

# Creating an Interprofessional Virtual Community of Practice: Lessons Learned



A project supported by **The Josiah Macy Jr. Foundation**



**2019 Report**

## Center for Medical Simulation

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# EXECUTIVE SUMMARY

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**The problem:** Educators are the vehicle for learning, yet we spend little dedicated time developing our own skills, knowledge, and performance. Some educators learn through reflections on the job; some receive formal training. Skills often deteriorate without consistent or spaced practice or feedback.

**The hypothesis:** Educators can sustain skills and continue to improve if they have a continuous way to 1) conveniently engage in deliberate practice, 2) receive feedback, 3) reflectively practice the very things that they teach, and 4) have a community of practice partners and coaches to do and receive all of this.

**The vision:** We envisioned a continuous learning system in an interprofessional virtual community of practice. We expect that those who participate in such a community will be able to develop a deeper understanding for IPE and be able to use their enhanced knowledge and skills to help other faculty and learners at all stages.

**The project and findings:** We created and piloted an online “CMS Virtual Campus: An Interprofessional Community of Practice” (we will refer to this as “the VC”) where a small sample of interprofessional (simulation and non-simulation) educators received peer and mentor support to develop and reinforce their own skills at their convenience. The varying modules (activities and courses) are structured to promote interprofessional learning and modeling, reflective practice, and a culture of feedback--essential elements for developing expertise and providing better and safer patient care.

The pilot consisted of two phases: Phase I and Phase II. This pilot helped us understand in depth the needs of users, ways to address them, and ways to offer the things that we found to be effective to all health profession educators.

In **Phase I** (July 2016 to January 2018) we performed a needs assessment and developed seventeen modules in different combinations of:

- sizes (range 2min to 1.5hr),
- media (podcasts, videos, discussion threads, online practice), including synchronous (scheduled to be online together) and asynchronous (activities that could be done on own time), and
- topics (simulation, debriefing, feedback, speaking up, self-reflection, case design).

A total of one hundred of our graduates from our Simulation Instructor Courses were invited to either alpha test (during development) or beta test (the first fully developed version of) the modules. Interviews of these testers occurred post-Phase I. Of the 17 modules developed in Phase I, 16 were launched and nine emerged as engaging/popular by the testers and matured into Phase II activities. One module (The Feedback Course) continued in development and launched in Phase II.

The activities found to be most engaging were podcasts, short (2 – 4 minute) animated videos of storytelling prompting reflection, and synchronous (scheduled online) feedback sessions. Specifically, the modules that matured from Phase I were (in order of engagement):

1. Podcast - *An informal conversational-style podcast (15-50 minute audio-only) with two faculty discussing or interviewing other fields of practice and how they apply to simulation and debriefing.*
2. Speaking up stories - *Two to four minute animated videos with voice-over of faculty telling a story of a time when they spoke up or didn't speak up, highlighting the complexities of speaking up.*
3. Interprofessional Simulated Debriefings – *1 to 1.5 hours of scheduled synchronous sessions where participants watch an already recorded interprofessional simulation case, volunteer to be a debriefer or roleplay a learner in the video. The debriefer debriefs and faculty and peers provide feedback during or after the debriefing.*

4. Book Club – *Podcast recordings of CMS Book Club discussions*
5. Stories about understanding other’s frames (thoughts that drive actions) – *two to four minute animations with voice-over of faculty telling a story of a time when they made an assumption about another person and were surprised to discover another frame using the advocacy-inquiry communication tool as taught in CMS courses*
6. Advice column – *a questions and answers letter/discussion board for IPE faculty*
7. Scripting on how to effectively communicate – *text-based feedback on advocacy-inquiry communication tool as taught in CMS courses*
8. Topic-based listserves – *text-based discussion threads around specific topics of interest*
9. Scheduled online gatherings – *a reunion for the participants after their engagement in the online course or pilot*

Interviews of beta testers revealed six themes of engagement from an analysis of the interviews. The beta testers felt that the following elements sustained or would increase their own engagement of continuously developing themselves in an online community:

1. Flexibility of platforms to be mobile and continuous where one can access the materials as convenient and on the fly (i.e., accessible when they have time at a desk with the ability to continue via their car stereo while driving, continuing via their mobile device while waiting in a parking lot or grocery store)
2. Reminders provided, preferably set to their own preferences (i.e., daily, weekly, certain times of the day/week)
3. Self-guided map with dashboard that can show progress and completion and guide what to do next
4. The content solves their problem in real-time (i.e. can access material that will help them teach the class they are teaching tomorrow morning)
5. CE/CME or Certificate provided
6. Expert modeling (i.e. videos or blogs of experts modeling the skills that they are looking to achieve)

Using the six themes identified in Phase I, we applied potential solutions into **Phase II** through three venues:

1. Social Media Release of Year 1 products (podcasts and select videos)
2. IMS Online Debriefing Skills Refresher course (a continuation of modules from Year 1 in a structured six-week curricular format)
3. The Feedback Course (implementing all six themes into one six-week online course)

In Phase II, we tested our products and platforms with different testers:

- social media was tested in the online public apps,
- our online debriefing skills refresher course had 36 testers,
- 100 non-simulation health profession educators were invited to join the Feedback Course, we had 36 beta testers that committed with 98% total engagement to this 5-week course.

Interviews and surveys (mixed methods) of the beta testers in the online courses were conducted throughout Phase II. Initial findings reinforce the themes identified in Phase I, as well as several additional prominent themes including (in order of frequency):

1. Feedback is a source of pain for all interprofessional educators and is an area of mutual development interest. The level of interest was astounding: 100 learners were invited for 40 seats of the Feedback Course Pilot. Within one week, 60 expressed interest of taking the course (6 hours a week for 5 weeks), 20 of which we wait-listed. The online attendance rate was 98%. The participants reported completing 90% of the assigned homework. The most frequently reported reason for dedicating personal time, attending the course, and completing assignments was interest in gaining the skills to be better at understanding and having feedback conversations.
2. Small group synchronous work and peer-feedback and interaction is valuable to learning and engagement.
3. Practice, coaching, and interaction with experts is a top desire.

4. Both asynchronous and synchronous work (also known as “blended learning”) are of value. Beta testers preferred that all content be asynchronous and that synchronous times be used for practice. We also found that the content provided that was asynchronous was primarily not completed or completed shortly before the start of the assigned class.
5. Effective technology orientation is critical to engagement.
6. Time for reflection and exercises requiring personal reflection or struggle with the concept is valuable to the learning and engagement.
7. A mobile community of practice platform is convenient and valued as a learning container.
8. It is preferable that all materials be collated or kept within one platform.
9. Activities that allow natural practice (i.e., simulated situations and role playing with others) and immediate feedback are more engaging than activities that feel awkward (i.e., talking to the camera as if it is a person) or where feedback is not received.

**Next steps** for maintaining and spreading a virtual community of practice: Many of the resources developed in phase I is on a release schedule and are offered through Center for Medical Simulation social media (e.g., twitter, website, linked in, etc). The Feedback Course is offered through the Center for Medical Simulation here: <https://harvardmedsim.org/course/the-feedback-course/>

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# FOREWORD

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*“An expert is a person who has made all the mistakes that can be made in a very narrow field.” – Niels Bohr, Danish physicist and Nobel Prize winner*

A conversation at the Center for Medical Simulation as we began our thinking around this project....

**Janice (the PI) Palaganas:** *Well, I think that the key to creating the best type of interprofessional education is finding what we struggle with as an interprofessional group, practice that thing, and practice the tools that we teach to figure out where the exact issues of application live and how to overcome them.*

**Jenny (the CEO) Rudolph:** *YES! You’re talking about being “Deliberately Developmental.” It’s what Bob Kegan at the Harvard Graduate School of Education talks about in *Organizational Behavior--practicing what we preach*. As Jeff [Cooper] says, if we are teaching teams how to work together, we have to work at it, too. And if we can’t do it here, how will they?*

This was the basis of our philosophy as we engaged in the work that we present in this report. There were many levels of reflection-in-action: from reflecting on the content that we were testing to how our testers were receiving the content, and from how we think and work together to achieve the very things that we are looking to achieve in our learners all the way to reflecting on how we reflect. We present here select lessons learned at various levels of reflection. And we are working on our publications that detail each theme that we uncovered in our journey. We are excited to realize that this is a lifelong journey. Join us in our work. We’d love to learn more about what we are learning with you.

 @MedSimulation

The Center for Medical Simulation would like to thank the Josiah Macy Jr Foundation for providing us with the opportunity to explore interprofessional virtual communities of practice, understand factors of continuous learning online, and contribute to interprofessional healthcare education by disseminating our findings through this report.

# INTRODUCTION

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We have structured this report with the goal of providing “accessible” information—in other words: information that is understandable and resourceful. We crafted this report as if we are telling you the story of our journey, with references and concepts that we used to support our work embedded throughout, and transparently identifying observations that we found interesting as potential areas for your future research, and disclosing what we found difficult in hopes that you can use this information to save yourself from any pain that we experienced and be prepared for similar challenges.

We begin by giving you some background highlighting how we found our way into this project in collaboration with the Josiah Macy Jr Foundation. We describe our project plan that fell into two phases. With each phase, we outline what we were looking to test or pilot, how we did it, and what we discovered.

Reflection at each stage and at many levels (e.g. how we work together, what content would best meet learning needs, what online format would be best) generated many lessons learned. We provide select key lessons learned throughout the document. These are easy to find (if you’re a skimming-kind-of-person) because they are in tables labeled “Lessons Learned.” We recommend reading the information just prior to each table if you are not familiar with the terminologies that we use.

Much of what we report is written as a summary, touching briefly on major concepts. Please access the references that we insert throughout within footnotes if you would like to learn more about each topic. We will also provide more details in our future publications behind each area of work.

At the end of the report, you will find a list of contributors, the scope of each contributor’s work and responsibilities for this project, and contact information so that you can reach out to the appropriate person if you have any questions, thoughts, or ideas.

We hope that you enjoy and can use our findings to create new innovations in your own interprofessional education.



# The Project

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## Who are we?

The Center for Medical Simulation (CMS)<sup>1</sup> was founded in 1993 as one of the world's first healthcare simulation centers. We focus on communication, collaboration, and clinical crisis management (CRM) to develop individual and team behaviors that keep patients safe and provide the best quality health care. We have run over two thousand clinical courses and trained thousands of participants globally on how to achieve best possible learning under active realistic, full-environment, and challenging conditions. We offer three ways of doing this: clinical interprofessional team courses, interprofessional faculty development courses or fellowships, and organizational culture change programs. In this project, we channeled our expertise in interprofessional faculty development, focusing on how to create a community of practice to achieve continuous and engaging interprofessional faculty development.



