

# STUDENTS TAKING **CHARGE**

IN GRADES 6–12

Inside the Learner-Active,  
Technology-Infused Classroom



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An **Eye On Education** Book

ROUTLEDGE  


# Introduction

I am pleased to offer this new edition of *Students Taking Charge*, focusing on 6–12 classrooms, thus allowing me to provide you with even more examples and strategies. As always, my thinking continues to evolve, so this edition offers new insights into designing student-driven classrooms, building student engagement, empowerment, and efficacy. I am indebted to the many teachers who run *Learner-Active, Technology-Infused Classrooms*, tweet about them, and share their stories with me. Their experiences help educators collectively take school to the next level.

Passion lies at the intersection of a dream and success. Those who are passionate about their craft typically have a dream of what can be, and have had glimpses of that dream in small pockets of success along the way. That combination fuels a desire to keep moving forward, regardless of personal sacrifice, fully believing that this is the road on which they are meant to travel.

The field of education is graced with many passionate teachers—those who believe that all students can learn and are fueled by those moments when students perform beyond their expectations. The Greek philosopher Heraclitus said that you can never step in the same river twice, because the river is constantly changing. So it is with the classroom. Each day brings newness: students are constantly changing, growing, and learning; passionate teachers are continually honing their craft; society possesses a momentum that repeatedly presents new challenges for schools.

Passionate teachers see beyond the barriers; they know there is a better way to prepare young people for their future and to unleash in them all the potential they possess. They explore new ways of approaching teaching and learning, and, fueled by isolated and sometimes small encounters with success, they forge ahead. I have no doubt that the relentless pursuit of instructional innovation by the passionate few will overcome the barriers of resistance and create innovative, adaptive learning environments that will both serve and form society in ways beyond our current imagination.

My own passion for changing the world through education is fueled by the *Learner-Active, Technology-Infused Classroom* students who thank me and share their stories; their dedicated teachers who challenge themselves daily and work tirelessly to make their students' educational experiences more productive and meaningful; and their school and district leaders who courageously find ways to make it happen, battle the status quo, and take the risk to forge a new and innovative path for school. I am blessed to be joined by the amazing group of educators at IDE Corp. Their passion and dedication to the educators and students we serve is inspiring; they challenge my thinking and enhance the collective work we do.

## **My Journey**

My vision for the *Learner-Active, Technology-Infused Classroom* was inspired by many moments throughout my life. When I was ten, I began running a summer school program for the neighborhood children; by the time I was twelve, I was charging fees and holding graduation ceremonies for parents. In some ways, it was a one-room schoolhouse; I had neighborhood children of all ages anxious to come to my school for the three days a week it was open, including those who were gifted, those with learning difficulties, and a teenager with cerebral palsy. To meet their needs, I assigned varying work and spent a lot of my time working in small groups and with individual students. I still look back in amazement that the neighborhood kids hated to miss a day of summer school, given that we truly worked the entire time! One bright and talented young man had been attending my school since age three. When his mom had her first parent-teacher conference, his teacher pointed out how far ahead he was from his peers, no doubt because of the private school he was attending. Today, the young man is a judge, and I like to think his early experiences in "school" helped to fuel his own passion for his craft.

An early experience in my teaching career inspired me to solidify my vision and articulate it so that others could join my quest for the ultimate learning environment. It was the late 1970s, my second year in teaching and first year teaching middle school. I was assigned the lower-level math students who had repeatedly failed the state tests. I remember starting class asking my eighth graders to take out their books, only to find that few had brought them. Paper? Pencil? My efforts to recreate the traditions experienced in my own schooling seemed futile. One day, I asked my students to simply show up for class the next day—no books, no paper, no pencils. They all complied. I had pushed back the desks and arranged the chairs in a circle. I explained that I wanted to keep my job and they needed to learn math, and I asked them for the solution to my dilemma. My students pointed out that math instruction was boring and they didn't see the point.

I suggested that perhaps I could design projects that would make the learning more meaningful; they agreed to give it a try.

I don't remember the first project I designed, nor the entire complement, but I do recall a few. We created scale drawings of birdhouses to build; we used paper plates to create polyhedral disco balls (it was, after all, the 1970s, and John Travolta's nephews were in my classes). In those days, teachers could take their students out to play kickball on a nice day. My students would head out with clipboards to track the progress of the game; once inside, they would run the statistics on the game and analyze it in light of previous games. When the state tests arrived, my students did quite well, with almost all of them passing. I remember my principal asking me what I did; I didn't know. He persisted and pointed out that my students performed particularly well on percentages, but I simply shrugged my shoulders and admitted I hadn't gotten to that chapter yet.

Years later, I realized what had happened. I had designed higher-order problems for my students to solve, and then provided them with the resources and support they needed to learn. I realized, too, that the problems did not encompass only the skills in a single chapter of the textbook; they spanned many chapters. I would venture to say we worked with percentages, for example, in most of the problems. I saw the power of students learning from a *felt need* in an authentic context, and that year and the successes my teaching style yielded never left me. The personal computer had not even been invented yet.

