clicking a mouse is not the same experience is having a conversation – particularly because the learner **is not speaking**, and so is not activating those mental processes.

We wanted to create a more authentic micro learning experience in which core leaders make choices during a conversation in which they are **both listening and speaking**. This is important

We included multiple methods of engagement including listening *and* speaking

because it activates the same areas of the brain that are used in actual conversations. We also wanted to provide immediate and specific feedback based on their choices when they reach the end of the conversation. In addition, we wanted to scale the solution and make it readily available to all frontline core leaders so they could access it when, where, and how it is most convenient to them.

Learning Solution

We created an Amazon Alexa skill called "Giving Developmental Feedback" that simulates a conversation between a core leader and a direct report. The Alexa skill can be enabled at www.Amazon.com, the Alexa app on a smartphone or tablet, or through voice command using an Alexa enabled device. The Alexa skill can be accessed via Amazon Alexa enabled devices such as Echo, Dot, and Show and on the Amazon and Reverb apps for Apple and Android smartphones/tablets (Note: the latter solutions means that one does not need to purchase additional hardware in order to use the Alexa skill).

Once the Alexa skill is enabled, frontline core leaders simply speak a command such as "Alexa, open Giving Developmental Feedback" near their Alexa enabled device.

There are two best use cases for using this micro learning experience.

Review Course Content
A frontline core leader wants to quickly review the content learned in the CLS course. However, he wants to do so within the context of a real conversation.

Prepare for a Feedback Conversation
A core leader wants to quickly increase confidence in his ability to apply the key concepts in the CLS course to a developmental feedback conversation he is about to have with a direct report.

Access the Alexa skill with an Amazon Echo, Dot, smartphone, or tablet.

VUI LEARNING DESIGN INNOVATION

Voice User Interface

We are at the beginning of an entirely new era of learning design. Our breakthrough innovation is the use of a Voice User Interface (VUI) in learning. This is similar to the birth of the Graphic User Interface (GUI) in 1979. As the story goes, Xerox PARC showed their prototype of a mouse driven graphical user interface to Steve Jobs at Apple. He was blown away by the possibilities and opportunities of this new type of interface – one that was not limited to a command line, text-only interface. This was the birth of the Macintosh operating system that revolutionized computing.

The Voice User Interface offers similar potential and opportunities to disrupt and reimagine how we interact and learn with technology. It enables voice experiences like the Star Trek computer in which a person can be in a room, ask a question, and get an immediate response back – all without looking at or touching any device. What was once science fiction is now a reality in which voice experiences offer a faster, easier, or more delightful way of doing things.

> "
> I think it's useful and pretty innovative. It would be interesting to see where it can go. This is something new – something I've never seen.
> "

Rapid Advancements in VUI Tech

Technological advancements in the last few years have made VUI more robust, accurate, and capable. Some key advancements include:

- 💬 Web Services
- 💬 Internet of Things (IoT)
- 💬 Automatic Speech Recognition
- 💬 Natural Language Understanding
- 💬 Far Field Voice Input Processing
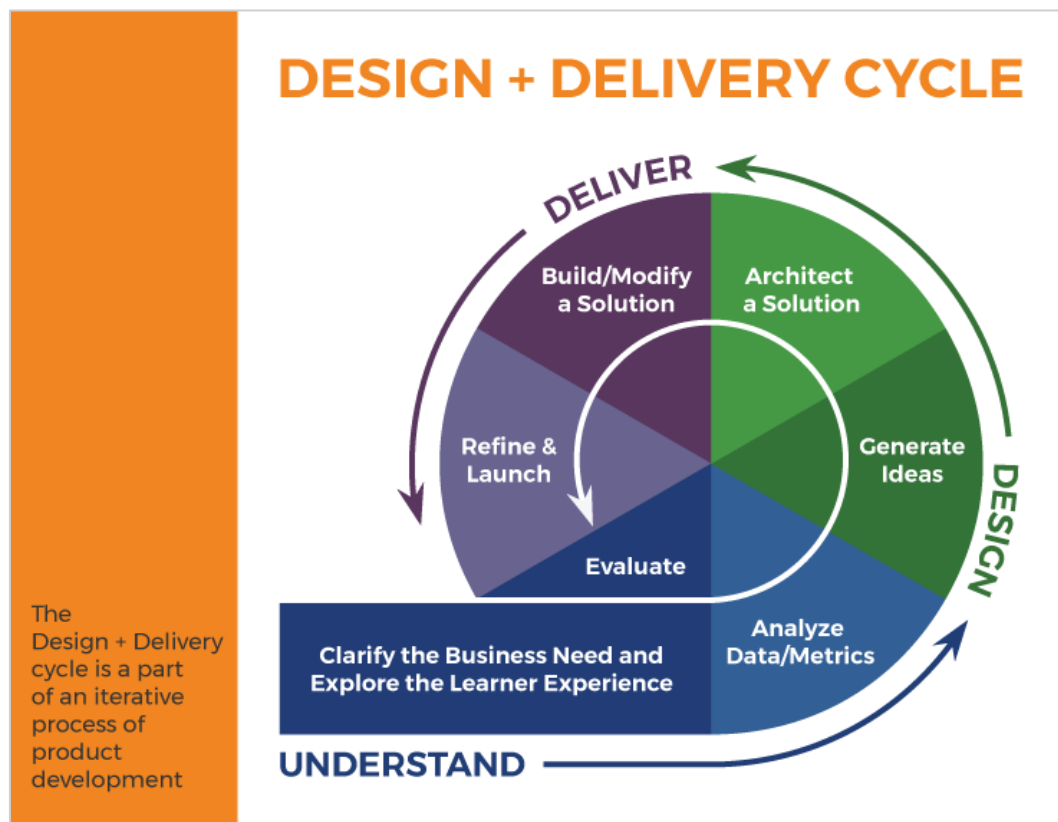- 💬 Machine Learning/Artificial Intelligence