## How we discovered the need

With thousands of graduates having spent intense weeks with us demonstrating personal transformation during their time with us, we always wondered: What happens to them after they leave us? Do they have practice partners? How do they maintain the skills?

Many of our graduates return to us in an Advanced Course that requires post-graduation experience. As with many skills gained without continual practice, it has become apparent to us that a continuous learning system<sup>2</sup> (CLS) is needed for health profession educators. In order to gain skills and knowledge, you need “massed” learning. Learning that is condensed within a timeframe, e.g., a short intensive course or a semester long course. And in order to effectively maintain or build upon those skills and knowledge, you need “spaced” learning—practice that occurs periodically that exposes you to the skills along with feedback and reflection.<sup>3</sup>



Without continuous learning, the loads of time a learner and educator puts into a course has the potential to be wasted. Just as clinical skills and knowledge need continuous learning, educators need to maintain and improve their own teaching and learning skills and knowledge. For many years, we have been wanting to create this type of continuous learning system and explore how to best achieve such learning.

The dilemma that we face at CMS of feeling the need to create a continuous learning system for our learners is a problem that all healthcare education will encounter. In healthcare, continuous learning systems are needed to achieve reflective and applicable learning that translates into behavior change so that healthcare providers can meet the needs of the complexities that we see today. How can we best do this in all health profession education?

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<sup>1</sup> [www.harvardmedsim.org](http://www.harvardmedsim.org)

<sup>2</sup> <http://macyfoundation.org/publications/publication/enhancing-health-professions-education-technology>

<sup>3</sup> Ebbinghaus, 1885; Izawa, 1971; Glover, 1987; Roediger III et al., 2012; Aziz et al., 2014; Kornell, 2009

In addition to being asked to create interprofessional education, today's healthcare educators will be charged with creating continuous learning systems using online education. So not only do current educators need to sustain and build upon their own teaching and learning skills, they also need to learn how to develop such continuous learning systems and feel comfortable online.

### The Need of Needs Assessments

Like most new projects, we decided that the way to start is to perform a needs assessment—sampling target participants to identify collective needs. As we studied what we uncovered through surveys and interviews, it confirmed for us the need of needs assessments. Needs assessments are a compass to learner-centered project development. They show you what is relevant or interesting to your learners. They help you understand in depth their jobs, pains or challenges, and gains or things that help them meet their needs. They show you the gap between where they are and where they and you want them to be. And, more important to project management, they save you time by understanding what you should be doing and this understanding helps ensure that what you are creating is going to gain the interest of your target learners and has the most potential to effectively achieve the goals of your program.<sup>4</sup>

In 2016, we sent a survey to 30 graduates and 40 non-CMS graduate/non-simulation health profession educators (HPE). We performed 10 semi-structured (two standard questions and then impromptu questions as the conversation flowed naturally) interviews and reviewed surveys and interviews conducted in 2010 with CMS graduates. We also interviewed CMS faculty and staff in a staff meeting. In our surveys and interviews we asked questions like: *If you had to teach tomorrow, what would worry you the most? If there is one thing you wish your learners knew or could do before coming to you, what would that be? If we created three new courses, what would you want them to be? What skill do you find yourself forgetting and having to relearn? What is your favorite app and why do you keep using it?*

With some needs identified, we began our brainstorming and surprised ourselves with some additional thoughts in the process.

## Lessons Learned: In Needs Assessment of Health Profession Educators

1. Educators lack their own continuous learning to develop and enhance their teaching and learning skills.
2. Educators feel like they don't have time to focus on personal development. Time is a bigger investment than money.
3. Interprofessional educators lack opportunities for their own interprofessional learning. Majority of their interprofessional learning has been on the job without explicit conversations or team reflections on the way they work together. Direct harsh comments or avoiding difficult

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<sup>4</sup> Goldstein & Ford, 2002; Kern et al., 1998; Norman et al., 2004; Queeney, 1995

conversations is common. They, themselves, have never undergone a scheduled course focused on interprofessional education.

4. Educators feel as though transparent feedback for real-time learning is rare in their work environment. This was reported by employees of both hospital and university environments. Most interviewees felt that the lack of feedback was due to the organizational culture of their work environment and time constraints.

5. Regardless of profession, clinical competency is a concern. There is a palpable education-to-practice gap—anecdotes of how new graduates are not immediately competent to practice in their newly hired clinical role.

6. Educators are often not aware of what they need to learn and, more problematic, often do not know that they are not aware. Many reported being surprised about lessons learned from courses that they reported as transformational, stating that they did not expect to learn what they learned and that they did not realize how important what they learned was to their practice. A few interviewees reported being surprised that they have come to enjoy an online application that they now use daily.

7. Educators make time for at least one online application daily. The applications that they continue to engage in are relevant to their work or personal needs and are convenient in their daily activities (e.g. on their phone, can listen in the car, friendly on their desktop with notifications). The types of apps fell under almost every category (e.g. social media, informational resources like podcasts, clinical guides, or news; games, hobby sites, physical activity monitoring apps, shopping, practice apps or course apps, etc). Most interviewees reported having developed habits that trigger or sustain their engagement.

8. There was a wide variety of content that was reported as immediately relevant to individual teaching. The range was from task training to organizational systems change. This difference is multiplied by profession (tasks per profession) and target learners (pre-licensure to very experienced practitioners). Common content areas included skills in communication, specifically debriefing (the learning conversation that typically occurs immediately after a simulation or real experience and facilitated by the educator), feedback and speaking up. Other common content areas identified included curriculum development, assessment, research, literature updates, and career development.

We wanted to understand: What is the nature of each of these challenges that we identified in our needs assessment? And what keeps health profession educators engaged in their own online development?

And so we developed a mission, vision, and purpose statement:

**Mission Statement**—this stayed written on our project wall (literally) throughout the project  
The virtual interprofessional community of practice (viCoP—what we wanted to develop) is a convenient, accessible online community center housing informal and formal opportunities for

deliberate reflective practice and feedback that equips health profession educators to create reflective practitioners and culture change needed for safe and quality patient care.

### Vision Statement – this was our “BHAG” or Big Hairy Audacious Goal<sup>5</sup>

The viCoP will be a “third place”<sup>6</sup> online for health profession educators where they can be part of a community of new and old friends and colleagues where they can engage in conversations and activities that focus on continuous self-improvement as a means to helping others improve.

### Purpose Statement –these were our Project Goals

We will create and pilot an online or virtual "Interprofessional Community of Practice (iCoP)", entitled, “CMS Virtual Campus: An Interprofessional Community of Practice” and referred to as “the VC,” where a small sample of educators use peer and mentor support to develop and reinforce their own skills at their convenience. The VC will eventually be available and applicable to all health profession educators. Participants will be able to choose from a menu of activities accessible on demand to fit busy schedules; they will be able to receive feedback from experts and peers, as well as practice giving feedback. The varying modules are structured to promote interprofessional learning and modeling, reflective practice, and a culture of feedback--essential elements for developing expertise and providing better and safer patient care. We expect that those who participate in the VC will be able to develop a deeper understanding for IPE and be able to use their enhanced knowledge and skills to help other faculty and learners at all stages.

The pilot will help us understand in depth the needs of users, address them, and offer them to potential future users.

### A partnership with the Josiah Macy Jr Foundation

Josiah Macy Jr Foundation, founded in 1930, is the only national foundation solely dedicated to the mission of supporting projects that broaden and improve health professional education. The Macy Foundation’s priorities include encouragement of interprofessional education and teamwork, provision of new curriculum content for health profession education, new models for clinical education, improving education for the care of underserved populations, and health profession educator career development.

With our vision in hand for a continuous learning system for interprofessional educators through a virtual Community of Practice as well as our inquiries into how to maintain educator skills and explore engagement and new content, we sought a board grant from the Macy Foundation. The Foundation decided that our inquiries and strategic directions were a strong match. We agreed to expand the offerings to all health profession educators (beyond healthcare simulation educators) by beta testing with our graduates, as well as non-simulation health profession educators (HPE) products that will be available for any HPE.



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<sup>5</sup> Big Hairy Audacious Goal or BHAG comes from business literature to create vision statements, Collins & Porras, 1994

<sup>6</sup> A “third place” is the place you go aside from home and work (e.g., community center, gym, coffee shop, bar, mall, beauty salons, church, clubs, etc.), Oldenburg, 1989.

With the award of a Board Grant from the Josiah Macy Jr Foundation and with the in-kind support of our own organization (CMS), we endeavored on this overwhelmingly interesting project.

[Podcast of the Project](#)

We implemented the project in two phases:

**Phase I** (Year 1: 2017) was to plan, create, alpha test “modules” (learning activities) with our IMS graduates, revise and retest

**Phase II** (Year 2: 2018) was to beta test with IMS graduates and non-simulation interprofessional educators for general applicability

Throughout both phases, we continued to study: *What is the nature of each of these challenges that we identified in our needs assessment? And what keeps health profession educators engaged in their own online development?*

The next sections describe each phase, how we did it, and what we learned at each step.

# Phase I: Online Engagement

## What were we looking to test?

With our mission (page 11) on our wall, our vision and purpose (page 12) in our heads, and the Project Proposal approved by Josiah Macy Jr Foundation and CMS in our hands, we began Phase I of our project: The planning, development, and alpha testing of our deliverables. We knew that we were setting out to build an online interprofessional community of practice. Instead of a site where you can only search and pull information, we wanted to create an online community where one could not only pull information, but apply it through practice on the site and receive, as well as give feedback on that practice. We decided to call this the “CMS Virtual Campus,” or “the VC.” We also sought to create and test modules that would motivate reflection and modules that created and sustained engagement in one’s own development as an educator. And through all of this testing, we used the opportunity to attempt to understand more deeply the challenges that we identified in our needs assessment (page 10).

## Online Engagement

We are standing in the “perfect e-storm”<sup>7</sup> where innovation has brought together education, technology, and learning needs. Online education and blended learning<sup>8</sup> is headlining higher and continuing education. Engagement tells us about the quality of education or activities that we are providing; it tells us how much our user is valuing the experience through the investment of their time and effort.<sup>9</sup> Understanding factors of online engagement provides insight into future curriculum and online course development.

## Classic Theoretical Underpinnings

At CMS, we build everything we teach on a few classic theories in teaching and learning, action science, organizational behavior, and sociology that we have strongly adopted over the years in our work, practice, and teaching. We kept these in mind as we created every aspect of this project, thinking of some more than others as appropriate to each component of each activity. We list a select few here for your convenience:

Theory	Description
Adult Learning (Knowles, 1980)	Andragogy is the study of adult learning. Malcolm Knowles states six assumptions that motivates adults to learn. These assumptions include: 1) adults need to know the reason why they are learning what they are learning, 2) adults need to be involved in their plan and decisions around education (be self-directing), 3) adults bring vast experiences to the discussion, 4) adults are most interested in material that is relevant to their lives, 5) adults learn best when the activity is problem-centered, and 6) adults are internally driven.

