Better, Faster, Cheaper: An Agile Design Sprint Model for Developing Virtual HyFlex Courses

Abstract

The COVID-19 pandemic spotlighted the roles community and connectivity play in the learning process. The long-term closure of physical campuses presented universities with an opportunity to reimagine online teaching and learning and re-envision how courses should be designed to meet students' evolving needs. At SCAD, student surveys revealed that, on average, students were more satisfied with courses in which they were allowed to engage synchronously with their professors while still having the flexibility to complete assignments and participate in discussions at their own pace.

Featuring real-time virtual class meetings for those who can attend synchronously and on-demand recordings for those who cannot, the SCADnow virtual HyFlex modality offers maximum flexibility to both students and faculty. Students can digitally connect to award-winning degree programs according to their own schedules, and faculty can spend more time focusing on active teaching and learning. The flexible design of SCADnow courses necessitated a new course development process–a modified Agile model that dramatically cuts down on the time and cost of producing online courses. The article describes the origin and workings of this course development model within the context of the university's HyFlex modality.

Keywords: HyFlex, hybrid, Agile, design sprint

Introduction

The COVID-19 pandemic taught educators and education administrators two important lessons. The first is that, when faced with an existential crisis, even the most traditional institutions will find new and novel ways to adapt and survive. The second is that any such flexibility on the part of an institution is made possible only through the determination and willingness of faculty and students to adapt to their changing circumstances.

Prior to March of 2020, the Savannah College of Art and Design (SCAD) maintained two distinct, and in many cases entirely separate, modalities: a standard on-site modality and a traditional asynchronous online modality (SCAD eLearning). Like most four-year institutions, SCAD was forced to rapidly implement a university-wide shift to online instruction after quarantine protocols were established by local and state governments. Programs and classes which had never previously offered synchronous online experiences at SCAD–including performing arts, global sourcing and import buying for fashion, equestrian studies, and more–stood up hundreds of live classes in a matter of days, hosting meetings via Zoom to meet student demand and comply with the recommendations of the Centers for Disease Control and Prevention as well as state and local agencies.

The abrupt switch to a fully synchronous online model, while temporary, revealed several opportunities for improvement. One of the largest was in the way SCAD's online courses were developed and delivered. Up to, and for a brief period after, March 2020, SCAD eLearning produced model courses designed exclusively for asynchronous participation. Students who had only participated in these asynchronous online classes noted in course evaluations how much they enjoyed the chance to attend synchronous class sessions and regularly engage with their professors and peers. Likewise, students who had never taken, or had taken only a handful of

asynchronous online classes noted how much they enjoyed the increased flexibility and freedom provided by the online modality. Based partly on these course evaluation results and the results of further student satisfaction surveys, a decision was made to adopt a new, virtual HyFlex modality that would combine the best of hands-on synchronous and flexible asynchronous instruction. This new modality would come to be known as SCADnow.

Background of the Problem: Hybrid versus Virtual HyFlex

The perils of implementing a strictly hybrid or blended learning modality are many. Despite a growing trend of hybrid courses offered at the undergraduate and graduate level, a 2022 Pew Research survey found that 65 percent of teenage students prefer in-person learning to either traditional hybrid learning (18 percent preferred) and asynchronous remote learning options (9 percent preferred) (Anderson et. al, 2022). In this case, hybrid models were defined as those including a strict physical and digital hierarchy in which asynchronous elements are supplemental to lectures which are typically delivered simultaneously and synchronously to students attending both in-person and virtually via video conferencing software. This arrangement does little harm to students in person, as in face-to-face interactions, faculty can gauge student engagement and determine the quality of attention based on standard social cues (Coalition, 2020). However, the visual limitations of video conferencing software make gauging and maintaining virtual students' attention a much more challenging task.

