



Critical Analysis & Proposal

MSU Denver Agile Instructional Design Network (**AIDNet**)

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Context, Setting, & Need

In the modern, ever-changing, technology-saturated culture of higher education, the perspective on effective instructional design (ID) practices and optimal design team structure and management has clearly shifted. Although this momentum and perspective shift is becoming more and more apparent in the literature, the necessary institutional shifts are not often being recognized and implemented. This presents an opportunity to transform an institutional paradigm by providing an in-depth critical analysis of the current ID trends in order to mobilize more effective and efficient processes for designing face-to-face, online, and blended courses at MSU Denver, and potentially campuses nationwide.

MSU Denver is part of a vibrant tri-institutional campus in the heart of Denver, Colorado. The university mission is:

to provide a high-quality, accessible, enriching education that prepares students for successful careers, post-graduate education and lifelong learning in a multicultural, global and technological society. To fulfill its mission, Metro State's diverse college community engages the community at large in scholarly inquiry, creative activity and the application of knowledge.

To meet the criteria outlined in the university's mission and inherent to its culture, an apropos framework for assuring effectual instructional design is not simply advantageous, it's imperative.

As part of this research and analysis, I conducted a thorough review of existing literature, and also looked deeply at the current ID practices and personnel systems in place at MSU Denver. My hope is to provide a variety of stakeholders a framework from which to build transitional schemas, and ultimately lead to more efficient and agile design teams/networks that can thrive in the current educational landscape. Beyond the local institutional effects, I also plan to work with current MSU Denver ID professionals to disseminate this work more broadly through a variety of key publications and presentation channels. Through sustained dissemination, MSU Denver will become part of the national conversation with regards to the adoption of an *Agile* design model (examined in detail within the literature review), and could potentially be viewed as the pioneers of a more adaptive sub-system I'm referring to as AIDNet.

This analysis was conducted to assess the value of this proposed shift, but will not be fully implemented until the necessary time has passed to create perspective and determine the ultimate success or shortcomings of this proposed institutional adjustment.

Planned Change & Rationale

The refinement and/or redevelopment of conventional structural schemas in place at MSU Denver (and specifically within the Education Technology Center) will lead to a more agile infrastructure; one which is created around fundamental ideas which optimize the creation and optimization of instructional content. The key component to realizing this improvement will be to shift to a networked organizational structure in which smaller (3-5 person) teams work within an *Agile* design model to build efficiencies through iterative micro-design cycles. This planned organizational enhancement will lead to greater campus-wide collaboration, more efficient process discovery, ID innovation, greater autonomy, experiential diversity, and ultimately the development of effective learning experiences for all students.

Planned Intervention Support

Through the extended process of strategic conceptualization and restructuring, I will play an important role within three specific contexts. I will be a resource for strategic consultation and leadership at all stages of adoption. Having invested over 100 hours of research and analysis into literature related to *Agile*, and competing design models, within the context of higher education, information systems, team management, and instructional design, I feel that I can offer expertise and informed guidance at multiple stages. More broadly, I will also offer a unique perspective on education and design. Having worked for the Library of Congress Office of Strategic Initiatives for over 12 years, I bring an exclusive understanding of national-level institutional policy, and necessary command over what is required to enact high-impact change within the unique conditions of higher education. Finally, I also possess a wide range of more refined skills related to design and critical inquiry. This includes a broad understanding of critical software, cloud-based applications, and an authentic appreciation for generating new knowledge through critical inquiry, creative exploration, and an experiential understanding of the value of disruptive change.

Literature Review

Having conducted a thorough review of literature related to the traditional use of *Agile* (typically within the context of software startups and entrepreneurial ventures) and competing design schemes, and the more modern development within higher education institutions, a range of meaningful trends can be observed. Historically, the predominant model adopted by ID professionals has been the systematic approach of ADDIE (*Analysis, Design, Develop, Implement, Evaluate* - see Figure 1), but this has since been classified as more of an umbrella framework. Molenda's (2003) meta-analysis states, "What is emerging in the recent literature is a tendency to accept the ADDIE term as an umbrella term, and then to go on to elaborate more fully fleshed-out models and narrative descriptions" (p. 36). ADDIE certainly still has value within the context of instructional design, but the literature suggests that more refined, context-specific refinements of this underlying framework are needed to meet modern demands. One such extrapolation, rooted in many principles outlined by ADDIE, is the *Systems Approach Model* (see Figure 2) expounded by Dick and Carey (2009). This model takes a systems view of instruction, in contrast to defining instruction as the sum of isolated parts, and addresses instruction as an entire system, focusing on the interrelationship between context, content, learning, and instruction. Again, this systems-approach still provides crucial insight, and strengthens our ID foundation, but fails to offer meaningful strategies for adapting to the technological pace of change seen in the modern era. We turn our attention to the *Agile* approach to address these concerns.

