The Learning Theory Behind Caboodle! Big IDEAS Courses

Community Building through Design Thinking, Project-Based Learning, Cross-Curricular Instruction, and Epistemic Agency

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"There's never been a better time to be alive if you're curious...When I wanted to learn something outside of school as a kid, cracking open my World Book encyclopedia was the best I could do. Today, all you have to do is go online."

-Bill Gates

The 2020 Educational Landscape

In early 2020, the world ground to a halt.

With little time for preparation, businesses and institutions around the globe needed to adapt their policies and procedures overnight in order to function and do their part fight the spread of COVID-19. As governments grappled with mandating life-sustaining practices, individuals and families struggled with protecting themselves and their communities. During this time, many people had a newfound need to be innovative, resourceful, and flexible while searching for solutions to mitigate the issues created by uncertain circumstances. As part of the United States' essential infrastructure, public and private educational institutions in the United States had to undergo an unprecedented shift from in-school settings to a completely virtual environment. This shift was unexpected and unsettling to students, educators, and parents alike. However, it may have marked the beginning of an inevitable shift toward the integration of 21st century technologies into an early 20th century institutional holdout: the traditional classroom. Perhaps this is an opportunity to open our minds to a different kind of learning that can extend beyond the time and space constraints that are found in physically-bound school settings.

Learning in a traditional academic setting has typically manifested itself as educators relaying information to students. In theory, the student ingests that information and then, in turn, demonstrates understanding of that knowledge through performing a particular task. The expectation is for students to willingly engage with this cycle regardless of the relevancy to their own lives. This factory model of education may have served a purpose in years past, but how meaningful is it now?

The 2020 Educational Landscape (continued)

Our technologies are quickly evolving, and so must our instructional methods. We can no longer limit ourselves to a didactic model when students have instantaneous access to information at all times and in all places. The world around us is growing rapidly through innovation, and our teaching methodologies should prepare students to think in new ways and learn to learn. It's time for educators to rethink their roles and function as guides to help students take ownership of their own learning and reframe their own thinking.

Big IDEAS was designed to accomplish just that. **Big IDEAS** is a dynamic, student-centered, interdisciplinary, differentiated, experiential model that recognizes the potential of design thinking applied to a learning environment.

Differences Between the **Big IDEAS** Model and Didactic Instruction

1 Project Work
central, rather than peripheral, to the instruction

2 Authentic Experiences
instead of artificial exercises

3 Scheduling Flexibility
maximizing meaningful engagement

4 Differentiated Instruction
occuring on many levels in a natural, authentic way

5 Epistemic Agency
students are the designers of their own learning experiences

6 Content Knowledge
idea generation instead of information absorption

7 Student-Centered
defining their own problems and generating their own solutions

8 Educator Role
shift to facilitation, mentoring, and supporting differentiation

9 Local Focus
instruction is tailored to the needs of the local community

10 Creativity-Centric
students integrate creative thinking and design into all parts of the project

Five Core Pedagogical Approaches

The **Big IDEAS** process incorporates and integrates these five pedagogical models:

Fostering Epistemic Agency

Project-Based Learning

Design Thinking

Community-Based Learning

Cross-Curricular Instruction

Big IDEAS

APPROACH ONE:
Fostering Epistemic Agency

Student-Driven Learning

Big IDEAS isn't just a program to fill a temporary need during a time of increased remote learning. It is a thoughtful approach that takes into account big-picture concerns and goals in education in the United States. Data shows that the US continues to perform poorly in reading, math, and science when compared to other countries throughout the world (Balingit & Van Dam, 2019). The reasons for this are highly debated and studied, but it is largely recognized that many American students lack motivation when learning is not incentivized. How to build intrinsic motivation remains a significant concern for American educators as our current instructional methodologies do not align well to student goals. The lack of intrinsic motivation has led to teachers taking on more of the burden to find ways to make students learn and prove they have learned. The Big IDEAS model addresses this significant issue by prioritizing, and providing a blueprint for, fostering epistemic agency.

With **Big IDEAS**, students have agency in their learning experiences and are active participants in determining the course and process of those experiences. **Big IDEAS** is designed so that meaningful student input occurs from the examination of an instructional objective to the definition of an authentic problem to the final evaluation of the learning artifacts. Instructional standards are shared directly with students so that they can craft their experiences to demonstrate understanding of those standards in a real-world setting. Research has shown that creativity can be fostered by allowing a learner not only to solve problems in an authentic context, but also by participating in the act of defining those problems. Doing so encourages divergent thinking, a source of creative activity. This can be accomplished through the collaboration of teachers and students in solving the ill-defined problems and in debating the issues related to the problem the students defined and are working to solve (Sawyer, 2012).

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"As educators and adults, we too often underestimate the incredible innate abilities of K-12 students. We must shift from didactic instruction to fostering epistemic agency. Young learners are so incredibly adventurous, creative, and resourceful when you let them define their own learning paths."

