

Design Case: Rapid Prototyping of an Array of Continuing Education Courses

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Abstract

This paper describes a series of instructional design projects focused on the design and development of successive pregnancy and postpartum fitness courses to provide continuing education courses for sets of learners with specific identities and learning goals and objectives. Taken as a series of decisions and actions employing the modular rapid prototyping techniques borrowed from Atomic Design and the collective decision making of Agile development, a design object-oriented approach to rapidly produce an array of continuing education courses is described. In this context, an instructional design team was able to redesign learning objects to meet the criteria of each specific learner identity, or “User Story.” This design case presents the critical design decisions made during each course development iteration, the reasons for those decisions, failures in which the design did not work as planned, and reflections on the design and development process to establish the precedent revealed in a new instructional design model, which when replicated will result in newly designed courses.

Background

Continuing Education (CE) course design is an area of Instructional Design that requires constant modification and technological implementation to meet the competitive demands of the global marketplace. The ability to produce CE course content in a timely manner is a key factor in creating sustainable revenue for any institution. According to Adnan and Ritzhaupt (2018), there is an increasing demand for instructional designers to create high-quality instructional solutions in a variety of settings using more effective approaches. Adnan and Ritzhaupt suggest that the integration of software design principles into Instructional Design processes are a pragmatic approach that can make the creation of courses more productive and efficient.

Borrowing from manufacturing processes, one technique of interest for producing essential and accessible content in a fast-paced environment is Rapid Prototyping (RP). Through modular design and employing the Successive Approximation Model (SAM), developed by Michael Allen, instructional designers have been able to move away from the linear, time-consuming, waterfall design processes and quickly and cost-effectively produce content (Desrosier, 2011; Sites, Allen, & Green, 2014). Using this technique allows iterative design practices to drive the creation of a fast and more cost-effective production of course and content. RP can be practiced with AGILE project management principles that allow for increased communication between the stakeholders, contributing to a more successful delivery of the product. In small institutions, CE course development may be more effective with the implementation of AGILE design principles because of the constantly changing course demand and the need for quick turnaround time for courses under contract.

In this design case, we will describe how one course development process considered the development of user stories to produce multiple iterations of the course content, tailored to the needs of each user. This process decreased the production time of CE courses and produced an array of fully developed course products for multiple audiences.

Institutional Context

This design case details the experience of the initiation of a CE course by a Subject Matter Expert (SME), the design and creation process, implementation, and further iterations of the original course. The layout for the design process and the rationale for the use of the Successive Approximation Model (SAM) in this process are explained. The outcomes and reflection process are shared to reveal a series of decisions that led to the development of a new design model – the User Story Approximation Model (USAM) and the implementation of a best practice methodology.

The university that employed the designers of this case is a fully online degree-awarding institution that also offers CE courses to professionals in the field of sport. The CE department provides certificates and courses for domestic students as well as international partners. Most of the contracts for CE are with international organizations and institutions so the timeline for course development is much shorter and the design more situation-specific than that of domestic continuing education.

The university's Instructional Design department had previously used a linear, waterfall approach to project management and course design. This process created lengthy design times, difficult communication, and course revisions. Using the linear ADDIE approach, course production covered months of development time, while content moved from one person to

another. The department underwent a change in management and the new director shifted this process and implemented Agile principles and a Scrum methodology. The department then began to use the SAM model to develop course components quickly, which decreased production time substantially. Designers completing other courses found utility in the reuse of components from this course. It served the department's functioning to make the course components a part of design element library that was collectively used for decreasing the amount of design time and creation while building courses.

Using the SAM model for iterative development, we were able to work with modular units and standardized design elements to provide a flexible framework for all continuing education courses. This framework was easily accessed by the team of designers, managers, and SMEs to rapidly create and edit course content. The design element library was housed on a shared drive in which all designers accessed. Once the initial course had been created, the modular components of design and content were then used to create multiple course iterations to meet the demands of other programs and product owners. This systematic approach to course design based on atomic design principles from software design practices allowed a small team to produce more courses in a shorter period (Frost, 2016).

First Iteration (Alpha Course)

The development of the Alpha course began with a Subject Matter Expert (SME), who was a graduate student and fitness professional who was contracted by the university to develop the concept of a maternity wellness course that incorporated personal fitness exercises to create for domestic CE course. This course was intended to serve as an informative progression through pregnancy to aid women and interested individuals in identifying the transformative changes and safe exercises during pregnancy and the postpartum period. The SME created an outline for the course and provided a plan for instructional videos that she would be recording to demonstrate the exercises. The instructional designer met with the SME. The course objectives and desired outcomes, flow of the modules, existing media, and resources were determined for the course. The SME agreed to write content for the unit pages. The course modules were developed in a branded format. The course elements were added to pages and content was added in a successive fashion as the SME provided it.

The design for the course consisted of a five-module structure, including an introduction, content pages, reading material, auto-graded knowledge checks, and video resources in each module. The modules corresponded with each of the three trimesters, postpartum fitness, and associated resources. The modules included content pages with a title that described the key concepts found on the page. The course detailed the safety of exercise and the changes of the human body during and after pregnancy. The SME provided specialized content of an interview that she conducted with a professional in the medical field, which was included in the first unit. The instructional designer filmed and edited the instructional videos in the university's recording studio, and the videos were added to the modules. The instructional designer also located an actor with a baby to demonstrate postpartum exercises for video production as well.

The course was completed in one month, from design to creation, and then moved to sale on the university's CE website. Once the course was live for enrollment, the marketing department advertised the course to increase enrollment and interest in the course. The visibility of the course to multiple university partners attracted interest in modified versions of the course.

