



Everyone Designs: Learner Autonomy through Creative, Reflective, and Iterative Practice Mindsets

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Abstract

Developing learner autonomy—or the ability to take charge of one’s learning—is a crucial element of teaching and learning and of design work. In this article, we argue that developing learner autonomy in students requires instructors to adopt a two-fold approach through a mindset rooted in creativity and reflective practice. We discuss the theoretical grounding for this mindset, and then situate our discussion by examining an award-winning hybrid-blended course about design thinking in an educational psychology and educational technology doctoral program. The course outcomes qualitatively demonstrated the ways in which students developed a perception of learner autonomy through their work in creating and implementing context-specific educational technology design solutions. We present and discuss evidence from our own formative reflective practice as instructors, along with evidence from students’ reflections, on how themes of learner autonomy emerged via our proposed pedagogical mindset.

Keywords Education · Teaching · Learning · Hybrid course designs · Design thinking · Creativity · Reflective practice · Educational technology · Blended learning

Introduction

In our complex, twenty-first century world there is a growing need to support the development of creative, independent lifelong learners; and it becomes important to understand and consider aspects of instruction that allow for learner autonomy. A critical factor in determining student autonomy is how instructors create learning experiences that allow for it. One inherent challenge is that instructors, as designers of student learning, have traditionally opted to retain strong control (Prichard and Moore 2016). In emerging, technology-rich learning environments, where there is often a greater sense of newness and uncertainty, the urge to heighten instructional control may even be stronger (Collins and Halverson 2018). Yet, emerging research on learning has established that student autonomy contributes to the development of lifelong

learners who can adapt to the shifting demands of work in our society (Betts et al. 2016)—therefore, it is apt to consider issues of student autonomy in higher education. In educational research and theory, the concept of autonomy—plainly defined as students taking charge of their own learning—has often been situated in K12 contexts (Cotterall 2000; Holec 1981; Lan et al. 2013). However, it is not wholly bound to any single educational context or discipline. Rather, autonomy is critical to building habits of mind for independent, capable, creative, and lifelong twenty-first-century thinkers (Holec 1981; Liu et al. 2014), making it essential in higher learning.

There are tensions in the design of environments that support learner autonomy. At one level, developing learner autonomy requires instructors to “step back” and relinquish some control. At another level, there is a need for careful design and orchestration of learning experiences, since autonomy does not occur by turning students loose without materials, structure, or resources. Thus, there is a tension between learner autonomy vs. instructional control. Further, both instructors and students must be prepared to navigate a tension between the modalities of reflecting ‘in action’ vs. reflecting ‘on action’ as laid out in Schön’s (1984) conception of design as reflection *in* and *on* action. In managing such issues, we point to what Thomas Kuhn termed *essential tensions* (Kuhn

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1977). Essential tensions happen when seemingly opposite or simply conflicting or competing ideas both exist, and indeed are *necessary*, in the same space. We will describe how a mindset combining a dual focus on creativity and reflective practice can support environments that mitigate these tensions toward learner autonomy.

In this article, we argue that creating environments for autonomy in education requires instructors to cultivate an approach rooted in creativity and formative reflective practice. We situate our discussion by examining how this approach played a role in the development of an award-winning synchronous hybrid doctoral course on design thinking, education, and technology. To begin, we discuss the theory-based attributes of creativity and reflective practice as an inherently formative, design-based way of working (Kenny 2017), and then describe how we put these mindsets into action. We then reflect on evidence from our scholarship of teaching and learning inquiry (Simmons and Marquis 2017) into our students' perspectives about their learning. Finally, we consider how our efforts to design and teach this synchronous hybrid course through a creative/reflective practice mindset influenced students' perceptions of autonomy.

A Twofold Instructional Mindset

The overarching instructional approach we describe combines two complementary mindsets that powerfully support each other: (a) a creative mindset, and (b) a reflective practice mindset. We describe the theoretical underpinnings of these two mindsets and how they come together in our example. First, we consider the role creative thinking plays in pedagogy as the basis for a creatively focused instructional mindset. Following this, we discuss Schön's (1984) idea of reflective practice as a mindset for emerging higher education learning contexts—drawing especially on the constructs of reflection *in* and *on* action for formative practice. These elements come together for a focus on instructional habits of mind that correspond with creative thinking and reflective practice as a means to support learner autonomy—and thus help navigate tensions around autonomy vs. instructional control and reflection *in* and *on* action.

The Creative Mindset

Creativity in teaching is central to developing experiences and environments that are engaging and effective across learning contexts (Sawyer 2015). While creativity is thought of as subjective, most research defines it as having several core components. First, a creative idea, process or product is *novel*—it brings something into play that either did not exist before, or at least is relatively new for its context. Cropley (2003) asserts, however, that a novel idea with no potential use cannot be taken as “creative” because novelty does not guarantee that something will be effective (Amabile 1996; Zhou & George

2001). So creative products must be *effective*—or useful, logical, understandable, or of some value to others. This ability to come up with novel and effective solutions, or creative thinking, is grounded in varied factors. The challenge of creating learning experiences that are novel (relatively so, within a course context), effective, and whole in technology-mediated higher education settings, is that emerging twenty-first century contexts are so new that we often do not fully understand what the goals, settings, outcomes, or challenges look like. In evolving contexts things change frequently and we are often dealing with uncertainty and unknowns. This is why we suggest focusing on a mindset that corresponds with creative thinking, rather than chasing a target of novelty, effectiveness, and wholeness, or seeking perfect creativity. Creative teaching is related to the mindset and beliefs that teachers hold (Henriksen and Mishra 2015). If we start by understanding and aiming for creative and flexible mindsets in emerging technology-mediated settings, we are better positioned to figure out new approaches to teaching and supporting learner autonomy in such contexts.

