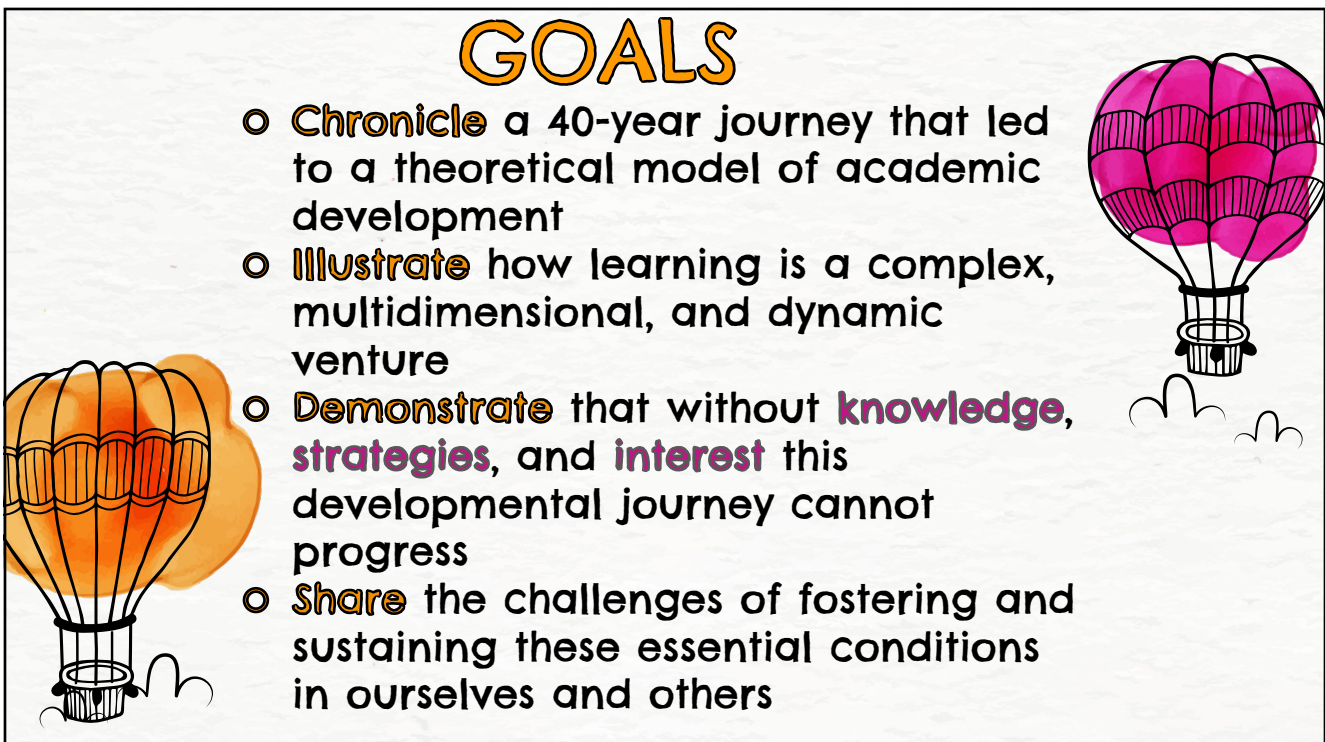


# THE JOURNEY TOWARD OPTIMAL LEARNING FOR ALL STUDENTS

Charting the Complex Interplay of  
Cognition, Metacognition, Motivation,  
and Emotions