Each of these areas are experiencing rapid advancement and growth which are driving an inflection point in voice technology. However, the core driver of VUI is not technological – it is us. We seek voice experiences because we are naturally wired for speech. So what does this mean for learning?
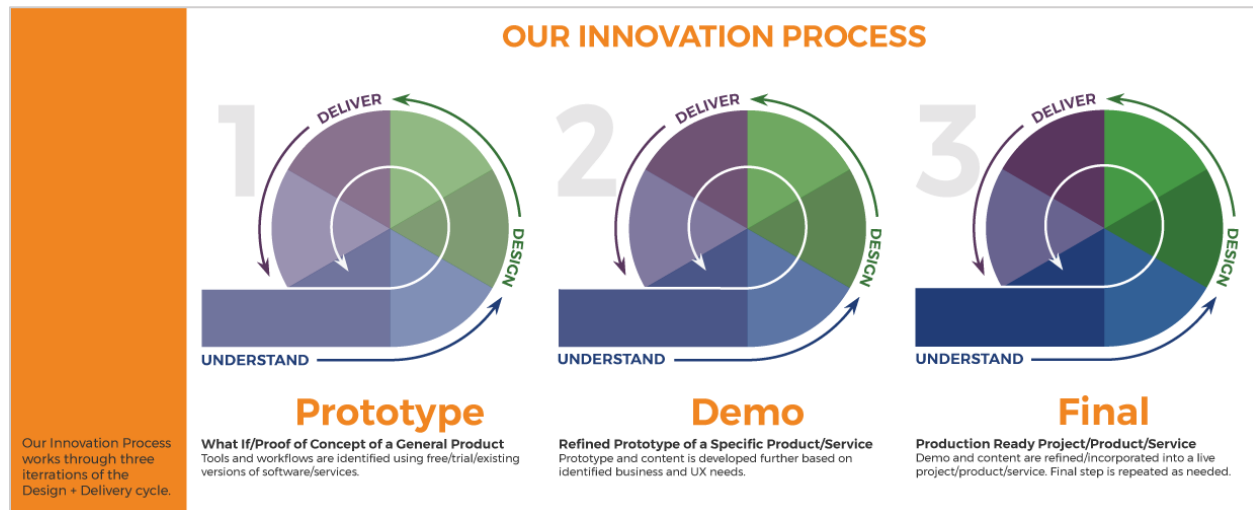
Exploring VUI Learning Designs

VUI allows us to reimagine and redefine new and different types of engaging learning experiences – ones not limited to interacting with a computer, mobile device, or a screen for that matter. At Providence St. Joseph's Health, we have positioned ourselves to be at the cutting edge of VUI in learning design. We are paving the way toward fully conversational, multimodal interactions that will ultimately extend to mobile, wearable, and even mixed reality learning experiences. We are not there yet, but we are blazing a trail.

We used the following process to guide our design and product development.

The Design + Delivery cycle is a part of an iterative process of product development

DESIGN + DELIVERY CYCLE

DELIVER

Build/Modify a Solution

Architect a Solution

Refine & Launch

Generate Ideas

Evaluate

DESIGN

Clarify the Business Need and Explore the Learner Experience

Analyze Data/Metrics

UNDERSTAND

Our innovation process builds upon the Design and Delivery cycle as shown below.

OUR INNOVATION PROCESS

Our Innovation Process works through three iterrations of the Design + Delivery cycle.

Prototype
What If/Proof of Concept of a General Product
Tools and workflows are identified using free/trial/existing versions of software/services.