In our course design, we drew on extant research on creativity, which suggests several key psychological correlates of creative thinking, as: flexibility, open-mindedness, tolerance for ambiguity, intellectual risk-taking, and willingness to “play” with ideas, plans and designs (Baer and Oldham 2006; Harris 2004; Prabhu et al. 2008). Karwowski (2014) notes the importance of a person's mindset for creativity, i.e., a mindset that values creativity and views it as open to change and growth. Amabile (1996) emphasizes that people with these traits are not guaranteed to be “creative,” nor is it a clear formula for creative thinking—but it is a necessary condition.

Given the unique pressures of twenty-first century education, and growth in new technologies, there is recognition that creativity is central to teaching (Freedman 2007; Zhao 2012). This is especially relevant in design contexts, but also in technology-rich, online, or hybrid settings, where the landscape is still evolving, and practices must be figured out *in situ*. As Cropley (2003) asserts:

(Education) cannot limit itself to the transmission of set contents, techniques and values, since these will soon be useless to living a full life, but must also promote flexibility, openness for the new, the ability to adapt or see new ways of doing things, and courage in the face of the unexpected, in other words, creativity. (p. 136)

In a study of the most accomplished teachers in the USA, Henriksen (2011), and Henriksen and Mishra (2015) suggest that a creative mindset is the key factor that successful teachers cultivate in their work. This mindset includes aspects such as: a focus on problem solving *in situ* and *in practice*, an openness or willingness to try new things, and a belief that creative thinking is accessible to all. We suggest that such a

creative mindset is one core element of an instructional mindset toward learner autonomy in emerging settings; another element is found in the idea of reflective practice.

The Reflective Practice Mindset

We complement this idea of the creative mindset with an idea derived from design literature and teacher education—that of reflection *in* action and *on* action, based on the work of Schön (1984). Kenny (2017) suggests that the goal of formative work in education and training “is to gather feedback that can be used by instructors and learners to guide improvements in the ongoing teaching and learning context.” This connects clearly with Schön’s vision of design and education as grounded in reflective practice—via these facets of reflection in and on action.

In his influential text *The Reflective Practitioner*, Schön (1987) described how most human-centered professions require us to reflect in two ways: both after and during an activity or event. As Schön describes, design often occurs in a dialog between a designer (teacher) and their work, materials, and other variables. Expert knowledge is developed through reflective practice, which occurs dynamically as we stop and take note of our learning, both while a situation is occurring and after it. This notion of ongoing and sustained reflection and iteration toward improvement speaks to an inherently formative view of designing for learning.

Reflecting *on* action involves setting aside time after a situation or experience to think about what occurred, what to do differently next time, and what was learned. Reflective practice *in* action means attending to values such as: experiencing, thinking on your feet, thinking about what to do next, and acting (Valkenburg and Dorst 1998). While reflective practice is a staple of good design work, it can be difficult to enact in the complex contexts of teaching (Jay and Johnson 2002). It requires conscious effort and attention, with time set aside for reflection and ongoing decision-making (Van Manen 1995).

We assert that a twofold approach that seeks to consciously engage reflective practice, while also cultivating creative habits of mind, can help instructors create more student-centered experiences. This also allows for more opportunities toward learner autonomy and creation. These habits of mind come together to develop an instructional mindset that we have aimed to explore, specifically in the context of doctoral education students in a blended setting—which we describe next.

Knowledge Media Design

The Creative/Reflective Instructional Mindset in Action

Knowledge Media Design was a blended-hybrid doctoral (Ph.D.) course in the college of education at a major mid-

western U.S. university, on the topic of design, in the context of education. The term “blended” refers to its blend of instructional modes, i.e., the use of real-time class sessions along with asynchronous web-based discussions, projects, and presentations. The term “hybrid” refers to the composition of students taking the course, i.e., a mix of both physically present and online students. The course had two main goals: (a) to help students understand design thinking as a mindset and a methodology for transforming education; and (b) to give students practical experience in developing and implementing their own media-enhanced learning designs. Two authors of this article were lead instructors, while the second author served as the technology/course assistant.

A unique feature of this course was that it was also a *synchronous hybrid course*, i.e., instructors taught to a mix of both physically present and online, telepresent students simultaneously during the same class sessions. There were 15 doctoral students in the course (10 physically present and 5 telepresent) and the synchronous course sessions occurred every other week, with asynchronous work occurring online via the course website in between. During the synchronous sessions, half of the students attended class sessions in the traditional face-to-face classroom; the other half of the students attended sessions using a videoconferencing platform (GoToMeeting). Synchronous class sessions featured instructor presentations, whole-class discussions, and small-group/project work for major projects and in-class assignments. Both students and instructors consciously engaged in the design and refinement of technology configurations to support communication and collaboration, and they reflected regularly on how well those configurations supported the intended learning objectives.

A key idea here speaks to the importance of learner autonomy as grounded in Moore’s (1993) idea of transactional distance. In Moore’s conceptualization, transactional distance, more than physical distance, signals an inherent “gap” between the instructional moves of teacher and the evolving understandings of the learner. Seeing teaching as being a form of transaction implies that the teacher is at best orchestrating contexts and situations where learners can engage with ideas to construct their *own* knowledge (Moore and Kearsley 2012). Transactional distance exists in all teaching/learning contexts but can be exacerbated in digital technology-mediated contexts for a range of reasons. Moore argues that one way of mitigating transactional distance is through increased learner autonomy—allowing students the freedom to develop their own understandings in their own way to bridge the gap that exists between them and the instructor.