It was the invention of the desktop computer and its arrival in schools that further fueled my vision for the classroom. Teachers are faced with a classroom of students with varying needs and interests; computers provide them with a wealth of opportunities to help students learn. In the early 1980s, I was a district-level administrator, when I decided to make "an offer to innovate" to a couple of teachers. Alysse Daches and Cyndie Bach taught fourth and fifth grade, respectively. They were both among the daring few who purchased desktop computers for their homes. I asked how they would like to have five desktop computers for their classrooms, and they jumped at the chance. Over the course of the next few months, I saw a new vision for the classroom spring to life. On one visit they told me they felt guilty that the computers sat vacant while they were teaching lessons; I suggested that perhaps they could reduce the number of whole-class lessons in favor of other means of providing instruction. On another visit they told me how challenging it was for the children to push together desks of all different sizes and attempt to work collaboratively. I replaced the desks with forty-two-inch round tables. Structure by structure, strategy by strategy, my vision for instruction took shape. More than twenty years later, with myriad classroom teachers implementing the *Learner-Active, Technology-Infused Classroom* across the grade levels, I wrote the first edition of this book to capture the essence of this instructional framework to share with passionate teachers

everywhere. This second edition is split into two books to offer a more detailed look into 6–12 implementation and K-5 implementation, allowing me to provide even more detail and examples for you to understand the framework and implementation strategies.

## Your Journey

This book is intended to be a three-fold guide to:

- ◆ Designing an *Authentic Learning Unit*, which is the foundation of the *Learner-Active, Technology-Infused Classroom*, aimed at engaging students;
- ◆ Understanding the structures needed to support its implementation and empower students;
- ◆ Building the facilitation strategies that will move students from engagement to empowerment to efficacy.

Therefore, it's best if you pause after each chapter and spend some time designing the various components of the unit. Every six months, reread the book and you'll learn even more! The early chapters delve into designing an appropriate core problem for students to solve and the analytic rubric to provide them with clearly articulated expectations. Chapter 4 addresses differentiation techniques to further engage students in grappling with content. Chapter 5 focuses on the many structures of the *Learner-Active, Technology-Infused Classroom* that empower students to take charge of their own learning. Chapter 6 drives home the importance of teacher facilitation—a new role for teachers—in this environment. Chapter 7 addresses physical classroom design, which will prove to be more useful for those who have more control over their physical classroom space than for those who do not. The ten principles of the *Learner-Active, Technology-Infused Classroom* are woven throughout and then addressed more fully in Chapter 8. Chapter 9 closes the book with special considerations, such as a priming plan and designing a *Learner-Active, Technology-Infused School*; it also offers thoughts on how the *Learner-Active, Technology-Infused Classroom* addresses many of the instructional needs and programs present in schools today.

I hope this book helps to fuel your passion and provide you with many ideas for innovatively designing your classroom.

# 1

## The Why for Your Instructional Design Journey

### Change the World!

“Design Your Own Destiny.” Those are the words that greet middle school students in one of our *Learner-Active, Technology-Infused Schools* as they enter each day. Those words resonate with the “why?” of the *Learner-Active, Technology-Infused Classroom*: positioning students to change the world. Students deserve an education that positions them to tackle any challenge, pursue any goal, and be outfitted with the skills to meet with success. Before schools can consider what that should look like, they need to identify the why, their purpose. Why should we put all this energy, thought, money, and time into teaching children? My answer to that question is: efficacy!

Efficacious people can identify a goal, build a plan, and put it in motion; and if they don’t achieve that goal they can reflect on why and make adjustments for the next attempt. Efficacious people are driven by their passion to make a difference in their own lives and the lives of others; they make life happen, rather than letting life just happen to them. Efficacious people can take steps to lead a happy life, be a productive citizen, and, moving beyond themselves, change the world! What would it take to create classrooms and schools that produce efficacious human beings and world citizens?

Imagine a learning environment in which students pose questions and actively seek answers, pursuing solutions to problems they want to solve. They decide how they will use their time, take charge of setting and achieving goals, and work individually to build skills and collaboratively develop solutions to real-world problems. Technology is used throughout the day,

seamlessly, as students and teachers need it—from handheld devices to tablets to laptops to virtual reality headsets. Students walk to a flat-screen monitor on the wall and talk to students in another part of the world. Teachers move around the room, sitting with students who share their accomplishments, asking probing questions and gathering assessment data that will shape tomorrow’s instructional plans. You hear students talking about content; their vocabulary is sophisticated; their thinking processes are evident through their discussions and reflections. They are intent on the task at hand, yet not everyone is working on the same thing at the same time. No one is off task. Every now and then you hear a cheer or a student exclaim “I got it!” as they dive into the next phase of a project. Students shift from current activities to others without the prompting of the teacher. No one watches the clock; no one wants to leave. This is a snapshot of the *Learner-Active, Technology-Infused Classroom*. Students in this classroom take learning seriously and pursue it vigorously. Teachers in this classroom masterfully craft and co-create learning experiences with their students that emanate from real-world situations; they facilitate learning, ensuring that each student achieves at the highest level. Parents are partners in the learning process, often via the Internet, working with teachers and students as one cohesive unit to ensure that the students are given the best foundation possible for the rest of their lives.