Demo
Refined Prototype of a Specific Product/Service
Prototype and content is developed further based on identified business and UX needs.

Final
Production Ready Project/Product/Service
Demo and content are refined/incorporated into a live project/product/service. Final step is repeated as needed.

As we began to innovate and explore learning design using VUI in the leadership development space, we developed several prototypes and demos of basic Alexa skills. Each Alexa skill has a different structure and learning focus (listed in order of technical complexity and when it was developed):

- **Random Fact Generator**
  Clarifying Questions used for providing examples of clarifying questions

- **"What Type of…" Quiz**
  How Can I Show Appreciation used for exploring ways of showing appreciation based on answers to a series of questions

- **Podcast (RSS Feed) Reader**
  Micro Stories used for reflections to begin a meeting based on the RSS feed of the Micro Stories podcast

Although each of these skills had some merit to them, none of them provided a significant value as a standalone micro learning experience for our frontline core leaders to reduce FYTO. It wasn't until we developed a new learning design structure that we found success.

A Successful VUI Learning Design

We saw the need and value in creating a more authentic simulated conversation– one in which the frontline core leaders must *speak and listen* as choices are made throughout a conversation. The learning experience was structured around a "Choose Your Own Adventure" style branching scenario on Giving Developmental Feedback.

Giving Developmental Feedback
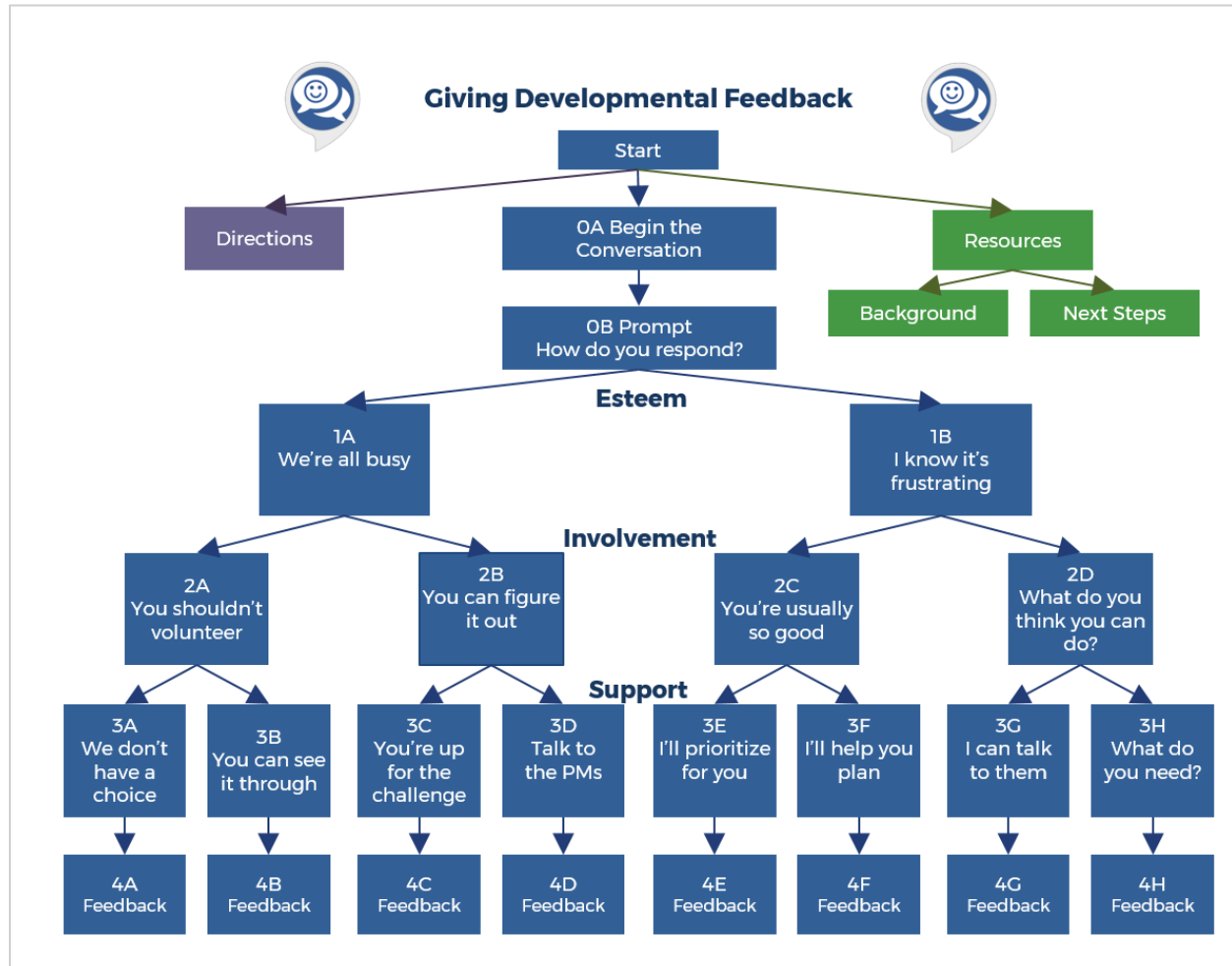
Learners begin the simulation in a first-person conversation and then make three decisions, each with two choices. Each decision focuses on a key area in providing developmental feedback: esteem, involvement, and support. There are eight potential outcomes. 4A is the worst outcome in which poor choices were always made, while 4H is the best outcome. The outcomes in between have varying degrees of success.