Because digital technology-mediated contexts complicate the issue of transactional distance, i.e., the increased separation between the teacher and learner, pedagogically speaking—they require the development of unique teaching and learning strategies or techniques. This synchronous

hybrid doctoral seminar had two modalities of participation (although the class met at the same time, some of the students were present in the room while others joined by video conferencing), which implies that the transactional distance was different for the two groups. This of course placed an extra requirement on the instructors to meet the differential needs of the two groups.

If we consider this seminar from the lens of transactional distance, a relatively complicated picture emerges. As Fig. 1 demonstrates, there were two main forms of distance in the doctoral seminar. First, is the distance between the instructors and the students in the classroom, where an instructor's moves and engagement with ideas can be read and interpreted differently by each student. The second is the distance between the students who needed to be telepresent—as shown in the video screen at the front of the classroom. These students faced additional transactional barriers beyond those faced by the face-to-face students, such as diminished social presence, vagaries of audio-video quality, sense of isolation, and so on. Thus, the design of the course needed to navigate these transactional challenges and distances while adhering to course goals and objectives. This presented an evolving challenge from week to week as we sought to understand and meet the needs of students experiencing different forms of distance. It also required a certain willingness to continuously reflect and engage in creative.

Course Design and Approach

The Knowledge Media Design course was designed to foster learner autonomy through engaging both the students and the instructors in creative and reflective mindsets. The pedagogical goals for the course included: (a) introducing students to design thinking across disciplines; (b) giving them experience in thinking creatively about teaching and learning with technology; (c) building up and expanding their fluency with

existing and emerging educational technologies; and (d) helping them incorporate design processes to create innovative solutions to their own problems of practice.

To foster these mindsets within class sessions, we modeled the course on the principles and practices of a working design studio. Because doctoral courses are more commonly set up as discussion seminars, adopting a design studio model required pedagogical openness, and a degree of pedagogical risk-taking through openness to new or untried structures. Per a design studio ethos, students were encouraged to make their work processes transparent, to take risks, and to iterate their design solutions throughout the semester. The instructional team aimed to model effective design studio processes and principals for the students by applying them to the course itself. Emphasizing a design studio ethos also established expectations and a thematic tone for students' engagement with the course material—to be ready and willing to take control over their own learning experiences.

The learning experiences centered on two major semester projects: a meaningful design problem and a reflective design journal/portfolio. For the first project, students selected a real-world educational problem meaningful to them from their own interests. These student-selected problems varied, from the physical design of a classroom, to the design of a new curriculum, to devising solutions to communication issues between schools and communities. Students assumed the role of apprentice designers of educational technology solutions, where the objective was to present a working design of their solutions by the end of the semester.

For their second major course project, students were asked to create websites that served as a journal of their experiences by showcasing a portfolio of their course work, and a blueprint for implementing their final design solutions. The websites allowed students to share their thoughts and insights, showcase their design work, chronicle their learning progressions, and prompted future planning via the iterations of their



Fig. 1 Base configuration for a synchronous hybrid class session (Knowledge Media Design)

designs. In applying a focus on design thinking and creativity, successes and failures earned equal merit for learning, as learning from failure is essential to productive creation (Smith and Henriksen 2016). For example, in each class session students openly demonstrated or discussed design ideas and works-in-progress from their journals to stimulate ideas and insights across projects and perspectives. The student websites also served as an additional medium to articulate ideas and designs, toward the kinds of transparency of work that are part of a studio model (Fig. 2).

Autonomy suggests independent learning, but it does not mean students work in isolation—because autonomy incorporates choice-making and independence in the context of working with others in the creation of and reflection on student-selected projects.

Design has inherently social aspect to it (Cross 2001). Autonomy can occur through students choosing their own projects or problems (Holec 1981), but they also must talk,

think, and collaborate with others and the world around them. The key was to provide opportunities for independence and collaboration, and choice in how students framed their work. For instructors, this means navigating a tension between enough structure to outline the learning goals/outcomes and cover the desired content, and enough freedom for students to frame their own ideas and act on their interests. Adding to the challenge, of course, was the fact that students were “present” in the class in two very different ways at the same time, both face-to-face and online.

Creativity Through “Learning as Design” Projects

In addition to the semester-long problem of practice project, we required a third set of creative assignments (which students submitted at several points during the semester, via their websites) which allowed for more creative design play within the education subject matter. These assignments were

Knowledge Media Design

About

Solo Work ^

Assignment 1.1: A Photo Essay

Assignment 1.3: An Experience Map

Assignment 2: Applying Design Thinking ^

Discovery

Interpretation

Ideation

Experimentation

Evolution

Synthesis

Assignment 3: A Final Reflection

Group Work ^

Assignment 1.2 – Radio Story

TWEETS

- New and effective Holistic and original Creativity #creativity-

Assignment 3: A Final Reflection

“All correct reasoning is a grand system of tautologies, but only God can make direct use of that fact. The rest of us must painstakingly and fallibly tease out the consequences of our assumptions.”

– Herbert A. Simon

This statement resonates strongly with me. Tautologies by definition circulate their truths in patterns both obvious and subtle. They create constraints merely by their presence and are hard to resist if one cannot see beyond the obvious into the subtle and indeed into the sublime. This course was a valuable experience if for no other reason than it helped me understand the nature of consequence in relation to my own particular design/life assumptions.

I present these two words as a combination because they need to be in order to be fully appreciated. When I began in September, I was under the impression that the design of Knowledge Media implied experiences, readings, activities, and projects that would elucidate on the nature of object/user interface and interaction. At first, I felt I was correct in this assumption. I wrote in my notes:

The assignments are sharp, quick, and require a degree of flexibility and creativity on the part of the students. What’s interesting about this particular setting will be

Follow ...