The *Agile* approach (see Figure 3) originated as a means of improving the modern development of software. Agile Alliance (2013) describes Agile software development as a group of software development methods in which solutions evolve through collaboration between self-organizing, cross-functional teams. It promotes adaptive planning, evolutionary development, early delivery, continuous improvement, and encourages rapid and flexible response to change (Agile Alliance). One privy to the world of ID can't help but make meaningful extrapolations from this description into the realm of higher education, and the literature certainly seems to exemplify this new potential for strategic adoption. In the annual NMC Horizon Report: Higher Education Edition, Johnson, Becker, Estrada, & Freeman (2014) identified the adoption of an *Agile* approach as a long-term trend coming in education writing, "By nature, many startups are equipped to quickly change processes and workflows; if higher education institutions adopt startup models, it could lead to the more efficient implementation of new practices and

pedagogies” (p. 16). Within education, this new approach to design and development could become a trend that moves as fast as the technology which was developed by way of guidance from the very same principles.

If we accept the notion that an *Agile* development approach is suitable within the higher education context, we can then examine micro-implications of its adoption within the context of a broader theory of organizational macro-networks to envision the potential of a truly revolutionary shift (AIDNet). As stated by Scott (2015), “units of study in organization studies have expanded from exclusive attention to individuals within organizations to include organizations as collective entities; organization “sets”—organizations connected by critical exchanges to other organizations; organization “populations”—organizations of the same type; and organization “fields”—organizations sharing relational and symbolic systems” (p. 69). Seeing organizations (and sub-organizations) as integral constituents of a more expansive network allows for cognitive shifts in how we view the processes best suited to allow these networks to thrive. Scott (2015) further expands on this notion stating that,

In a time when conventional boundaries are regularly ignored or changed and when meaningful activities transcend these boundaries, we observe organizational scholars who increasingly shift their focus from “organizations” to “organizing”, from structure to process, from attributes to mechanisms. And these same scholars are likely to embrace broader units of study, including organization populations, networks, and fields (Davis & Marquis, 2005; Scott, 2013, chap. 8; Scott & Davis, 2007, chap. 14).

Current literature suggests the need for a reexamination of current organizational structures which are sensitive to the networked approaches being more commonly observed within evolving systems of information. The underlying interconnectedness which defines the worldwide web of information today is likely to be a valuable emulatable metaphor when developing personnel teams, and if this is true, then the design of meaningful learning experiences is likely to be more successful when ID teams are structured to complement the informational network within which their work is conducted.

A final approach, bringing into focus additional macro-perspectives, can be examined within the still broader contexts of team dynamics/management and Information Systems (IS). In order to maximize the potential outlined by the *Agile* approach, management and team structure must

also be considered and critically analyzed. In review of a 2006 study performed by Elizabeth Whitworth, Kishnah, Lalsing & Pudaruth (2012) found that, “Agile practices bring a certain level of motivation to individuals that make them tend to collaborate more compared to traditional methods. This creates cohesion between Agile team members and has a positive impact on both personal and team productivity” (p. 120). Couple this with their findings correlating team size to communication efficiency brings further credibility to the AIDNet approach. “A three member team has three communication channels and a five member team has ten, twice the number of persons. However a six member team has as much as fifteen communication channels. Therefore the more persons there is on a team the more difficult it is to communicate and share information among team members. Thus team size affects both efficiency and productivity of teams directly” (p. 120). The literature suggests that establishing a flexible network of agile ID teams maximizes communication efficiencies at all levels of inter-team and management communication.

Beyond the team *structure*, *Agile* methodologies also outline a number of integral *processes* (e.g. The Scrum). The Scrum Guide (2013) defines scrum as, “ A framework within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value” (p.3). Scrum relies on a three-pillar approach of *transparency*, *inspection*, and *adaptation* to employ an iterative, incremental approach to optimize predictability and control risk. This brief examination of the *Scrum* process is only included to illustrate one of the many concrete processes within the conceptual *Agile* framework.