At the end of each conversation, frontline core leaders deepen their learning as they receive specific feedback in relation to the choices that they made. They are then given the opportunity to try the conversation again, explore background material, or reflect on next steps.

User Experience Considerations

The 'Giving Developmental Feedback' Alexa skill incorporates a variety of unique features to enhance ease of use and support a great user experience.

> **Natural Language Responses**
> Learners can respond to a decision prompt using a variety of related phrases and are not limited to an exact response. This is possible through the use of machine learning and artificial intelligence in the cloud that processes all of the data.

> **Voice Navigation**
> Learners can navigate through the skill by saying prompts such as "Go back," "Start over," "Exit," and "Next".

> **Automatic Speech Recognition**
> Learners with a wide range of dialects, inflections, and other speech patterns can be recognized and understood.

> **Far Field Voice Input Processing**
> Learners can access and use the Alexa skill in a variety of relatively noisy environments. Here is an example of what the Alexa service can hear with and without the noise cancellation.

> **Cloud Computing and Processing**
> Learners can use small devices that leverage the power of cloud computing to handle all of the data processing without the need for local processing and storage capabilities.

"
One of the best things about this is that it is really retrievable- It's instantaneous.
"

UNIQUE VUI EXPERIENCES

Traditional Course Components

As shown below, frontline core leaders can access our HR Portal to find the resources for professional development. One of the courses listed is **Communicating for Leadership Success**, which includes multiple components. The two core components that learners can choose from are the Classroom/Instructor Led Training and the eLearning course. In addition, there are two other related online courses. To accelerate and sustain the skills learned in the core course, there are links to a variety of additional learning experiences.

HRportal
Caregiver.eHR.com

Ask HR   Logout

Search...

Pay	Benefits	Well-being	Work/Life	Career & Development	Resources	Core Leader Central

Home / Core Leader Central / Developing Myself   Hello, JOHNNY HAMILTON!

Developing Myself

+ Core Leader Essentials

+ HR for Core Leaders

− Communicating for Leadership Success

- PHS: Communicating for Leadership Success Classroom – LD (4 hours)

eLearning (If you don't have access to a classroom course or you prefer online)

- PHS: Communicating for Leadership Success eLearning (DDI) (2 hour classroom equivalent)

Additional related courses

- PHS: Strengthening Relationships eLearning (DDI) (25 minute micro-course)
- PHS: Guiding Discussions to Get Results eLearning (DDI) (25 minute micro-course)

Tools to help accelerate and sustain skills

- Quick tips, pitfalls, articles and books - DDI AnyTime
- Job Aid
- Discussion planner
- STAR feedback form
- Feedback survey
- Sparking action self-assessment
- Interaction skill online simulation
- Recommended reading: The Art of Conversation

Related links

SuccessFactors   »

Printable course catalog »

To register for classes:

1. Log in to HealthStream
2. Select the **Catalog** tab
3. Type **PHSLD**, click **Search** button
4. Select course title
5. Click **Enroll** button
6. After confirmation, click course title
7. Click **Add to Calendar**

An Ecosystem of Learning Experiences

These additional resources create an ecosystem of learning experiences to support the core course content, as shown below. Each learning activity can be categorized into one of three groups based on the intent of the learning:

- Build Background
- Reference Quickly
- Apply Knowledge
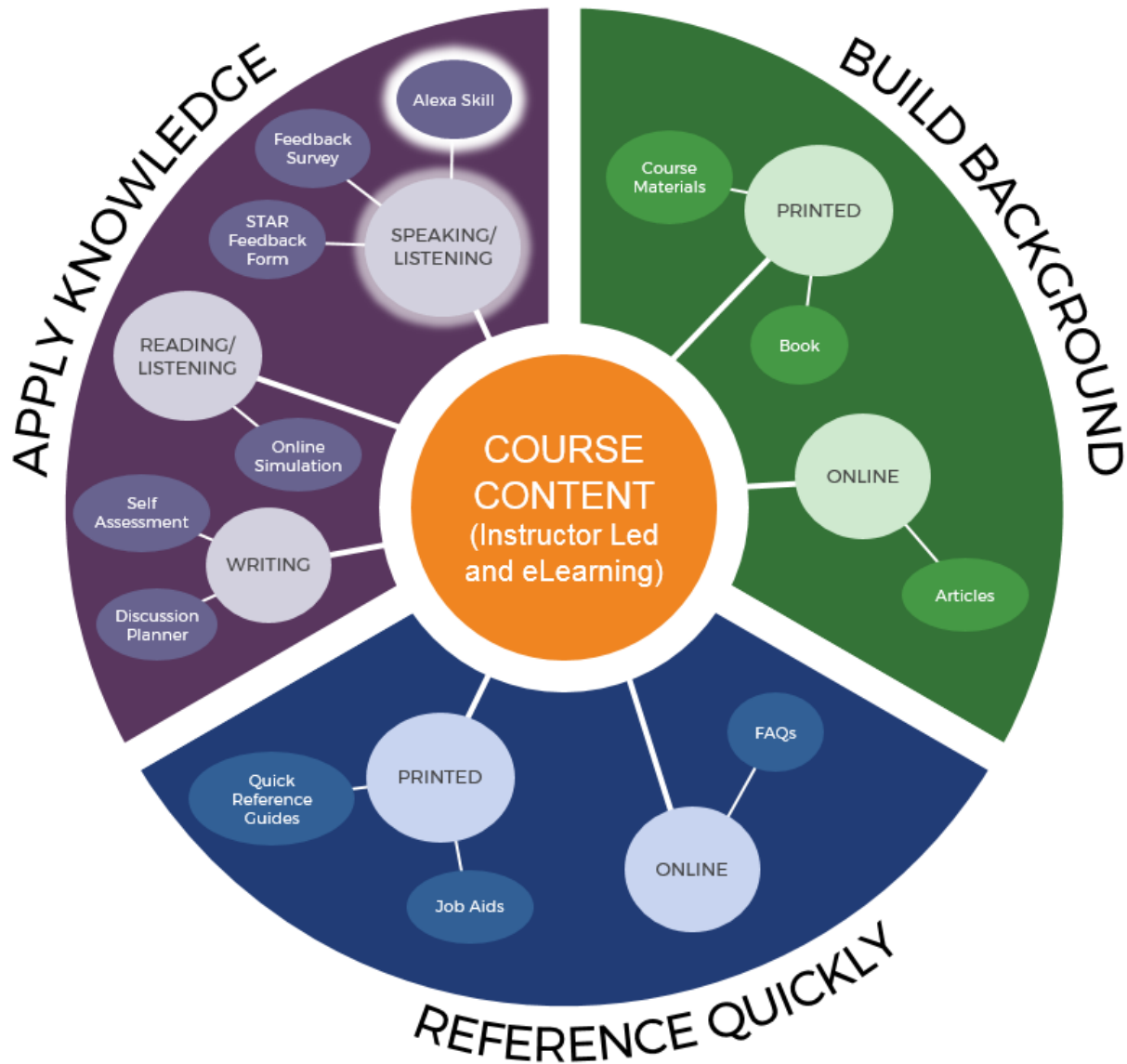
When learners want to reinforce, review, and apply their knowledge (the Apply Knowledge section), they can choose activities that are based on one of the following.

Writing Activities
These are designed to plan (Discussion Planner) and/or reflect (Self-Assessment) on what to say and how to say it. These are typically completed before or after a conversation and may be referenced during a conversation.

Reading/Listening Activities
This includes an online simulation designed to allow learners to listen to and read a conversation. Learners make decisions throughout the conversation by reading choices and clicking the corresponding buttons on the computer screen. They receive detailed written feedback at the conclusion of the scenario.

Speaking/Listening Activities
These are designed to practice real conversations by speaking and listening. The STAR Feedback Form and the Feedback Survey both require interacting with a coach/mentor who has mastered the content in order to do the activity.

'Giving Developmental Feedback' Alexa Skill

Speaking/Listening Activity
This allows learners to **speak and listen** during a conversation whenever and wherever they need– without having to schedule and coordinate a time to meet with an expert. Learners can quickly access a just-in-time solution to build their confidence and review the content in a way that closely resembles an authentic conversation experience.

This solution also can scale and be implemented quickly to the thousands of frontline core leaders across six states. As soon as an Alexa skill is developed and launched, it is immediately available to everyone. In addition, any updates to existing skills are automatically available.

> " I like the flexibility of having access to it at any time, as opposed to scheduling availability with a busy trainer. "

Deeper Connection to the Content

Another unique experience is the way that learners relate and connect to the course content. Since there are no visual elements in this learning experience, learners often will fill in this missing data within the story to create meaning and thereby connect deeper to the content. For example, they may imagine the specific meeting room in which they have the discussion.