Fig. 2 Example of a student-generated journal/portfolio website for Knowledge Media Design

intentionally aimed so that students had to learn by doing or through creation. They included creating a photo essay to explore the social meaning of a chosen object or artifact; designing a visual representation or a “journey map” (as is called in user experience design) along with a written reflection to map a user’s emotional experience of a designed process [such as playing a video game, or taking a course (example in Fig. 3)]; or, creating a podcast to interview a professional designer and thematically investigate their creative processes; and finally, there was a designer reflection paper to bring together scholarship and practice-based learning. To engage a creative/reflective mindset it was important to offer projects that privileged the action of creation. This could have accompanied any course content or subject (i.e., this was not a course in art or design, but a course for education doctoral students, yet there were opportunities for creative design work).

Reflective Teaching for Enhanced Communication and Collaboration

Finding a balance between autonomy and teamwork was intentional, meaning some work was individual while other assignments were collaborative. One of the course features that arose

through instructor reflection was providing students the autonomy to design their own class communication and collaboration channels. The course originally called for students to use predetermined tools and technologies for team collaboration and communication. Groups were comprised of physically present students and at least one telepresent student. During one after-class “reflection on action” session between instructors early in the semester, a pedagogical “a-ha” moment compelled a turn in approach. Some of the group interactions appeared stiff and constrained, lacking flow and authenticity. Moreover, technological capacity (e.g., bandwidth, hardware capabilities, etc.) was unevenly distributed among the students, exacerbating the existing transactional distance. The course was about helping students use design as a framework for education. So as we reflected, we had to ask ourselves: why are we directing approaches or tools for their communications and collaborations during class sessions? If the course was about design thinking, then having the students design their own communication was essential hands-on practice. Thus, we asked them to play with their communication structures, and use a range of freely-available technologies. Students were asked to choose how they interacted and worked, opening up the structure and giving the groups the freedom to design their collaborations.

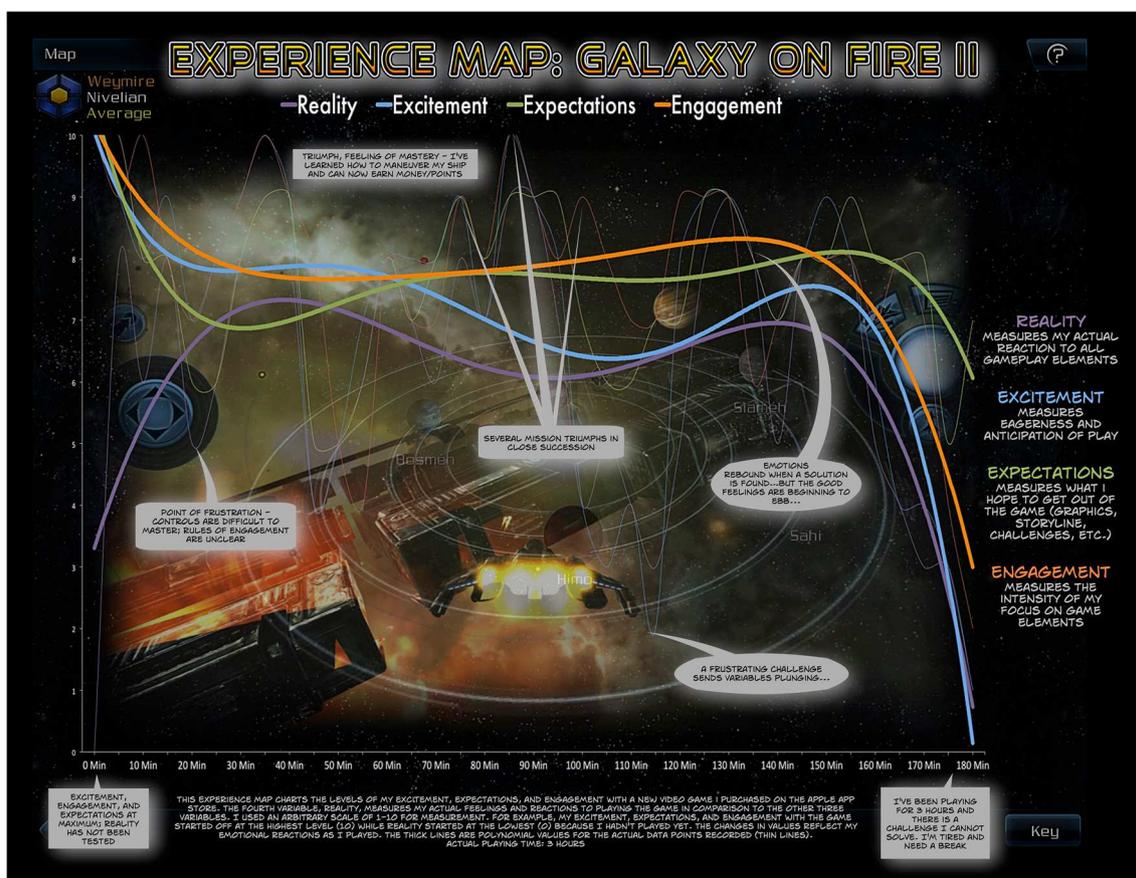


Fig. 3 Example of a student-made creative “journey map” of an emotional design experience with technology

The results were customized small-group interactions based on the technological and collaborative needs of the students, not the instructors—allowing the small groups to bridge their transactional distance in ways that worked best for them. For example, some student groups used a full range of videoconferencing capabilities (seeing, hearing, and screen-sharing with each other) when collaborating inside and outside of class. Other students found they only needed audio, so they would turn their video cameras off. Some groups wanted to use Google Hangouts while others preferred Skype or other tools. Still other groups found rich collaboration happened best by interacting through shared, synchronous writing platforms like Etherpad or Google Docs—using these as collective digital workspaces for sketching, developing, and revising ideas.