A final examination of the Agile literature within the IS domain will serve to finalize a holistic view of this emerging paradigm within the context of instructional design, and specifically at MSU Denver. Given the historical legacies and institutional axioms, in many ways, information systems offer perspective which are analogous to those in ID and higher education. In this regard, it's no surprise that *Agile* frameworks are also becoming increasingly prominent within the IS domain. Just as technology is affecting education, an equal or more prominent disruption is being seen at the IS level. Given this shift, IS professionals are looking to alternate methods, both theoretical and practical, to aid in their study and practice. Bick, Heinzl, Kude, & Schmidt (2014) discuss how the unpredictability of non-routine events within information systems give credence to, and even necessitate, an agile approach to design (p. 8). I would assert that systems of information within education, though often more structured, are equally

unpredictable, and warrant similar attention to a model where agility is inherent. The IS literature also serves to offer a unique perspective from that of a *user* (or in our context, *learner*). Chasalow, Dhillon, Hong, & Thong (2011) completed an extensive empirical test which demonstrated, among other findings that, “users who have developed a habit of using an agile system are also more likely to consider the constant changes as a natural part of the system, and thus more willing to try new features when released” (p. 260). Their research is among the most transferrable to the domain of higher education as it demonstrates direct implications for students (users). Their study demonstrates additional applicability to faculty by finding that, “comfort with change, an affective component of attitude, was found to be the strongest predictor for intention to continue using the agile IS and also for intention to use future features” (p. 259). By “chunking” larger ID projects into smaller, more digestible sub-processes and products, IS literature suggests that all stakeholders (faculty and students) will be more likely to adopt otherwise disruptive products and technologies.

Based on current literature in the fields of *ID*, *Network Theory*, *Agile Design*, *Team Dynamics/Management*, and *IS*, new models of thinking which embrace an agile, networked view of organizations; one sensitive to the interconnected nature of modern socioeconomics and information, is likely to be better suited to meet the demands of education in the 21st Century. This macro cognitive framework, complemented by an agile, inter-network approach to instructional design, seems to represent a new, optimized approach which will lead educational institutions such as MSU Denver successfully into the future.`

Findings

Traditional organizational and instructional design models are rooted in valuable principles, but will no longer suffice given the exponential advances of technology in the 21st Century. Adopting an *Agile* model for designing instructional content and systems is a necessary step if educational institutions are to keep pace with the innovative sectors that are driving economic development and actualizing the jobs of tomorrow. After a thorough review of existing literature, three major findings have been identified with potential to significantly shape the modern approach to ID. First, the *Agile* approach, previously applied to software development, is viable and transferrable to the domain of higher education and ID. There is nothing inherent to the entrepreneurial underpinnings of the software and start-up culture that would make this approach inappropriate for higher education. Once an *Agile* approach is applied, the next finding

is related to management and structure. By adopting findings from the domains of *Network Theory* and *Team Dynamics and Management*, we can envision a dynamic department of networked ID sub-teams functioning with ultimate agility to design high-quality products in efficient, micro-iterative design cycles. Finally, through the broader lens of *Information Systems*, we find that an agile approach is more likely to lead to the acceptance and adoption of disruptive processes and technologies that will inevitably accompany this ever-changing landscape. We also find that an ever-growing body of literature, throughout a range of epistemological domains, is in support of models like *Agile* that allow departments and organizations, and possibly even large institutions, to function efficiently and productively in the modern age.

Discussion & Recommendations

Based on a latitudinous review of literature, and critical analysis examining potential implications within the context of higher education, I am excited and confident to make extrapolations, discuss relevancy, and make meaningful recommendations to the key stakeholders at MSU Denver. To actualize the paradigmatic shift integral to AIDNet, the most important change is likely to be structural. Moving from a single top-down department to a more interconnected network of agile design teams is critical to this successful shift. Once AIDNet is in place from the standpoint of organizational structure, there will be a variety of sub-network strategies that will further strengthen the overall culture of the MSU Education Technology Center, and potentially the broader university culture. Teams should continually explore *Agile* design strategies involving adapted Scrum-based processes, and competitive design initiatives that reinforce network unity and promote autonomous creativity. To further illuminate the potential within this foundational change, I will offer two specific examples:

Within this new model involving the formation of agile Scrum teams to carry out iterative micro-design, transparency between all members will be critical. To overtly demonstrate the importance of this, I recommend the systematic cycling of personnel, both within and between, AIDNet teams. This would involve the team leaders (Scrum masters) occasionally stepping into less familiar roles, and those that would traditionally be considered subordinates, occasionally taking a position of leadership. This would help to create ultimate transparency, leverage experiential diversity, and build a greater sense of overall empathy among all AIDNet members.

