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A surprising navigation: The emergence of the LODEStone model for specialized learning design, through the creation of OCTBR, a Creative Commons-licensed course development tool for health science learning

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Abstract

The LODEStone model is an emerging design framework for consulting on organizational, department or team level challenges for specialized learners. LODEStone evolved from the iterative design of OCTBR, a course development tool created at an academic health science center (AHSC). OCTBR's purpose is to help create better blended and online learning experiences for graduate-level students in medicine, allied health and related health sciences. Reflecting on how OCTBR was developed, we describe a pilot framework of Learning, Opinions, Discerning, Equipping and Shaping (LODEStone) that can be used to design other projects for specialized learners.

Keywords: instructional design, framework, specialized learning, medical learning, allied health learning, health science learning, course development, AHSC, Creative Commons

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The LODESTONE model, named for the metal used in early compasses, is a piloted model to design and deploy innovative solutions for specialized learners. LODEStone evolved from our experience as two instructional designers and technical administrators working with highly specialized learners – faculty, staff and students at an academic health science center, or AHSC. These centers incorporate not only a medical school and health professions programs, but also a hospital or health system.

Working at an AHSC in the a South Central state, we created an open-source, Creative Commons solution that could be used to improve blended and online learning for the AHSC and other health science learning organizations and programs. The Online Course Teaching & Building Rubric is a non-prescriptive tool to help resolve needs for both distance and hybrid learners, and the faculty and staff who are creating and managing their courses. Looking backward, our design process, which we call LODEStone (Learning, Opinions, Discerning, Equipping, Shaping), can be used to create solutions for other groups of specialized learners.

Learning – understanding and acclimatizing to unique learning populations

As new colleagues, we had both been recruited from more generalized higher education settings, creating instructional design solutions for a large multi-campus community college district and a highly selective university respectively. There were certain scope differences between some of the faculty and staff members we previously supported, all of whom taught undergraduates – for example, in requesting help with instructional media development, trades or applied sciences professors might need to demonstrate a kinesthetic skill rather than the abstract topics taught by philosophy or English literature faculty. Both learners and faculty members at an AHSC have unique challenges that required us to consider new ways of creating learning solutions.

At an AHSC or other health science graduate program, learners are enrolled in fields such as medicine, nursing, dental, pharmacy, or veterinary studies. We specifically worked closely with faculty and learners in medicine, nursing, and in five allied health fields: nutrition, physical therapy, occupational therapy, respiratory therapy, and clinical laboratory sciences. Regardless of the field, health science learners must typically "drink from a fire hose" during a didactic phase of learning where they memorize many new terms, functions and ideas. After a year or more, these learners move to "clerkships" or "fieldwork". They are still learning, but through

a practical phase of applying their knowledge as apprenticed health providers. Many will move across the city or state to continue interning or doing fieldwork, including in rural areas where there are few options for health care, and high-speed net access may be spotty. The campus learning management system, and its courses and complementary systems (such as Tegrity or Voicethread), are often critical in keeping teaching and mentoring relationships alive, during a time that is emotionally, as well as intellectually, challenging for the learners.

Depending on the AHSC and its attitude toward learning organizations, students who are not enrolled in a clerkship or on-site fieldwork at the AHSC's hospital or health system may be considered, formally or informally, as "loss centers". In other words, a resident who is working in the AHSC-owned hospital, or an occupational therapy student doing fieldwork in the AHSC's community clinic is highly valued as contributing positively to the bottom line of patient care. Students who do not apprentice at the AHSC, or who are still in the didactic learning phase prior to clerkship or fieldwork, may share the same technology tools with personnel working at the hospital or health system – but may be prioritized differently or provided with fewer service hours. This is somewhat understandable, as hospital personnel, including those who are apprenticed learners, are often using technology for crucial patient needs, 24-7. Unfortunately, this also may mean that the technical departments

providing Help Desk support, may not be structured to help specialized learners engaged in didactic learning or based away from the AHSC's home hospital or clinics, including those who are using blended or completely online technologies. We found that students at our former AHSC were acutely aware of this, and repeatedly made comments about "limited support" or "teaching myself on my own."

Opinions – the value of qualitative sentiment collection and analysis

Even before we formally collected, analyzed and acknowledged concerns from the initial group of learners we served, we each had troubling interactions talking to students, by phone, email, or in person, where we learned about unmet needs, particularly in blended and online programs. Several of the students we spoke to from one AHSC program were experienced professionals who had been in practice for one or more decades, and could not understand why their emails were not replied to in a timely fashion. We quickly became aware of the impact of vague or late communication for distance students, and pernicious assumptions about "digital native" students who were assumed not to need instructions for software or technical tasks. We discovered in our sentiment analysis, distance students often did not view themselves as empowered learners, but users who felt disconnected from teachers and other mentors, and from the broader AHSC community as a whole.