<sup>7</sup> Kim & Bonk, 2006

<sup>8</sup> blended learning is a mix of in person and online education

<sup>9</sup> Robinson & Hullinger, 2008

<p><b>Experiential Learning</b> (Kolb, 1975)</p>	<p>David Kolb and Roger Fry developed a model of learning that conceptualizes learning as a process through the transformation of experience from the work of Dewey, Lewin, and Piaget. The model posits four cycles: experience (e.g., work, “real-world” experience, simulations), reflection (e.g., reflecting on a specific action), conceptualization (e.g., analyzing and understanding what drove the action and effect), and experimentation (e.g., planning and executing a course of action).</p>
<p><b>Situated Learning</b> (Lave &amp; Wenger, 2008)</p>	<p>Lave &amp; Wenger describe a social process where knowledge is co-created within the context of how that skill or knowledge is applied. Situated Learning Theory also embraces a concrete experience (i.e. simulation) and reflective observation on the experience (i.e. debriefing). Learning is constructed in a way where knowledge is contextualized. This deep understanding of the context becomes the means for understanding that situation and the meaning made by the learner. This dynamic perspective adds a larger context to debriefing and suggests that learning is supported and altered through the exchange and interaction of individuals. Lave &amp; Wenger complement situated learning with the concept of a “community of practice.” The learning in IPE should include the same members with their perspectives and contribution of the event explored.</p>
<p><b>Reflective Practice</b> (Schön, 1983)</p>	<p>Donald Schön’s work describes how we create new meaning through the analysis and understanding of actions and values. There are two types of reflection: reflection-in-action (i.e., during the simulation) and reflection-on-action (i.e., after the simulation) during debriefing. Debriefing should also allow for a third type of reflective practice identified by Thompson and Pascal reflection-for-action (i.e., how to apply new meaning for new action in practice or for the next simulation).</p>
<p><b>Deliberate Practice</b> (Ericsson, 2004)</p>	<p>K. Anders Ericsson outlines essential components of deliberate practice that optimizes learning and performance including: internal motivation to engage in a task to improve; building upon previous experience, skill, and knowledge; immediate feedback on the performance; and repetition of the task. Ericsson underscores the point that healthcare students need representations that can support planning and practice of the actual performance to allow for adjustments toward mastery and there is a need where feedback can be immediate. With careful planning and skilled facilitation, simulation with debriefing helps to fill this need.</p>
<p><b>Psychodynamic Theory</b> (Bion, 1961)</p>	<p>Bion brings to light psychodynamic perspectives where learning depends on cultivating critical awareness of behavior in, as, and between groups.</p>
<p><b>Contact Hypothesis /Theory</b> (Allport, 1954)</p>	<p>Allport posits that contact modifies prejudice and stereotypes between professions and, therefore, modifies relationships between professional groups.</p>
<p><b>Identity Theories</b> (Tajfel &amp; Turner, 1986; Turner, 1999; Brown et al., 1986)</p>	<p>In <u>Social Identity Theory</u>, Tajfel &amp; Turner describe how our identity comes from our membership of social groups in which we perceive our group more positively than others. Turner explores <u>Self-categorization Theory</u> as an expansion of Social Identity Theory in the context of one’s organization. Brown et al. focuses on group objectives in <u>Realistic Conflict Theory</u> where the objectives in each group surface through attitude and behavior.</p>
<p><b>Practice Theory</b> (Bourdieu, 1977)</p>	<p>Boudieu describes how professional identity is acquired through one’s culture and how each profession has its own “cultural capital.” Under this theory, IPE should be a common long and consistent experience.</p>
<p><b>Self-Determination Theory</b> (Deci, 1972)</p>	<p>SDT seeks to understand motivation, contrasting intrinsic and extrinsic motivators. In online engagement, there are multiple factors from the individual and from the environment. SDT highlights what people have in common and this was important to us since it seemed that each response and interview revealed many differences in values and interests. It was helpful to view the data as common themes and common areas of difference.</p>

<b>Psychological Safety</b> (Edmondson, 2014)	Edmondson describes how the feeling of safety for interpersonal risk-taking is a mediator of relationships and critical to teaching and learning.
<b>General Systems Theory</b> (von Bertalanffy, 1971)	Von Bertalanffy views the whole individual-community-environment as beyond professional and political bounds typically of focus, taking into account each profession's complexity. Cause and effect is interdependent and this theory seeks to unify how each profession relates their work to the needs of all involved components.
<b>Organizational Theory</b> (Senge, 1990)	Senge describes conditions that nurture learning, creating "a culture of enquiry." An environment capable of respectful, proactive, and innovative continuous and iterative process of change and reframing allows this culture of inquiry.
<b>Activity Theory</b> (Engestrom, 2001)	Engestrom focuses on understanding and intervening in interactions to effect change in relations at the micro (individual) and macro (community rules) levels. This requires a joint activity.
<b>Complexity Theory</b> (Fraser & Greenhalgh, 2001)	Fraser & Greenhalgh account for the unpredictable complex adaptive systems in organizations, professions, and learners. Learning takes place between familiar and unfamiliar tasks and environments. To address each complexity, multiple remedies are more effective.
<b>Transformative Learning Theory</b> (Mezirow, 1978)	Transformational learning is a branch of Adult Learning. Mezirow describes a 10-step process for transformative learning to offer a guideline in developing the skills needed for optimal team performance in a complex environment.

### *Current Published Findings in Online Engagement*

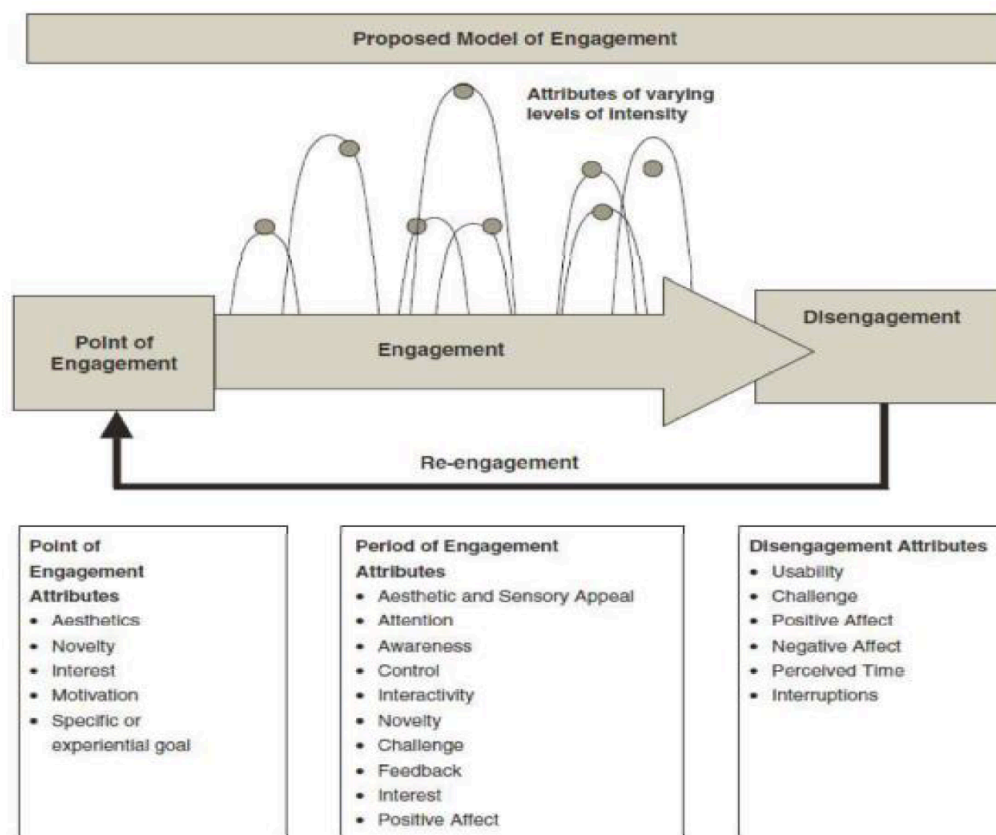
As we sought to study how to keep adult educators engaged in their own online development, we sat down with the online engagement literature during our development phase. We list for you some select findings here:

<b>Online Engagement Literature</b>	<b>Findings from Study</b>
User Engagement with Technology Framework (O'Brien and Toms, 2008)	O'Brien and Toms (2008) provide a conceptual framework on user engagement with technology which explains a process of four stages: point of engagement, period of sustained engagement, disengagement, and reengagement. The framework depicts attributes that exist for the user, the system, and the user-system interaction. See model below.
Benchmarks of the National Survey of Student Engagement (Kuh, 2001)	The National Survey of Student Engagement (NSSE) assesses dimensions on five benchmarks: level of academic challenge, active and collaborative learning, student interaction with faculty members, enriching educational experience, and a supportive campus environment.
Variables for Online Education Engagement	Volery & Lord (2000) as well as Dixson (2010) identified three main variables critical to online education engagement: technology, instructor characteristics, and student characteristics.
Community of Inquiry (Garrison, Anderson, & Archer, 2000)	Garrison, Anderson, & Archer describe participation in online education through three elements essential to educational transaction: cognitive presence, social presence, and teaching presence.
Attributes of Online Learning (Anderson, 2008, Ch 2)	In his book, <i>The Theory and Practice of Online Learning</i> , Anderson describes attributes of online learning: learner-centered, knowledge-centered, assessment-centered, and community centered. He provides a model of online learning and describes the various interactions that occur.



Characteristics of Learning (Guralnick in Savetti & Bertagni, 2018)	Guralnick describes effective approaches to online learning: situated learning and learning by doing, just-in-time performance support, learning, technology, and emotion. Characteristics of online learning that people connect with include: relevance, concrete, the right kind of fun, and suiting the learner's context.
Ways of Motivating Students (Miller, 2014)	Miller links Self-determination Theory to online learning and offers the following strategies toward student motivation: -setting high expectations early -bridging, scaffolding, and hooks <sup>10</sup> -public rubrics (or what we refer to as dashboards) <sup>11</sup> -peer-feedback -gamification -sense of mission –tying to big professional and personal goals -using story or narrative -knowing where one stands (e.g. leaderboard)

Along with the intrinsic and extrinsic perspectives of Self-determination Theory, we found the conceptual framework by O'Brien and Toms on user engagement with technology particularly helpful as we approached the design of our online learning activities and include it here:



O'Brien & Toms Proposed Model of Engagement. Source: O'Brien & Toms, 2008; Copyright and Permission to reuse by John Wiley and Sons Publishing

<sup>10</sup> Bridging is understanding gap between teacher and learner ideas, scaffolding is addressing the gap between skills and knowledge, and hooks are tying material to intrinsic motivators, Miller, 2014

<sup>11</sup> rubrics (or dashboards) are structured grading or chart of completion

### Encountered: The scope is more than anticipated.

As we began our planning, we realized that this project had seven work streams, each work stream a project with its own sub-projects.