Successive Iterations

An inquiry was made by a Global South institution about creating a Spanish version of the course. The ID team met with the stakeholder to discuss the existing course and possibilities of translating the course to Spanish. The stakeholders provided documents describing content that they would also like to see implemented into the course. The scrum process that was used by the ID team. A retrospective identified deficiencies in the Alpha course for the new iteration. Goals were set so that a backlog of the tasks could be created to establish design priorities and work was completed through a task to time assignment arrangement called a sprint. The ID team completed the revision of the Alpha course through an implementation of Weick's sensemaking to orient tasks to the new user story established by the stakeholder. Content was expanded and new media was created and added to meet the demand of the user story. The stakeholder reviewed the course and provided translation documents to orient the course to the Global South partner's dialect. At this late stage, the stakeholder sought renegotiation to include branding images within the course content. Once these items were added to the course, the course then moved from development to sales and marketing on the university's CE website.

It was determined by sales to offer the Alpha course as a complimentary course on the university CE webpage to highlight new multimedia implementation for internal stakeholders and to offer a valuable resource to the local community. This complimentary iteration of the course supports a portion of the university's mission to provide free education to the public. The first iteration in English became a course for domestic sales and the Spanish translated iteration became a sales offering to Global South partners.

The ID team was then notified about an inquiry from a US partner institution that wanted to purchase a course that provided training in pregnancy and postpartum fitness for nursing students. The introduction of this new user story for the course sparked the next scrum meeting for the ID team to identify other user stories that could benefit from a course in pregnancy and postpartum fitness. The ID team identified the target audiences, their individual needs and developed multiple user stories for iterations of this course. At the end of the planning meeting, a total of five courses were identified with separate user stories (audiences). The user stories determined the successive iterations of the Alpha course each time implementing Weick's sensemaking to meet goals and outcomes established by the user stories.

The content expanded after developing learning outcomes for each course. Outlines for each new pregnancy and postpartum fitness course with components aligned to the user stories were created for delivery to various institutional clients in tandem development processes. The ID team's rapid prototyping through repurposing learning and design objects and AGILE collaboration on the course design led to production ready courses within two days.

The process began with the duplication of the Alpha course into successive course shells and labeled for each new user story. Page elements from the design library were added to ensure accessibility, brand, and consistency. The ID team then edited the course content through Weick's sensemaking. The content was considered and then modified through four critical processes of interpreting the content for the new user, transmuting the structural elements, providing variations to focus on the user's needs, and finally improvising any missing content that would complete the learning goals and outcomes. The instructional designers created or modified media and graphics for each successive iteration. Media was created with reusable design elements that provide a standardized and branded look, while making production time minimal. Once the courses were complete, the primary shells were duplicated, and each given a

unique course name and number to identify the audience. The SME was then asked to review each iteration to make modifications to content according to audience and to the interactive learning components and assessments to meet the specialized interest of the stakeholders, thereby producing the final version of the six courses, which were delivered within a two-week period.

Reflection on the Process

The ID team realized that they had created a series of decisions that through their documentation would create a set of best practices for rapid design and development. Creating an array of CE courses through the identification of user stories served as a benchmark that led to the development of an instructional design model. The use of AGILE practices allowed for collaboration that eliminated the need to pass content in a linear fashion, cutting down on the time needed for creation and revision, and allowing for multiple iterations of courses to be identified and created. The final retrospective of this development cycle led to plans on how to improve the quality and effectiveness of the new design process. The ID team found a common feeling of motivation from collaboration and communication. Collaboratively processing course design at the same time, using video conferencing as the work was being completed, allowed for decisions to be made in real time. The use of modular design and a design element library allowed for quality content to be produced and branded in an efficient and lucrative manner. This set of process helped define a best practice for converting alpha course content into multiple iterations. The feedback from the stakeholders was also incredibly positive and in the case of one stakeholder, additional course contracts were negotiated for other content areas. The process of RP of course content has shown to be cost-effective and essential for a small institution with limited staff and budget.

References

- Adnan, N. H., & Ritzhaupt, A. D. (2018). Software engineering design principles applied to instructional design: What can we learn from our sister discipline? *TechTrends*, 62(1), 77-94.
- Desrosier, J. (2011). Rapid Prototyping Reconsidered. *The Journal of Continuing Higher Education*, 59, 135-145.
- Epp, J., & McKee, J. (2015). Digging Up: A Five-Year Journey to Instructional-Design Stability in a Postsecondary Distance Education Unit. *Canadian Journal of University Continuing Education*, 41(1), 1-12.
- Frost, B. (2016). Atomic Design. Pittsburgh, Pennsylvania.
- Iino, H., Celik, P. M., & Lutz, B. A. (2017). Applying Backward Design Principles to Online Continuing Education Course Design and Development for Working Professionals. Proceedings of the ASEE Annual Conference & Exposition, 1991-2006.
- Kim, E.H., Kim, K.H., & Bae, K.E. (2019). Development of Online Continuing Education Courses on National Health Examination for Community Health Nurses: Using the Rapid Prototyping Method. *Journal of the Korea Academia-Industrial Cooperation Society*, 20(8), 250-263. <https://doi-org.libproxy.usouthal.edu/10.5762/KAIS.2019.20.8.250>.
- Sites, R., Allen, M., & Green, A. (2014). Leaving ADDIE for SAM Field Guide: Guidelines and Templates for Developing the Best Learning Experiences. American Society for Training & Development.