Surprisingly – because of the emphasis on quantitative research at many AHSCs – qualitative feedback, appearing as comments on the student government's end of year surveys, was the most illuminating, and helpful for getting a broad understanding of our learners' needs and frustrations. For example, over multiple years, students highly rated technical tools that were no longer in use but were still listed on the questionnaire after the tools' disappearance. This appeared to be survey fatigue. However, it also cast doubt on the quantitative results we received, when students were polled about the existing learning management system and overwhelmingly responded positively. Therefore, we could assume that the many negative qualitative comments about the learning management system correctly reflected many frustrations not measured elsewhere. Based on the student government surveys, it was apparent that learner frustrations centered on issues with online communication, lack of instructions for using learning technologies, group work that took place online, and technical issues with screen casted videos and the campus LMS.

Our early informal analysis of student needs, becoming increasingly refined through a more formal qualitative analysis of sentiment, was directly put to use in regular training sessions on using the campus learning management system, designing courses, and learning about trends in blended and online learning. These

sessions were open to any faculty or staff member who could travel to the main campus. We incorporated comments from students to illustrate why certain skills were emphasized, such as clarifying group work assignments and regularly providing feedback to online learners. That training, in turn, offered us more opportunities to listen with an "ear to the ground" to another set of learners – the faculty and staff who were using learning technologies to teach and lead didactic students and apprenticed or professional learners.

For example, during one of our workshops for faculty and staff, we were surprised to hear a medical preceptor (a formalized mentor for medical students in clerkship) announce, "I hate millennials!" The preceptor was quickly joined in her complaints by a nursing manager at the hospital, with both describing their frustration with younger students and employees' focus on their smartphones, social media, and their charges' need for instruction and direction on technical and other tasks. These colleagues viewed younger learners as being both too interested in technology, and part of a membership of "digital native" learners who "should not" need any guidance in understanding technology, either. While we did not encourage sweeping generalizations of users in the training classroom, and immediately shared feedback about the many young learners who had called us for help, we found that anecdotal discussions often brought the room together and were a useful bellwether for

emergent issues. Training from the back and offering an optional workshop on new digital trends particularly offered insight into our faculty colleagues and their attitudes about how they and their students were "supposed" to learn.

Discerning – iterative design of a faculty development tool

OCTBR came about due to occasional faculty requests for not only job aids, but a "handout" that would holistically meet their course design needs from week to week. With many faculty also engaged in clinical preceptorships, patient consultations or surgeries, and research – and also lacking formal pedagogical training outside their own field – many had the most time for course design training when first onboarding at the institution, then could perhaps join only one training course a semester. Some very motivated users requested additional facilitation, meeting with one or both of us privately, but these were typically "power users" who had additional pedagogical or technological expertise.

To find an effective "handout" that could be helpful across our user base, we first searched for an existing solution, such as a Creative Commons-licensed checklist for course design (Van Duzer, 2002). However, while these resources provided best practices for general higher education learners, these rubrics and other tools promoted thematic aspects of online learning, such as accessibility, that would ideally be facilitated or even mandated by a much larger management team

of instructional designers, such as a formal Educational Technology department. The AHSC where we were based instead had a small learning technology footprint: at the inception of OCTBR, two of us both managed multiple learning systems as front-end administrators (our learning management system, Tegrity, Voicethread, survey collection software, and the Ensemble Video media management system) in addition to providing instructional design help to several medical and allied health programs, residencies and tracks. (We had two colleagues with expertise in database administration and software engineering who managed the back end of our learning management system, running locally.)

Our primary internal clients – faculty and programs at the AHSC – required an open-ended solution that responded to their learners' unique didactic, fieldwork, and clerkship needs, and could be used interprofessionally across a number of health science fields. It had to be non-prescriptive, inexpensive, and useful for faculty who often had advanced and unusual knowledge in some domains, but neophyte or spotty experience with both learning technologies, and general pedagogical theories. Despite a number of excellent Creative Commons-licensed course development rubrics, none appeared to exist for instructors creating online or hybrid courses for professional learning (medicine, health science, MBA, etc), or for specific fields in higher education (such as history, engineering or music). Instead

of adapting an existing rubric, OCTBR's development would start with a brand new rubric, because the format had been successful at other institutions, and could be designed, then filled to reach learners in novel and specialized domains.

Equipping – identifying existing resources, knowledge and stakeholders

The resources used in OCTBR were discovered through a methodical scoping strategy. This allowed a better grasp of the standards and emerging trends of medical, nursing, and allied health learning that could be options on the existing, open source tool. The first step, in addition to feedback from existing training and support calls, was reviewing the still influential ACGME/ABMS Toolbox (American College of Graduate Medical Education and American Board of Medical Specialities, 2000; Sowan & Jenkins, 2013), reflecting the competencies that have been the primary focus of physician educators for two decades, and seeing how they could be mapped to the existing design.