Work Stream	Description
Content Module Development	<i>To develop 17 “Modules” or online activities of different sizes (e.g. ranging from 2-minute activities or 1 hour sessions to a 6-week online course) and objectives that will exist in the virtual campus as the content provided.</i>
Tester & Audience	<i>To select and invite a total of 100 CMS graduate testers and 100 additional non-IMS graduate interprofessional healthcare educator testers.</i>
Facilitator & Staff	<i>To select co-facilitators and faculty to facilitate the activities.</i>
Platform	<i>To study the platform needs of the virtual campus to achieve mission and vision. Determine best platform to meet campus needs, learner needs, faculty needs, and research topic needs.</i>
Research & Usability	<i>To study how to keep healthcare educators engaged online. Develop research best using easily-accessible big online statistical data. Embed research needs into platform, modules, and integrations.</i>
Business Modeling	<i>To determine jobs, pains, and gains of future subscribers; subscription fees, faculty stipends, virtual conference platform and resources, marketing, and human resources post-project. To research online education trends.</i>
CE/CME/Certificate	<i>To provide continuing education credits to users. To provide a certificate of successful completion to users.</i>

### How did we do it?

The nice thing about performing a needs assessment, knowing some theories, swimming in the literature, and thoughtfully discussing your findings is that, in pretty organic form, you might start doing things that designers and experts say you should do. That is what happened to us. As we worked deeper into the implementation, we thought it would be advantageous to leverage frameworks in the field of human-computer interactions. While we didn't initially follow these frameworks during the planning phase, once we matched what we were doing to processes of the frameworks, we found the common language and visualizations of these frameworks to be helpful. We offer them here as a framework that you can use and we also present them here because they allow us to describe how we did what we did (even though we inadvertently began following the steps).

### User Experience Approach

User Experience (known as “UX”) describes all of the aspects of the end-user’s interactions with our products.<sup>12</sup> One important realization was that UX design would be essential in the effectiveness of this overall project. All stakeholder interactions would be handled in the module design and experience. It would be important to make the modules as intuitive, friction-free, and easy to use as much as possible. There were many levels of module development that could

<sup>12</sup> Here are some resources that we found extremely helpful for UX: <https://uxchecklist.github.io/> , <http://uxmag.com/> , <https://designshack.net/> , Szabo, 2017

quickly become confusing (e.g. faculty perspective, business perspective, resource perspective, user perspective) and, given our project mission, purpose and interests, our best approach was to focus on what the user experience looked like. We then invested time in focusing on the UX, consulting with UX specialists. This provided the project with some great insights into how to study and design the modules. This approach helped us define our objectives for each module. Keeping in mind our mission, we storyboarded<sup>13</sup> what we thought to meet that mission, including layouts, pathways of activities, and release schedules. We then sketched out a process map<sup>14</sup> of the user experience and highlighted the technological interfaces. After we did this, we were able to map the technology needs, followed by the faculty and staff needs, and finally the business needs.

User experience research looks at the behavioral dimension (what users do) and attitudinal dimension (what users say) to study user satisfaction with a product.<sup>15</sup> We used a mixed methods (quantitative and qualitative) approach to study usability and the user experience. Select results are mentioned in our Lessons Learned (pages 21 and 26).

### *Design Thinking Framework*

While user experience approaches helped us to focus on our users and empathize with our testers, we used a Design Thinking framework to brainstorm how we would meet each objective and implement the testing. Design Thinking<sup>16</sup> has five phases:

- Empathize with your users
- Define your users' needs, pains, and insights
- Ideate solutions by challenging assumptions and creating ideas for innovative solutions with possible outcomes in mind
- Prototype the solutions by creating beta versions
- Test the solutions by getting feedback and revising

The method of Design Thinking is an iterative approach that is not always sequential and can occur in parallel and repeat as needed, always focused on understanding the user or learner. It is also a collaborative process where interprofessional perspectives are needed to challenge assumptions.

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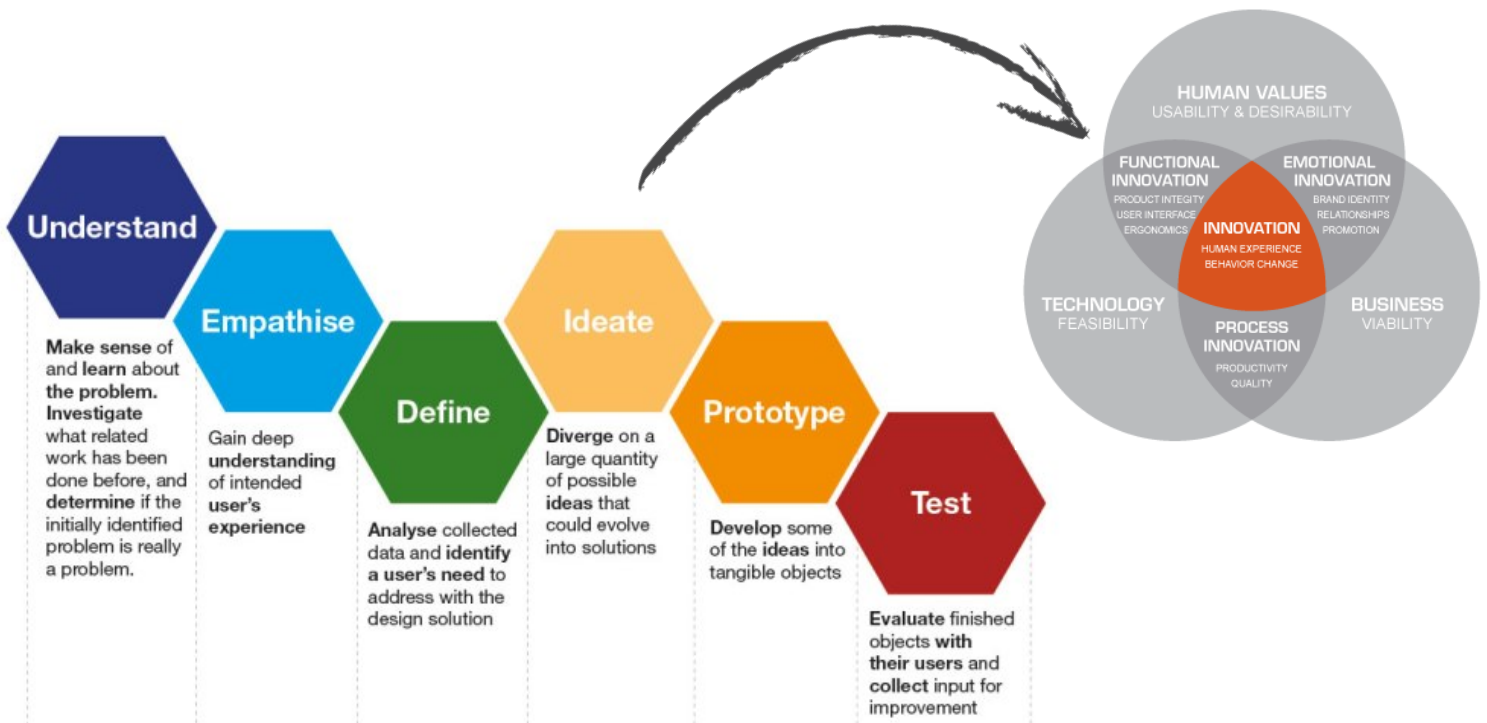
<sup>13</sup> A storyboard is a visual outline that describes the project. There are many ways to storyboard. For phase I we used <https://stormboard.com/> since the team was in the midst of travel or lived on different coasts. For Phase II, we did this physically in one very large room, using all of the wallspace.

<sup>14</sup> A process map visually describes the flow of the processes of one perspective.

<sup>15</sup> There are many applications that help guide you through user experience research, e.g. Airtable

<sup>16</sup> Curedale, 2017; Lockwood & Papke, 2017; Fuller, 1956; Schon, 1983; DiRusso, 2016; <https://dschool.stanford.edu/>, Beaird et al., 2018; Macdonald & Elahee, 2016

# BUILDING BLOCKS OF DESIGN THINKING



The design thinking framework. Source: <https://sheilapontis.wordpress.com/2015/06/04/design-thinking-revised/> and <https://brooksstevens.com/blog-post/innovative-design-concepts-power-3-part-iii> Permissions obtained for reuse.

We used the Design Thinking Framework (Stanford d.school Method) during our beta phase and we iteratively tested, defined, created, empathized, prototyped each module created.

# Lessons Learned: In User Experience and Design Thinking

1. Needs assessments and thoughtful design around with the user in mind naturally steers you into user experience and design thinking approaches. Frameworks are helpful for common language and team collaboration of processes.
2. A process flow map from the perspective of the user helps identify gaps in your workstreams/projects.
3. Successful innovative designs occur when the product is desired, feasible, convenient, and viable.
4. Be prepared to be surprised. The user's reactions to the beta were often surprising, whether it was opposite what we had hypothesized or a completely different pain or gain that we didn't think about.
5. Pausing with each action and assumption during the iterative experimentation allows a better understanding of the user experience. By revealing your biases during the development phase, the team can consistently be on the look-out for biases that come into play by the developers and can neutralize or challenge those biases where appropriate.
6. Design Thinking applied to a community with multiple activities and options allowed a natural experience of selection and elimination of modules. It became clear to us that a pilot of sixteen modules was a large amount to be iteratively testing. Every module had its own design footprint or design cycle. In design thinking, there are life cycles of design: introduction, growth, maturity, and decline.<sup>17</sup> Each module's life cycle of design became visible to us as we underwent this process of testing. Some of the successful modules unexpectedly required patience in the growth phase. Some of the modules matured, while others declined. Some modules required more resources than anticipated and during ideation, the team selectively eliminated efforts on those modules to refocus and conserve time and focus on the ones that seemed to grow based on the user experiences.
7. In the online environment, "successful technologies are not just usable; they engage users"<sup>18</sup> Usability testing is not a complete measure without studying factors of engagement.