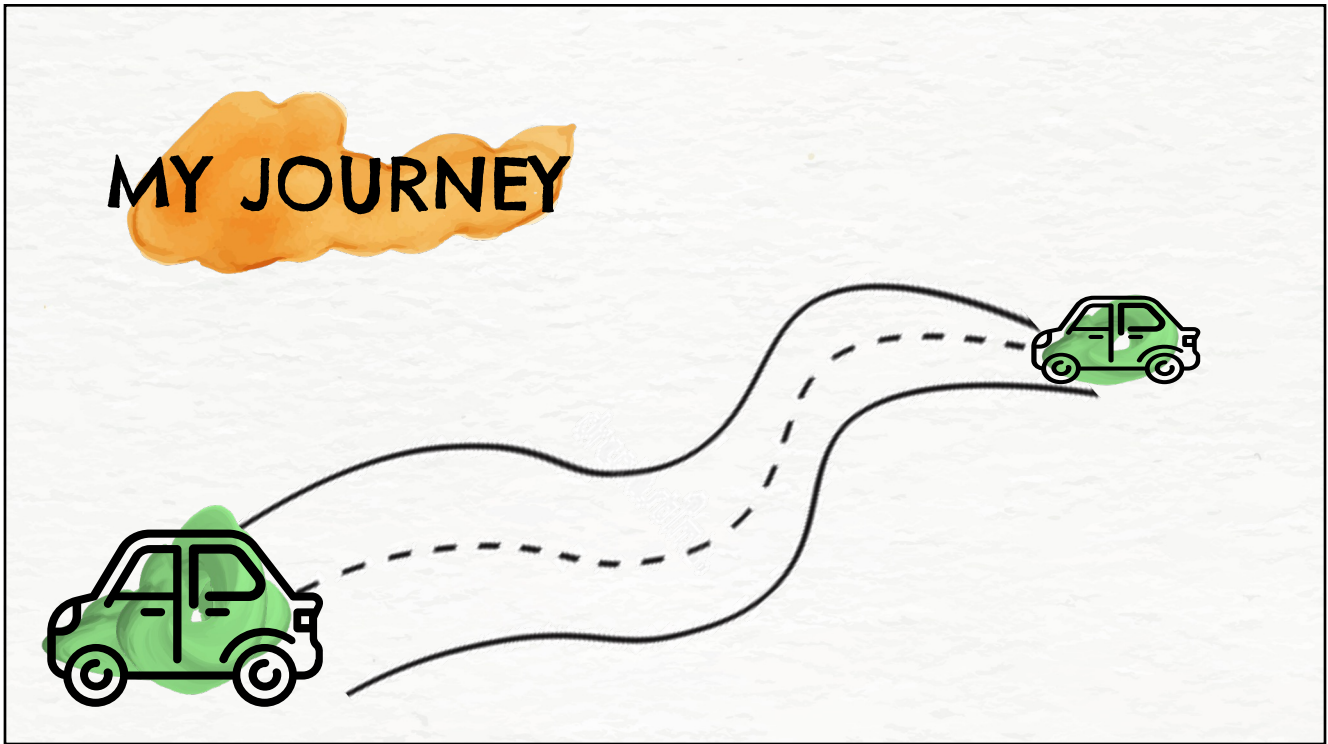
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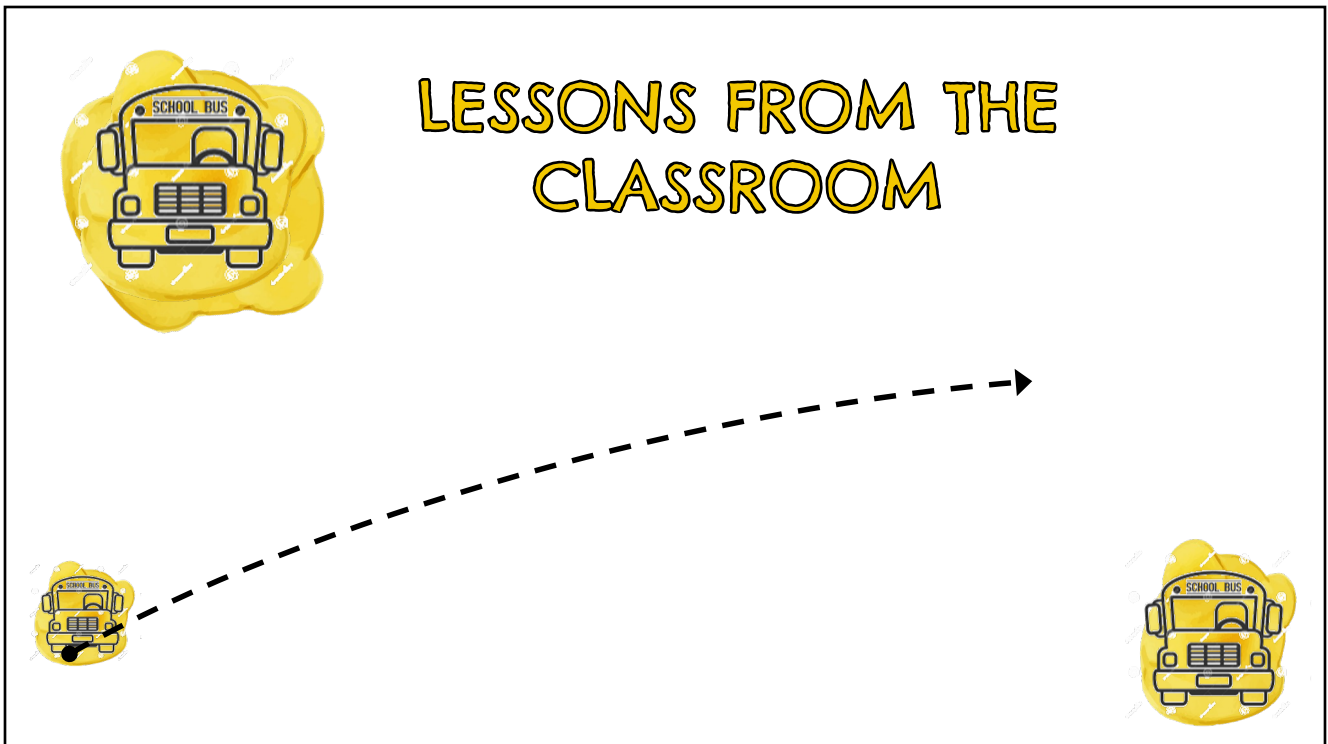
## GOALS