You may recognize aspects of your own classroom or those of your colleagues. Pockets of innovation exist in schools; it’s time to stop celebrating pockets of change, incremental improvements, and isolated innovative teachers. It’s time to take bold steps to secure the future of our students and the world.

## School and Society

Schools both serve and form society. They serve society by building in their students the skills, concepts, and information needed to thrive in today’s world. When the sundial gave way to the analog clock, people needed new skills. When the slide rule gave way to the calculator, school curriculum changed. The school community must continually consider changes in society, particularly technological changes, scientific breakthroughs, and historical events, and ensure that the curriculum is designed to shape successful world citizens.

In addition to critical subject-area content mastery, students need to build skills in creativity, innovation, critical thinking, problem solving, communication, collaboration, information literacy, technological literacy, initiative, self-direction, socializing, cross-cultural engagement, productivity, leadership, flexibility, adaptability, accountability, and responsibility. How do you build “ility”? Most of these skills cannot be approached as a subject. A student cannot take a class in flexibility and adaptability. These skills that

fall outside of subject-area content are acquired based on *how* teachers teach more than *what* they teach.

If schools serve society by *what* they teach, then they form society by *how* they teach. Schools that place a great emphasis on individual competition develop citizens who are well-suited for that, but may not be as able or willing to work collaboratively. Schools that place a great emphasis on project management, time management, and resourcefulness develop citizens who are better prepared to lead self-reliant, productive lives. This is a connection that schools often fail to realize, and it is why teachers and administrators must very carefully develop an ongoing, purposeful, instructional design plan that not only considers the written curriculum—the *what*—but also shapes the teaching and learning process in the classroom—the *how*. Both should connect to a powerful purpose, in the case of this book, positioning students to change the world.

In today's society, an event in one part of the world affects others around the world. Countries around the world comprise a global, interdependent system. Our economies, commerce, health, environment, and more are interconnected, which presents both opportunities and challenges. Beyond the realm of Earth, countries are engaged in a new space race to colonize Mars.

In order for schools to meet the needs of a global society, they must prepare students to be problem-finders, innovators, and entrepreneurs. . . . Today's students are ready to make the leap from passive recipients of information to active participants in a classroom that will prepare them for their future.

(Sulla, 2015, p. 5)

## Moving Beyond “It’s Always Been That Way”

Consider this anecdote I once heard. A mother is cooking a ham dinner. She cuts off the end of the ham, places the larger piece in the pan, and begins to roast it. Her young daughter says, “Mommy, why do you cut off the end of the ham?” Mom responds, “You know, I’m not sure but my mother always did that. Go ask Grandma.” The young girl goes into the living room and asks her grandmother the same question. The response is, “I don’t know; my mom did that so I did too,” and the girl turned to her great-grandmother and asked why. The elderly woman responded, “Well, otherwise it wouldn’t fit in my roasting pan!”

What a wonderful anecdote for the ills of perpetuating the dominant paradigm of schooling. Teachers always stood in the front of the room when I was in school, so that must be where you stand. We always had textbooks,



so they must be a necessary part of school. We've always had students write and solve problems on the board, so that must be a necessary component of mathematics instruction. It's time to think through what schooling looks like and make some significant adjustments to past practices. That's not to say you discard everything you currently do. Rather, you keep what works and make some adjustments. The important thing is to keep your mind continually open to change and be willing to shift some of your beliefs as to what the teaching and learning process could look like.

Shifting your belief system is not an easy process; it requires unlearning some of what you've learned in the past. Authors Ron Heifetz and Marty Linksy (2002) distinguished between technical and adaptive change. Technical change focuses on implementing known solutions to problems. For example, if students are not performing up to your desired level, use a rubric to offer them clearly articulated expectations. You learn how to use a rubric, implement its use, and teach others. That's technical change, and it is the focus of most professional development and college courses today in the field of education. It is a transaction of knowledge. Adaptive change, on the other hand, focuses on developing solutions to problems for which none yet exists. It represents an underlying transformation of thought and action. Designing classrooms to meet a new, emerging generation of learners is a problem for which there can be no available solution, given that students and society are continually changing. Adaptive change requires a change in one's belief system.

## **From a Compliance Model to an Efficacy Model**

When you walk into a *Learner-Active, Technology-Infused Classroom*, you immediately notice how engaged students are. You look around the room and note that all students are on task and look very focused on whatever they are doing. Conventional classrooms are based on a compliance model of education: the teacher has rules, goals, and assignments, and wants students to comply with those. The understanding is that through compliance, by following the teacher's lead, students will learn; and, while that approach might produce temporary test score results, it will, in and of itself, fall short of producing long-term retention of learning and will do little to produce efficacious learners. Thus, a different model of education is needed to produce efficacious citizens who can change the world.

The first step toward an efficacy model is positioning students to engage with content at deep levels. This is one of the key goals for instructional design, as you'll read about in the next section. As students build the ability to engage in activities and with content, they will be better positioned to be empowered to take charge of their own learning. In the *Learner-Active, Technology-Infused Classroom*, many structures and strategies are put in place

to empower students. With engagement and empowerment as the foundation, shifting focus from being empowered by others to empowering yourself leads to efficacy. The *Learner-Active, Technology-Infused Classroom* is an efficacy model of education.