It isn't difficult to see why then students might prefer an in-person learning model to a hybrid model if given the choice. In the best-case scenario, the stark physical-digital split imposed by a traditional hybrid model creates two separate but equal classroom experiences in which faculty members must divide their time between, and implement specific, intentional strategies to engage, both their in-person and online participants equally. In the worst case, a

traditional hybrid model can lead to extreme inequity between in-person and virtual participants, which in turn places increased strain on faculty who require specially designed courses, educational technologies, and additional training in order to manage their separate audiences (Singh, 2021).

By contrast, a virtual HyFlex model–that is a HyFlex model that offers only virtual synchronous or asynchronous engagement opportunities–presents a more level playing field. Virtually all engagement between faculty and students in a virtual HyFlex course occurs within the digital classroom, a combination of live synchronous lectures delivered via Zoom, full video-on-demand (VOD) recordings of those lectures, and asynchronous course materials made available via the institution's learning management system (LMS). In addition to creating more equitable interactions for all participants, the virtual HyFlex model also considers another aspect of the post-pandemic learning experience: How learners want to engage.

Bay View Analytics' 2021 Digital Learning Pulse survey found that 57 percent of students noted feeling more optimistic about the concept of online learning during and after the online shift brought about by the COVID-19 pandemic (McKenzie, 2021). Another 52 percent noted feeling more optimistic about the use of digital course materials. In general, virtual instruction provides greater opportunities and safer spaces in which students with physical impairment, those suffering from chronic pain and/or anxiety disorders, as well as members of racial, ethnic, neurodivergent, and sexual minority groups can participate (Doak, 2022). And while data on student approval of online courses in 2020 vary by region and type of instruction offered, Wiley's Online College Students 2020 report notes that 79 percent of students felt that the quality of instruction they received in online courses was better than or equal to their on-site learning experiences (Magda et. al, 2020).

In short, and with good reason, students crave more online offerings from post-pandemic institutions. The days of strictly on-site learning experiences are, within the next several decades, nearing their end.

That sentiment correlates with SCAD's own findings related to virtual instruction. During the first year of virtual HyFlex offerings at SCAD, student surveys reported a 94 percent course satisfaction rate. By the same survey standard, student satisfaction climbed to 95 percent in 2022, following the formal launch of SCAD's virtual HyFlex modality, SCADnow. Additionally, the shift from traditional static eLearning content and hybrid lecture delivery to a model driven by weekly faculty-student engagement via Zoom drastically changed the needs of the university's course development process, freeing up time for more innovative development of grading opportunities and assessments.

Agile in Higher Education

The concept of "Agile workflows" was pioneered in the late 1980s and 1990s, but the concept of an Agile methodology evolved out of the Agile Manifesto, written and published by a collection of 17 software developers (Agile Manifesto, 2001). The Agile Manifesto, which is still widely referenced to this day, defines four values and 12 principles which serve as a foundation for the Agile Software Development and Agile Project Management workflows. Agile methodology relies on incremental and iterative progress informed by short feedback loops. The values outlined in the Agile Manifesto are not strict rules; rather, they serve as flexible guidelines that offer guidance based on specific contexts (2001).

A response to the much more bureaucratic and hierarchical Waterfall method, Agile methodology is famously non-rigid, providing typically non-linear development trajectories

composed of short cycles of development and delivery that contribute to a larger overall project. Rather than focusing on and cleaving to one aspect of development, the methodology allows design teams to adjust to the changing needs of a project and implement new solutions as needed within the project's scope. In the field of software development, agility is underpinned by the values and principles set forth in the Agile Manifesto, enabling teams to rapidly create, embrace and learn from change while generating and contributing to perceived customer value (Conboy, 2009).

Agile methodology and development practices are not new phenomena in the field of learning design (LD). Briggs writes that agile approaches are being adapted in schools and universities across the globe, particularly in Brazil and India, with "other high-profile practitioners active in the United States (Agile Classrooms), Peru (Laboratoria), Australia (Agile Schools) and The Netherlands (eduScrum and Scrum@School) among others" (Briggs, 2014; Parsons, MacCallum, 2019). Parsons and MacCallum note "a lack of formal literature about these initiatives," however, Stewart et al. points out that software development and education have similar methodologies (2019; Stewart et. al, 2009). As noted by Eschenbach et. al, the work of faculty is often a collection of projects, including "teaching, performing research, writing grants, journal articles, or citations, and conference papers, preparing presentations, or performing service for the university," all of which tend to have a flexible scope (2015).