From the example above, we suggest that the focus on a creative/reflective instructional mindset allowed us to learn in situ from experience, and to take stewardship over solutions to support the intended learning. In turn, openly modeling this mindset for students resulted in them viewing us as an example to leverage their own learner autonomy—an essential point given the greater transactional distance faced by the fully online students. Students would switch technology configurations to match their needs and objectives, sometimes on a meeting-by-meeting basis, with a greater appreciation of both the function and form of their designs. Moreover, the freedom to be technologically flexible meant students felt they had a greater stake in their teamwork and designs.

Modeling Learner Autonomy Through Creative/Reflective Instructional Practice

As instructors, we consciously worked to allow for our own risk-taking and reflective practice, seeking to model the two-fold mindset for the students. For example, we arranged time to meet immediately after each synchronous course session to discuss and make notes about what worked well and what needed to change. We noted areas where the discussion or work lagged, or when groups seemed more or less engaged and what contributed to this. This led to new ideas for the next session, which we would then observe and post-reflect on. These changes were sometimes as small as trying different camera angles for the class-view provided to the online students, or as major as making a change to how we asked students to communicate and collaborate with each other. We then would summarize these discussions for students during the next class session so they were aware of the iterations of reflective design thinking behind the adjustments.

This form of reflection on action by the instructors also highlights another component that is essential to the design process—that of rapid prototyping and testing (Liedtka 2015). This process can be seen as “mini-experiments” that allow designers (in this case the instructors) to test evolving ideas

through small interventions, reflect on the outcome and make changes (Santo et al. 2016). As Schön argues, this can be seen as a dialog between a designer (instructor) and their context, or as a conversation with the evolving design. In this, we the instructional team shaped the situation in accordance with our initial understanding of it. The situation would “talk back,” and we would respond to its back talk. Schön (1984) notes that in a good process of design, this conversation with the situation is reflective. Thus, in the process of navigating between reflection *on* and *in* action, the instructors were able both to improve the class design (in a thoughtful, but relatively low-risk manner) and also to offer students insight into how such reflection can actually occur in a pedagogical space.

Giving students access to our own design thinking allowed us to both model and engage in reflective practice with them. As we engaged this type of quick prototyping design on the course itself, sharing this with them along the way, we sought to create space to generate insights and innovations that would improve their own broader project designs, as well as the overall learning experience. For example, during our first synchronous class session with a videoconferencing platform, we noticed that using a single wall-mounted camera to broadcast a view of the students and the instructors physically present in the classroom did not give a sense of “being present” for the students online (the camera’s static view and remote placement actually increased the transactional distance between those present in the room and those who were remote). One of the physically present students realized he could add an additional view for the hybrid students by logging into the videoconferencing (GoToMeeting) platform with his iPad and pointing the device’s camera at people as they spoke. Suddenly, hybrid students had an “embedded” view within the circle of students in the room, one that could follow the action up-front as discussion flowed. We immediately saw value in his technical solution, but decided to improvise a more stable form of this dynamic, embedded view. The result was a mini-innovation in student interaction: an iPad, logged into the videoconferencing and mounted on a tripod—dubbed the TriPad—to be moved by students and instructors in the room to foster better sight and sound for the telepresent students. This invention gave telepresent students some physical dimension in the room, and more direct engagement and presence between class participants (Fig. 4).

By highlighting the role of learner-generated innovations within the course structure, we hope to emphasize how autonomy arose via pedagogical mindset. Before our shift toward allowing more customization of communications, students were constrained by what we prescribed. Once choice and customization arose, students were free to experiment and develop strategies that fit their needs—arguably a better way to experience and practice the power of design in education and address the inherent transactional distances in this seminar in an open, flexible manner. This process of rapid prototyping



Fig. 4 Synchronous hybrid class session with “TriPad” enhancement for embedded class views of in-class discussions

of ideas based on each team’s current understanding of the situation, and reflection on how it played out in real-time, followed by a stepping back and tweaking of ideas (Santo et al. 2016). These are at the heart of the process of design. Thus, this class allowed students not just to study and learn about the ideas of design it permitted them to actually participate in the evolving prototype—and thus become co-creators of course itself.

Examining Reflections on Course Outcomes

We have aimed to highlight the design of a course yielding learner autonomy, and to suggest how pedagogical mindsets for creativity and design led to learners’ experiences of autonomy and creativity. Beyond our theoretical and practical efforts, it was important to engage in scholarship of teaching and learning to understand our learners’ perspectives, i.e., did students really find that they had opportunities to take charge of their learning and exercise creativity? How did our own instructional mindset affect them? The course described here won a first-place award in the AT&T Awards for Innovation and Technology at a large US (“Big Ten”) university. While there is value in this external criteria, there was also a need to inquire into our learners’ perspectives.

Learning About the Student Perspective

Because of the ongoing focus on reflective design practice throughout the class, we engaged a scholarship of teaching and learning (Simmons and Marquis 2017) approach to further reflect on action. This illustrative example is grounded in core theoretical foundations, and we suggest that there may be applicable ideas or takeaway points for other education, design, and technology-rich contexts, although not conventional research generalizability.

After the course ended, we sought to capture reflective data on the experiences of the 15 students in the course, by sending

out a qualitative survey with an open-ended prompt. This survey consisted of the following single prompt:

Please reflect on your experience in the course Knowledge Media Design and write or journal with descriptions of reflections on your own learning, and what you noticed or experienced in the course itself. Share anything that you feel would be prevalent to your course experience.