## Achieving Instructional Equity

A wonderfully diverse world means diverse learners with diverse needs. The equity discussion has schools challenged to provide not an equal but an equitable education for all by giving each student what he or she needs to succeed. At the core of equity is opportunity and access. Imagine classrooms in which students have myriad opportunities to thrive academically, and access to the instructional approach they need and desire.

In his book *For White Folks Who Teach in the Hood . . . And the Rest of Y'All Too*, Christopher Emdin (2016) defines reality pedagogy as:

An approach to teaching and learning that has a primary goal of meeting each student on his or her own cultural and emotional turf. It focuses on making the local experiences of the student visible and creating contexts where there is a role reversal of sorts that positions the student as the expert in his or her own teaching and learning, and the teacher as the learner. It posits that while the teacher is the person charged with delivering the content, the student is the person who shapes how best to teach that content. Together, the teacher and students co-construct the classroom space.

(p. 27)

In the *Learner-Active, Technology-Infused Classroom*, student voice and choice are at the forefront. Students work with teachers to identify problems they wish to solve and ways in which to learn what they need to achieve their goals. Teachers facilitate through small-group and one-on-one conversations with students to gain a better understanding of students' abilities, successes, challenges, and needs so they can be a powerful resource in their students' learning journey. It is a classroom where all students thrive. The *Learner-Active, Technology-Infused Classroom* is an instructional equity model for education.

## Three Critical Goals for Instructional Design

At the core of the *Learner-Active Technology-Infused Classroom* lie three critical goals for instructional design: engage students in learning, build greater responsibility for student learning, and ensure academic rigor.

## Engaged Learners

Busy students are not necessarily engaged students, nor are seemingly happy students who are working in groups. Although “hands-on” activities are wonderful, what you truly want are “minds-on” activities. If you assume students are engaged in learning, take a closer look to see if what they are doing is directly related to academically rigorous content and if they are understanding and thinking deeply about that content. Suppose middle school students are learning about the impact of invasive species on the carrying capacities of species in an ecosystem. Consider the following scenarios as we peek into three classrooms:

- ◆ Students are locating information in books and from the Internet to construct a food web and energy pyramid for an ecosystem being overrun by a non-native species.
- ◆ Students are designing a hyperlinked computer presentation on a food web and energy pyramid for an ecosystem being overrun by a non-native species, incorporating animation and sound, developing hyperlinks to provide further information on various species.
- ◆ A group of students is developing a presentation on the future of the Great Lakes if the growth of the Asian carp population goes unchecked, along with suggestions for how to slow the population growth.

Although all three scenarios cover the content of food webs and energy pyramids, it is important to consider how students spend the bulk of their time. In the first scenario, students are most likely engaged in finding and reporting information. Doing so will lead them to some level of knowledge of the science topics, but the work is primarily “regurgitation” of content: copying and pasting; taking data in one form and presenting it in another. This is a prevalent activity in the compliance model of education. The second scenario assumes students have already found their information and are reporting it using a digital presentation, sharing “known” information with others. Their engagement, however, is now in the digital presentation software. Again, although the students are focusing on important skills, as the teacher, you must consider what content is the *goal* of instruction. In this case, students are engaged in the use of software, not understanding the food chain. The third scenario has students “grappling” (Sulla, 2015) with the content itself—understanding the cause-and-effect relationships that exist and using higher-order thinking to consider future situations; they are identifying problems and posing solutions for them based on personal interest and curiosity. All three of these scenarios might occur when learning about

ecosystem interdependencies and the cycles of matter and energy transfer in an ecosystem; the key is the *amount* of time allocated to each and which is the end goal. In the case of the third scenario, students will absolutely have to search for “known” information, and they will have to develop a mode of presentation. That presentation, however, will focus on convincing others of the merit of their solution to the problem, the “unknown” that students have created as the goal of the unit of study.

Current standards demand a higher level of understanding and application of content than ever before.

The word “understand” means to know how something works and to grasp the meaning of it. The definition intimates personal, often long-term, experience with the subject. . . . Achieving understanding involves deconstructing information, making connections to existing knowledge, making and testing predictions, and constructing new meaning—in short, grappling.

(Sulla, 2015, p. 30)

The bulk of students’ time should be spent on grappling with “known” content to provide an “unknown” solution to a problem. Engaged learners need to be grappling with curricular content in significant ways much of the time, no matter what their ages.

## **Student Responsibility for Learning**

Student responsibility for learning is a concept that most educators embrace but few foster. Teachers are often frustrated that students don’t come to class prepared, haven’t done their homework, and so forth. If you take a closer look at most classrooms, students enter the room and wait for the teacher to tell them what to do; or they follow a “do now” written on the board, that the teacher created. You’ll hear teachers saying phrases like “clear your desks,” “take out your notebook and a pen,” “put your homework out on your desk,” “quiet down,” “speak up,” and more. Teachers will call on students to speak; distribute materials; give, collect, grade, and return assignments; and tell students what their grades are. In this type of environment, students are asked to follow along compliantly; the teacher decides what, when, and how students are learning. This model typically does not actually produce learning; it might produce a short-term bump in test scores relying on short-term memory, but the goal of schooling must be long-term retention of learning. Many of us who succeeded in spite of the compliance model of education had other things going for us: parents who served as models and mentors, a national respect for education as the way out of poverty post-World War II, the ability to construct meaning from information, and so forth.

