

HYBRID LEARNING ACROSS TIME AND SPACE

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INTRODUCTION



“ The authors present extensive experience regarding how building a community and a sense of connection is essential for online learning success. Instructional design is the foundation for an online or hybrid education, based on research about how students learn in a technology-enhanced environment. Creating active engagement with content, professors and peers is as imperative as the application of knowledge in real world scenarios.

Susan C. Aldridge, PhD.
President
Thomas Jefferson University



“ Hybrid Learning Across Time and Space” hits the nail on the head! As I have been developing my upcoming book, The Learning Revolution, the multi-dimensional value of engagement and community linked to active learning has become crystal clear. Not only does it lead to greater completion, but it also drives deeper learning. And the technological support and enhancement increases the consistency of validated learning outcomes, while encouraging improved engagement and agency for the learner. In short, the hybrid world described here is a significant improvement on our previous ways of providing college courses and other services.

Dr. Peter Smith
Founding President – Community College of Vermont,
California State University,
Monterey Bay



“ If you and your teams are working to create deeper, richer, and more impactful learning experiences for your students, the set of catalytic conversations framed in this chapter are a must. From the power and potential of autonomy in learning to the quest for competence to the human need for relatedness, buckle up for ideas and insights that can help make things better for learners and the institutions that serve them.

Mark David Milliron, Ph.D.
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ABSTRACT

In the modern educational world, especially coming out of a raging pandemic, the distinctions between in-person and online and between synchronous and asynchronous learning have become increasingly blurred. At the same time, online or asynchronous portions of a learning experience design can easily feel disjointed from the synchronous or in-person elements, making it difficult to truly blend learning for students working at different times and in different places. Discussion board assignments or the use of other interactive technology tools are a common attempt to bridge this gap, but often these tools are not incorporated meaningfully into courses and are underused or the assignments feel like busywork. In either case, they do little to increase positive interactions with student peers and instructors. At worst, they lead to more disengagement rather than being a solution to it. This chapter explores various high-impact pedagogical practices, technology and design choices, and game design principles that build strong learning communities. These communities, and the authentic connections they facilitate, are key to successful learning across hybrid modalities because they keep students and instructors motivated and interested, improve course progression, and increase “contact time” with the material. That increased engagement, along with the cooperation that emerges as authentic connections form in communities, is especially vital for effective interaction. Regardless of whether they are online or in-person, to be effective interactive course elements require students to be thoughtful and active co-creators of a quality learning experience for each other.

Keywords: hybrid learning, community, conversation, discussion

HYBRID LEARNING ACROSS TIME AND SPACE

Did you know that for successful business executives it has been estimated that only 10% of their learning has happened through formal instruction? That finding is based on a survey researching the key developmental experiences of successful managers (Lombardo & Eichinger, 1996). They concluded that the bulk of learning happens outside of formal classes, with 20% happening through social interactions and 70% happening from experiential learning opportunities where new knowledge is created and used in real-world applications. Those proportions do not hold in all situations for all groups of people and the model has been criticized for how broadly the so-called “70-20-10 rule” has been applied despite how narrow the sample of collected data. Nonetheless, the implication, which is supported by additional extensive educational literature, is that “practicing” or applying knowledge in context (Billett, 2010) and having the opportunity to learn with others (Okita et al., 2007) will tend to promote more or deeper learning. How can we incorporate these social and experiential learning opportunities into courses? How can we build in human interaction, especially when students are increasingly demanding online, asynchronous, or hybrid learning approaches? We believe that the answer, which we will be exploring throughout this chapter, is to build and immerse students in strong, multi-purpose, continuously-present active learning communities.

WHAT DO LEARNING COMMUNITIES OFFER FOR ACTIVE LEARNING?

The very distinctions between in-person and online, and synchronous and asynchronous learning, are dissolving to the point where most courses are in some way “hybrid”. Emerging from the pandemic and staring down the 2025 “enrollment cliff” (Kline, 2019), many on-ground programs are being forced by students and economic realities to evaluate their current teaching and learning practices. This is leading to rapid changes and innovative strategies emerging in an industry that relies heavily on tradition and, due to its own success, has not historically needed to evolve to increase its enrollments. While some of this change is very obviously bad, and change is often scary, the upside is that this particular moment in time represents a historical opportunity to not only imagine what could be possible in education, but to actually be able to breathe life into that vision. It is an opportunity to improve upon past teaching methods and replace anything that we recognize is sub-optimal or yielding questionable results.