That flexibility, in turn, puts academic projects in line with traditional IT and software development projects, for which Agile workflows are typically best (2015). As early as 2006, Boyle et. al recommended the implementation of a modified form of DSDM (formally known as Dynamic System Development Method), an agile methodology developed in 1994, for the creation of learning objects (Boyle, 2006; Abrahamsson, 2003).

Others have simply attempted to modify, or even radically rewrite, the Agile Manifesto itself to be more in line with education and instructional design contexts (Parsons and MacCallum, 2019). Stewart et. al offer a rework of the manifesto's four values—an interpretation that focused largely on the concepts of active and collaborative learning (2009). Tesar and Sieber offer a separate rework with a focus instead placed on "agile e-learning," an ultimately narrow focus (2010). While modest, these efforts represent only the tip of the spear when it came to molding the Agile Manifesto into a different, more "academic" shape. Kamat changed virtually every facet of the original manifesto's values (2012). Similarly, Krehbiel et al. utilize a much longer list of wildly different values, which ultimately calls into question what value scholars find in a manifesto they feel requires a complete overhaul to be applicable in educational contexts (2017). (For our purposes, the Agile Manifesto was adopted with only minor changes, substituting "the development of learning objects" for "software development") (Agile Manifesto, 2001)

The Agile methodology aims to "build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done" (2001). In Boyle's case, the implementation of Agile methodology in an instructional design project includes five distinct considerations and phases: analysis of learner needs, design, development, delivery, evaluation (Boyle, 2006). This is a slight modification of the standard Agile workflow used for software development, which focuses instead on defining a problem or set of user stories around which solutions can be developed. Including student and staff workshops to discuss common obstacles to learning, implementation of Boyle's model, while revolutionary for the time, required a significant investment of time and resources from multiple stakeholder groups (2006).

The AM-OER model described by Marimoto et. al takes a somewhat different approach. Structured for the development of open educational resources (OERs), the AM-OER approach focuses on delivering small-batch solutions throughout the life of a project, releasing specific OERs as they are finished on an as-needed basis (Arimoto, 2016). According to Arimoto, "[OER] modules are developed iteratively and incrementally by short sprints, with a sprint lasting from days to a few weeks," during which "team members communicate and constantly interact with each other to discuss the development activities, monitor their progress, and to identify the main obstacles that hinder the progress of work" (2016). This workflow works well for the Open University's use cases (short-form OERs designed typically for a broad generalized audience), however adapting it to full course development processes for students in programs as different as luxury fashion management, sequential art, and industrial design presents a different sort of challenge.

The subject matter and skills taught in art and design programs change rapidly. Expectations in graduate-level game design programs, for example, may shift from one quarter to the next, with new technologies and competencies becoming necessary in order to keep graduates learning at pace with evolving industry standards and emerging trends. Change is the expectation as educators and students alike are exposed to new and emerging techniques, tools and ways of teaching are assessed and implemented to support the dynamic needs of today's learners (Hew, Brush, 2007). Gannod et. al write, "as learning becomes more personalized and requires adjustment to changing conditions and requirements while fulfilling stringent accreditation standards, new pedagogical methods are required that can reduce the cost of change" (2015). Personalization is key.

For dedicated learners, education "is a large life-long project that needs effective management" (López-Alcarria et. al, 2019). Learners who receive a personalized education tend to outperform peers who receive a standard or model education, even when starting from a place of lower academic achievement (Pane et. al, 2015). Additionally, schools that provide learning spaces that support personalized learning strategies tend to outperform schools that do not offer such spaces (2015). To provide these personalized and personalizable spaces, and to stand up the rapid development of the learning objects needed to support said spaces in a virtual HyFlex environment, our team needed a new way to develop courses. To that end, we adapted an existing agile model pioneered by Google.