Imagine a classroom in which seventh-grade students walk through the door; retrieve their folders, or log onto a website that includes their current work and a schedule that they developed the prior day; read through comments from the teacher; and start working on activities they decided upon. Students determine what resources they'll need to accomplish their tasks, and they sign up for them, including *small-group mini-lessons* offered by the teacher. They use *analytic rubrics* to guide their work and assess their own progress; they share with the teacher how they're progressing and what they need to be more successful. The teacher facilitates learning through a carefully structured environment that allows students to take responsibility for the classroom. Student responsibility for learning requires clearly articulated expectations and consequences, structures that students use to meet with success, and guidance and feedback from the teacher.

Imagine a classroom in which eleventh-grade students are working in pairs with counterparts in another part of the world, collaborating to address the global food shortage. Some students are independently conducting research; others are videoconferencing with their partners to share information and ideas. A student who is having difficulty interpreting a graph and has been unable to obtain help from his team accesses a digital *help board* and enters his name and help topic. Soon, the teacher joins him to analyze the graph. About twenty minutes into the class period on this particular day, the students transition from what they are doing to attend to a brief lecture by the teacher on the topic of precision agriculture.

## **Academic Rigor**

If students are engaged in learning and taking greater responsibility for their own learning, then ensuring academic rigor is easy. The battle cry of most schools is to increase test scores, even if scores are already relatively high; but you can't force students to learn. In 1998, William Glasser determined that students choose to learn based on a sense of belonging, freedom, power, and fun. Sousa (2017) found that for information to move into long-term memory, it must have sense and meaning. Presenting content followed by practice, absent of these conditions, will not necessarily increase understanding and will, most likely, not lead to long-term retention. It may bring about a small, temporary bump in test scores, but weeks later the students will have little to show for their work, and little foundation to build upon the following year, which leaves the next year's teacher reteaching that which was forgotten.

I met with a group of teachers representing second grade through twelfth grade to discuss rethinking instruction. During the discussion, an eleventh-grade teacher commented, "Well not only do I have to concentrate on history, but I have to teach them how to write. I don't know what your curriculum is in middle school, but many of my eleventh graders can't write in

paragraphs!” A middle school language arts teacher quickly defended her curriculum with, “I spend a lot of time on paragraph construction because they come to me with no knowledge; but they leave my classroom with strong writing skills. Our district needs to teach paragraph writing in the elementary grades.” A second-grade teacher who happened to have a stack of student stories with her pulled them out and said, “I don’t know what you’re talking about. My second graders write great paragraphs.” We passed around the student writing samples and the upper-grade teachers were incredulous. The first teacher to speak exclaimed, “If they write this well in second grade, what happens to them between then and high school?!”

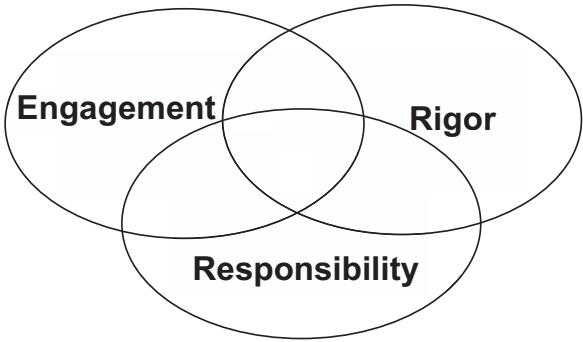
Many students can memorize content for the moment; if you engage students’ minds in grappling with content through meaningful, authentic problems, they will build knowledge and understanding for the long term. If you increase students’ responsibility for learning, offering them freedom and power, they will be able to accomplish more, not remaining dependent on others to continue moving forward; they will strengthen their executive function skills to enable them to take increasingly greater responsibility for their learning. You can then increase academic rigor through well-crafted assignments, questions, differentiation, collaboration, and more.

**“if you engage students’ minds in grappling with content through meaningful, authentic problems, they will build knowledge and understanding for the long term.”**

## A Synergy

When the goals of engagement with content, responsibility for learning, and academic rigor are working in concert, the outcome is powerful and lasting learning (see Figure 1.1). This synergy is critical to the success of the *Learner-Active, Technology-Infused Classroom*.

**Figure 1.1. Three Critical Goals**



## The Students We Teach

The Internet has significantly changed how people communicate, work, collaborate, engage in commerce, and think. Educators need to understand how our technologically advanced world has affected today's students and design classrooms that better suit their learning modalities.