Another specific recommendation would be the implementation of an annual “Pitch-off”, wherein AIDNet members (and possibly students) present to a panel of impartial judges a 60 second “pitch” for the addition of a new tool, strategy, or novel innovation which creatively leverages technology in education. The winning pitch is then folded into the annual AIDNet strategy, gets reassessed annually, and is either phased out in place of a new Pitch-off winner or fully integrated based on demonstrated success.

The final recommendation involves a greater focus on communication, a vital component which is apparent throughout the reviewed literature and integral to all permutations of the *Agile* model. All AIDNet members should be encouraged to continually voice concerns, opinions, and ideas at all stages of the design process. Within the *Agile* model, cognitive conflict is encouraged, and specific processes established, to maximize the overall network benefits that come from such positive conflict. Again, I will offer one specific example, and tool, that should be implemented as part of the communication strategy under the AIDNet approach:

Within the ETC, typical communication is currently carried out either in-person, or through the use of traditional email. I recommend the inclusion of a new tool called Slack (<https://slack.com>). Slack allows for a greater range of creative, dynamic communication and file sharing which is perfectly suited for AIDNet. Specific “channels” can be established to simultaneously facilitate inter-team and network-wide communication. In preparation for the potential use, a Slack team account (MSUETC) has already been secured.

Conclusion

Traditional models, especially within higher education, are not easily disrupted, but it's only through disruption that we see the potential for a truly revolutionary change. In the latest NMC Horizon Report: Higher Education Edition, Johnson, Becker, Estrada, & Freeman (2015) state that, “In order to breed innovation and adapt to economic needs, higher education institutions must be structured in ways that allow for flexibility, and spur creativity and entrepreneurial thinking” (p. 8). MSU Denver has a unique opportunity to become a pioneer in a nationally shifting paradigm; not by simply adopting entrepreneurial models like *Agile*, but by constructing their very own, and uniquely tailored, strategic ID network (AIDNet). By selectively leveraging

the most applicable practices and strategies from the fields of *Instructional Design*, *Network Theory*, *Agile Design*, *Team Dynamics/Management*, and *Information Systems*, MSU Denver has the potential to truly stand above the rest within the landscape of higher education.

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Appendix

Figure 1. ADDIE Model

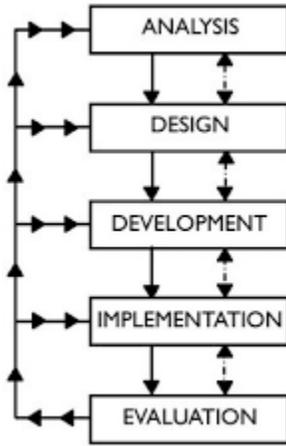
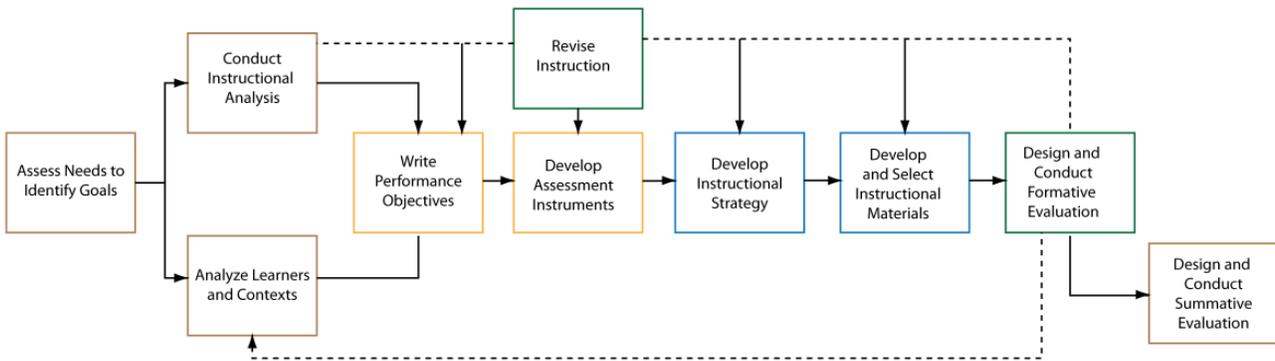


Figure 2. Dick and Carey Systems Model



Adapted from Dick, Carey, Carey (2001)

Figure 3. Agile Instructional Design Model