- **Chronicle** a 40-year journey that led to a theoretical model of academic development
- **Illustrate** how learning is a complex, multidimensional, and dynamic venture
- **Demonstrate** that without **knowledge**, **strategies**, and **interest** this developmental journey cannot progress
- **Share** the challenges of fostering and sustaining these essential conditions in ourselves and others

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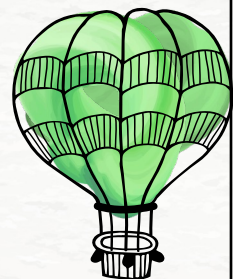
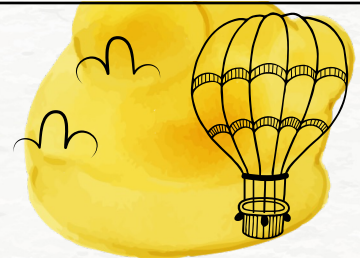
- A decade of teaching middle school students
- Primarily responsible for reading and mathematics
- Served three years as teacher for 14 5<sup>th</sup>-7<sup>th</sup> graders at the very top and bottom in reading achievement
- Amazing cognitive, behavioral, physical, social, emotional, and economic diversity
- Was a challenging but the most rewarding experience of my career as a K-12 teacher



**This teaching experience was a real-life lesson in the *complex* and *dynamic* character of learners and the learning process**

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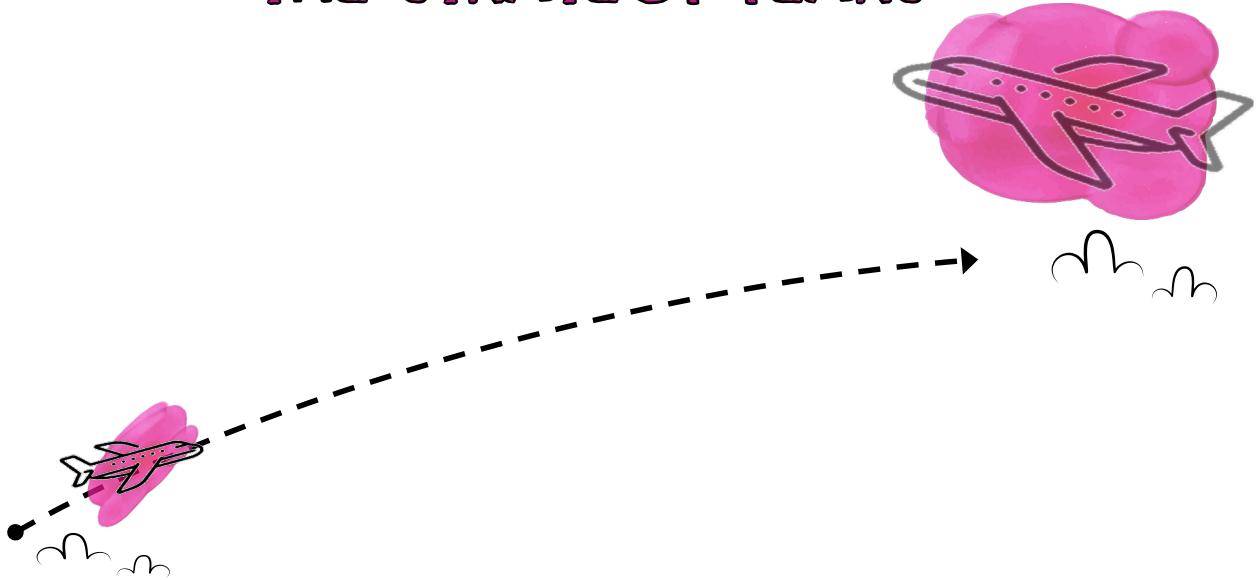
**Education is not  
preparation for life.  
Education is life itself.**