The SCADnow Design Sprint Model

Prior to the launch of the SCADnow design sprint model, SCAD utilized a somewhat modified traditional course design workflow. Over the course of seventeen weeks, a team of three designers–a dedicated instructional writer, instructional designer, and instructional media designer–would work with a faculty subject matter expert to craft longform asynchronous lecture content, assignments, and assessments. Students enrolled in these courses (dubbed simply SCAD eLearning courses) had minimal opportunities for live engagement with their professors. Additionally, the cost—in time, monetary resources, and human capital, proved somewhat prohibitive for expansive redevelopment of courses. In short, the rapid rate of change within programs and courses far outpaced the ability of team members to keep up with development demands.

The Interaction Design Foundation defines design sprints as "an intense five-day process where user-centered teams tackle design problems" (IDF, n.d.). Each workday within the traditional five-day design sprint is dedicated to a different task that builds upon work from the

previous day and supports the work to come. On Monday, for example, teams meet with relevant experts to map out a problem and determine the overall goals for the week's sprint; on Tuesday, teams generate ideas to explore possible solutions; on Wednesday, the team critiques proposed solutions to determine which are most likely to succeed; on Thursday, a working prototype is constructed (if applicable) and on Friday, the team conducts user testing (IDF, n.d.). While the breakneck pace of a traditional design sprint is ideal for designing solutions to small-scale software problems or addressing individual user stories, the realities of working in academic contexts makes a five-day sprint to develop something as substantial as a course virtually impossible. Getting faculty to the table alone could take longer, let alone coming to an agreement on an underlying problem and the terms of development. Furthermore, while individual learning objects within a course could certainly be approached using a five-day sprint model, the end result and shifting priorities could potentially lead to a course as disjointed as its production schedule.

Of more relevance in an academic context are the six phases of a design sprint, as outlined by Google's Design Sprint Kit (With Google, n.d.). First proposed by Jake Knapp, a former design partner at GV, Google's design sprint makes use of a modified Double Diamond structure that adds a third "diamond" of divergent (i.e., exploratory) and convergent (i.e., focused) development processes (The Sprint Book, n.d.) (see Figure 1). These three diamonds in turn support six distinct phases of development—understand, define, sketch, decide, prototype, validate—in line with traditional Design Thinking methodology (With Google, n.d.). In a software development context, the six phases of a design sprint are completed within the span of a single week to address manageable problems.