Our goal was to understand the phenomenological experience of students—via their “lived experience” of the phenomenon (the course) as individuals involved in it (Moustakas 1994). As noted by Creswell, qualitative studies often revolve around small samples of “up to ten” participants (Creswell 1998, p. 65). Our focused sample fits the context of self-reflective phenomenological examination.

Then, we individually engaged a round of thematic coding—to break these ideas down into common themes, or “meaning units,” for our data (Moustakas 1994). The instructional-research team then discussed these themes collectively to negotiate a coding scheme that identified emergent ideas around this inquiry. These emergent themes are discussed below, embedded in direct quotes in the students’ own words, to provide what Creswell (1998) refers to as rich, thick description of the experience.

Thematic Takeaways

We share several key themes that explain what students’ in this course felt was most salient to their experience. The key themes that emerged all revolved in some way around autonomy, creativity, or reflective design in the course. These themes of student experience were: having *autonomy in student interactions via multiple modes of communication*; having *opportunities to create*; and seeing *the course design as an ongoing, participatory process*.

Autonomy in Interactions and Multiple Modes of Communication One of the overarching themes many of the students noted was the value in having the opportunity to drive their own interactions—to utilize different modes of communication and have a say in how they interacted. Learner autonomy is often conceived of in terms of learners taking charge of their learning of the content (Cotterall 2000). While this idea played out in project work, students also remarked on taking charge of how they engaged with the content and learning context. One student, Sarah, described how her group used this opportunity to figure out communication modes that worked for them, saying, “The instructors gave us common platforms to communicate on a group Etherpad, and allowed us to choose any other mode of communication. This freedom to experiment with different technologies let me appreciate the subtle nuances between them.” This idea of autonomy in communication was echoed by another student, Carl, who wrote:

I liked the flexibility in how the small group interactions were up to us to structure. When I worked with different groups we used Skype, Google Hangouts, Etherpad, Google chat, etc. Leaving it up to the students left the majority of the small group time available for actual interaction, rather than having us messing around with interfaces (as so often happens in blended or hybrid classes I've taken in the past).

This sense of autonomy in structuring their interactions stemmed from a small insight during an instructional-team post-class reflection on action session, which we described in a previous section, regarding how we aimed to iterate and evolve the course to improve group communication. This demonstrates how important it becomes to reflect and iterate—even via small changes which can lead to bigger insights around student learning (Cropley 2003). Another student, Zach, noted how this allowed students the chance to play with multiple technologies, while working toward the specific assignment purposes or discussions. He commented:

The real innovation was in allowing the participants the chance to explore different collaborative technologies while completing the tasks within a given time frame. Working within constraints in the service of creativity, function, purpose, and design was a major theme of this course—and the activities provided opportunity to explore that through multiple technological perspectives, time frames, distance considerations, and creative capabilities...This was a powerful way to experience the content.

Interestingly, this comment reflects the essential tension noted earlier—the idea of student autonomy vs. instructional

control, or the fact that learner autonomy does not happen without some degree of structured planning (i.e., learner autonomy must be architected). Zach continued by reflecting on how this autonomy involved clarity of goals and purposes, with instructor support:

The technology arrangements showed attention to detail...We had to move nimbly between multiple information and media platforms before, during, and after classes but the goals, purposes, and instructions were always clear. This was my first synchronous hybrid learning experience and it changed the way I conceptualize online learning.

This sense of learning about (online) learning demonstrates how, when students have an opportunity for some autonomy in structuring their own learning, there are increased opportunities to reflect—not just on the content itself, but also on their own learning (Holec 1981). Another student, Andrea, made a similar point:

While I learned about design thinking, I also learned about blended courses. Through strategic grouping, clearly stated expectations on roles and responsibilities, and creating online and face-to-face spaces that student groups could interact within, the instructors (names removed for anonymous review) provided multiple pathways bridging the face-to-face and online environments.

Offering varied resources for and modes of communication, with student autonomy driving the interactions, opened up the opportunities for community building as well—addressing one of the significant transactional distance challenges faced in online and hybrid courses. Another student, Ken, reflected on how this gave everyone a chance to participate and communicate differently:

This course allowed for a variety of projects and communication experiences between both the students and the faculty...We utilized many different modes to provide some variety as well as give everyone a chance to participate including video, forums, collaborative writing docs, e-mail, software options and traditional print-based materials.

This sense of bringing together the diversity of student experiences, by offering multiple ways to connect, and letting students direct their interactions, paid off not only in student autonomy, but in building up a sense of community and minimizing transactional distance inherent in such interactions. One student noted how the course website helped to keep the sense of community active in the time between class meetings, with open lines of communication for students to

make connections between course content and their personal and professional lives. Beth commented that, “Knowledge Media Design proverbially tore down the wall that previously separated online and face-to-face students. We were all part of one learning community: The design learning community.” Despite the fact that Beth does not explicitly use the language of transactional distance, it is clear from her quote that in some key ways she believes that this “separation” was minimized in the manner in which this seminar was designed and executed.

Opportunities to Create A key pedagogical idea in the design of this course was for students to engage their creative making—to actually construct artifacts, consistent with our mindset approach. Doctoral courses tend to emphasize reading, research, and writing—and while we were careful to incorporate these as well, we were also explicit about doing several projects where students used technology to create or design artifacts. This creative strand of projects (the photo essay, radio story, and the emotional map) contributed to student engagement and autonomy through opportunities for creation. These themes arose in student reflections on the course. One student, Mark, noted that these opportunities to create were helpful for his own critical reflection, with respect to the content, speaking particularly to their sense of empowerment:

CEP 917 created an environment for me to critically reflect on the way I utilize design thinking into my professional practice. I was empowered to creatively think about and produce a workable design to specifically address a problem in my professional practice. I was stretched academically and professionally while thoroughly enriched by journeying through the process.