As early as 1998, Don Tapscott described the ten themes of the then-emerging digital (or net) generation. They possess a *strong independence and autonomy*, considering they can easily access and challenge information. They reveal an *emotional and intellectual openness*, based on their willingness to post their thoughts and opinions on websites. They are *inclusive*, using technology as a means through which to develop a community of diverse individuals with whom they interact. They believe in *free expression and strong views*, having unparalleled access to information and forums. They are *innovative*, continually looking for ways to improve the world around them. They are *preoccupied with maturity*, seeking to meld into groups of people who are older than they. They engage in *investigations*, willing to surf the Internet in search of the answers they seek. They thrive on *immediacy*, spurred on by the instantaneous connection offered by modern cellular phones and the Internet. They are *sensitive to corporate interest*, skeptical that media messages are designed to serve corporate needs. They are mindful of *authentication and trust*, given that, with the open architecture of the Internet, they must continually question what they see and hear. Tapscott (2009) later reinforced this, pointing out how these characteristics have been solidified in these students' adult lives. These adults are now parents of children in school, and yet their digital experiences were nowhere near as sophisticated as those of their children. This and future generations of students deserve formal learning environments that honor their unique characteristics.

Consider a few effects of technology on the digital generation. In a technologically advanced world, you:

- ◆ Can post opinions through blogs, share videos, upload podcasts, create personal social networking pages, and more. The result is that your students *thrive on expressing themselves in a variety of ways*.
- ◆ Go to websites and they welcome you, know what you're interested in, and refer to you by name. You create digital avatars that represent you online. The result is that your students *expect personalization*.
- ◆ Send instant digital messages to whom you want, engage in online environments with whom you want, control your tablet's screen layout, customize your cell phone, and wear technology on your wrist. The result is that your students *demand freedom*.

- ◆ Engage in online, interactive environments with others around the world, socializing, creating, and gaming. The result is that your students *thrive on social interaction*.
- ◆ “Google” people, use the Internet to learn to pronounce a word, watch a YouTube video to learn a skill, go to the UN website to learn about world hunger, check the weather, and get the news. The result is that your students *demand immediate information*—what they want, when they want it.
- ◆ Digitally message several people while searching the Web, engaging in an online discussion, streaming a television program, and posting to social media. The result is that your students *want to be everywhere at once*.
- ◆ Grieve the loss of others through social networking pages, raise money for starving people in third-world countries, raise money to support taking a stand against genocide in other parts of the world, and organize political events. The result is that your students are *socially aware and active*.

In our students’ lives, the digital world is ever present and melded with the real world. “Very few adults have had any real long-term exposure to the digitally infused life experiences of the students who populate our schools” (Jukes, Schaaf, & Mohan, 2017, p. 31). The digital nature of our students speak to the need to design classrooms that are engaging, authentic, differentiated, resource-rich, collaborative, and that foster greater student responsibility for learning. In short, these are classrooms that support efficacy.

## **Stories From the Field**

A seventh-grade science teacher has been working on making his contact with students more meaningful and focused on grappling with content. On Friday, he had planned to take the students outside with paper airplanes to conduct some physics experiments around flight. In the past, he would stand in the front of the room giving the entire class directions on folding a paper airplane, as all of the students followed along. Realizing this is a lower-order activity, he instead videotaped his hands making the airplane as he offered verbal directions. He set up a video station and instructed students to sign up in groups of three throughout the week to assemble their airplanes. Students reported enjoying this approach. One noted, “You know, sometimes when a teacher is talking you kinda zone out. And you can’t rewind them. Now we can!” Students worked on this independently while the teacher joined other students to discuss the results of their current experiments. Two pairs of students were conducting an experiment on



molecular movement that generates heat. They each set up three beakers of water: one cold, one room temperature, and one hot. They then introduced a drop of food coloring in each beaker and watched to see how quickly the water throughout the entire beaker changed color, if at all. The teacher listened to one pair's description and then mused, "I wonder what would happen if you used yellow food coloring instead of blue." The students were eager to set up a second experiment and try it. He listened to the other pair's similar description and then offered, "I wonder what would happen if you used mineral oil instead of water." Again, students jumped at the opportunity to see what would happen. Imagine a classroom in which students are engaged in grappling with content, fueled by the teacher asking probing questions. Imagine a classroom in which students are working on different tasks, including some that utilize video to "clone" the teacher. Welcome to the *Learner-Active, Technology-Infused Classroom*.

A high school advanced placement (AP) environmental science teacher had her students exploring population pyramids to analyze the patterns of underdeveloped versus developed countries. She posed a problem to her students: select three countries around the world that are in different stages of development, study their population growth over a period of no fewer than 50 years, generate population pyramids, and offer suggestions as to how each country might stabilize its population. A visitor to the classroom sees students working in groups, pairs, and individually on a wide variety of tasks. Students are using spreadsheets to load data that will determine the shape of the population pyramid. Advanced students are using computer programs to create simulations that engage in "what if" analysis. Some are brainstorming possibilities; others are researching countries' backgrounds. The teacher has printed *how-to sheets* for students using computer programs. She posts a list of *small-group mini-lessons* on the board, such as "An In-Depth Look at Factors Affecting Population Growth" and "Analyzing Population Pyramids," for which students can sign up to attend. Students are eager to share their findings and insights with one another and move freely around the room doing so. When the bell rings, no one wants to leave class. Welcome to another *Learner-Active, Technology-Infused Classroom*.