As we do this, many programs are grappling with students who are now used to having options to attend online and are requesting hybrid options despite campuses re-opening (Lempres, 2022; McKenzie, 2021). In-person or synchronous learning certainly maintains a level of popularity among instructors, students, and parents. Likely, they assume it will lead to a better learning experience that meets more basic psychological needs, an assumption with supporting evidence (Fabriz et al., 2021). Sharing physical spaces would seem more likely to promote authentic human connections and enable students to have the positive aspects of the “traditional college experience” portrayed in popular culture. When we talk about authentic human connections throughout this chapter, we are referring to the kinds of experiences in which students can interact regularly and “socially” enough with others to build actual friendships while working together learning a topic. The kind of friendships with peers and instructors that cement into lifelong social and professional networks. One fear among some educators aside from any specific experience students might miss by not being on campus, is that learners who are not in close physical proximity to others can easily become hopelessly “lost” on their educational pathway. On campus or attending synchronous sessions, students can supposedly get help and motivation in real-time from the instructor or other students. The COVID-19 pandemic has certainly put a spotlight on the various ways that human connections are important for our mental health and happiness (Okabe-Miyamoto & Lyubomirsky, 2021), not to mention our learning (Boud et al., 2013). Yet more students than ever want hybrid learning options (Barnes & Noble College, 2022; Samson, 2022). Why would students now want to opt-out of showing up to class and connecting with peers and their instructor, if they have the option to attend class?

Our guess at the answer is a simple deduction. Since students appear to value connecting with their peers and instructors but are insisting on having options to avoid class, maybe it is because they are not interacting very much or making authentic connections in most classes. Maybe most students do not actually feel like their class offers opportunities to connect with their instructor and peers or to feel like an important part of the class. Many probably do not want to walk across campus because being there offers little more

opportunity to connect with others than a recorded lecture. Or maybe they feel they have as good a chance of their instructor answering an email question as they do of getting a chance to ask their question during class.

Perhaps the reality is that most authentic connections tend to grow out of the less teaching-focused and more social settings of a campus. A student lounge. The quad. The dining commons. Or even clubs, interest groups, or research labs, where students are surrounded by peers with similar goals and shared interests who are less likely to judge them. All of these are spaces where people are better able to interact and express themselves as individuals. Regardless, we can probably safely conclude that if attending most classes really was meeting social needs, building soft skills that impacted their success, and providing social and experiential learning experiences, then it is doubtful students would be asking to skip them (Samson, 2022).

Many heroic instructors do take it upon themselves to create an incredibly social and experiential learning environment in their on-ground classrooms. Nonetheless, even in these seemingly ideal synchronous spaces and with a committed and experienced instructor, class sizes beyond 10 or 20 students make most interactive activities difficult. Many courses also have only 2 or 3 synchronous sessions weekly for a few hours in total. If a class lasts 60 minutes, simply trying to organize and instruct 20 students to do an activity could waste 10 of them. Trying to organize 300 students... well, we do not like to say anything is impossible! The reality, though, is that creating opportunities for peers to connect while handling the "business" of a class is challenging. And even if an instructor is well-intended and highly interactive, class time is usually fixed. Simple mathematics tells us that as the number of students goes up but class time stays constant, each student will get a little less personal attention from the instructor and less time to connect with peers; unless the instructor can extend these opportunities outside class.

Even under ideal circumstances, most instructors know the blank stares and silence they get when starting a class conversation, especially from students who are unfamiliar with each other. Not to mention shy, under-confident, or non-native speaking students, who often find it intimidating to participate. Class conversations may not be as inclusive as we hope even in fairly ideal circumstances; alternative ways to participate often allow certain students to find a voice that would be silent in a synchronous classroom (Lempres, 2022).

Fostering authentic interaction and building a learning community among students is challenging because it requires things like willing participation from learners, time, openness, vulnerability, a shared mission, and true cooperation. Still, cultivating a true sense of community among students is important for motivation and does appear to buffer them from things like poor academic outcomes and depression, which can be particularly important for underrepresented minority and first-generation students who tend to report a lower sense of belonging at their institutions (e.g., Gopalan et al., 2022). Online or hybrid courses that do not address these student needs risk negative impacts on learning and these courses will tend to create more dropout among those already at higher risk of poor educational outcomes. Even if students are "well-connected" on their campus and have a strong sense

of belonging at their institution, communities will usually have positive impacts on courses; almost everything becomes easier when students are feeling motivated and are willing to help one another. This may be especially true in the hybrid modality where student's virtual engagement with each other and the instructor can feed more productive live sessions and vice versa.

Tawnya Means, Ph.D., now Assistant Dean for Educational Innovation and Chief Learning Officer at the University of Illinois Urbana-Champaign, told us in a recent e-book interview that, "The impact of COVID has touched every single institution of learning, globally — from preschool to higher education, not to mention its impact on countless other organizations. The experience of shifting all education to remote and hybrid delivery has taught us that the right technology is not a 'nice to have' but a necessity. High quality, evidence-based pedagogical tools for delivering learning experiences, maintaining engagement, supporting interaction, and building and maintaining community are vital to creating disruption-proof education" (Yellowdig, 2021a, p. 12). This is a sentiment we are certain is shared among many educators and institutions as we leave the pandemic behind. But can technology really help us form a learning community and authentic connections among our learners?