-Sigrid Frandsen

APPROACH TWO:
Project-Based Learning

PBL

One well-established approach that continues to gain traction in the American educational landscape is Project Based Learning, or PBL, which is an foundational component of **Big IDEAS**. The premise is simple: provide students with holistic, authentic opportunities to design solutions to existing problems. Doing so helps the students to make connections between the content and experience—or "teaching for transfer"—resulting in the increase both of memory and of content and a greater understanding of the subjects (Partnership for 21st Century Skills, 2007).

Project-based learning activities, in their perfect form, are largely student-directed. The learner not only produces a learning artifact (or project), but also is actively involved in defining the problem the project will address. Learners collaborate in groups to negotiate the solution, and the solution can come in many forms, both tangible (e.g., a functioning model) or conceptual (e.g., a plan to increase community involvement in their school). Lastly, the project is rooted in real issues and is not necessarily tied to one content area since authentic problems rarely are limited to a single domain.

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"If we teach today as we taught yesterday, we rob our children of tomorrow."

-John Dewey

SPIN
2017, 10,000 BIKES
ACROSS 150 US.
"GOOGLE DOCKS
FOR WHERE
LOCKED"

FINDING A BIKE

PASS BOX
PROTOTYPE IN
MELB, USES ULTRA—
SOUND REPORTS
ON CYCLIST SAFETY
TO AUTHORITIES

SMRTGRIPS
RETRO FITS INTO
HANDLEBARS,
HAS GPS GIVES
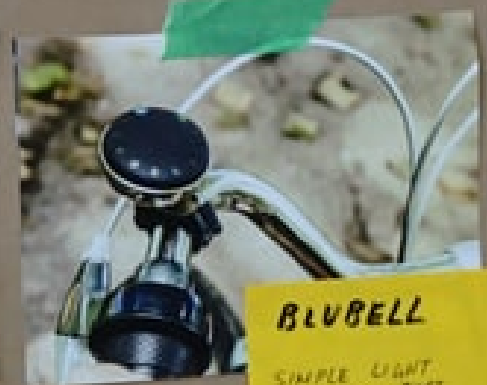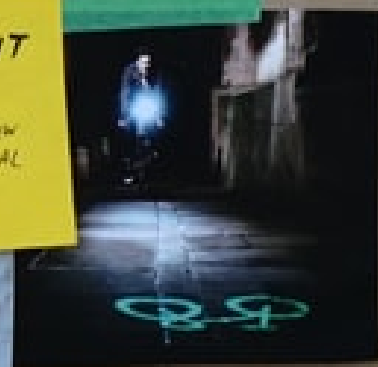RIDER HAPTIC
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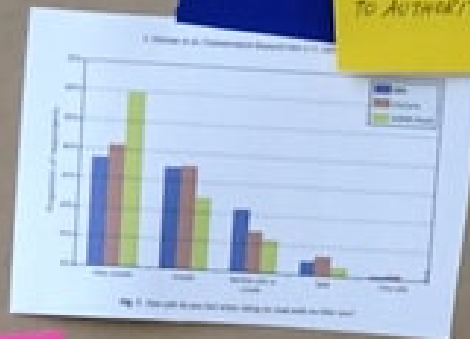
SAFETY

NAVIG- ATION

**LIFE BE
LIGHT**
SUPER LIGH
MAP HOLDER
PREVENTS FA
ADJUST, REP
REPLACE

BLAZE LASERLIGHT
NOW ON 250
CITIBIKES IN NEW
YORK AS ATRIAL

BLUBELL
SIMPLE LIGHT
NAVIGATION THAT
TAPS INTO MOST
CYCLE FRIENDLY
ROUTES

ECO HELMET
FOLDABLE
LIGHT COLLAPSIBLE
HELMET
OUT OF CARDBOARD

HYGIENE

HAIKU

this easy.

2. Unlock

Not Just for the Business World

While rooted in the framework of Project-Based Learning, **Big IDEAS** takes this model a few steps further by connecting students directly to their own communities through design thinking and inquiry-based learning. Students are guided through the causes and consequences of issues that are relevant to their communities, and then are given the tools needed to generate their own solutions. Carroll et al (2010) explains, "Design thinking may help students become empowered agents in their own learning who possess both the tools and the confidence to change the world. As we move into the increasingly complex world of the twenty-first century, this ability becomes essential. As one student in this study stated, 'If I set my mind to it, I can do it.'"

Design thinking is important when connecting learners to STEM topics because, "design thinking pedagogy can affect deep, meaningful learning in a variety of STEM topics and facilitate application of this knowledge in authentic tasks" (Marks, 2017, p.10). Additionally, Conlin et al. (2015) look at design thinking through the lens of students who perform at different levels. Crucially, they highlight the impact of design thinking on learners who are face learning challenges. "More broadly, our results suggest that design thinking strategies can help all students learn in new situations… Our results also offer an existence proof that the lower-tracked students can learn these strategies as well, and moreover that they benefit the most from learning design thinking strategies" (Conlin et al., 2015).

"Design thinking may help students become empowered agents in their own learning who possess both the tools and the confidence to change the world."