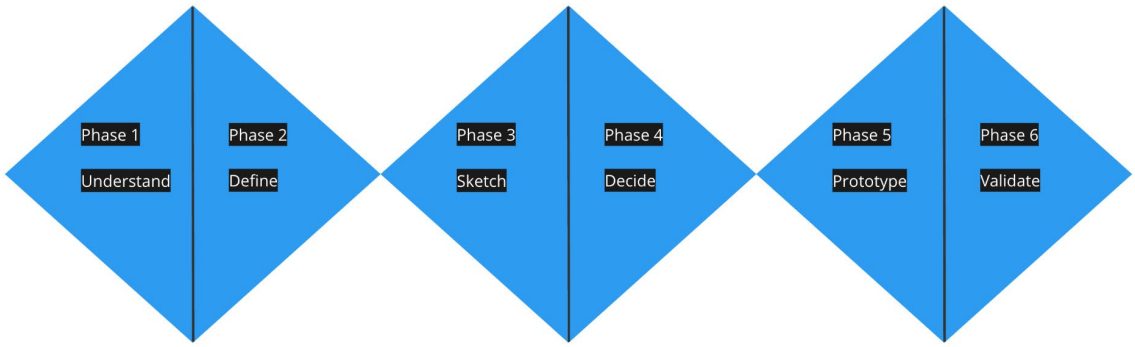

Figure 1: Google's Design Sprint Model

Addressing course design through the lens of traditional instructional design methodology, it should be noted that the concept of the design sprint maps well onto the five phases of the traditional ADDIE model of instructional design: (1) analyze (2) design (3) develop (4) implement and (5) evaluate (Moradmand et. al, 2014) (see Figure 2). ADDIE, it could be argued, includes enough implied flexibility to support an iterative design model, allowing for circuitous phases of analysis, design, and development as needed following the implementation and evaluation of certain aspects of course development (i.e., testing the effectiveness of assignment instructions with one cohort of students before redesigning them for a future class). That said, some contest that ADDIE lacks agile properties found in other, more agile-friendly methods such as the Feature-Driven Development model (Bichelmeyer and Ph, 2005; Jasmy et al., 2014). More important than the instructional design model on which design sprints can be scaffolded is the understanding of underlying design problems and the statement of clear goals for each design project. A course design sprint could theoretically be mapped onto, or developed in unison alongside, most extant instructional design models (excepting the hierarchical

Waterfall method) provided that the design team begins with an agreed upon goal and a well-understood and researched design problem to address.

Figure 2: The ADDIE model (Dave Braunschweig via Wikimedia Commons)

In response to the need for rapid course development for SCAD's virtual HyFlex model, our team adapted the six phases of the Google design sprint into an extended six-week process that dedicates one week to each design phase. This model, which we refer to internally as the SCADnow design sprint model, produces recommended model courses using the contributions of one-to-three learning experience designers (including a media design specialist) and input from faculty subject matter experts. These model courses are fully customizable within the

university's LMS (Blackboard Learn Ultra), allowing faculty to adjust grading opportunities and assessments as needed to suit the needs of their teaching style. Additionally, the benefit of a virtual HyFlex model is that faculty can record live lectures via Zoom and upload them directly to the course for future asynchronous viewing. This aspect of the SCADnow modality eliminates, in large part, the need for separate lecture content to be designed as the expectation is that faculty will record all lectures given. This in turn frees up valuable time for the development and further refinement of grading opportunities, rubrics, course navigation, and accessibility.

Sprinting Toward Change: Six Weeks from Start to Finished Course

As mentioned previously, the SCADnow design sprint model takes place over the course of six weeks (allowing time for communication with departmental leaders and faculty SMEs prior to and after the completion of the sprint for planning and validation). These six weeks map onto the six phases of the Google Design Sprint format and, with a week devoted to (1) researching existing course materials and student needs (2) defining a design problem (3) ideating and designing solutions (4) developing materials directly in the LMS (5) creating a functional high-fidelity prototype of the final course as intended for student viewing and (6) quality assurance testing and validation. To allow for greater flexibility in the development process, and to encourage an iterative design workflow, our team groups these six-week stints according to Google's "three diamond" structure (With Google, n.d.). These groupings are defined as: define, design, deliver (see Figure 3).