TECHNOLOGY IS PART OF THE SOLUTION

Technology can help build authentic connections across hybrid learning environments, but it requires a shift in thinking, intentional design, and evidence-based iteration. Most importantly, these things must happen for both the design of educational technology and of our learning experiences. We will further argue that building authentic connections becomes much easier by implementing proven practices in game design for both technologies and courses. Most of the base principles of Yellowdig, our patented point system, and our recommendations for community management draw inspiration from games. While many other technologies and educational experiences incorporate gameful learning principles (e.g., [GradeCraft](#), developed by the University of Michigan), it remains a field that is far too often ignored in education. For example, a core tenet of gameful learning is providing students increased self-determination because of its ability to foster motivation (Deci & Ryan, 2000; Ryan & Deci, 2020).

As the Founder and a VP of Yellowdig, we have each seen success in building learning communities for tens of thousands of courses and programs with these gameful approaches. We will be using some examples from the Yellowdig experience as case studies here, but the lessons extend well beyond what we have done. When we combine intentional, iterative, and game-based design with thoughtful instructors and awareness of the needs and motivations of students, technology becomes a powerful driver of student connection and learning. A reason that students want hybrid courses using technology (e.g., Jenay, 2021) is because educational technology has matured to the point that it offers obvious conveniences and advantages for learning that cannot be matched by a brick-and-mortar classroom alone (e.g., increased options for contact time with the material and instructor). Thoughtfully designed hybrid courses end up offering more choices for

students (we talk about the importance of this gameful design concept later) and more ways for them to interact more often with the content, peers, and their instructor.

ARE DISCUSSION BOARD INTERACTIONS CREATING COMMUNITY?

Before we go deeper into gameful learning and lessons we learned at Yellowdig, let us explore one of the currently established approaches to building interaction in hybrid courses. Discussion boards are a common attempt to bridge the gap between synchronous and asynchronous learning to create more space for social and experiential learning. But how often do you hear anyone actually excited about them? Our answer is very rarely. Students tend to mock them (Martinez, 2019). Instructors and course designers spill endless ink on how to create better prompts and avoid difficulties in managing them (e.g., Gernsbacher, 2016; Lieberman, 2019), often with eye-catching titles that acknowledge a shared negative sentiment like “The Ever Dreaded Discussion Board – Out of the Box Activities and How to Handle the Workload” (Grady, 2020) or “Why Online Discussion Boards Suck, and What to Do About It” (Lane, 2020).

The prototypical discussion board approach features instructors mandating a posted response to a prompt and students commenting on two other posts by midnight on Sunday. How commonly do students finish their discussion assignment at the last minute, right before it is due? Most instructors seem to know this is a concern, but maybe not how serious it is. In the early days of our Classic platform we naively enabled a discussion-style framework and had not yet implemented many of our current gameful strategies to spread out student participation. Web traffic regularly spiked 50-100x normal on Sunday evening, as students flooded into our platform dutifully responding to their discussion assignments. Ignoring many other concerns, a huge problem is that unlike non-interactive assignments (e.g., papers, science labs, problem sets, etc.), if enough students procrastinate and do all of the work at one time, it becomes literally impossible to achieve an asynchronous back-and-forth discussion; every student that participates that way is posting and reacting to other students’ posts as required, but not truly interacting with anyone. Because they are not, they are unquestionably not making authentic human connections while simultaneously reducing the value of the exercise for everyone else.

Acknowledging this problem, a very common approach for improving discussions, which does seem to at least help ensure peers have something to react to, is adding a deadline earlier in the week for creating an initial response to the prompt. These second deadlines do ensure that posts are completed early enough in the week that students can read them, allowing the possibility of discussing them (e.g., Gernsbacher, 2016). As downsides, they also give students another thing to worry about on a weekly basis and give instructors another rule to enforce. Finding it a little odd to try to solve a problem created by deadlines by implementing more deadlines, we dealt with these problems with gameful solutions: we incentivized early participation and revisiting to continue conversations, created a “point buffer” that effectively removed hard deadlines, made comments worth more per word than posts in our default point rules, structured our feed to give students more choice, and allowed conversations to

end naturally, rather than stop at the end of each week.

In the interactions we have, the majority of instructors complain that their students do not care about discussion assignments or are doing the least they can to get their grade. While that may sound like a typical complaint about students, what it tells us is that simply using interactive technology is not magically motivational or valued educationally by them. Our earlier reference to student Tweets about discussion boards (Martinez, 2019) readily illustrates why; the Tweets mock the long, text-heavy, repetitive students posts that discussion boards generate. These spaces are often filled with unnecessary words to meet a word count and vapid comments filled with platitudes; a common result of students treating the task as busywork.