DEMONSTRATION

How to Access the Alexa Skill

To use the Alexa **Giving Developmental Feedback** skill, first go to www.Amazon.com. search for the name, then enable it.
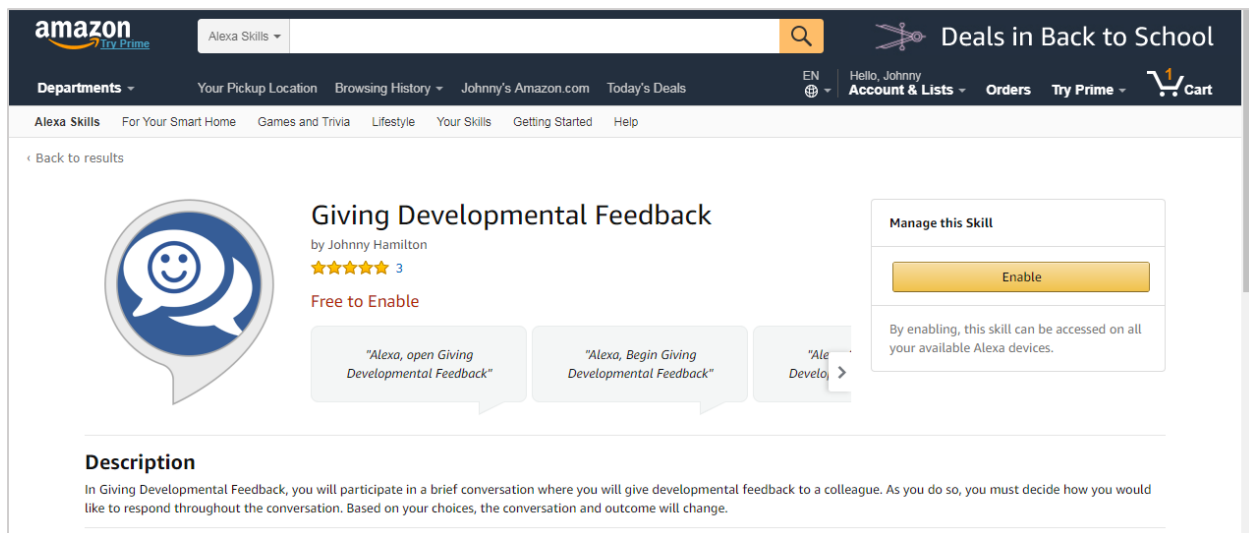

Next, access it using any Alexa enabled device such as an Amazon Dot, Tap, or even a Samsung Smart Fridge or Ford Focus. However, you do not need to purchase any additional hardware in order to access the skill- you can use smartphone instead. In that case, download, install, and then launch the free Amazon or Reverb app for iOS (Apple) and Android. Using your device, simply say "Alexa, open Giving Developmental Feedback" to begin the learning experience.

Video Demonstration

Click the image below or the following link to view a short video demo. http://bit.ly/AlexaVUI
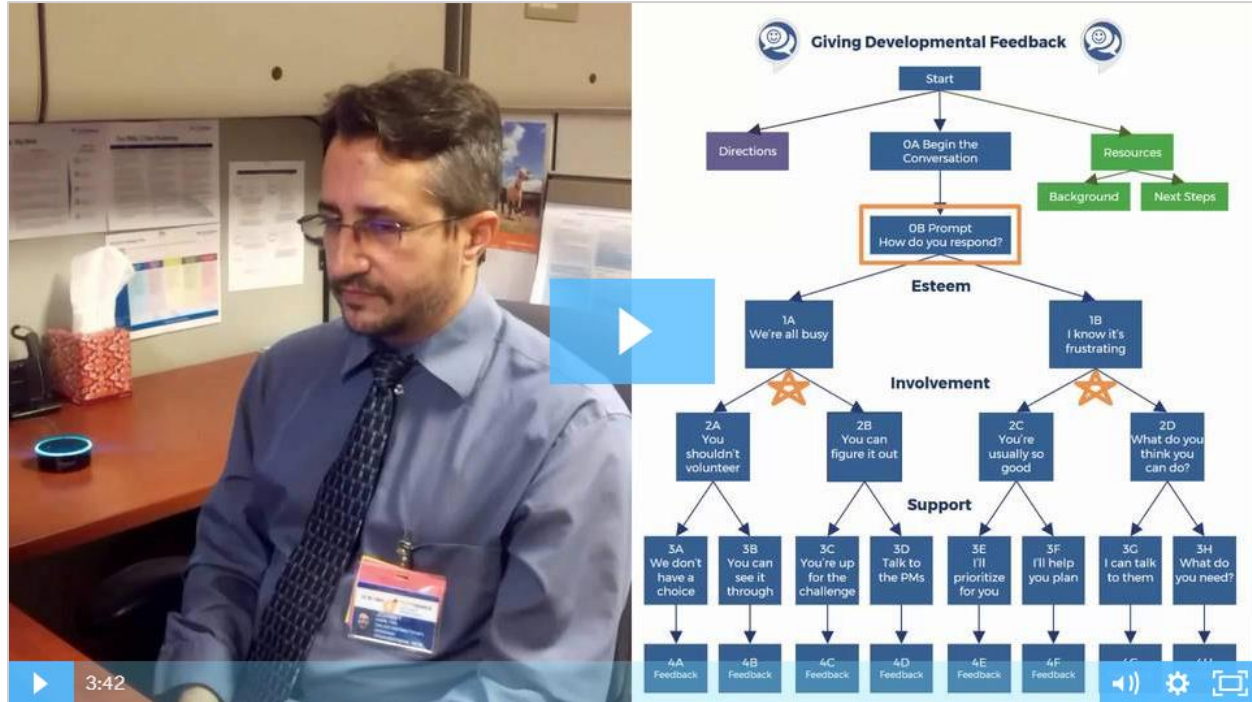
METRICS & DATA ANALYSIS