**John Dewey**

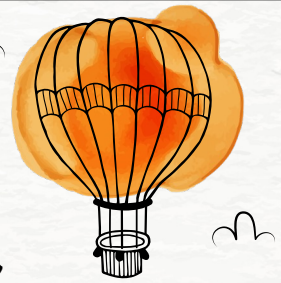
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## THE STRATEGY YEARS



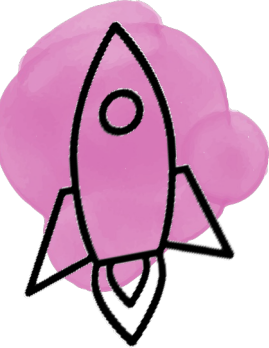
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- The era of cognition, metacognition, and information processing theory
- A focus on explicit strategy instruction as a key to improved comprehension and recall
- The literature was replete with learning and studying, text processing, memory, and monitoring strategies (Alexander et al., 1984; Weinstein et al., 1988)
- There was compelling evidence that training led to improved outcomes (Garner et al., 1981)
- Those who used more strategies were held to be more effective learners

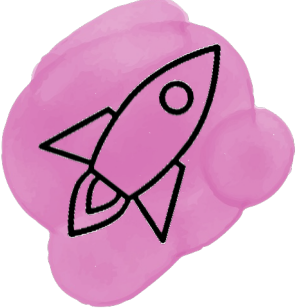


**The benefits of strategy use and training were viewed as *consistent* for all individuals**

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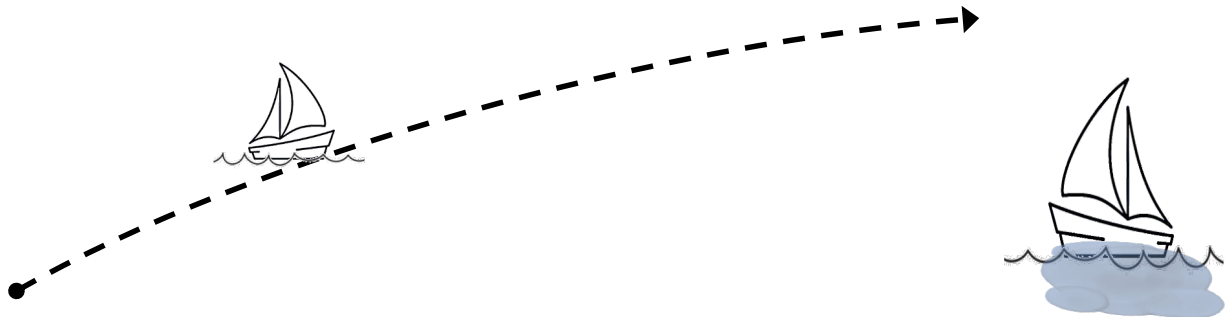

It is better to solve one problem five different ways, than to solve five problems one way.



George Polya

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**INTERACTION OF KNOWLEDGE AND STRATEGIC PROCESSING**



The diagram illustrates the interaction of knowledge and strategic processing. It features a dashed arrow pointing from the bottom-left towards the top-right. Three sailboats are positioned along this path: one at the start of the arrow, one in the middle, and one at the end. The sailboats appear to be moving from left to right, suggesting a progression or a process over time.