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<sup>17</sup> Macdonald & Elahee, 2016



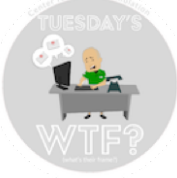

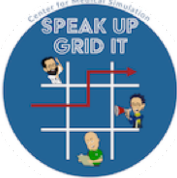

<sup>18</sup> O'Brien & Toms, 2008

## The Modules




In Phase I, we used the findings from the needs assessment to steer us in the development of seventeen modules in different combinations of:

- sizes (range 2min to 1.5hr),
- media (podcasts, videos, discussion threads, online practice), including synchronous (scheduled to be online together) and asynchronous (activities that could be done on own time), and
- topics (simulation, debriefing, feedback, speaking up, self-reflection, case design).

We hoped that if we used universal design concepts and created a “sandbox” of different activities, the experiment would reveal what our users would find naturally engaging.

MODULE		
REFLECTIVE PRACTICE		<p><b>Speak Up! (2 to 4 minute videos)</b>  <i>Animated speaking up stories with invitation for commenting. The stories illustrate real events and reveal lessons learned around speaking up that can encourage speaking up.</i></p>
		<p><b>DJ'simulationistas....'sup? (15 to 40 minute podcasts)</b>  <i>Dan &amp; Janice podcast on different fields of science and how they apply to healthcare simulation and debriefing.</i></p>
		<p><b>Stories About Understanding Frames (2 to 4 minute videos)</b>  <i>Animated advocacy-inquiry stories with invitation for commenting. The stories demonstrate the power of advocacy-inquiry. These illustrations motivate one to hold the basic assumption (that there is a good reason behind another's actions). When you have a “WTF” moment, think: “What’s Their Frame?”</i></p>
		<p><b>The Feedback Course (5-week online Course)</b>  <i>Four 3-hour classes given weekly serving as a gateway to a feedback practice online area. Class one reflects on receiving feedback. Class two reflects on giving feedback. Class three highlights the complexities in giving feedback. Class four is a FACE webinar (feedback assessment tool) that prefaces the online practice environment.</i></p>
		<p><b>Speaking Up Pathways (10-15 minute videos)</b>  <i>Video of a Learning Pathways Grid done to find pathways to do it better using the Speaking Up! Episode of the month. These grids discover how we often get in the way of our best intentions, reframes thinking to empower speaking up, and finds doable techniques to speaking up.</i></p>
TOOLS & COACHING		<p><b>IPE Simulated Debriefings (1 hour scheduled sessions)</b>  <i>Simulated debriefings scheduled synchronously for groups of 5-8 and recorded for asynchronous review and commenting. These debriefings allow practice and pause-and-discuss real-time coaching, as well as feedback from debriefees/peers.</i></p>

		<p><b>With Good Judgment Coaching Series</b> (text forum)  <i>Text-based coaching on written I saw-I think-I wonder. The Molecule GJCS allows one to practice advocacy-inquiry via text with specific coaching via text.</i></p>
		<p><b>Expert Corner</b> (15 minute videos)  <i>15 minute recorded lectures of experts in the field speaking on a topic that they are currently passionate about understanding and promoting with invitation for commenting, Q&amp;A. The expert corner brings our audience to up and coming considerations in simulation and IPE.</i></p>
		<p><b>Debriefing Feedback</b> (30 minute videos)  <i>Subscribers can upload their real debriefings for peer feedback.</i></p>
		<p><b>Advice Column</b> (text forum)  <i>Dear Abby-like inquiries and responses to and from CMS faculty.</i></p>
		<p><b>Special Interest Conversations</b> (listserv)  <i>Community-driven and facilitated interest groups within the virtual campus. These include affinity or special interest group topics, e.g., specialties, in-situ, standardized patients, pre-licensure IPE, etc.</i></p>
<b>RESOURCES</b>		<p><b>Simulation Models: How-to's</b> (8 minute videos)  <i>Fast-forward stop-movie videos on simulation technical how-to's, including creating simulation models and simulation fixes.</i></p>
		<p><b>CMS Book Club</b> (40 minute podcasts)  <i>Podcasts of recorded conversations from the CMS Book Club (our brain playdate). These podcasts share CMS's current thinking with the world sparked by concepts presented in the assigned book.</i></p>
		<p><b>Daily/Weekly Update</b> (email listserv)  <i>Daily easy-read email and social media push by CMS that includes a quote with a link to a new virtual campus activity, as well as a summary of an article, book, blogs, existing simulation resource.</i></p>

	<p><b>IPE Case Portal</b> (download and upload site)  <i>Repository of interprofessional simulation cases. These will be initiated from develop-a-course IMS groups. IMS graduates can use these cases and post any discoveries or revisions, serving as feedback and continual standardization and peer-reviewed process of scenarios.</i></p>
	<p><b>Virtual Museum: The History of Patient Safety and Healthcare Simulation</b> (5 to 40 minute videos)  <i>Interactive scrolling timeline with scroll-over and clickable 5 min video interviews of our historical leaders and text information on the history of healthcare simulation.</i></p>
	<p><b>Online Reunions</b>  <i>Meet online with other colleagues in the community by scheduling (or "booking online reunion dinner reservations") online meetings for one-on-one meetings or group meetings.</i></p>

A total of one hundred of our graduates from our Simulation Instructor Courses were invited to either alpha test (during development) or beta test (the first fully developed version of) the modules. About 75% of invitees logged onto the platform. At 2 months, 60% of testers were active. By the end of 6 months, 40% of testers were active.

Of the 17 modules developed in Phase I, 16 were launched and nine emerged as engaging/popular by the testers and matured into Phase II activities. One module (The Feedback Course) continued in development and launched in Phase II. Specifically, the modules that matured from Phase I were (in order of engagement):

1. Podcast (DJ Simulationistas... 'sup?) - *An informal conversational-style podcast (15-50 minute audio-only) with two faculty discussing or interviewing other fields of practice and how they apply to simulation and debriefing.*
2. Speaking up stories - *Two to four minute animated videos with voice-over of faculty telling a story of a time when they spoke up or didn't speak up, highlighting the complexities of speaking up.*
3. Interprofessional Simulated Debriefings – *1 to 1.5 hours of scheduled synchronous sessions where participants watch an already recorded interprofessional simulation case, volunteer to be a debriefer or roleplay a learner in the video. The debriefer debriefs and faculty and peers provide feedback during or after the debriefing.*
4. Book Club – *Podcast recordings of CMS Book Club discussions*
5. Stories about understanding other's frames (thoughts that drive actions) – *two to four minute animations with voice-over of faculty telling a story of a time when they made an assumption about another person and were surprised to discover another frame using the advocacy-inquiry communication tool as taught in CMS courses*
6. Advice column – *a questions and answers letter/discussion board for IPE faculty*
7. Scripting on how to effectively communicate – *text-based feedback on advocacy-inquiry communication tool as taught in CMS courses*
8. Topic-based listserves – *text-based discussion threads around specific topics of interest*
9. Scheduled online gatherings – *a reunion for the participants after their engagement in the online course or pilot*



## Evaluation of Phase I

Packed with theories and concepts, factors that we found outlined in the literature, and the lessons we were learning in our design process, we sought to evaluate Phase I. We sent an evaluation survey to all testers. We gathered click data and other online/software analytics. We also interviewed twenty-five beta testers with different ranges of engagement, including those that never signed in and those that signed in and never engaged afterwards, as well as the fully engaged testers. A thematic analysis was performed on the transcriptions from the interviews. We used this data to further understand the challenges and motivations of engagement. We also used the data to inform our revisions in preparation for Phase II.

## Lessons Learned: In Online Engagement

1. Universal design concepts<sup>19</sup> revealed areas of engagement. The activities that procured the most engagement were podcasts, short (2 – 4 minute) animated videos of storytelling prompting reflection, and synchronous (scheduled online) feedback sessions.
2. Online engagement is a critical data source to both measure and ensure the success of online education. While online education may be usable, it may not be engaging and the user may exit. Additionally, because the asynchronicity of online learning can easily multiply faculty time, peer feedback is central to the success of online learning and engagement. Group exchanges and peer learning is the hinge in collaborative learning and is foundational to the future of online education.
3. Users reported the importance of flexibility of platforms, where the activities were mobile and continuous where one can access the materials conveniently during daily transitions or work and on the fly (i.e., accessible when they have time at a desk with the ability to continue via their car stereo while driving, continuing via their mobile device while waiting in a parking lot or grocery store).
4. Multiple clicking, logins, and lack of time were reported to be a trigger for abort rates.<sup>20</sup>
5. Users reported that they would be more likely to engage or sustain engagement if reminders were available, preferably set to their own preferences (i.e., daily, weekly, certain times of the day/week)
6. Users desired a self-guided map with a dashboard that can show progress and completion and guide them as to the next activity.
7. The users desired content that solves their problem in real-time (i.e. can access material that will help them teach the class they are teaching tomorrow morning). This varied specialty-to-specialty and profession-to-profession. Common relevant areas were debriefing and communication skills.
8. The users reported that CE/CME or Certificate provided would increase engagement.
9. The users desired expert modeling (i.e. videos or blogs of experts modeling the skills that they are looking to achieve).
10. Engagement is multifactorial intrinsically and extrinsically. It is difficult to identify educators whose intrinsic factors align with our extrinsic factors and are motivated to put in consistent practice to improve their own skills.
11. Business Model Development is complex and depends on factors of engagement. The trend in education has been shifting into open source, free source materials which makes costs a concern. Additionally, people know what they would be willing to pay to participate, but don't know what they'd actually pay.<sup>21</sup> Pricing experiments are necessary. While many universities are moving toward unbundling, bundling seems to be a viable business strategy for us and cannot be dismissed.
12. Online teaching requires a different skillset. Student-faculty interaction is one of the five benchmarks of the student engagement dimensions. The moderating, mentoring, and facilitating of faculty promote student engagement.<sup>22</sup>

# Phase II: Fostering Engagement

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## What were we looking to test?

With the findings and lessons learned from Phase I and in our User Experience and Design Thinking Approach, we brainstormed viable and user-focused solutions and applied them to our design and implementation of Phase II activities. We applied the themes that we gathered from Phase I through three venues:

1. Social Media Release of Phase I products (podcasts, select videos, and keynote presentations)
2. IMS Online Debriefing Skills Refresher course (a continuation of modules from Phase I placed in a structured six-week curricular format)<sup>23</sup>
3. The Feedback Course (implementing all findings plus additional market research to determine sustainability into one six-week online course)

We also wanted to strengthen our work in business model testing, communities of practice, and our own deliberately developmental practice. We explain this below. First some info on the three venues:

## Social Media Testing

Select products from Phase I matured into launch and release. We wanted to reach out to all potential audiences, including non-simulation educators. We also wanted to test the success of these products in the public forum. We selected modules whose cost-benefit qualified in in-bound marketing (basically, we deemed these modules to be worthy of offering them free to the world, because the benefits of in-bound marketing outweighed the resources put in).