Unfortunately, in this model instructors then need to spend their precious time wading through and grading the uninspired posts and “I agree” comments. Ultimately, we find many instructors start to regard discussions as their own form of busywork, resenting time that could be better used on other teaching projects, their research, or departmental service. Interestingly, with their role in discussion boards defined as the question asker and answer grader, in our experience those who do use this model often tend not to even consider that they could or should join the discussion and interact with students. We note that anecdotal observation here because there is an important side effect of grading discussions; grading but not taking part in discussions places the instructor into a clear antagonist role (i.e., makes them “Darth Grader”) in one of the few parts of the course they would otherwise have guaranteed opportunities to interact with and help every individual student. Students also tend to act as if they have to be careful about everything they say when they are being graded, likely because if they show uncertainty or lack of knowledge they risk it hurting their grade.

As importantly, the grading rarely seems to compel better or more thoughtful conversation while also being of questionable utility as a summative assessment. We talk later about why the typical discussion board grading does not lead to better discussions, but it is important to discuss why it is not a valid individual student assessment. First, the assessment is not measuring learner’s ability to take part in a good discussion, just answer an instructor prompt, so at the least it is not a valid assessment of discussion skill. On top of that problem, the task is social and students are able to see each other’s answers to the prompts before they make them. That means what previous students have said influence how students respond and they frequently alter what they want to say to say something novel. At base, that means their posts are not an accurate, valid, or “pure” reflection of their personal knowledge of the topic either. Some instructors and technologies hide initial responses until everyone has made them, which negates this problem but creates another one that hurts engagement and discussion; the initial responses to the prompt will tend to be even more repetitive and make the same point repeatedly. That is not a winning recipe for kickstarting a vibrant conversation. One of our Success Managers also once jokingly said: “Assessing discussion quality by grading discussion posts is like rating a book by scoring each page.” Discussions are organic and contributions build on each other. It is difficult to grade that, but if we do we need to be giving students points for the things we really want to see, like authentic student interactions, “real”

conversations, or actions that build a stronger sense of course community.

Many discussion boards are failing to regularly achieve the goals their designers intended, but this is not the way it has to be. We can get our students intrinsically motivated if we pay attention to their needs and what actually interests them (Ryan & Deci, 2020), then use that motivation to help create learning environments that they actually enjoy and want to take part in. That's not easy. It requires a thoughtful approach that motivates them, respects their agency as humans, enables them to feel competent and capable of mastery, and helps them fulfill their needs and goals, especially in largely asynchronous hybrid designs.

TAKING LESSONS FROM GAMES

Have you seen a kid (or adult for that matter) who needs encouragement to play their favorite game? Usually, encouragement is needed to get them to take a break! Game designers need to build engaging games to make money and, therefore, base the mechanics and gameplay on deeply rooted human psychology. While many popular games are of questionable educational value in the academic sense, almost all good games rely on players learning or improving to progress or win. Many of the best games actually use learning and achievement to promote continued engagement, which is probably exactly the opposite of how most educators think. Educators usually talk of engagement (i.e., attentive participation) to increase learning. The reality is that these two things create an intertwined feedback loop; game design strategies often promote both engagement and learning. Also, while engagement may not be a primary goal for learning, it is practically a prerequisite for it. Attention is vital for memory formation (Chun & Turk-Browne, 2007) and Posner and Rothbart start their paper, *Attention to Learning of School Subjects*, by saying, "Of all the factors that influence learning, attention to the learned material may be the most important" (Posner & Rothbart, 2014, p 14). If students are not engaged in the intended activities while they are completing parts of a course, they are probably not learning and if they are not learning they will probably start to disengage.

REWARDS SHAPE BEHAVIOR

Rewards and gamification in learning are as old as grades, so the concept of applying rewards and motivating design principles to courses is certainly not new. Grades are rewards according to either of the definitions offered by Mirriam-Webster: 1) Something that is given in return for good or evil done or received or that is offered or given for some service or attainment; or 2) a stimulus (such as food) that is administered to an organism and serves to reinforce a desired response ("Reward," 2022). Grades also have many direct parallels to the rewards that improve games: 1) They motivate the players (i.e., students) to perform better, learn more, try harder, etc., just like collecting coins in a Super Mario Bros. game or wedges in Trivial Pursuit and 2) they signal to others the current skill level or progress of the individual players (i.e., students), just like experience points in role-playing games or Monopoly properties. Students who study more are rewarded with better grades and better grades help a student "win" at school by affording them a degree and better opportunities. Whether we like it or not, grades are what motivate many students to change from being disengaged from school (e.g., watching

Netflix) to sitting down and studying for a test, reading a chapter, or completing a paper.