A middle school Spanish teacher offered her students a "reality challenge" fashioned after *The Amazing Race*, offering each team the longitude and latitude of a location in a Spanish-speaking country to where they were transported. They had to write a narrative of how they would return home from there. Using Google Earth, they had to walk around the neighborhood and have conversations with at least three people they found, asking for directions and advice. Some students were using computers to familiarize themselves with the neighborhoods; pairs of students were using conversation starter cards, attempting to mirror conversations that might happen if they were in this situation; some were in a *small-group mini-lesson* with

the teacher, learning about conjugating -ar verbs; some were individually writing portions of their narratives to share with their team members. One student needed help on verb conjugation and went to the *resource table* to find a *how-to sheet*; another wanted advice on subordinate clauses and put her name on the *help board* for the teacher. Welcome to yet another *Learner-Active, Technology-Infused Classroom*.

## A Philosophy, Framework, and Solution

It is important to view the *Learner-Active, Technology-Infused Classroom* as a comprehensive framework for teaching and learning, not as one possible method among many that you may use. One cannot be *Learner-Active* in the morning but not in the afternoon. One cannot use this method for some students and something else for others. The *Learner-Active, Technology-Infused Classroom* is a complex framework of interdependent structures and strategies that, together, provide the best possible learning environment for all students, thus being differentiated in and of itself. Mastering the art of designing a *Learner-Active, Technology-Infused Classroom* requires certain paradigm shifts that will change your view of teaching and learning forever.

There is room for almost any method you may run across in the *Learner-Active, Technology-Infused Classroom*. As you read other books and articles, attend workshops and conferences, and complete coursework on various educational topics, consider how they align with this framework and how they can fit. Unless you're advocating for a totally lecture-based, teacher-centered classroom, most likely you'll find that most of the popular strategies for fostering learning will fit nicely into the *Learner-Active, Technology-Infused Classroom*. Just stay focused on the extent to which you are providing engagement, responsibility for learning, and academic rigor. Remember, though, that a lot of popular teaching strategies and programs today still presume the teacher is the information deliverer. So as you shift your paradigm, consider how these strategies and programs could be modified to work in your student-driven classroom.

This is not a framework that is meant to stand alone; it is meant to be a solution to many of the challenges facing schools today. The *Learner-Active, Technology-Infused Classroom* is the perfect solution for designing classrooms that offer Multi-Tiered System of Supports (MTSS), such as Response to Intervention (RTI). Relatedly, it is the perfect venue for implementing Universal Design for Learning (UDL). Schools are pursuing learning environments that provide a 1:1 ratio of student to computing device. The *Learner-Active, Technology-Infused Classroom* provides key structures for shifting from a more teacher-directed learning environment to one in which students engage in learning with significant access to a computer. Schools are looking to provide students with a STEM (science, technology, engineering, and math)

or STEAM (add arts) focus. Design process is a natural component of the *Learner-Active, Technology-Infused Classroom* as students identify and solve real-world problems. Schools are looking to build twenty-first-century skills in students. The structures of the *Learner-Active, Technology-Infused Classroom* build all of the targeted skills and more. Schools are considering how to provide virtual learning experiences for students so that they may enroll in a course that they attend via computer. The principles of the *Learner-Active, Technology-Infused Classroom* apply in this venue, as well as in the more conventional physical classroom. Schools are challenged to design effective co-teaching (inclusion) classrooms to provide instruction for all students, including special needs students, in one inclusive learning environment. The *Learner-Active, Technology-Infused Classroom* is the solution to this challenge, providing a perfect venue for two adults to share a learning environment without one taking precedence over the other.

Ultimately, consider how the framework and related structures and strategies presented in this book address the needs of your students and of the world of education today. Apply the principles as you make decisions about instruction in the classroom.

## What to Expect

Designing a *Learner-Active, Technology-Infused Classroom* requires adaptive change, and adaptive change takes time and mental energy. Embarking on this instructional design journey will take you through three distinct levels in the change process. The first is “dynamic disequilibrium.” This occurs when you are implementing new strategies and structures for the first time. One moment you are excited and celebratory, and in the next you find yourself disappointed and in despair. One day you’re thrilled that you found this book; the next day you’re ready to toss it in the trash. (But please don’t.) This is a really important time to keep a journal (written or digital) to track your experiences, successes, and challenges. The act of writing allows you to reflect on events and learn from them. A year from now, the journal will be a wonderful documentation of an amazing journey in instructional design. One teacher kept a journal in her first year of transformation. In her second year, she complained that her students were just not as good at the *Learner-Active, Technology-Infused Classroom* as her last year’s class. Then one day she sat down and read her journal from the prior year. She realized that she spent much more time in the fall teaching them the structures. In fact, last year’s students weren’t all that good at this learning environment either, but she helped them understand it. This year, she just assumed she was going to have students who were starting the year as if they were last year’s students at the end of the year. Keeping a journal can provide you with important insights, particularly in your first few years of designing a *Learner-Active,*

*Technology-Infused Classroom*. This first phase of the change process typically lasts a year or less. Once you begin to repeat the instructional design process with a new set of students, you tend to move to the next phase.