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○ Became skeptical of the "one size fits all" view of strategies

○ So, examined the relation between knowledge and strategy use theoretically (Alexander & Judy, 1988)

○ Conducted a series of studies with middle school, high school, and college students in



various domains (Alexander et al. 1989; Alexander et al., 1989a; Alexander et al., 1989b; Alexander et al., 1989c)



○ Outcomes demonstrated that "more," in terms of strategy use, is not always "better"

○ Distinguished more clearly between skills and strategies

**The frequency and level of strategies used were found to be related to students' domain and topic knowledge**

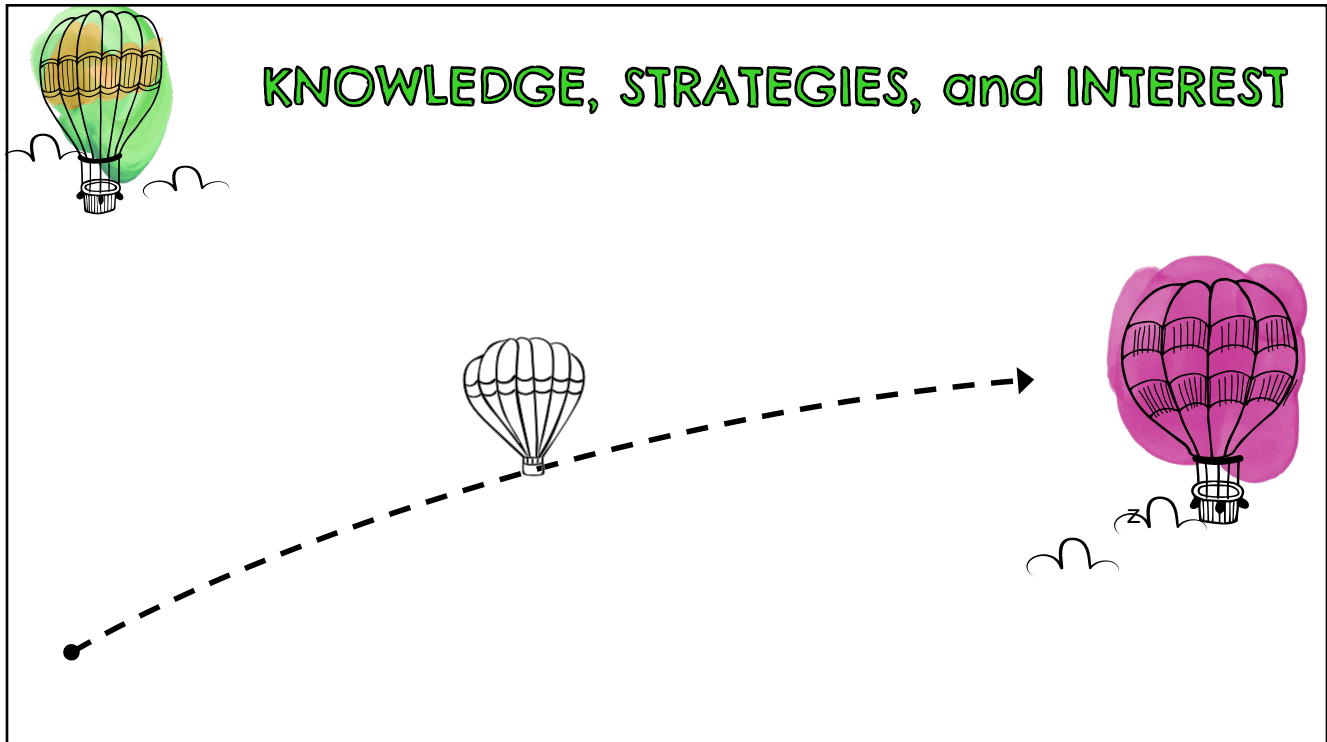
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If I had an hour to solve a problem, I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions.