It was also important in structuring these projects was to combine student creation with authentic real-world connections. As Zach remarked, this also led to better work and learning about the content:

I really feel like I learned a lot about design, and educational design in particular, through the projects. The instructors used a wide range of multimedia and multimodal approaches. I have to say that my classmates’ projects were also the most impressive class works produced in any of the classes I’ve taken. The assignments were authentic and it led to some high quality works.

Along these lines, Anne also remarked on the balance between constraints and openness in project work. She reflected that while he appreciated the opportunities for student choice and interpretation in the creative project work, the constraints also helped to structure the work, as she stated:

What I came to appreciate about the activities was the open design. The activities ranged in difficulty and time but they were designed so that we could choose what we did, but also understand the goals. There were constraints to every project we were assigned but the projects themselves were very open to personal and/or group interpretation.

This speaks to the fact that creativity often thrives under constraints. Instructors are sometimes understandably uncertain about implementing new or creative projects or approaches in coursework, due to a perception that creativity is too broad, open-ended or messy a construct to engage within the bounds of class learning (Korgel 2002). However, as Beghetto and Kaufman (2010) point out, creativity actually requires some reasonable constraint for students to exercise their problem solving skills toward a structured goal or purpose. This means that creativity can thrive in educational settings, if we are careful to think about the essential tension between constraints and openness in projects, between autonomy and control giving students structure, purpose and framing in assignments, and room to play and explore.

Course Design as Ongoing Iteration Involving Students

Finally, a key theme was the fact that the course was itself an act of ongoing, reflective design in action—one that involved student input rather than a package set-in-stone at the beginning. This seemed to emerge from the instructional mindset aspect of reflective practice, and thus highlight the importance of ongoing iterative reflection and willingness to adjust the learning experiences and setting based on evolving realizations and what happens in action. In some key ways the manner in which this course was designed (and re-designed while being taught) captures an essential quality of the design process—that of rapid prototyping, reflection on action and making changes based on the “talk back” of the evolving design.

One student, Amy, noted that our attention to design in action improved her experience and engagement with the learning experience, and improved the experience for students at a distance:

The instructors continually asked us about how they could fine tune class operations and worked toward improving them, even on the fly, around student experience. The course experience was not compromised by distance, which is an impressive feat in my mind. I thought it was important that it was a course about design that *also was* design in action.

Mark noted that coming in with a reflective practice instructional mindset helped not only to allow for more student-centeredness (in bringing participants to contribute to the

evolution of the course in action), but also helped define how a course can model the content, and made the ideas more resonant:

The consistent ongoing revision based on feedback was evident. This included adding additional cameras for the video experience, modifying how the forum was utilized, and adjusting the agenda to provide varied activities...One piece that stood out was that the course modeled the content. It was a course about design while the class itself was a design in motion. We all contributed to evaluating and modifying the design during the experience, and this resonated in the readings and course work as part of the syllabus.

Another student, Ellie, noticed the importance of flexibility and technology-fluency in instruction, to sustain this kind of design-in-action iteration, as she reflected:

We remained true to the objectives but the course structure was both flexible and responsive to the needs of the students. This tweaking and individualization of the course was sustained through the instructors' understanding of both the affordances and constraints of technology, their flexibility with course tools, and their unwavering commitment to design thinking, envisioning what "ought to be" instead of what was.

This comment goes to the heart of our creative/reflective instructional mindset. The idea of crafting what "ought to be" in response to a need resonates with what it means to design something, in this case a learning experience consistent with Schön's (1987) ideas of reflection on and in action.

The idea of a twofold creative/reflective mindset is certainly important for all teachers and learners in twenty-first century contexts. But it may be particularly compelling for educators working in blended-hybrid or online spaces, where students often report feeling left out, or isolated from the center of learning—a challenge which inevitably leads to decreased constructive autonomy (Liu et al. 2014). If this example demonstrates anything, we hope it shows that this does not have to be the case. Students across national and international contexts can be effectively engaged in their own learning, by applying a mindset focused on creativity and reflective practice. As Sarah summed it up:

As more courses become blended, it's important to pay attention to the hybrid people. I've taken enough classes to know that the f2f group can have the better learning experience if educators aren't careful. That wasn't the case here...the instructors tinkered with the design along the way to make it better. The class encountered technical snafus as in other classes. But the difference

was the dedication to seeing the course as an ongoing design.

Another student (Anna) also suggested that an important take-away for her was the fact that the course was a design in motion, noting how it reduced "the gap" between physically present and hybrid students. She described it thus:

The way to sum up my experience is a quote that resonated throughout the virtual and physical walls of our classroom: "Everyone designs who devises courses of action aimed at changing existing situations into preferred ones." The course was about design and the instructors blurred the boundary between the class content and the course itself, and it showed us an exemplar of design in action. This narrowed the gap between the face-to-face and online learners, as they worked at fine-tuning the course design along the way.

The quote Anna mentions here is actually drawn from Herbert Simon's (1969) definition of design, which goes on to note, "The intellectual activity that produces material artifacts is no different fundamentally from the one that prescribes remedies for a sick patient or the one that devises a new sales plan for a company or a social welfare policy for a state" (p. 130). This definition highlights the value of design as a creative process that spans disciplines, and which is as important to educators as to doctors, lawyers, social planners, instructional designers, and others. Schön (1987) points out that both creativity and reflective practice are integrally woven into design—and we emphasize them here as part of a twofold mindset that instructors can use to frame their own practice and their students' opportunities for meaningful learner autonomy.

