

Creating Blended Learning Environments in K-12 Education: A Systems Thinking Approach

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Blended learning is a kind of instruction that began in the late 1990s and today assists millions of students. It is not only traditional “face-to-face” instruction or just “online” instruction, but rather a concerted, though out “blend” of the best of both experiences. Students still attend a brick and mortar school, have a teacher or other instructional supervisor, and still learn in the familiar face-to-face manner with their peers. The difference, however, is that online technology is used to also teach these students who might be working at their own pace and following their own path. This is different than standalone, often peerless online learning with no instructional supervisor support.

In fact, to qualify as truly being blended learning, Horn and Staker (2015) write that part of the instruction must be online and have “some element of student control over time, place, path, and/or pace” (p. 34). Also included in their definition of blended learning is that “the student learns at least in part in a supervised brick-and-mortar location away from home” (p. 35) and finally that “the modalities along each student’s learning path within a course or subject are connected to provide an integrated learning experience” (p. 35). This means that a student simply doing work online while sitting in their bedroom doesn’t necessarily fit into blended learning, nor would a teacher assigning that students look information up on a certain subject using Google. The whole point of blended learning is that each piece complements the others and creates a entire world for the student to live in.

Systems thinking, as Senge (2006) defines it, is “a discipline for seeing wholes. It is a framework for seeing interrelationships rather than things, for seeing patterns of change rather than static ‘snapshots’” (p. 68). Systems thinking can be applied to almost any complex situation. It is often used in family counseling, as families are their own unique “systems” and a small problem in one area can cause breakdowns in other areas. For example, a family composed of a

father, mother, son, and daughter can show many instances of this. If the son is failing a class in high school, this can affect all the other family members. One parent may be angry while the other one feels guilty that they are not spending enough time with their son. This can lead to the parents arguing between themselves and leaving the daughter to feel as though all of her parents energy is tied up in her brother, leaving her feeling unimportant and alone. That would be an example of a breakdown in a system, but it shows how interrelated things can become. This type of systems thinking can be employed when designing blended learning environments for K-12 students.

Fortunately, educators are not flying blind when it comes to figuring out how to put together blended learning. There are two models that educators can employ when designing blended learning environments for their students: TPACK and SAMR. TPACK stands for Technological, Pedagogical, and Content Knowledge and I will discuss this framework first.

In the TPACK framework was developed by Mishra and Koehler, from Michigan State University, in 2006. Mishra and Koehler identified three primary forms of knowledge: Content Knowledge, Technological Knowledge, and Pedagogical Knowledge. Content Knowledge is the amount of knowledge the instructor has on the subject itself, Technological Knowledge is the amount of knowledge the instructor possesses on the technology being used to implement the lesson, and Pedagogical Knowledge is the amount of knowledge the instructor has on ways of delivering the lesson in a way that supports the student's learning.

Systems thinking shows us to look at the interconnectedness of things, and to successfully deliver a lesson, all parts of the TPACK framework need to be connected as well. If an instructor is delivering a lesson using technology, they must first understand the subject itself, then they must understand the technology that they are using, and finally they must be put

together in a way that will drive the student's learning. If an instructor is teaching a lesson on Shakespeare, they must do more than show the student's how to do an internet search for Shakespeare. A good lesson would take all parts of the TPACK model into consideration, and as such would be a good fit for Horn and Straker's (2015) definition of blended learning.

The SAMR model is another framework that can be used in constructing lessons. SAMR stands for Substitution, Augmentation, Modification, and Redefinition. The lowest level in this framework is substitution. An example of substitution is swapping out having students read a Shakespeare sonnet sequence online rather than in a physical book. With augmentation, using the same Shakespeare sonnet lesson, the online readings can be paired with audio of a trained actor reading the poems aloud along with links that define the vocabulary being used. For modification, the students might be asked to form groups and use Google Docs to collaborate on translating the sonnets into a more modern vocabulary that makes more sense to today's reader. The final stage, redefinition, really showcases how technology can change the learning experience for the students. In this example, after students have completed their modern translations, they can connect online with students at other schools, or even other countries, and share their translations with each other and learn how a group of students in England would translate the same lines. With that being said, redefinition does not have to be the goal of every lesson, as sometimes simple substitution is enough.

Taking all of this together, one can begin to see how using a systems thinking approach to blended learning, along with a framework such as TPACK or SAMR, can be effective in creating an environment that is not only conducive to learning, but create one that would be impossible to realize without the understanding and utilization of technology. In the K-12 world, combining these separate entities can lead to a more immersive education for students.

To create an example of how to create a lesson based on these principles, I look at a unit I taught many years ago to 12th graders based on reading Jack Kerouac's novel *On The Road*. At the time, I simply taught from a paperback version of the novel, having the students take turns reading aloud while the others followed along. Along the way I would interject about the social and political events at the time and how they influenced the characters in the novel, in hope of the students understanding the context of the events in the novel. If I were to create the lesson today, I would do it much differently.

To begin with, instead of creating individual lessons based on readings, each lesson would naturally flow into, and relate to, the next. There would be "big lessons" that the smaller lessons would be tied into, such as understanding what it meant to rebel in post-World War II America and how that led to the cultural upheavals in the 1960s, leading the way to the Civil Rights movement and Feminism. This is all part of systems thinking, where each piece has an effect on the other pieces in a logical way.

Students would read the novel, in an online ebook, both individually and as a group. Utilizing the online platform, the references that emerge in the novel would be able to be linked to, so that when the characters Sal Paradise and Dean Moriarty are talking about jazz, the students could listen to a representative example of the jazz that Kerouac himself was inspired by while writing the book. The novel features several cross-country road trips, and using online resources, students would be able to create their own maps of the routes that the characters took, along with actually seeing pictures of how landmarks looked at the time of the writing so that they can see what the characters were seeing when they took those drives. They would also be able to hear Kerouac reading excerpts from the novel himself, allowing the students to hear the musical intonations that Kerouac experimented with in the rhythm of the words that he chose.

Students would also be able to link to other texts that provide a deeper understanding of what it was like living in post-World War II America, with the McCarthy hearings, the Red Scare, and the eventual war in Korea. All of these different aspects would be able to be assembled into something like a jigsaw puzzle, where students could see the relationship between everything and how small events lead to much bigger ones.

Lessons like this can be created for any grade level, in any subject, as long as the instructor designing them understands systems thinking, blended learning, and a framework to implement them. It is important to understand that the world is made up of interrelated things, that events do not occur in a vacuum, and the reason the last domino falls is directly because the first domino was pushed. It's equally important to know that blended learning is an effective way of providing instruction, and by using it an instructor can be able to achieve results that are not seen in face-to-face only or online only instruction. These are big ideas that create big learning opportunities if employed with thoughtfulness.

Works Cited

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