The Giving Developmental Feedback Alexa skill was recently certified and published in the Amazon store in September 2017, so there is only limited user data available. However, we gathered other data during and right after the certification process using several means.

User Surveys

We asked caregivers to experience the Alexa skill and then to complete a nine question online survey. The survey included a Net Reporter, usability, and other Likert type questions, as well as a reflective, open-ended question. The survey can be accessed at http://bit.ly/AlexaSurvey1.

User Survey Results

The results of the survey data indicate that the Giving Developmental Feedback Alexa skill is **easy to use, engaging, and effective.**

100%

The content was relevant and the skill was easy to navigate

19%

Confidence

19%

Ability

Confidence and ability to give feedback increased after the skill

"Awesome and innovative experience."

83%

The story was engaging and relatable

"Very useful skill development app."

Average score for software/apps	**31**
'Giving Developmental Feedback' Alexa Skill	**50**

The experience was very satisfying, with a high **Net Reporter** score

User Interviews

Several caregivers were selected for an interview to explore their Voice User Interface experience at a deeper level. Two interview summaries are included here.

User 1
I would like to learn more things in this way. Listening really prompted me to focus on what was being said in the actual scenario itself. If I was looking at a screen, I would tend to be distracted, so this really allowed me to pay attention. If there was an area that I wasn't very comfortable or sure about, I would want to practice. Especially a new manager would appreciate this. This was more interactive – although it's not visual, to me I evaluated it as visual. I imagined someone sitting in front of me as an employee or someone that I manage. This was more realistic to me because in a video you have actors that are acting it out. I like the flexibility of having access to it at any time, as opposed to scheduling availability with a trainer (coach) who may be busy.

User 2
The voice user interface was much easier (compared to a video simulation) since it's allowing me to say something. That's a nice feature as opposed to just watching the video. It gets me to think a little bit more about what I'm going to say next. Obviously, talking and improvising as you go is always better than watching a video and being cajoled into responding that way.

If this is an area where I might need help or assistance, then this would be great. Areas such as change management where you can present some scenarios like when a person has been given new assignments and new responsibilities that he or she may not be familiar with. Approach the subject matter in a way that's best for both the person and the organization. For instance, how can you to prepare a manager or director to talk about a reassignment. It can make you think about the right mindset, approach, and questions to ask.

> " When I was doing this, I could almost see the person and relate to what she was saying – kind of like filling in a storybook. "

Trainer Interviews

CLS course trainers also were interviewed to explore potential best practices and challenges to a successful implementation. These trainers not only know the content very well, but also have keen insights into the needs of the frontline core leaders since they train them on a daily basis throughout our multistate system. This is a summary of their key ideas:

Quick, Accessible Experiences
Frontline core leaders often are very busy and have a large amount of direct reports (50 to 150+). Learning experiences to review and practice skills should be short, preferably under five minutes, and very quick to access.

Optimal Environment for the Experience
The best environment to use this skill with an Alexa device is an enclosed room, such as a private office or a shared office that can be used privately. A private space is important not only to avoid disturbing other caregivers, but also patients. This learning experience is not suitable for a shared cubicle office setting or on the floor of a hospital.

How to Message This Experience to Users
It is hard to encourage our target audience to pull learning experiences in an on-demand fashion (as opposed to pushing them via notification). We need to determine the best ways to communicate the value of how to access and use these learning tools.

Tracking Behavior Change
Although we can track the usage data, we struggle being able to track if or how it actually changes the core leaders' behavior. Doing so will take more in-depth analysis than basic reporting.

