Solving for M-Theory: Playing with time and space during the pandemic

Abstract

Higher education, especially at the undergraduate level, has traditionally used a “fixed in time and space” model of instruction. However, the COVID pandemic, with its attendant reduction or elimination of on-campus face-to-face instruction, presents a frame-breaking change (Tushman, Newman, and Romanelli 1986) that has forced educators into reconceptualizing the very foundations of their course designs and instructional methods. Some faculty have looked to replicate the traditional experience using synchronous Zoom sessions. We instead have reviewed our own mental models of time and space constraints, expanding those limitations of a “fixed” model, as M-Theory in physics asserts we can (Bars and Terning 2010). We invite this session’s participants to share how they have reimagined their instructional approaches to break free of the traditional fixed time and place constraints, providing experiences that not only improve learning during the pandemic but are improvements that will endure post-COVID.

Introduction

Physicists have long suspected, and tried to solve for, the existence of other dimensions of time and space. Among the most prominent of those, Itzhak Bars has asserted that “there isn’t just one dimension of time, there are two. One whole dimension of time and another of space have until now gone entirely unnoticed by us” (Bars and Terning 2010). His work gave rise to M-Theory, a unifying theory of “the fundamental forces of nature” that includes 13 dimensions of time and space (M-Theory Wikipedia entry). In this session, we consider anew “time” and “space” in teaching and learning during the COVID pandemic, where norms, routines, assumptions, and structures about time and space have been disrupted. We will facilitate a roundtable discussion about how the pandemic’s disruptions have allowed exploring time and space differently with students, class sessions, and learning outcomes, grounding the discussion in our own experiences of surprising freedoms and playfulness that such disruption has afforded.

Targeted toward any MOBTS Conference participant, our goals are,

1) to share some of the surprising and generative modifications and experimentations that COVID-forced disruptions and changes allowed us to make in our teaching practices, particularly among those practices that we had used for many years and that had become unexamined and ‘invisible’ to us;

2) to allow a collaborative forum for sharing other practices MOBTS participants have included in their teaching and learning for the past year;

3) to build community and resources among MOBTS participants during a time of marked isolation and exhaustion, acknowledging the great difficulties we have encountered while providing scaffolding for moving forward.

There have been great difficulties. The pandemic’s destruction has been deep, disproportionately affecting the already marginalized. A session grounded in a “silver lining” view of the pandemic is a form of privilege. We want to be clear about that, and note that our impetus for this session comes from our own experiences of isolation, workload stressors, and straight-up exhaustion. The most important session goal, then, is to create community and help each other.

Theoretical Foundation/Teaching Implications

Time’s existence upon a dimensional plane, rather than a linear line, opens up distinctly new temporal behaviours and possibilities, many of which breach the laws of time we are currently imprisoned by (Hunt 2018).

While our reference to the ongoing physics M-Theory mathematics challenge is whimsical, “time” is usually considered a finite resource, and framed within scarcity and deficit: “There’s no time to do X” or “There aren’t enough hours in the day to complete all of this work.” “Space” is usually considered in three dimensions, in physical teaching spaces, student study areas, labs, or where our community partners serve and intern supervisors work. Our session plays with the concepts of increasing our sense of time and space, and is grounded in two separate literatures: we extend research examining how teaching structures and routines can enable student creativity and risk-taking by considering how the COVID disruptions to taken-for-granted course practices have facilitated our own creativity and experimentation. We also re-visit seminal work from the strategy literature about conditions that necessitate change and outcomes we might expect from those changes.

The COVID pandemic’s impacts on the world have not yet been measured or even effectively described. In higher education, the pandemic has negatively impacted almost every aspect of our work, and has resulted in dramatic levels of faculty exhaustion and burnout (e.g., Flaherty 2020, Sept 14; Flaherty 2019, Nov 19). There is not enough time or energy to attend to increased workloads and expanded student needs for effective teaching and learning outcomes. Due to our own burnout levels, we needed to re-think core aspects of our teaching practices, student engagement practices, and learning outcomes expectations and to do that, we needed to re-consider our norms, structures, routines, and assumptions concerning time and space. Rather than being “imprisoned by” our extant sense of pre-pandemic time, we instead chose to experiment with how time and space could be used differently, creatively, and even playfully during this liminal time.

Lund Dean and Fornaciari (2014) asserted that students are willing to be creative and generative only within defined structures, routines, and other delimiting factors that lower their risks if they go out on a limb. For example, those authors shared how rubrics that privilege process-based learning rather than the content of an assignment significantly increased creativity in service-learning reflection work by assuring students knew how they would be assessed before they began their work. During COVID, we used Lund Dean and Fornaciari’s logic to experiment with new forms of course and assignment ‘time and space’ structures, such as new expectations, schedules, deadlines, and assignment representation options.