Human beings, by nature, seek stability. The early stages of the change process are often unnerving, so a natural inclination is to find those structures or strategies that appear to work the best and adopt them as the definitive solution. This causes you to enter the second phase: “contrived equilibrium.” You’ll design a rubric template, for example, to which students respond well; and you’ll decide that all rubrics should always be written in this exact same way. This is a dangerous phase, because you meet with exciting, successful moments, but, to be honest, you don’t know what you still don’t know. Often teachers are asked to provide turnkey training and walk others down the exact path they have taken to designing the *Learner-Active, Technology-Infused Classroom*. I advise against any turnkey training until you’ve experienced your fourth year of implementing this framework. While you may enjoy the successful achievement of your goals, the journey is truly just beginning, and you have a lot more learning ahead of you. This phase can last a year, a few years, or, in some cases, the length of your career. The key is to push on to the third phase through continual reflective practice.

The third, and destination, phase of the change process in designing *Learner-Active, Technology-Infused Classrooms* is that of “reflective practitioner.” Arriving at this phase means you are continually questioning the structures and strategies you employ and making adjustments along the way. Times change, society changes, students change; and masterful teachers adapt their classroom practices accordingly. Returning to the earlier example, you may find that different styles of rubrics work for different students under different circumstances. You may modify your rubrics based on the time of year, the type of problem students are solving, and so forth. Each time, you question whether or not this is the best possible implementation.

I met with a teacher to review her *Authentic Learning Unit (ALU)* and offered several suggestions for improving it. She exclaimed, “You know, you wrote this with me three years ago.” I smiled and shouted, “I’ve evolved!” What was acceptable to me three years prior was no longer good enough. Reflective practitioners eagerly open their practice to their own critique and that of others.

Although you may think you can begin at phase three, the instructional design work that lies ahead takes time and is like learning any new skill. Let’s face it, if you take up diving, you don’t expect to enter the Olympics the following year. Only time will produce improved results. Malcolm Gladwell (2011) claims it takes 10,000 hours of practice to achieve mastery. Use a journal or other means to continually reflect on strategies and structures you are trying and how they worked out. When something does not appear to work, avoid the temptation to revert to former methods. Probe

more deeply to consider what structure or strategy you could change to make it work. If you reflect on the situation, you will push yourself to find the key to success.

## The Change Process in Action

If something is not working in your *Learner-Active, Technology-Infused Classroom*, it typically means that a structure or strategy is missing. I worked with two sixth-grade teachers who shared the teaching responsibility for two homeroom groups of students. Students would spend a half day with each teacher. The teachers reported that it was too confusing and time-consuming for students to schedule their own time and manage their folders. As we discussed the challenges, the teachers arrived at the solution to shift their perspective from their day to the students' day. They had each student manage one folder; when students left for lunch, the teachers swapped the stack of folders so students had them available when they returned from lunch to the other classroom. They decided, too, to have students schedule their time for the week, taking into account both teachers' classrooms, on Monday morning. These small adjustments produced great success.

The change process applies to students as well. I visited a high school *Learner-Active, Technology-Infused Classroom* in chemistry. I approached a group of students sitting at a round table and sat down to talk to them. I asked how they liked learning this way. They unanimously agreed they liked this better than classroom lectures, because they were more engaged, could talk to others about the work, and enjoyed solving real-world problems. Then one student added, "But she doesn't teach." I sympathized with their plight of having to teach themselves and asked what they were learning. "Nuclear fission and nuclear fusion." I asked how they are learning this. As they shared their stories, they included how the teacher offers some whole-group lessons to share ideas to get them thinking; they use an *activity list* the teacher prepared to locate ways to learn; there is a *help board* and when they put their name on it, the teacher comes over with a small whiteboard to explain things. As the conversation went on, one of the boys tapped a girl on the arm and said, "Hey, she does teach!" I advised the teacher to conduct a *benchmark lesson* on what teaching looks like in the *Learner-Active, Technology-Infused Classroom* as students, too, shift their paradigms as to what teaching and learning look like.

## Imagine, Consider, Create

As you work to design your *Learner-Active, Technology-Infused Classroom*, take time to *imagine* the possibilities, *consider* the research and experience of others, and then *create* your classroom. When you reach the *create* sections,

I encourage you to stop and spend some time designing the materials being described. This book is not intended to be read straight through in one sitting. It is meant to guide you through rethinking your classroom and instructional design. You'll note that there will be some structures and strategies that you already use, some that you can easily envision adding to your repertoire, and some that you feel will absolutely not work in your classroom. Start by adding those that make the most sense to you; but never lose track of those seemingly impossible ideas. Keep them in your journal and return to them down the road.

Efficacy for your students is a worthy goal; outfitting them with the knowledge, structures, and strategies they need to accomplish their goals will help establish the trajectory of their lives. Several years from now, you'll look back on your classroom and find it hard to believe what you've accomplished. The key is to keep on innovating and reflecting. Enjoy the journey!

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