> "
> I think it would be really helpful training nurses transitioning into a new specialty.
> "

Usage Data

Since the Alexa skill is hosted on Amazon Web Services, we have the ability to monitor and analyze a wealth of usage data. These metrics include:

- The number of unique customers, sessions, and utterances (what the learners say)
- When each session occurred
- The frequency and time/date successful and failed sessions
- The average number of utterances per session
- The frequency of specific intents (the decisions/choices that the learners make)

As more core leaders have the opportunity to experience this skill, we will be tracking this data as well as its impact on workplace performance.
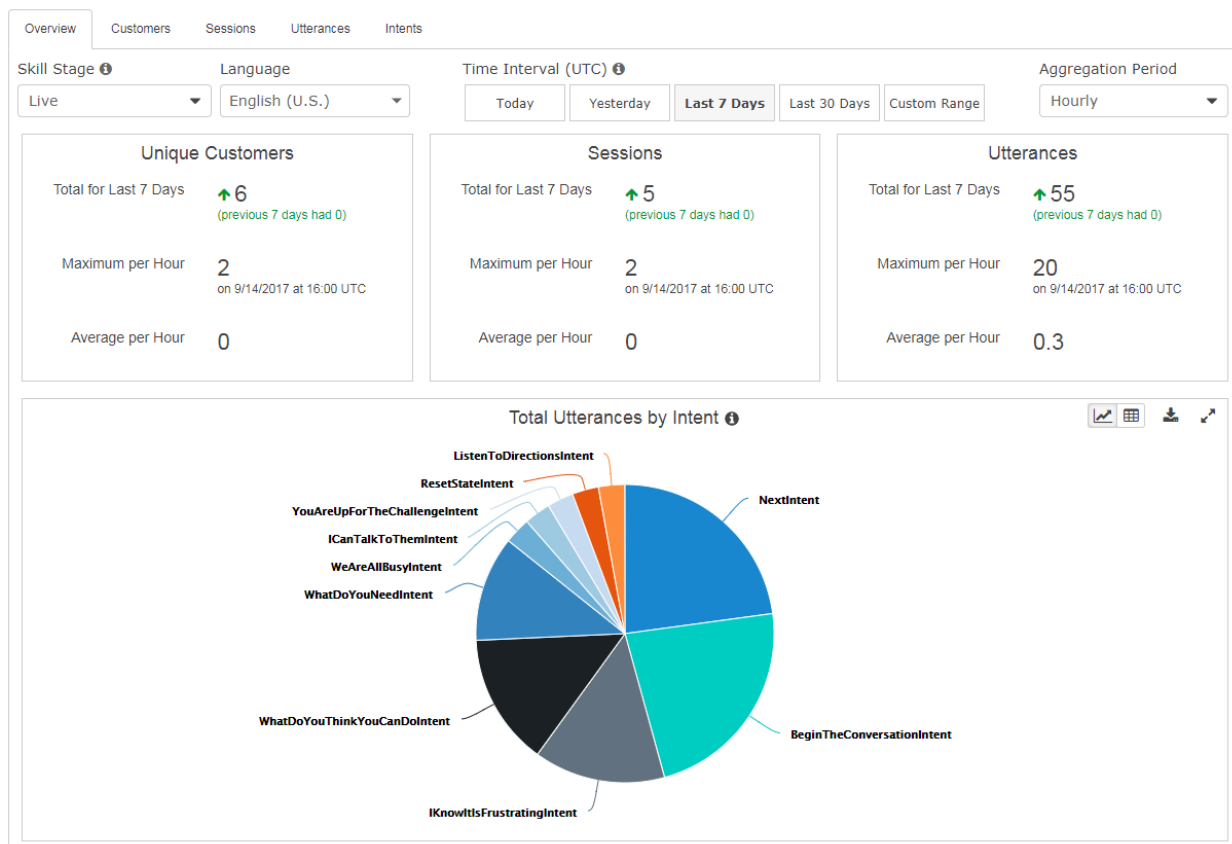
About the Author/Developer

Johnny Hamilton is a Multimedia Specialist at Providence St. Joseph Health and has developed several Alexa skills.

He is an experienced learning content developer/producer/manager, instructional designer, and credentialed teacher with extensive experience in online professional development and project management. He is an expert in course authoring platforms and has developed branding/style guidelines and course templates, system/standardization processes, and innovative award-winning content. He holds design certifications in UX, Micro Learning, Story-Based, Scenario, Gamification (expert), Virtual Training, and Instructional Design. He has recently been internationally recognized by eLearning Magazine as a 2016 Learning Champion (High Performer) for his contributions to the learning industry (www.bit.ly/2016-award).

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Best Advance in Leadership Simulation Tool

What simulated conversation would you want to do?