## Six-week Course Subscription to Spaced Learning Activities

The other modules that required more resources where payment is appropriate and also matured out of Phase I were placed into a six-week online course for our graduates. This course seeks to refresh debriefing skills learned in our intense simulation instructor course.

## Five-week Structured Course: The Feedback Course

With our findings from Phase I and additional market research, we revised our 17<sup>th</sup> module: The Feedback Course, a 5-week online course on how to have effective feedback conversations. We incorporated all of the thematic findings from Phase I into this course.

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<sup>19</sup> Lock et al. (2019). Handbook of Research on Blended Learning Pedagogies and Professional Dev.

<sup>20</sup> Abort rates are when a user aborts or leaves an intended path.

<sup>21</sup> William Poundstone, 2010

<sup>22</sup> Robinson & Hullinger, 2008

<sup>23</sup> See: <https://harvardmedsim.org/course-type/online-instructor-training/>

## How did we do it?

All seven work streams (page 10) remained at play in Phase II, working simultaneously. A major difference between Phase I and Phase II was that the modules that did not mature into the social media testing venue or the spaced learning activities venue were paused at the end of Phase I. Work efforts in Phase II shifted to focus on the 17<sup>th</sup> module that was in development in Phase I but not released in Phase I. This was the 5-week online Feedback Course. The course had 40 feedback-related modules embedded within its curricula. We designed the 40 modules within the course as we did with the beta testing modules in Phase I, only this time using the lessons that we learned. We also had two cohorts pilot the course. As per our findings in Phase I, the testers appreciated and engaged in both synchronous and asynchronous activities. We decided to create a blended approach to further study the nature and challenges of online engagement. We structured our design thinking in this phase by scheduling the synchronous sessions on Tuesdays (Cohort A) and Fridays (Cohort B). There were 18 health profession educators as beta testers in each cohort for a total of 36 testers (five reported using simulation for their IPE and the rest reported that they did not currently use simulation—this was important to us as we wanted to make sure that what we developed is applicable to all health profession educators outside our simulation graduate pool). We prototyped with our Tuesday cohort and revised for Friday cohort testing. This is how we applied our Phase I Lessons Learned to the Feedback Course:

Phase I Lesson Learned	How We Applied To the Feedback Course
#1. Our testers find podcasts, animated videos of storytelling, and synchronous feedback sessions engaging.	We included all of these media.
#2. Engagement tells us about the quality of our products. AND engagement is necessary for peer learning and to decrease organizational human resources.	We created a research group focused on studying engagement throughout and post-Phase II.  Peer-driven exercises were embedded in the course.
#3. Our testers want flexibility of platforms.	We used one primary platform for the course that was available on all devices and housed material from third party applications (e.g. youtube videos, dropbox documents). We also tested multiple apps and software to explore what our testers mean about “flexibility.”
#4. Avoid clicking and logins.	We chose Slack as our primary platform which typically requires a one-time login with one click access.
#5. Our testers want reminders that they can set.	Slack allowed and controlled this function based on individual preferences.
#6. Our testers want a dashboard and rubric.	We created and provided this, showing completion, time, and next steps.
#7. The content needs to solve our testers pain.	We chose the topic of Feedback based on our needs assessment and it turned out that it is a sore pain for all health profession educators, regardless of profession, and is an ideal common interprofessional need.

#8. Our testers want CE/CME or a certificate.	We worked to obtain continuing education for our spaced learning activities and are in the process of using what we learned in the spaced learning venue to apply it to the Feedback Course to be available upon public launch scheduled for May 2019. We provided a certificate of completion for our beta testers.
#9. Our testers wanted expert modeling.	We provided this through videos, in-class demonstrations, and during coaching sessions.
#10. There are intrinsic and extrinsic factors in engagement.	We monitored engagement and attendance closely and personally contacted testers to explore high and incomplete engagement. Our research team explored this through semi-structured interviews.
#11. Business Model Development	We understood more clearly the costs and resources required for this course during this pilot testing. These were factored into the development of our business model.
#12. Online teaching requires a different skillset.	We did a lot of deliberate practice and reflection, reading and application, and seeking of tester feedback.

### Feedback in Healthcare

In teaching the Feedback Course,<sup>24</sup> we learned a lot in feedback conversations that we'd also like to share with you here through Lessons Learned.



Podcast on the Feedback Course

<sup>24</sup> We offer here a podcast on work done in the Feedback Course: <https://soundcloud.com/medicalsimulation/episode-052-the-feedback-loop>

## Lessons Learned: In Feedback Conversations\*

1. Feedback is a core part of people's jobs and a source of pain and development interest for all interprofessional educators. A business model test we conducted was assessing the level of interest and engagement in the pilot (hypothesis: more sign-ups and more consistent participation = more desirability). It was astounding: 100 learners were invited for 40 seats of the Feedback Course Pilot. Within one week, 60 expressed interest of taking the course (6 hours a week for 5 weeks), 20 of which we wait-listed. The online attendance rate was 98%. The participants reported completing 90% of the assigned homework. The most frequent reported reason for engagement was their personal interest in gaining the skills to be better at understanding and having feedback conversations.
2. Small group synchronous work, peer-feedback and interaction is valuable to learning and engagement.
3. Practice, coaching, and interaction with experts is a top desire.
4. Both asynchronous and synchronous work are of value. The learners (beta testers) preferred that all content be asynchronous and that synchronous times be used for practice. We also found that the content provided that was asynchronous was primarily not completed or completed shortly before the start of the assigned class.
5. Effective technology orientation is key to engagement in virtual communities of practice.
6. Having the time for reflection, exercises requiring personal reflection, and the act of struggling with a presented concept is valuable to the learning and engagement.
7. A mobile community of practice platform is convenient and valued as a learning container.
8. It is preferable that all materials be collated or kept within one platform.
9. Activities that allow natural practice (i.e., simulated situations and role playing) and immediate feedback are more engaging than activities that feel awkward (i.e., talking to the camera as if it is a person) and where feedback is not received.
10. Deliberately developmental practice<sup>25</sup> by faculty and learners enriches the teaching and learning.

\*These lessons learned are gathered from initial analysis of our data. Formal analysis of the data is still in progress.

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<sup>25</sup> Kegan & Lahey, 2006, 2016; We describe our deliberately developmental practice in more detail at the conclusion of this report.

## *Business Model Development*

With more experience behind us and some new lessons learned, we also increased our attention to value propositions, business modeling, and sustainability. We used the beta testing in both Year 1 and Year 2 to begin testing and developing our business models. We used a rigorous business model development and testing approach based on outcome-driven innovation and the “jobs to be done” theory of Anthony Ulwick and the non-profit business model testing developed by Strategyzer.com. We used three levels of business model testing explore and advance the sustainability of the Virtual Campus offerings. The process allowed us to develop and test “hypotheses” about what our learners need.

Level I of business model testing took the form of interviews about our learner’s needs. To enhance our assessment of the sustainability of new on-line material we utilized a framework by Tim Brown and the innovation firm, Ideo.<sup>26</sup> The framework studies “desirability” (i.e., What jobs, pains and gains do our products address?), “feasibility” (i.e., Can we, along with key on-line learning platform partners, manage the technological, logistical, and administrative challenges?), and “viability” (i.e., Can we, as a non-profit, make more than we spend offering this in the long term?). We interviewed testers using this framework. These interviews allowed us to correct assumptions about what our learners’ valued. This generated new insights. These insights, in combination with our organizational processes, revealed that learners preferred bundling of products with already existing products to ensure their own continuous learning. During Year 1 pilot testing, the success of some of the modules allowed us to discuss the benefits of free online subscriptions of select modules as venues for in-bound marketing. We decided to test this, too. Level II tests used these findings to create an experimental business model of bundling our on-line debriefing refresher course with our in-person course to test whether our participants would pay additional tuition to add the on-line, bite, sized spaced learning to their in-person course.

Our Level I and Level II findings informed our Level III testing where we assessed in Year 2 how participants access, participate in and follow up on the Feedback course, the on-line debriefing course, and an additional peer-guided skill building course for speaking up across interprofessional differences.

For comparative analysis, we implemented a revised business test in August 2018 of offering the debriefing skills refresher as a stand-alone course. For the Feedback Course, we developed a business model testing plan, including a landing page tests, course sign up metrics, and tuition level tests to be implemented in February 2019.

As mentioned above, another part of the sustainability model of the Virtual Campus comes through the down-stream benefits to CMS of the Free Open Access Materials that we have made available on our website. Because this VC fits our mission to continue to develop interprofessional and simulation faculty the US and world-wide, CMS supported (co-funded) this VC. We (CMS) invested more than anticipated since we view the Virtual Campus learner experiences as a vehicle to help healthcare educators, including our alumni, to come to additional courses or refer colleagues and students to our programs. The sustainability of the Virtual Campus comes both from its own tuition-generating activities and also from its role in guiding educators to our tuition-generating program. In this pilot, the VC platform maintained our connection with the students, generated new connections with interprofessional healthcare educators who follow our multiple social media offerings, and allowed others to learn about us when they would not otherwise have known about

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<sup>26</sup>See: <https://www.ideo.com/post/change-by-design> and <https://blog.strategyzer.com/posts/2017/12/6/how-to-systematically-reduce-the-risk-uncertainty-of-new-ideas>

us. We believe that the Feedback Course that we developed is an attractive course for all interprofessional educators with which the course fee will allow it to self-sustain.

While it is difficult to forecast the project's growth and continued study around costs is necessary, the pilot findings provided information on the VC's potential, directions for marketing, models to sustain and grow the program, and needs for content development. We have had success in doing such pricing and costing over the 25 years that CMS has been operating successfully as a non-profit educational organization and we plan to continue our study with an eye for financial sustainability.

For the Feedback Course to be sustainable, we will be marketing the course through the networks of CMS, our IPE partners, as well as various interprofessional communities and meetings of health profession organizations and societies.

