BABSON COLLEGE
Babson Academy for the Advancement of Global Entrepreneurial Learning

THE ONE HOUR ENTREPRENEURSHIP EDUCATOR

Four Ways Neuroscience Can Influence Entrepreneurship Education

Based on research conducted by Babson College Professor **Matt Allen**

Recent advances in brain imaging techniques have allowed researchers to see in real time how the emotions people experience impact the brain. Through his research, Babson College Associate Professor Matt Allen has identified four key neuroscience concepts that can improve the pedagogy of entrepreneurship education.

1 Memory, as a form of knowledge, is neurologically complex.

» Entrepreneurship is similarly complex. Use multimethod approaches to capture the complexity.

As we teach entrepreneurship, we need to embrace this complexity. It is a commonly understood belief that students have different learning styles. These preferred methods of learning actually exist because students have different ways of encoding memories in their brains.

Entrepreneurship is just as complex—reflect that in your teachings. Try to teach entrepreneurship or integrate entrepreneurship into learnings outside of the entrepreneurial classroom. With a complex learning and memory system, a multimethod approach will teach stronger lessons.

2 The brain prefers "reasonable" over truth. "Reasonable" is student-specific.

» Focus on inductive approaches using external data with constant feedback to overcome brain-driven biases.

The brain is inherently "lazy." It prefers to do less work, rather than more and shorten what we do if we can. When it encounters something without order, it fills in the gaps so we can easily understand what we are seeing or doing. Those 'gaps' become memories—therefore, our memories are not quite as trustworthy as we think.

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These shortcuts and gaps can sometimes lead to biases. While the term "bias" can have a negative connotation, they are not all bad. Cognitive biases allow us to quickly make conclusions based on prior experiences. However, they can also prevent students from drawing effective conclusions in research, as they may rely on what they know instead of what is being displayed in front of them.

How can we help students overcome biases in the classroom?

An inductive approach to learning is key. Rather than telling students what is the outcome or result of a situation, have them develop their own conclusions to situations—and repeat these instances. Over time, students will see that biases exist in their current thinking, and the market may not agree. Receiving constant feedback means that students can interpret and reinterpret scenarios until they come to a 'true' understanding of a problem—not just what their brain perceives.

3 Knowledge is stored in the brain in two distinct formats, each with unique processes and conditions.

» Entrepreneurship favors an implicit approach contrary to most disciplines. Focus on associations and emotions.

There are two key parts of the brain when we look at memories. The **cerebral cortex** is where explicit knowledge is encoded—information that is consciously taken in like facts, logic, events, and rules.

The **limbic system** is where we encode implicit knowledge. This includes more instinctive things like skills, abilities, associations, and emotions.

Many topics, especially in elementary and middle school, are taught in an explicit way. Students learn through facts, figures, and memorization. When it comes to entrepreneurship education, things are different. Associations and emotions are two key components of implicit learning. We know that memories, whether implicit or explicit, are more powerful when they are coupled with emotions.

You can't help a student develop an entrepreneurial mindset with facts and figures. You're going to change it with emotions and associations. Give them experiences with creativity and innovation so they can create new experiences, approach problems with a new mindset, and think of themselves in a different way.

4 The creation of truly new knowledge requires a combination of explicit and implicit learning.

» Use transformative approaches to integrate explicit and implicit knowledge creation leading to changes in mindsets.

There's not a lot of pedagogy out there that teaches us how to teach both types of learning. Jack Mezirow coined the term 'Transformative Learning' and built theory around how to create knowledge that covered both explicit and implicit knowledge in order to really change behavior and mindsets.

Creating a transformative learning approach begins with a disorienting dilemma. It is key to create a situation that throws our students off in a way that they need to rethink.

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When students reflect on a scenario and then have to identify new ways to address it, they get past their biases. By seeing things in a new way, they create new knowledge that can explain this dilemma. The problem-solving process and new information they discovered along the way is a new memory that they can reintegrate into future scenarios.



Transformative Learning Approaches

Mezirow (1991)

Disorienting Dilemma » **Reflection** » **Exploration / Experimentation** » **Reintegration**

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