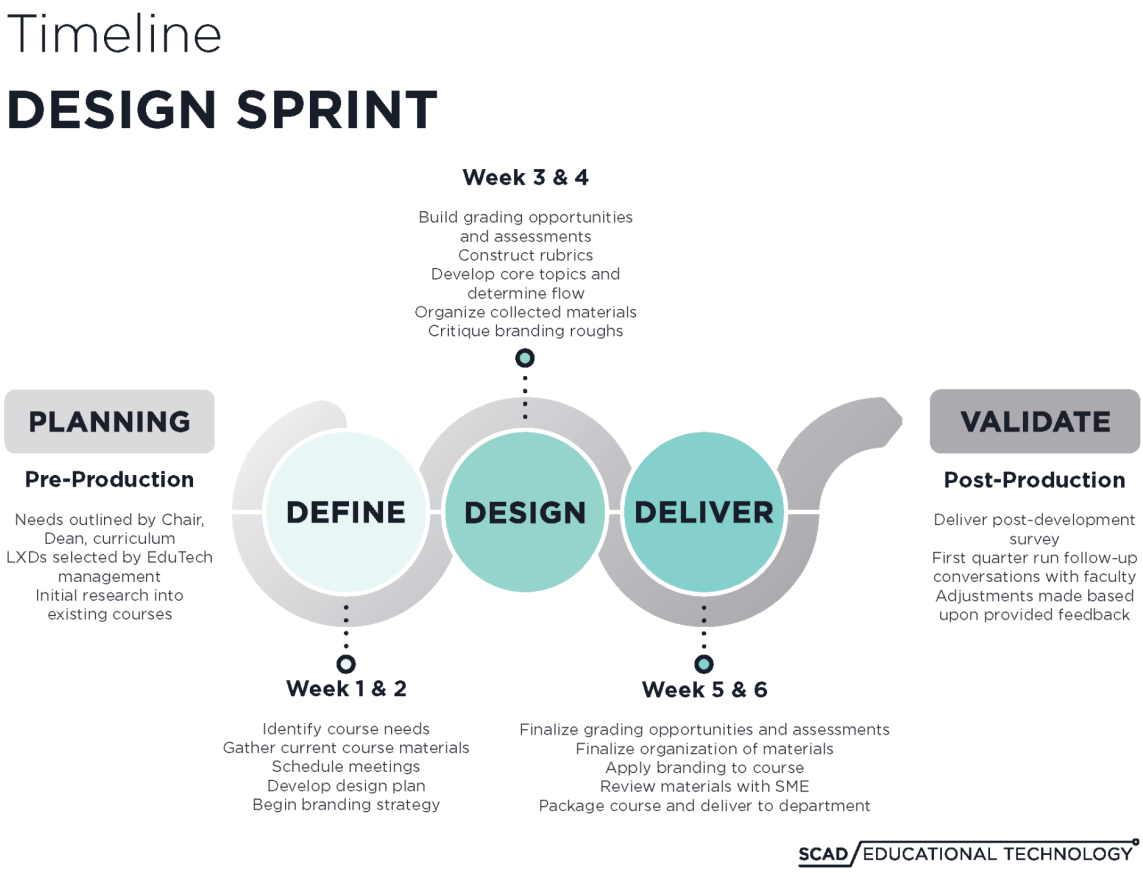

Figure 3: SCADnow Design Sprint Model

In contextualizing the six phases of the design sprint within the groupings of define, design, and deliver, the team creates elastic space to provide room for cases in which a full week might not be required for research on a redeveloped course, for example. This in turn allows teams to work at their own pace within the six-week structure, iterating and developing ideas as they go.

In practice, a given course design process using the SCADnow design sprint model might play out as follows:

- Week 1: **Research**: Meet with faculty subject matter expert (SME) to perform needs analysis and identify potential areas of improvement or opportunities for future exploration. Conduct research on the viability of existing course materials, examine changes in industry trends (as relevant), and conduct stakeholder and empathy mapping.
- Week 2: **Define**: With faculty insights and collected research, define design problem(s) in the context of the course and its goals. (Weeks 1 and 2 comprise the "define" phase of development).
- Week 3: **Design**: Ideate on potential solutions and begin designing interventions that align with course goals based on issues identified during initial needs assessment conversation. Interventions in this case include course artifacts, including assignment briefs and templates, rubrics, proposed discussions, a selection of potential lecture topics for each week, and other additional materials as required.
- Week 4: **Develop**: With proposed interventions agreed upon, the team begins to develop course material drafts in the LMS. (Weeks 3 and 4 comprise the "develop" phase of development).
- Week 5: **Prototype**: Continuing the work of Week 4, teams create a functional prototype within the LMS. This prototype includes all agreed upon course materials structured and arranged as intended to be experienced by students in the final version.
- Week 6: **Testing**: The team passes the course off to a designer not involved with the development process for quality assurance (QA) testing and to the faculty subject matter expert for review. Once the course is approved by the QA tester and faculty SME, the course is sent to departmental leadership for a final round of approvals. (Weeks 5 and 6 comprise the "deliver" phase of development).