## Lessons Learned: In Business Model Testing

1. “**Business model innovation**” is a separate and valuable process independent of educational program innovation. As a not-for-profit, imagining and testing new ways to connect with learners, finding new ways to financially support learning experiences, required a frame change. We needed to think of ourselves as not only as educational content innovators but also not-for-profit revenue entrepreneurs.
2. Being an “**ambidextrous**” organization that can both run stream-lined, efficient education programs but also learn and invent new things required a second frame change for us. We needed to recognize the competing priorities of looking for incremental improvements in existing programs and looking for out-of-the-box new approaches that might “disrupt” our existing programs. Naming and embracing the tension between conservation and innovation made it easier to do both.
3. **Visualization tools** for business model innovation and testing helps build shared mental models as well as innovation capacity across the organization. We used the **Business Model Canvas** and the **Value Proposition Canvas**, both developed by Strategyzer to force ourselves to articulate assumptions, interview and research our learners' needs (using jobs, pains, and gains lens).
4. Meeting learners' needs is the education equivalent to **sales and marketing** in traditional businesses. Whereas many of us in the education community see “sales and marketing” as something business do, but not us educators, we realized that communicating how we could help our learners address their challenges or reach their goals, helped us help them. The success for failure of courses names, free, open access materials on our website, word-of-mouth referrals to our learning experiences were all “data” about how well or poorly we were understanding learner's jobs, pain points, and valued goals.



## The Value of Communities of Practice

Phase II was structured to further explore virtual communities of practice. A community of practice is a group of professionals engaged in collective learning within a shared professional domain.<sup>27</sup> Virtual Communities of Practice (vCoPs) are communities of individuals with a shared passion who communicated via virtual or online media to advance their own learning, learning or others, and the knowledge in their field of practice.<sup>28</sup> We sought to nurture health profession education leaders through the provision of an interprofessional network, with the goal of creating a virtual community of practice that meets the challenges of need, time, motivation, continuous learning, reflective and deliberate practice.

How to develop your own vCoP.

To do this, we found the Community of Inquiry framework by Garrison, Anderson, & Archer (2000) to be helpful in the implementation of our structured vCoPs. The framework provides a structure for managing and monitoring the dynamic for collaborative thinking and learning. In our shaping of the vCoP, we studied, experienced, and practiced the elements in this framework, particularly: social, cognitive, and teaching presence.<sup>29</sup>

## Lessons Learned: In Communities of Practice

1. For the vCoP we sought to achieve, team collaboration tools were more conducive to our goal of creating a flowing, continuous community of practice (e.g., flexibility, notifications, multiple discussion threads with easy visualization and access) than a learning management system.
2. Personalized communication elicits higher engagement. Communication to groups or the entire community had less engagement.
3. Already existing communities of practice did not engage more or less than those who entered the community as individuals. Beta testers from already existing communities of practice (e.g., work together, took course together) signed up together for the Feedback Course and were from the same profession. We naturally split them into other smaller groups to maintain interprofessional groups. We were interested in studying whether entrance into our vCoP from already existing CoPs would increase engagement. We beta tested the online spaced learning activities with one graduate cohort (preexisting CoP) and two groups of individual registrants (did not know each other). The engagement data was similar in both groups.

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<sup>27</sup> Lave & Wenger, 1991

<sup>28</sup> Thoma, Brazil, Spurr, Palaganas, Eppich, Grant, & Cheng, 2017 offers guidance in developing your own vCoP. This project is included in this publication as an example.

<sup>29</sup> Garrison, 2017. Social presence is the ability for a user to identify, communicate openly, and develop relationships with a group; cognitive presence is the extent that a user can construct and confirm meaning through continued reflection and discourse; teaching presence is the design, facilitation, and direction of cognitive and social processes toward meaning and outcomes.

# Conclusion

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## Revisiting the Purpose of the Project

Our purpose as we set out on this endeavor was stated as the following:

*We will create and pilot an online or virtual "Interprofessional Community of Practice (iCoP)", entitled, "CMS Virtual Campus: An Interprofessional Community of Practice" and referred to as "the VC," where a small sample of educators use peer and mentor support to develop and reinforce their own skills at their convenience. The VC will eventually be available and applicable to all health profession educators. Participants will be able to choose from a menu of activities accessible on demand to fit busy schedules; they will be able to receive feedback from experts and peers, as well as practice giving feedback. The varying modules are structured to promote interprofessional learning and modeling, reflective practice, and a culture of feedback--essential elements for developing expertise and providing better and safer patient care. We expect that those who participate in the VC will be able to develop a deeper understanding for IPE and be able to use their enhanced knowledge and skills to help other faculty and learners at all stages.*

*The pilot will help us understand in depth the needs of users, address them, and offer them to potential future users.*

After 3 years of interesting work (2 of which were funded), we conclude here with our lessons learned, first per each stated purpose of the project and then with details as to what we additionally learned in our own CMS community of practice.

## Lessons Learned: On Purpose

<p>1. Create a virtual interprofessional community of practice.</p>	<ul style="list-style-type: none"> <li>▪ The pilot serves as a proof of concept. It can be done. A sample of our products currently exist on our “Virtual Campus,” some products open access, others per registration.<sup>30</sup></li> <li>▪ Success is multivariate and can be viewed through many lenses or frameworks. For example:             <ul style="list-style-type: none"> <li>○ User Experience factors: intrinsic and extrinsic</li> <li>○ Design thinking factors: desirability, technology viability</li> <li>○ Engagement factors: attributes of engagement and disengagement</li> <li>○ CoP factors: social, cognitive, and teacher presence</li> </ul> </li> </ul>
<p>2. Peer and Mentor Support.</p>	<ul style="list-style-type: none"> <li>▪ Feedback is desired and necessary for improvement.</li> <li>▪ Modeling by experts is desired and valued by learners.</li> </ul>
<p>3. Available to all Health Profession Educators.</p>	<ul style="list-style-type: none"> <li>▪ Social Media provides access to all Health Profession Educators.</li> <li>▪ CMS is expanding our market audience as a result of this pilot.</li> <li>▪ Our organizational name (“Simulation”) may be a marketing barrier to new markets.</li> </ul>
<p>4. Applicable to all Health Profession Educators.</p>	<ul style="list-style-type: none"> <li>▪ The concepts that we teach at CMS is applicable to all health profession educators.</li> </ul>
<p>5. Convenient Activities.</p>	<ul style="list-style-type: none"> <li>▪ Online activities are viewed as convenient to our users. The pilot included global testers who were as engaged as national testers.</li> </ul>
<p>6. Practice giving feedback in a culture of feedback.</p>	<ul style="list-style-type: none"> <li>▪ The testers reported desire for more feedback as a result of being in a “psychologically safe environment.”</li> <li>▪ The Feedback Course required feedback and a culture of feedback. It is feasible to create a culture of feedback online.</li> </ul>
<p>7. Reflective Practice.</p>	<ul style="list-style-type: none"> <li>▪ Testers reported reflection on concepts presented in each module during their daily activities.</li> <li>▪ Testers referenced stories told by faculty in various modules.</li> </ul>
<p>8. Developing a deeper understanding of IPE for all stages.</p>	<ul style="list-style-type: none"> <li>▪ A topic that is considered a mutual pain or problem cultivates natural collaborative thinking.</li> <li>▪ Small groups created within modules were interprofessional. This might naturally separate friends or learners registering together since they tend to be from the same profession.</li> <li>▪ Testers reported that the content could apply to any professional learner.</li> </ul>

<sup>30</sup> <sup>30</sup> The CMS Virtual Campus is live and usable here with login credentials we can provide Macy Staff: <https://eharvard.remote-learner.net/login/index.php>

<sup>30</sup> <https://harvardmedsim.org/community/>

<sup>30</sup> <https://harvardmedsim.org/resources/>

9. Understand in depth the needs of users.	<ul style="list-style-type: none"> <li>▪ The combination of data analytics, survey results, and interview transcriptions and coding allowed a deep understanding of the jobs, pains, and gains of our users.</li> </ul>
10. Develop a plan for sustaining the activities.	<ul style="list-style-type: none"> <li>▪ Piloting modules allowed an understanding of resources needed and appropriateness of costs.</li> <li>▪ Bundling costs with our intense courses is more convenient for our CMS graduates.</li> </ul>

### Deliberately Developmental Organizations

As we illustrated in our Foreword, CMS consistently works hard at being a Deliberately Developmental Organization.<sup>31</sup> A Deliberately Developmental Organization (DDO) is a culture that supports individual’s development and is part of the work, routine, and conversations. For us, it is being a part of cultivating our transparent and honest culture by having the courage to use our conversations toward improvement of ourselves, individually, for others, and for the team. As an organization that focuses on teamwork and communication, curiosity, high-regard, and transparency; more simply stated: we try to practice what we preach. And it ain’t easy. AND we know that it is key to our organizational success, our individual success, and our individual and combined happiness, satisfaction, engagement, and motivation.

### Annotations in Innovation

Overwhelmingly interesting projects in innovation make for an overwhelming and unexpected discovery of issues—our very own issues. At CMS. We live to tell the tale of this project here:

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<sup>31</sup> Kegan & Lahey, 2016

# Lessons Learned: In Innovation, New Project Management, and the Impact on the Existing Organization

1. The best way to create the most innovative interprofessional education is to practice what you preach. We deliberately practiced the tools that we provided in the modules. We know the tools inside and out and the theoretical basis and evidence as to why we should use them. And as we have seen with our learners, the application of knowledge is much more complex. Knowing is not doing. We are no different. We had difficulty applying a few of the tools or advice that we teach and worked to apply them (e.g. how to effectively receive feedback). With deliberate practice, we were able to uncover the difficulties of putting knowledge into practice. This generated effective and powerful teaching materials and activities that we did not have before. *Tip: Practice the things you teach and when you encounter something interesting or complex, study it.*

2. If we are promoting the use of an application that individuals at CMS wouldn't use or access, it is also likely not being used by our testers. If we couldn't do it ourselves, how could we ask our users to do it? We had discussions reflecting on the intrinsic and extrinsic barriers and what would work for us. This helped in our design thinking and iterative prototype versions. *Tip: Practice using the applications that you will be asking your learners to use. Study if it is burdensome or easy for you and your team.*

3. We have our own IPE issues that we, too, work hard at discussing. Just having these types of conversations is difficult. It takes courage, vulnerability, and a passion for improvement to have these discussions. *Tip: Use the situation with your team as an opportunity to practice advocacy-inquiry, good judgment, and difficult conversations. It may also help to read *Difficult Conversations* by Stone, Patton, and Heen.*

4. While we created the vision together (on paper), we actually had different practical visions of that vision. We had consensus on the purpose (the end), and very different ideas for the means to that end. *Tip: Storyboard your project, present it to the team and re-story it together beforehand.*

5. It is difficult to create a new project during organizational restructuring, hiring, and transition. While we had anticipated organizational shifts, when the scope of work multiplied, we found ourselves adjusting resources and weighing organizational priorities. *Tip: Assess your program for readiness<sup>32</sup> and review the project plan<sup>33</sup> together.*