In Tushman et al.’s (1986) seminal work, they examined when different types of organizational change may be appropriate: “converging change” or incremental/fine-tuning organizational change vs “frame-breaking” or major, discontinuous change. They note that sustaining shifts to core practices, or “frame-breaking” changes, happen during or in some combination of three conditions (p. 36-37):

1. Industry or environmental discontinuities;

2. Product-life-cycle shifts and changes in demand;

3. Disruptions to internal company dynamics

COVID has forced changes in all three of those conditions simultaneously. Higher education as an industry and as a viable model has been shaken, with all aspects of work, funding, student enrollment, teaching modalities, research, and community engagement called into question (O'Malley 2020, Nov 14). With almost every institution moving to at least a partial term online teaching experience, student demand has changed, particularly among international students studying in host countries. Many students have deferred their enrollment, moved their participation off-campus, and shifted demand from common revenue-generating services like room and board to demand for services that do not carry an additional fee or revenue source, like routine one-on-one consults with educators. As a result, internal functions and systems at universities and colleges have been under continuous change, trying to adapt, and increased COVID related costs of sanitizing and providing PPE have not been offset by a revenue stream.

Within the backdrop of all of this chaos, we’ve been relatively free to break our own frames. As Sun-Tzu noted, “In the midst of chaos, there is also opportunity” and due to reaching our own breaking points, we’ve experimented with new forms of course time, teaching and learning space(s), course assignments and structures, and student feedback mechanisms.

Session Description

1. We’ll start by describing our own experiences, sharing one or two concrete examples of what we have changed and the outcomes we have observed, particularly as they relate to an expanded sense of time and space.
2. Next, we’ll share a brief description of the Tushman et al. (1986) change models, helping participants situate their own experiences and plans for change within *frame-breaking* change.
3. Because vMOBTS is online, we’ll be able to send participants to break out rooms and we will move among them as facilitators.
4. Finally, we will bring everyone back for a whole-group debrief and suggestions for change opportunities that increase our sense of time, space and creative structures in teaching and learning.

Specific examples we will share to begin the conversation (part 1):

1. Course time structures using an online simulation
   1. Changes in the weekly engagement schedule
   2. Changes in when decisions are due, facilitating additional student touchpoints to reinforce learning concepts
   3. Freeing up class time for group-based consults and more effective debriefs
   4. Conceptual time compression shortens the time frame between the simulation experience and questions/discussions with students
   5. Student thinking time additions to the week increase the amount of time students are actually thinking about the course materials and what they are learning
2. Course time and space structures using Zoom and LMS
   1. Changes in how time and space can be used among synchronous, asynchronous, and face-to-face (FTF) learning modes. Multi-modal engagement adds time and space outside of the course schedule itself
   2. Student thinking time additions via asynchronous assessments like online forums, webinars, and student-led inter-group discussions.
   3. Freeing up class time for discussions and critical evaluation by using pre-recorded student deliverables such as vodcasting case analyses or podcasting responses to discussion questions based on source articles
   4. Extending due times beyond ‘we’ve always had assignments due at this time” thinking as a result of extended class session scheduling blocks. Class time has been extended to start earlier in the day and end later in the evening, expanding the sense of time and space availability
3. Using LMS to increase sense of space: Visual reconfiguration of course materials
   1. Employing nesting, labels, and other organizational options expands and organizes the use of common space in teaching platforms
   2. Expanding creativity in how student work may be crafted: from mainly written work to other representations that have evidence of student learning, sometimes in ways superior to writing. English Language Learners (ELL) and international students in particular have been drawn to these expanded possibilities

Change options based on Tushman, Newman, and Romanelli (1986) will allow participants to consider options they may have to increase their own senses of time and space (part 2). We will ask participants to individually reflect on, then share in breakouts (part 3), aspects of their teaching practices and course structures that they may not have revised or even thought about for a long time and which might present opportunities for discontinuous and frame-breaking change that will leave them and their students more refreshed. Frame-breaking changes include (adapted from pages 37-38):

* Challenging current beliefs, norms and myths that surround teaching and learning practices
* Deconstructing and re-crafting established roles, power structures, and resource allocations
* Revising core beliefs, values, and our personal teaching and learning philosophies that drive our practices
* Reorganizing structures, policies, expectations, and systems to acknowledge possibilities that were considered too risky before
* Reconfiguring relationships between and among important stakeholders including students, colleagues, administrators, community partners, accreditors, and professional organizations
* Inviting new people into our teaching and learning structures and spaces, and concurrently culling out those who have proven unhelpful or obstructive to innovating and self-care.

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| Topic | Allocated time | Elapsed time |
| Brief introductions of facilitators and if we have a manageable number of participants, introduce them too | 10 minutes | 10 minutes |
| Session framing:   * Goals * Moving time and space from scarcity to expansion * Literature models grounding | 10 minutes | 20 minutes |
| Facilitators share their experiences with changes and their results of increased senses of time and space | 10 minutes | 30 minutes |
| Participants move to break out rooms | 20 minutes | 50 minutes |
| Whole group wrap up & debrief | 10 minutes | 60 minutes |

References

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