The above workflow is divided among one-to-three learning experience designers, one of whom is a dedicated media specialist. For shorter, more targeted projects, one designer might approach development alone. This individual would be responsible for ensuring all grading opportunities, assignments, assessments, rubrics, and additional course materials are in place. For longer projects (e.g., full course or program developments available to all faculty within a department), three learning experience designers work together. One of the designers on the project is appointed a design lead (or lead learning experience designer) for the project. That individual is in turn in charge of managing communication between the team and the faculty SME and of maintaining team deadlines throughout the life of the project. As mentioned above, a separate designer not affiliated with the design project is tasked with providing QA testing ahead of final SME and departmental sign-off.

Results, and Avenues for Improvement

Overall, the implementation of the SCAD design sprint model has been a resounding success. Since the official launch of SCADnow, our team has designed or redeveloped more than 170 model courses—courses that faculty can populate with their own recorded lectures and customize with additional materials to meet the evolving needs of their students. The new model has enabled the SCAD Educational Technology team to design courses and bring programs online faster than ever. In fact, from 2020 to 2023, the university began offering 13 additional programs online, bringing the total number of online courses from 334 to more than 570.

Of note is the cut to development costs for producing a fully re-developed course: courses designed using the SCADnow design sprint model cost, on average, 50 percent less to produce as faculty are required to spend less time actively developing materials and can be completed roughly 66 percent faster (6-week delivery versus the seventeen-week delivery of SCAD's

previous course design model). The pace and requirements of development also make it much more sustainable for team members to work on multiple courses while avoiding burnout and project creep.

Additionally, through quarterly student surveys and course evaluations, students have noted an overall 95 percent satisfaction rate with SCADnow courses–an increase of 3 percent over SCAD's previous asynchronous eLearning modality. Students noted a particular appreciation for the ability to work and learn in their own environments, to use machines and equipment they were already familiar with, and the wealth of on-demand video content and clear instructions in SCADnow courses.

Faculty also noted a net positive response from working within the new SCADnow design sprint model framework. Among faculty highlights were that the new process "respected their time" and that using the framework allowed designers to demonstrate "strong empathy not only for students but for future professors who would teach the courses by including tips, tools, and tutorials that… improved the complete teaching and learning experience" (SCAD Educational Technology, 2023).

However, while successful, the SCADnow design sprint model also presents multiple avenues for future improvement. It is worth noting that this process works well within the contexts of the SCAD Educational Technology team–a team, at the time of writing, of 15 with seven dedicated learning experience designers and 3 dedicated learning experience designers/media specialists. We acknowledge that a considerable amount of our success is due to the investment of resources on the part of SCAD in service of excellence in online education. The process could easily be scaled to the needs of smaller teams; a better understanding of how to leverage opportunities, especially in the interest of empowering other units within the

university to develop their own training and learning content as needed, is an area of potential future exploration.

Another growth opportunity for the SCAD Educational Technology team involves finding ways to continually energize and engage faculty in the process of developing unique assessment and assignment opportunities for course models. Faculty often come well-prepared to the design sprint process with ideas for assignments and assessments already in-hand, and while that level of preparation and dedication is to be commended, it also limits the ideation potential of the development process. Currently, we are exploring new ways to approach the initial phases of the development process to place greater emphasis on brainstorming new methods to engage students in the virtual space.

Conclusions

In the aftermath of the Covid-19 pandemic, virtual instruction has experienced something of a renaissance. What Hodges et. al refer to as "emergency remote teaching," the quickened efforts of institutions to put in place "a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances," has since grown into an educational technology arms race, heralding a new era of innovation and experimentation in spaces of online learning (2020).

In this space, where industry trends and the evolving needs of students necessitate and demand constant change, a new, less rigid framework for instructional design and course development is needed. As Asgari et. al note, "the best fit is obtained when productivity has a direct causal effect on post-pandemic preference" (2022). In SCAD's case, students have noted a growing appreciation of and desire for virtual HyFlex courses, citing, among other things, their own increased productivity and comfortability in engaging with online learning.

In light of this and the results mentioned previously, The SCADnow design sprint model has demonstrated its potential as a viable and, in our case, successful alternative to traditional course development processes.

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