6. Uncertainty is needed in order to innovate. If you are innovating, it means that your organization hasn't done that particular thing yet. Additionally, when innovating in areas that do not have much published comparative/similar models, it is very difficult to predict where the project will go, the challenges to be encountered, decision-making, and business model development. We had multiple conversations around uncertainty and how we deal with it. *Tip:*

*Understand how comfortable everyone is with uncertainty.<sup>34</sup> Discuss how they deal with it best and what would work for each person in the face of uncertainty.*

7. Interprofessional education development requires interprofessional collaboration. *Tip: Determine together ways to collaborate. Protect time for the collaboration and work prior to start. Create collaboration calendars. Common language is important to teamwork. It might require working with your team to define terminology that you will be using.*

8. Innovation needs are paradoxical to implementation needs. The conditions that best foster idea generation is paradoxical to the best conditions for implementing them. Innovation needs novelty, uncertainty and space for creativity, while implementation needs familiarity and a degree of certainty. Innovation teams are typically divergent, creative, rapid, open, with undefined roles, while implementation teams are typically convergent, less open to mistake-making, with defined roles.<sup>35</sup> *Tip: You need innovation teams AND implementation teams to achieve both with some team members having the ambidextrous ability to do both. Set the edges of the sandbox— discuss absolute limitations, including time lines and costs, for creative freedom. And agree to be okay with the mess that will be inside during innovation, as long as high quality deliverables are produced within the timelines and costs set by the team.*

9. When you're innovating, you are playing outside of your comfort zone and it requires more work to understand your new playground. *Tip: Find the experts and do your literature reviews before starting the project so that you can build on already existing knowledge. Schedule interviews and reading time into your planning phase, but don't let it paralyze the work. At times where you feel like what you are doing is out of your league, keep in mind that you don't need to know the best evidence to do it, you will learn many of the things that are in the literature or that experts will tell you just by being thoughtful about what you do and doing it, AND if you do read and talk to experts beforehand or in the process, you will be on higher ground.*

10. The process of ideation and organization buy-in require patience. Everyone processes new ideas differently; some need more time, some like to immediately do. As in design thinking, the life cycle of a design requires a period of growth after introduction. Depending on the product and individuals involved, it may be an uncomfortably slow or uncomfortably fast process. *Tip: Have patience and flexibility with each other. Innovative ideas are nothing without organizational buy-in and the process of how that buy-in occurs is often more important to the organization and project than the idea (e.g., You propose an idea, it takes a couple of months of meetings and creative thinking, the idea takes multiple shapes, in the end it looks like the original idea. While this seems like wasted time, the creative thoughts and collaboration in the end leads to a*

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<sup>32</sup> In business literature, this is often referred to as “project readiness”, “operational readiness”, or “readiness management plan”. Cohen, 1998, Project Management Institute, 2004

<sup>33</sup> Project plans are essential to project management. Your team may need education and explanation of project plan documentation or how your project plan is structured. The work breakdown structure and timelines were important for us and intuitive to the team. We felt like the cost performance index and schedule performance index was too complex for our team and we used burndown charts and a RACI Matrix instead to understand backlogs. In retrospect, it would have been helpful to perform CPI and SPI periodically and use it as a guide to call high-priority meetings.

<sup>34</sup> Lindley, 2006; Laffont, 1989; Harvard Business Review, Emotional Intelligence 2017; Bradberry, 2011. Luckily, as part of a team building exercise years prior to this project, our team underwent personality analysis. We keep our results on each of our desks and often visit this when stumbling into “how we work together” conversations. To hear more: <https://soundcloud.com/medicalsimulation/episode-035-clash-of-personalities>

<sup>35</sup> Thayer et al., 2018, we found the RACI Matrix to be helpful in outlining roles.

*stronger and more supported product and the team skills developed in the process lead to additional innovative products.)*<sup>36</sup>

11. Grants increase organizational workload. You now have a skunkworks<sup>37</sup> department and opportunity costs<sup>38</sup> discussions become a thing. *Tip: Budget workload for all human resources beforehand, including a “just in case the scope widens” team.*

12. Innovation teams tests your organization’s ability for innovation, existing structure, policies and procedures, and its tolerance for such freedom and uncertainty. *Tip: Discuss and agree on the uncertain future—to be flexible with each other and what the organization discovers about its own processes.*

13. People quote the KISS (Keep It Simple Stupid) principle for a reason. Any project will have more work streams<sup>39</sup> than anticipated. Our work resulted in multiplied work streams (see Phase I and Phase II details). *Tip: Anticipate then KISS.*<sup>40</sup>

14. Communication is critical. *Tip: Regular meetings are crucial to the health of your project. Keep and confirm the meetings as scheduled. Assign a work breakdown structure<sup>41</sup> commander or project manager to assist in the steps and flow of the project plan. Software accessible to all team members helps to keep team on the same page.*<sup>42</sup>

15. Online Instructor Readiness is important for any educator: our learners AND for us, as well.<sup>43</sup> As our friend and colleague, Suzie Kardong-Edgren often jokes: If you are a health profession educator and you are not becoming familiar with online education, then you might as well write a self-addressed envelope with a letter inside that says, “We won’t need you anymore.” Online “teacher presence”<sup>44</sup> is a different skillset than those that we are used to in our face-to-face teaching. *Tip: Account for faculty training in online environments when moving your material online.*

16. All of this is a gift—we call it “the gift of issue-discovery.” Each time you uncover new organizational issues, it often feels like stepping in quicksand as you’ve got a clear shot at the goal. In these times, it is important to move from a fixed mindset to a growth mindset.<sup>45</sup> *Tip: Dealing with the issue might feel like a waste of time. But it is not. You have uncovered*

<sup>36</sup> We often podcasted what we learned from the project that week. Here is one on uncertainty:

<https://soundcloud.com/medicalsimulation/episode-21-the-problem-of-uncertainty>

<sup>37</sup> Skunkworks is an “enriched environment that is intended to help a small group of individuals design a new idea by escaping routine organizational procedures,” Rogers, 2003.

<sup>38</sup> Opportunity costs are values or profits that are given up to do or achieve something else. Frank, 2004

<sup>39</sup> We define a work stream as subprojects with its own tasks to achieve the bigger project. The streams often work simultaneously. See Phase I and Phase II for identified workstreams.

<sup>40</sup> Pit & Quarry, 1970

<sup>41</sup> A work breakdown structure also known as “WBS” in project management is a list of deliverables broken down into its smaller steps and components to achieve the work

<sup>42</sup> We explored Smartsheets, Yammer, Trello, Slack, and a physical scrum board. We noticed quickly that everyone has their own preferences in apps and software. For our project, we allowed everyone to use their own. Next time, we’ll begin the project agreeing on one.

<sup>43</sup> Kim & Bonk, 2006

<sup>44</sup> Garrison, 2017

<sup>45</sup> Dweck, 2006

*something important that you and your organization didn't know existed. AND if someone did know it existed, now is an opportunity to make it discussible.<sup>46</sup> Instead of frustration, meet each issue with curiosity. Identify the irony and pose it to your team. Reflect on it together. Problem-solve together, keeping in mind your mission. Like lesson #3, this process of team reflexivity<sup>47</sup> leads to solutions for the issues, a stronger organization from this discovery and problem-solving, and a stronger organization from the team skills gained from discussions and collaboration.<sup>48</sup>*

*Note: We are fully aware that our tips listed above are easier said than done. We podcasted, posted, and presented on many of these lessons learned.*

*Tip: You can find some of our podcasts as a result of our discoveries within the footnotes of this report.*

*And last note: As a result of our deliberately developmental work from this project, Janice Palaganas and Jenny Rudolph have been giving a well-received duo keynote talk on “Walking Your Talk: Find and Embrace Your Hypocrisy”*

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<sup>46</sup> This spurred a new book for our Book Club Podcast: <https://soundcloud.com/medicalsimulation/book-club-ep-003-daring-greatly-how-the-courage-to-be-vulnerable-transforms-brene-brown>

<sup>47</sup> Thayer et al., 2018

<sup>48</sup> We offer here a few podcasts of this: Book Club Episode on Teaming <https://soundcloud.com/medicalsimulation/book-club-ep-002-teaming-how-organizations-learn-innovate-and-compete-in-the-knowledge-economy-amy-edmonson>  
Episode on Finding Energy in Work <https://soundcloud.com/medicalsimulation/episode-022-finding-energy-inspiration>



# Contributors

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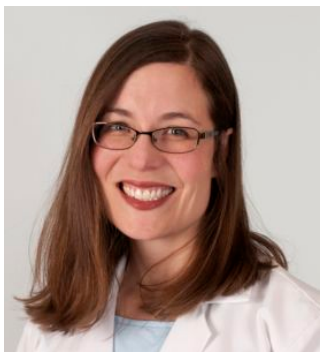


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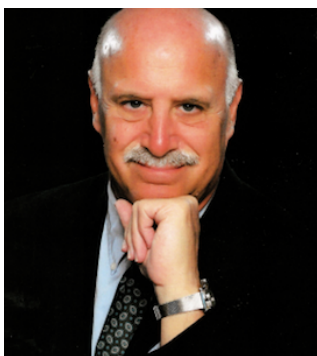


### Maria Rudolph, MD

Dr. Rudolph is a Psychiatrist and Simulationist who was involved in the development of the Feedback Course and the research studies in Phase II.

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### Robert Simon, MAT, MEd, EdD

Dr. Simon is the Senior Director of Educational Leadership and International Programs for the Center for Medical Simulation. Dr. Simon led the creation of the text-based coaching module using an advocacy-inquiry approach to engage all parties involved in learning conversations. He also advised and taught in the Feedback Course.

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### Demian Szyld, MD, EdM

Dr. Szyld is the Senior Director for the Simulation Education Training Program at the Center for Medical Simulation. Dr. Szyld led the development of two modules in providing feedback for interprofessional debriefing. He also oversaw the development of the bundling of modules from Phase I into the Online Debriefing Skills Refresher Course. Dr. Szyld was involved in the development and teaching of the Feedback Course.

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### Toni Beth Walzer, MD

Dr. Walzer is the Director of the Labor and Delivery Crisis Resource Management Program at the Center for Medical Simulation. Dr. Walzer advised and reviews the quality of modules provided in this project.

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### Research



### Rachel Lewin, MEd

Rachel is a PhD Student at University of California Los Angeles School of Education and Information Studies. Along with Dr. Maria Rudolph (above), Rachel was involved in the research performed in Phase II and advised the team on Team-collaboration tools.

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### Marketing & Program Management



### Michael Buttimer, MBA

Michael is the Digital Marketing and Content Design Specialist for the Center for Medical Simulation. Michael advised the team on the marketing plan and directed the release of our modules into social media.

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### Sarah Lathrop

Sarah assisted in the various scheduling of activities and the implementation of the project plan.

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