Albert Einstein



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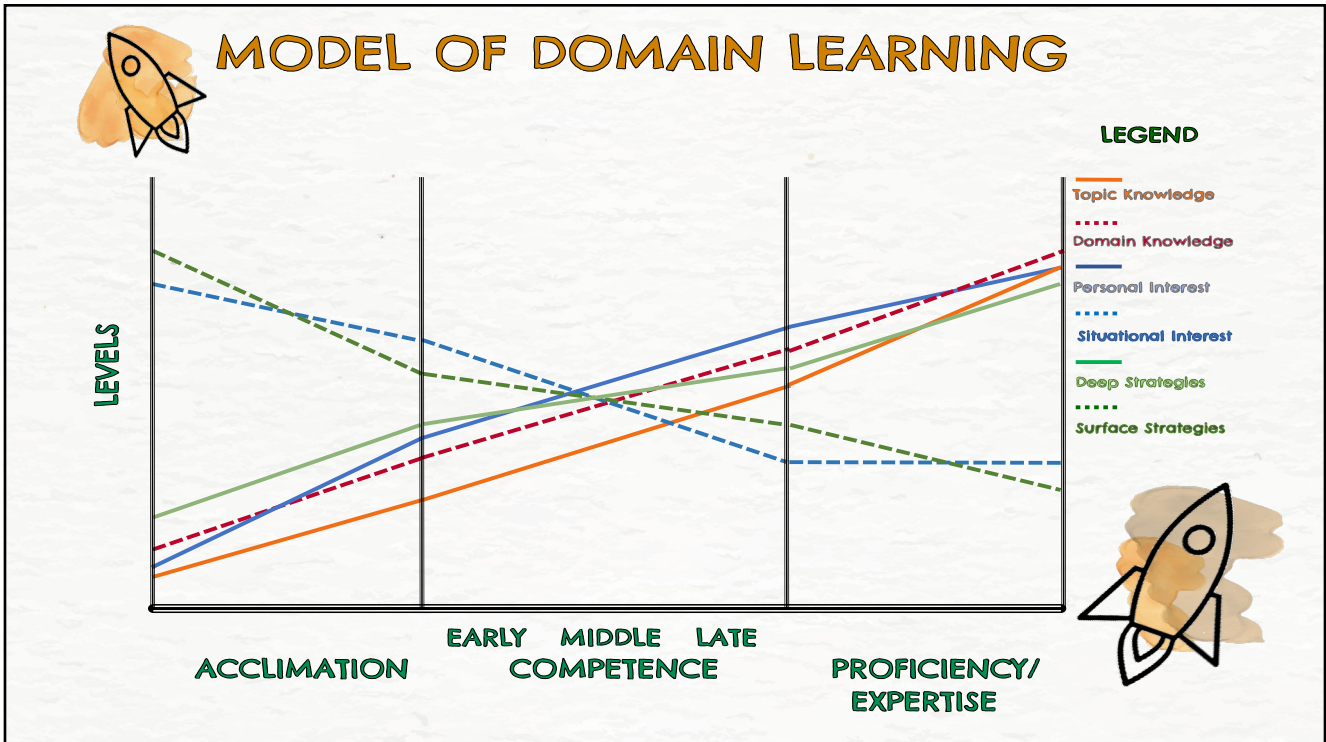
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- Became immersed in the writings of John Dewey on “true” interest
- Collaborated with contemporary interest researchers (e.g., Garner, Hidi, Renninger, Schiefele, Wade)
- Differentiated between individual and situational interest, and seductive details (Alexander et al., 1994c; Garner et al., 1991)
- Embedded interest in studies with knowledge and strategies (Alexander et al., 1995; Alexander et al., 1994a; Alexander et al., 1994b)
- Recognized different trajectories for surface and deep level strategies (Dinsmore & Alexander, 2012)

**The interplay of knowledge, strategies, and interest over time became the foundation for the Model of Domain Learning**

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### How is expertise in the MDL different from traditional models of expertise?