-Carroll et al

Learning Where You Live

Big IDEAS focuses on the importance of community by connecting students with civil servants, field experts, and community members in their neighborhoods and geographical regions. In a time of increased social distancing, it is crucial for students to learn how to communicate and collaborate effectively with others in virtual environments. As is explained in Partnership for 21st Century Skills (2007, p.14), "We need to know how to reach out to others to tap their expertise to solve the complex problems we face today. Advances in cognitive science support the notion that problem solving has a social dimension."

Interpersonal communication is a highly valued skill that is at risk with increased social distancing. **Big IDEAS** takes a purposeful approach in connecting learners with people who are affected by an issue and with the decision-makers who hold the power, all while offering guidance in how to safely and appropriately make these connections.

"We need to know how to reach out to others to tap their expertise to solve the complex problems we face today. Advances in cognitive science support the notion that problem solving has a social dimension."
-Partnership for 21st Century Skills

Learning Across Domains

As humans, our experiences do not occur in a vacuum, but rather within the rich tapestry of everyday life. When a person experiences a sunset and observes its beauty, their thoughts could focus on many different aspects of the experience. The sunset could inspire creativity through painting or writing a poem, lead to pondering the historical significance of heliocentrism, spark curiosity in geographical locations related to time zones, or even motivate them to learn about how refraction works with the brilliant colors in the sky. In the current educational paradigm, only one of those areas of interest would be analyzed in a core content class. This narrow-lensed view is a missed opportunity to explore the interconnected artistic, historic, geographic, and scientific perspectives of this event.

Cognitive science researchers Bransford et al. (2000) support this view, finding that traditional curricula are problematic. Too often, curricular content is compartmentalized, and educators introduce instruction as discrete, stand-alone learning activities instead of presenting a web of interrelated and interdependent pieces of a larger network as is found in outside-of-school settings. When instruction is presented in isolation, students may be learning only the routines related to the content (e.g., mathematical operations, biological processes, rhyming patterns) and lose sight of the meaning and relevance of the content in the context of its application in the natural world. This limits the ability for students to transfer and apply their knowledge to other domains, and therefore deepen understanding (Bransford, 2000, p. 139).

The Partnership for 21st Century Skills framework also emphasizes the importance of content integration. Not only does it represent the domains in an authentic way, but also it provides context and motivation for the student to recognize the importance of the instructional goals. "Interdisciplinary work often draws on a real-world context, because as we all know, real life issues don't restrict themselves to knowledge from just one subject domain. While teaching for transfer helps answer the eternal student question 'Why do I need to know this?' interdisciplinary work can help students see the essential connections between bodies of knowledge, and more fluently synthesize disparate domains" (Partnership for 21st Century Skills, 2007, p. 10).

"The future belongs to young people with an education and the imagination to create."

-President Barack Obama

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Why Big IDEAS?

The **Big IDEAS** framework incorporates innovative pedagogical models that have proven success, albeit with limitations. By connecting and overlapping these models, and by digging deeper into the practices that work the best, Big IDEAS becomes an all-in-one approach that will meet the true needs of the 21st century student.

Big IDEAS Courses are Tailored to these Cities:

Atlanta	Miami
Chicago	Minneapolis
Dallas	New York City
Denver	Philadelphia
Los Angeles	Phoenix
Memphis	Seattle

(?) **WANT MORE INFORMATION?**

Learn more about the Big IDEAS instructional framework by visiting caboodlelearning.com and exploring one of the many free, local courses.

LEARN MORE

Works Cited

Balingit, M., & Van Dam, A. (2019, December 03). U.S. students continue to lag behind peers in East Asia and Europe in reading, math and science, exams show. Retrieved July 29, 2020, from https://www.washingtonpost.com/local/education/us-students-continue-to-lag-behind-peers-in-east-asia-and-europe-in-reading-math-and-science-exams-show/2019/12/02/e9e3b37c-153d-11ea-9110-3b34ce1d92b1_story.html

Bransford, J. B. (2000). The design of learning environments. In J. B. Bransford, How people learn: Brain, mind, experience, and school (pp. 129-154). Washington DC: National Academies.

Carroll, M., Goldman, S., Britos, L., Koh, J., Royalty, A. and Hornstein, M. (2010), Destination, Imagination and the Fires Within: Design Thinking in a Middle School Classroom. International Journal of Art & Design Education, 29: 37-53. doi:10.1111/j.1476-8070.2010.01632.x

Conlin, L., Chin, D.B., Blair, K.P., Cutumisu, M., & Schwartz, D.L. (2015). Guardian Angels of Our Better Nature: Finding Evidence of the Benefits of Design Thinking.

Marks, J. (2017). The Impact of a Brief Design Thinking Intervention on Students' Design Knowledge, Iterative Dispositions, and Attitudes Towards Failure.

Partnership for 21st Century Skills. (2007). The Intellectual and Policy Foundations of the 21st Century Skills Framework. Tucson, AZ.

Sawyer, R. K. (2012). Explaining Creativity: The Science of Human Innovation, Second Edition. Oxford: Oxford University Press.