Feedback and rewards, both of which grades provide, will typically yield behavior change (see definition #2 for "Reward" above). People will do many things for rewards if you give them the information needed to get them, including keeping a safer driving distance (Mazureck & van Hattem, 2006), exercising more (Smeddinck et al., 2019), or shopping more (Keh & Lee, 2006). However, for rewards to work, they do have to be sufficiently rewarding and focused on creating behavior that helps actually achieve the intended goal. For example, in the discussion board paradigm discussed earlier, the reward for participating is grade points for creating a post that answers the instructor's prompt. Many student posts do this pretty well. But answering instructor questions for points is something they can do on a test or quiz. Those points do not reward students for thoughtfully discussing the concept with others but for answering a prompt; students are not motivated by the reward to start spending more time and mental energy discussing because they are not rewarded for that.

In another example of how the wrong rewards may not achieve the intended outcome, we often see that longer posts with more information and complex vocabulary will better fulfill the instructor's rubric, yielding a better grade. However, longer and "denser" posts almost always lead to less conversation, not more. When we used machine learning to study ideal word count settings in our platform we found requirements for 40-word posts and 20-word comments maximize reading of and subsequent responding to posted content. Recommended post lengths to improve engagement are even shorter in most standard social media (McLachlan, 2022). Reading a post or comment seems necessary to learn something from it, but reading is also required to build a real back-and-forth conversation. Thus well-intentioned instructor rubrics that compel things like 250 words posts and APA citations are probably not generating better discussion or as much learning because students read and think less about the content being shared. These requirements, typically intended to try to ensure better learning, may actually be focusing students away from doing the things that would. They are definitely tending to focus them away from producing organic and interesting conversations, building authentic human connections, or developing healthy, cooperative learning communities.

If these things are your goals, students need to be focused on them and rewarded for doing the things that lead to better interactions, like sharing something interesting to their peers that is related to the course and starts a conversation. They need to then be rewarded for coming back to continue conversations and for providing thoughtful replies that are helpful or interesting. Focusing rewards in this way is not just about increasing interaction or engagement. If a course designer has chosen to assign a discussion activity for a justifiable educational reason, if the assignment is not yielding a quality discussion, then it would have to be almost sheer luck if the activity was promoting the intended outcomes. Using rewards to encourage the intended behaviors is central to allowing students to access an activity's unique educational benefits.

These principles should be thought of broadly and applied to all manner of student rewards and grading. A great story

of how you can use rewards to promote community comes to mind from Lee Pinkowitz, Ph.D., Associate Professor at Georgetown University. As presented in our “Made for Humans” e-book (Yellowdig, 2021b), Dr. Pinkowitz made his community as active as possible by building on top of the Yellowdig point system and distributing awards to students who engaged positively. The awards, like the Postmaster General Award, Helping Hand Award, and Community Builder Award, were based on Yellowdig engagement data from dashboards in our platform. He used those data to incentivize students to be even more collaborative, a behavior change he valued. “I am a believer in collaborative learning. People who put forth an effort to collaborate should be recognized.” The reaction from students was so positive that, “By week 6 of the course, I was recording award ceremonies in a tux and even had the Dean deliver one of the awards. The students loved it so much. Some of them even recorded acceptance speeches and posted those.” Rewarding behaviors that improved cooperation and human connection allowed Dr. Pinkowitz to build a healthier community and ultimately achieve a positive educational experience everyone seemed to enjoy. It would be hard to know for sure that his students learned better and he did not collect data to confirm that, but Dr. Pinkowitz certainly perceived his students were benefitting, broadly speaking, from these experiences and motivation plays a big role in increasing “contact time” with course material which engaged students tend to retain more of (Chun & Turk-Browne, 2007).

Other common and engaging features of games are that they enable players to “choose their own adventure”, build their sense of competence as they tackle challenges, and enable players to connect or interact. Players tend to enjoy these things, which are centered around a well-researched psychology theory called Self-Determination Theory (SDT; Deci & Ryan, 2000). SDT suggests there are three things that help create intrinsic motivation - autonomy, competence, and relatedness. The following sections explore these concepts, how they apply to designing and integrating synchronous and asynchronous learning environments for hybrid instruction, and how communities can help add these elements to course designs.

AUTONOMY

Learning to survive in the *Planet of the Apes* game and learning about astrophysics in Physics 101 probably should have more things in common than you might imagine at first. Games like *Planet of the Apes* frequently give players a lot of autonomy, which refers to the feeling of having control over your actions and their consequences. For example, some games allow you to try as many times as you like to jump across a pit your character will fall into every time. As long as the player has options to get around the pit, the player has the autonomy needed for the pit to merely be an interesting challenge. But if the game gives the player no means to deal with that challenge, they will feel less autonomy, fail more, and be less likely to continue playing. This is why many games allow you to choose to go do something else if you get “stuck”, allowing you to come back later with more skills or helpful items.