With further scoping research which tapped databases like PubMed, and key publications and journals in the field (e.g. the American College of Physicians monograph series on medical learning, journals such as *Academic Medicine,* etc.), additional domains of health science learning were nested into OCTBR. These domains included evidence based practice, FERPA/HIPAA, #FOAMED (or Free Open Access Medical Education), communities of practice, reflective practice and metacognition, and

domain-specific assessment (such as RIME, Louis Pangaro's 1999 assessment for students in clerkship). Specialized topics in medicine, nursing, and allied health sciences offered at the AHSC were thoroughly investigated. Existing Creative Commons licensed rubrics and tools, and instructional design and learning resources were then investigated to determine the tool's needed scope for best practices in course navigation, usability, design, open access and many other topics that are domain-neutral for online learners.

We also utilized informational interviews with chairs and interested faculty members who provided input – and also interviewed staff members, such as the head of the student health service and a psychologist treating students at the AHSC, who described a side of learners that many faculty do not see. Since many online learners at the AHSC used the learning management system as their main link to the learning community, student resources were added as part of the OCTBR design. Counseling resources, student services and time management aids were mapped as a list of reusable links that could be easily ported in through the existing learning management system, and copied to multiple courses in minutes.

Shaping – solidifying, designing and deploying our solution

The tool was first designed with an awareness of the limited time most users had for training on software and educational practices. We reflected on the common

situation of an onboarding, new clinical educator who would typically be hired two weeks or less before they began teaching the course they had to design, sometimes in a learning management system they had never used before. We tailored our onboarding classes on using the learning management system so that these faculty members learned about the evolving tool, and used their feedback to further solidify its structure.

OCTBR had four levels that corresponded thematically to seasons, and were now shaped more precisely to meet the range of time that a faculty member or program might have to design a new course or group of courses. OCTBR's options for design and nested activities ranged from "Autumn" (processes and tasks that could be finished in two weeks) to "Winter" (allowing a year for development, or creation by a team). While intrinsically motivated faculty were interested in the options of "Summer" and "Spring", which assumed at least a month of design time was available, department chairs were often interested in "Winter", which was written for a team of designers on a group of courses, or a course designed a year in advance. Updated training was then provided that tied core outcomes to the most crucial actions listed on the checklist.

Still, OCTBR was non-prescriptive and reiterated best practices from fields that could be considered – not required. We were aware that no one tool could serve all the

unique needs of clinical faculty across different domains of health science, but realized after launch that the term “rubric” was itself problematic. Some faculty members assumed a “rubric” meant that non-clinicians would be assessing courses before they could be released. In educational settings, such as community college districts, where EdTech departments may be tasked with review of all courses before they go live, this decision may be made to ensure that all classes meet certain standards (such as meeting internal and federal usability expectations). However, with our small team, this assessment was neither feasible nor desirable.

The best solution was to offer pre-designed elements (such as the list of student service links), and decouple the rubric into multiple checklists while continuing to offer a rubric for those who wanted to keep that structure. We continued to focus and shape our training sessions on interprofessional topics that bridged all of our colleagues, no matter whether they were ophthalmologists, occupational therapists, or working in other fields. Over the next two years, several onboarding faculty from a variety of fields told us the Autumn Checklist – which assumes less than 2 weeks is available for a new faculty member to design and deploy a course – was meeting their just-in-time needs. After we presented on the tool in regional state conferences, it was adopted by graduate programs at another AHSC. Sharing it as a

Creative Commons-licensed tool online, we have since heard from clinical educators outside the United States who are finding it helpful for their course development.

Reflecting on OCTBR – and repurposing design strategies into a pilot model

Reflecting on our creation of OCTBR, as we discussed creating a solution for a new set of specialized learners at another professional school, this time in business, we realized that the process could be duplicated in a proposed model, and in an improved order that still allowed for iterative development. Following this pilot model, **Learning** begins with an early feasibility study, and listening to faculty and administrators about positive trends, and about learning or performance outcomes they need help with. Next, **Opinions** from students or other "end users" are collected, using sentiment analysis to confirm qualitative trends. While quantitative feedback and usage patterns are helpful, we found that qualitative opinions were a better resource and less influenced by survey fatigue.

As we consider what product, tool or solution can be developed, we note that while working at the AHSC, we often reactively designed to requests from management (such as faculty or program chairs). Currently we have found another method to help with **Discerning** what qualities a possible tool or solution should have. For example, if we had initially discerned our development tool qualities with the MoSCoW requirements practice, a useful method of focusing on the "minimal

usable subset" (Agile Business Consortium, 2019), we might have started with multiple checklists and reusable, pre-designed elements that could be dropped into a course, rather than a rubric. MoSCoW (a practice to determine "Must Have, Should Have, Could Have, Won't Have" elements) is already an integral part of the Dynamic Systems Development Method for software and technical project development (Agile Business Consortium, 2019), but we believe it is of great use in more learning design projects. **Equipping** would then be a matter of not only running another scoping strategy for a specialized field, if needed, but also pairing discerned requirements with stakeholders, knowledge, and resources that already existed. It would also mean identifying resources that needed to be created. Finally, with **Shaping**, we would solidify the current format of the solution – and design and deploy it. Combining these practices in this proposed model, and iteratively repeating steps to refine any tool or product, we believe this pilot model is a helpful and more efficient way to design for specialized learners.

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