Discussion

Although research in learner autonomy has predominantly focused itself in K12 learning, it deserves attention in education more broadly. Graduate-level education is a critical area for developing and fostering learner autonomy in design skills. The very nature of graduate work across programs requires that students build autonomous growth skills for complex, higher level thinking. Graduate studies in particular seek to create scholar-leaders, so that students can build on or challenge knowledge, work creatively, and innovate to create new knowledge and structures. This fits well with the ideas of learner autonomy and with the creative/reflective instructional mindset—all of which is inherently important to design, as applied to any field such as our education course.

We have discussed how the creative/reflective instructional mindset may lead to an experience that fosters and supports learner autonomy. This is evident in how students described

their experiences—in how they structured their interactions and engaged in creative projects in service of the course content.

Our thematic findings emerged from students' experiences. In reporting their experiences, students noted themes of: autonomy for their communications and interactions; opportunities to create authentic projects; and seeing course design as an ongoing, participatory process. Autonomy plays out most strongly in the first two themes, where it occurs at two levels—one being the autonomy of students in structuring their own interactions during the course, the other being a certain degree of autonomy experienced through project work that allowed room for choice in framing and creative approach.

Learner autonomy is sometimes discussed in terms of students' having choice around topics or projects (Holec 1981), which occurred here in the sense that students commented on projects that were “open to personal and/or group interpretation,” but also in project work that aimed to encourage creation (whether of an experience/journey map, a podcast, or a photo essay). We suggest that building this element of creation into project work is integral for allowing students to take control of what they do. This also suggests the importance of integrating design studies into other areas of curriculum (e.g., design for educators). Autonomy is ultimately embedded in creative work, because to create something new, we need to conceive of ideas ourselves and make design decisions to actualize them.

These themes connect to the final theme of seeing the course as an ongoing act of design, which stemmed from our emphasis on reflective practice. This is especially salient when teaching coursework grounded in education or design—in modeling the course as an example of what we aim to teach our students. It is also vital in evolving, technology-rich contexts, so that instructors can be creative and stay nimble about changes that improve the learning experience.

Finally, this focus on creativity and design for our instruction and in what we supported in student autonomy occurred in the context of several essential tensions (Kuhn 1977), which this mindset focus also helped us to navigate. As noted, essential tensions happen when seemingly opposite or contradictory ideas necessarily exist in the same space. For example, in education, essential tensions have sometimes occurred between the need for both innovation and tradition, or risk-taking and caution. In teaching and learning, and in particular in emerging technology-mediated contexts, there is a tension between autonomy vs. instructional control. Instructors may value student autonomy, but also need to employ bounds, conditions, and designed structures. Thus, learner autonomy requires scaffolding, support, and thoughtful design in course structures that allow students to have a measure of meaningful control in their own learning. Another tension exists within the different modalities of reflective practice. Schön (1984) did not describe these two types of reflective practice—

reflection *in* vs. *on* action—as a space of tension. Yet within the emergent contexts of teaching, which Sawyer (2015) often describes as a kind of structured improvisation, this does represent a kind of tension to be navigated, if never resolved. Both types of reflection—sometimes through quick, in-the-moment reflection *during* action, and sometimes through more deliberative reflection *after* the fact—must have space in the process. Engaging a kind of twofold creative/reflective mindset allows an openness to be both improvisational and deliberative, and consciously become aware of where, when and how to engage reflective practice.

We have noted how autonomy must be crafted through careful design. Allowing for autonomy in either project work or interactions and communication required constraints, as well as both front-end and evolving design. Creative project work must be open-ended, yet it still needs bounds, requirements, goals and instructions for a flexible structure. All this is, of course, complicated by the transactional distance that is inevitable in such hybrid or technologically mediated learning contexts—where some of the traditional scaffolds that structure learning are either not available or not present.

While we had to open up our own view of the course structure at a certain point to allow students to make choices to direct their own interactions, we also needed to continuously provide resources, requirements, and scaffolding. Our focus on mindset, around creative principles and design as reflective practice, helped us approach this goal toward outcomes of learner autonomy, even within the tension that instructors often operate with, wherein freedom and autonomy are architected. This cultivated approach allowed us to navigate a tension between the modalities of reflective practice both *in* and *on* action—setting aside time for both and considering how, at any time, we needed to engage a kind of reflection, either before or during the action of instruction. These goals and constraints are part of what it means to be creative and to engage in design work—as teachers and learners.

Conclusions

We have explored learner autonomy in the context of blended-hybrid doctoral education in a design course, with a focus on how instructional mindsets for creativity and reflective practice can lead to learning experiences with autonomy. We assert that an approach with a mindset toward creativity and reflective practice is essential in developing design learning experiences—and can support instructors in navigating essential tensions around a need for instructional control and a desire to promote learner autonomy, as well as a balance between reflecting *in* vs. *on* action. As blended-hybrid learning becomes more prevalent in graduate education and design studies, it is essential to consider the conditions and approaches that allow students to engage productively,

creatively and build a sense of their own autonomy as scholars and designers of education. In online or blended-hybrid learning, students potentially face a greater level of transactional distance, and often report feelings of distance or disengagement, with decreased sense of autonomy or creativity in learning (Kear 2010; Bell et al. 2014). Yet our experience suggests that open, intentional instruction based on creativity and design as reflective practice is itself a collaborative process for both instructors and students that fosters a sense of common purpose. This makes it a viable and productive path toward building autonomous and creative habits of mind in twenty-first century designers and learners.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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