Although the importance of autonomy in active learning is generally accepted, it is not always clear how to achieve it in learning experience designs. In building a community,

providing autonomy starts with cultivating the feeling that the learners matter as human beings and that their point of view is appreciated and encouraged. Autonomy requires a feeling of having control over actions and consequences, so learners need to be encouraged to think for themselves and become co-creators of their own knowledge. They also need to believe they can improve and contribute valid, even if imperfect, thoughts and opinions. Vibrant, low-stakes and organic discussions are a great way to build a sense of autonomy (and therefore motivation) while also yielding other benefits from peer and instructor connections.

There is a growing trend in providing “choices” to students in various activities, which can help, but merely giving options does not automatically provide students more control over outcomes. A discussion prompt may be written to provide students choices of what to talk about, but by and large those prompts are still doing far more to constrain choice than provide it. Discussion prompts implicitly (if not explicitly) tell students that discussion boards are a place to answer questions, not ask them. They also specify a small list of topics to be discussed. Imagine if a learner is “stuck” on something they needed to learn from two weeks ago while they perfectly understand the current week’s topic. Should they have the autonomy to ask a question about an older topic if that is what they need to discuss most? That would certainly give them better control over how they perform on the upcoming test. Obviously providing students autonomy is a balance and there may always be things we need to compel students to do, but the reality is that many course designs provide students very little opportunity to control their own participation and miss easy chances to improve motivation via increased autonomy.

In Yellowdig, we typically encourage instructors to forgo discussion prompts and instead ask students to start conversations, ask questions, and bring interesting and relevant things from their real-world experiences to share. Research with our partners comparing implementations within our own technology has repeatedly shown that this community model tends to produce about 50% more overall participation than a discussion board model. Importantly, students can focus on the things they need to learn or are most interested in, which has positive learning and motivational impacts. In a study performed by Fort Hays State University using Yellowdig (Martin et al., 2017), they analyzed different student actions to try to understand how their students engaged with Yellowdig and what was most associated with learning. Engagement in Yellowdig was correlated with course grade outcomes, which is not surprising, but the type of engagement most associated with course grades was not generating posts, but “out-degree” connections (i.e., comments on or reactions to other students’ posts). These behaviors were interpreted by the authors to be associated with more reading. This outcome should be less surprising than it is to many; most of us know a “lurker” (i.e., someone that never posts) on social media that still knows everything happening with their friends. As educators our tendency is to believe we know what is best for students and that requiring a “quality” response to a specific topic must be the best way to direct learning in an online discussion. However, when you empower students with real autonomy they gain more ability to do the things they need; sometimes those things that are most beneficial to them are surprising to us.

A great way to jump-start building autonomy in an online community is by asking learners to introduce themselves and explain their motivations behind learning a subject. Another good practice, especially for hybrid courses, is to encourage them to start talking about topics early or to blend topics together. Instructors can then pick a top conversation and use it as a springboard for discussion in a synchronous session. This technique allows instructors to celebrate students who are making good use of their autonomy to contribute thoughtfully to the community, which motivates other to do the same, improving the overall value of the community for everyone. Likewise, it allows instructors to incorporate student-driven topics they know learners care about into courses, building a greater sense among students that they are responsible for their own learning and are co-constructors of their learning experience.

COMPETENCE

Competence is the ability to do something successfully or efficiently. Building competence is similar to mastery, which George Leonard (Leonard, 1992) defined as “the mysterious process during which what is at first difficult becomes progressively easier and more pleasurable through practice.” That an author talking about building competence would describe the process as “pleasurable” is noteworthy because taking a competence-focused or mastery-focused approach to learning is also incredibly powerful for improving. However, for learners to strive for competence, two things are almost a prerequisite from a design standpoint. First is the ability to “safely” fail. The second is the ability to get frequent feedback. One reason many games are so “addictive” is that they allow their players to fail endlessly but “safely.” Video-game-addiction.org (*What Makes a Video Game Addictive?*, 2019) describes this compelling aspect of many games like this: “Games that hook players are often designed to be just difficult enough to be truly challenging, while allowing players to achieve small accomplishments that compel them to keep playing. In that respect, the design of video games is similar to the design of gambling casinos, which will allow players to have small “wins” that keep them playing”. Though obviously addiction is a problem and certainly not the goal of most educational experience designs, disengagement and disinterest in an educational experience also has many, many negative social, financial, and educational ramifications. As educators, the courses we deliver are competing against other activities that use these techniques to capture the attention of students and, whether we like it or not, the efficacy of our learning experience designs are impacted by our ability to keep their attention. Our best chance to compete for that attention is to reference these techniques that work from industries that rely on attention to drive their business.

When your character dies in a video game they usually respawn just a little bit back from where they left off, with few other long-term impacts. Cycles of safe failure allow the player to get fast and clear feedback on what things worked and didn't, and eventually the player figures out what they need to do or builds new skills, which the game rewards them for by allowing them to get to the next level or challenge. As players traverse the game, the competence they achieve usually brings a sense of accomplishment and satisfaction (i.e., the “wins” referenced above) and encourages them to continue forward, even in the face of immense challenge. There are

practical limits to how much difficulty players will tolerate; if players fail too consistently or the cost of failure is high (e.g., having to start from the beginning every mistake), players will give up more quickly and be more likely to “rage-quit” (i.e., give up with clear indications of frustration or anger). The internet is replete with lists of games that have not balanced the difficulty very well (e.g., <https://www.redbull.com/in-en/10-toughest-games-out-there>).

Unfortunately, many learning designs and the way students proceed through them do not promote a competence-focused or “growth mindset” approach to their education. Students are often graded after each waypoint in a course and given a fixed grade. That grade may reflect the student's current skill level, but once awarded, cannot be improved. That situation means there's no real incentive for the student to go back, learn more, and improve upon past mistakes. In this model for grading, failures are not “safe”, they are permanent. And if students accumulate too many failures they will have to drop the course and restart from the beginning. Like a game that creates many failures and punishes them severely, that can quickly turn to frustration and quitting. Further, these kinds of situations promote a culture focused on being right or “smart,” which can prevent many students from ever even participating at all, for fear of being judged if they fail. While you may think this fear would be isolated to low performers, it does apply to high achievers too and even has a recognized name in the academic world: “imposter syndrome” (Sakulku, 2011). Some high-performing students fear that at any moment they may be found out to be “imposters” that are not smart or accomplished enough to be deserving of where they are.

Fast feedback was also mentioned above as important to building competence, but in many courses feedback comes days or weeks later. That may be understandable given instructor workloads, but students are less able to learn from their mistakes and maintain the motivation to master a topic. Slow feedback is contrary to the “frequent and in the moment” learning that tends to promote competence. To top it all off, the culture of micro-grading often seems arbitrary and can easily demotivate someone, especially if a poor grade is permanent, as is usually the case. Most of these things could be altered easily through gameful course design and technology that supports less linear, rule-enforcing, or choice-free course designs.

A very interesting case in point comes from John H. Wilson, a teaching professor at Drexel's Close School of Entrepreneurship. John told us about how he teaches an unconventional course called “Ready, Set, Fail” (Yellowdig, 2021a). Failure is a given for entrepreneurs and they need to learn to fail and move forward quickly, so John turns things upside down relative to normal grading. Students try entrepreneurial tasks and fail, then talk about what they learned from those failures to get better grades. Much of the collaborative learning comes from students documenting their experiences in Yellowdig and discussing them with peers, exchanging valuable insights on how they transformed their garbage into gold. “That's really what this class is about—teaching them how to fail in a way that will allow them to recover emotionally, financially, and physically.” Although it is a unique approach, the philosophy behind it is supported by game design and can be applied, to some extent, in most learning environments.

Participation grading promotes practice and a growth mindset and it doesn't have to just be about attendance or speaking up during class. Course designers and instructors can award points for participation happening between synchronous sessions as students share interesting posts about course topics, answer other students' questions, etc. Facilitating continuous participation in an asynchronous learning community between synchronous lessons has a number of key advantages. First, all students have ample, regular opportunity to participate. This is simply unachievable in most synchronous classes with more than 10 or 20 students. It also helps certain students who may have more trouble finding their voice in a synchronous setting, like students who are not native speakers or just need a bit more time to compose their thoughts. Second, an asynchronous community enables participation regardless of whether a student can attend or their timezone. Third, online communities can give instructors, course designers, and administrators clear and objective insight into exactly how and how much students are participating. Healthy course communities have a wealth of information needed to help struggling students and make adjustments to teaching during synchronous sessions. All of these things can help instructors be more effective by improving their teaching and extending it beyond limited class time, by helping them see and experience students' "lightbulb moments" that guide teaching, and by improving the likelihood instructor will be viewed as a helpful "guide-on-the-side" rather than as an antagonistic "grader." Assessment is certainly important, but having some aspects of a course that reward participation and encourage continuous improvement allows students to see that they are on a journey toward competence.

RELATEDNESS

In Self-Determination Theory, relatedness is the need to form strong relationships or bonds with the people around you. According to the theory, such interactions are not only desirable for most people but are essential for their adjustment and well-being. But how often does the average course design focus on helping to create bonds between learners or between learners and the instructor? Is it even the job of an instructor or learning designer, who is focused on trying to improve learning, to worry about students "bonding" with each other or the instructional team? We would say yes. Though it is not the job of a learning designer or instructor to make students learn, it is their job to focus students on the important things for them to learn and remove as many barricades as possible that would prevent them from learning. Disengagement due to poor student mental health or having a lack of connection to their instructor or peers is a hurdle to learning. That is why, for example, the Department of Education is enforcing new policies for regular and substantive interaction with instructors in online programs (*Regular and Substantive Interaction Refresh*, 2021). But even hybrid and on-ground courses will not automatically fulfill these needs for students just because there may happen to be a synchronous session to attend. "Time and space" for creating authentic interactions needs to be built into courses to ensure these needs are being met.

In our experience, we have seen that providing more "open" community spaces that replace discussion boards tends to lift course completion rates by over 10%, improves course grades for students who do finish, and improves continuation rates to enrollment in the next semester by 5-10% (proprietary

partner research conducted between 2019 and 2021, which A-B tested the conversion of over 50 courses with over 5,000 enrolled students). Using our technology to simply replicate discussion board assignments rather than implementing course communities, on the other hand, tends to yield fewer positive impacts. This is because things like modern-looking and intuitive interfaces that work easily are important, but they are not sufficient to change learning outcomes. Adding new technology might automatically make learning more accessible or efficient, but it does not automatically produce more learning if the course design means that students are still doing the same cognitive things they were before the change.

Providing a sense of relatedness is not just about having the potential to form connections; it comes from the actual act of forming and maintaining those meaningful connections with others. Most modern internet-based games achieve this by offering individual gamers the ability to collaborate or compete with one another, usually talking with headsets, chat, or shared video feeds. How much are students actually connecting and then maintaining those connections throughout most courses?

Although there are exceptions where courses have been thoughtfully designed to enable connection and maintenance of those connections, many courses are simply not designed with that level of interaction in mind. In most situations, it is simply taken for granted that students will get connected when they need to. That may be true for well-prepared learners and extroverts, but it is not a safe assumption for introverts, first-generation students, those with less college prep, non-native speakers, working students, etc. Incidentally, these types of students are probably those most in need of the motivational and educational benefits of connecting with and learning from others. The challenges some of them face in doing so is also likely a significant source of their higher rates of dropout.

In a blog post by an author of this piece, Dr. Verdine (Verdine, 2020) wrote: "Many degree programs and courses include online discussion board spaces with weekly assignments and prompts to attempt to engage students, promote critical thinking, increase topic relevance, help students network, and allow them to otherwise "interact." Often students and instructors treat these as "check-the-box" assignments and they rarely spur anything resembling real conversations. Subsequently, these assignments rarely meet their intended educational or social aims." The key takeaway is that even if students are participating in a shared space or on an assignment requiring some student interaction, it does not mean they are really connecting. At least not necessarily in a way that is important for motivation, learning, or student retention.

LEVERAGING EXTRINSIC MOTIVATION TO BUILD INTRINSIC MOTIVATION

Incorporating the three aspects of Self-Determination Theory (autonomy, competence, and relatedness) that build intrinsic motivation into course design is important for creating an experience that is motivating and fulfills a learner's individual needs. Dr. Pinkowitz, who we mentioned earlier, was also using extrinsic rewards that helped build relatedness and celebrated people displaying increasing competence. In that way, his extrinsic rewards (points and awards) were helping to encourage an environment that provided for more basic needs

of his students according to SDT. Legitimate concerns about extrinsic rewards include that they can become less effective over time and can interrupt existing intrinsic motivations that people may have for doing something (Deci et al., 1999). However, the example from Dr. Pinkowitz is a good example of how extrinsic rewards like points can be “converted” to intrinsic motivation if done thoughtfully. In instances where we see people building healthy communities with authentic connections between people, students participate much more than is strictly required to get the extrinsic rewards. They are participating extra because they see value in participating, not for a better grade. Incorporating both the SDT elements and the supplemental extrinsic rewards into your attempts to create a course community will typically make those attempts more successful. A community really is needed for an optimal learning experience where members share a common purpose and collective inquiry into a topic of interest, as put forth in the Community of Inquiry framework (a brief description is available at <https://coi.athabasca.ca/coi-model/>; see also Garrison et al., 1999). To achieve that optimal experience, students must have the ability to project themselves socially, as individuals, into that community. These elements are not just nice-to-have; they are an integral part of an effective learning experience.

BRIDGING GAPS ACROSS TIME AND SPACE

Classrooms have always existed to form a community that can learn together. In fact, the word “university” itself is derived from the Latin *universitas magistrorum et scholarium* (Various Authors, 1911). That translates roughly to “community of teachers and scholars.” Connecting with others is required for sharing ideas, engaging in healthy debates that expand understanding, and for discussing different points of view. Together this makes community an important enough part of learning that it is effectively indispensable. Community and connection are why even the most advanced scholars form research societies and attend conferences.

And yet our modern educational world has to create optimal learning environments for students who are scattered across space and time. That creates some daunting challenges that we are certainly all familiar with after years of a pandemic. The good news is that we can meet these challenges head-on through a combination of good tools, thoughtful instructional design, high-quality instructors, and respect for the needs and motivations of our learners. We might need only one more thing... to make sure we share the best ideas and learn together!

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