MDL	Factor	TRADITIONAL
Three stages; competence the most encompassing	<b>STAGES</b>	Individuals are only novices OR experts
Knowledge, strategic processing, and interest	<b>FORCES</b>	Almost exclusively cognitive
Only a small percentage have the skill, will, and thrill to become experts	<b>THE "WHO"</b>	Anyone who devotes enough hours to deliberate practice can become expert
Will be in various points depending on domain	<b>AREAS</b>	Does not deal with cross-domain variability
Early learning is often "other" influenced; later movement is largely self-determined	<b>CATALYSTS</b>	Does not make the role of others as clear or purposeful
Pursuit and maintenance of expertise is a lifelong process	<b>PROGRESSION</b>	How one becomes an expert, beyond deliberate practice is unclear



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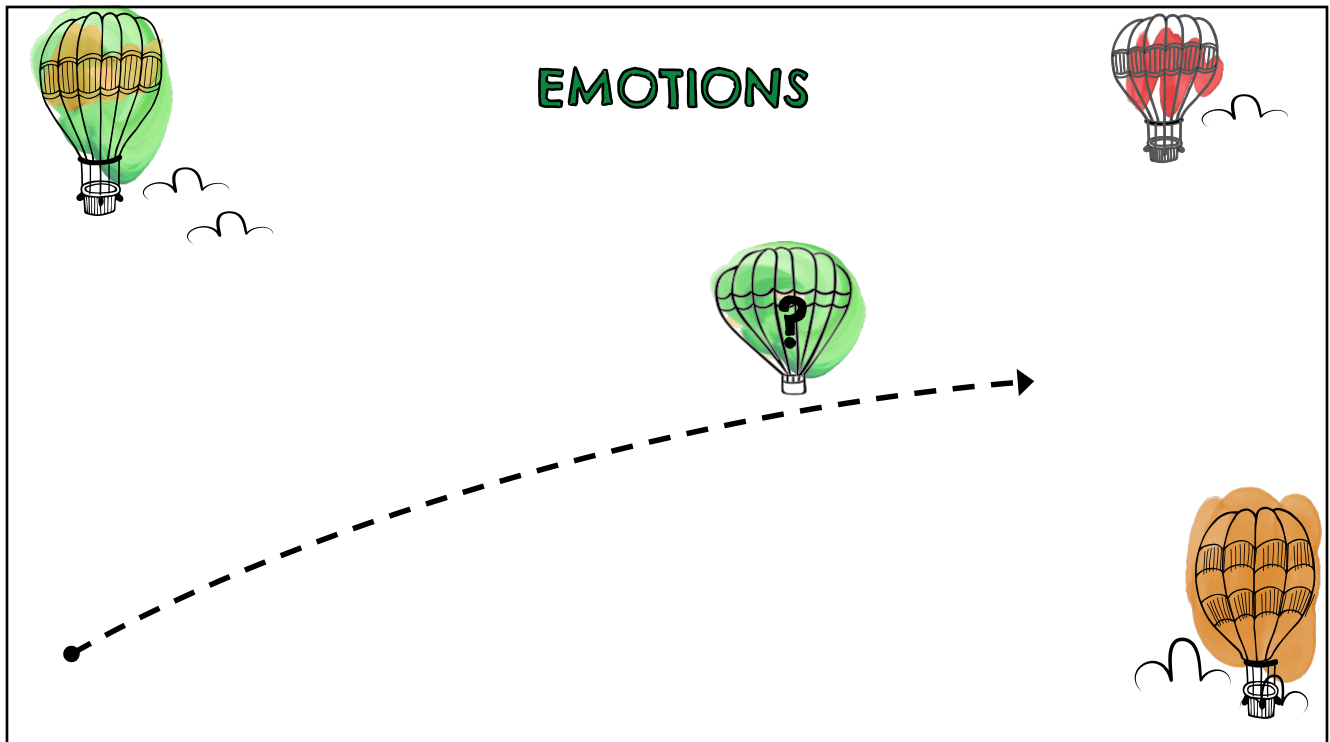




In training a child to activity of thought, above all things we must beware of what I will call “inert ideas”—that is to say, ideas that are merely received into the mind without being utilized, or tested, or thrown into fresh combinations.

Alfred North Whitehead

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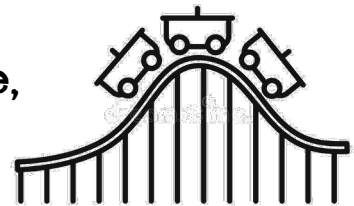
Between stimulus and response  
there is a space. In that space is  
our power to choose our response.  
In our response lies our growth  
and our freedom.



Victor Frankl

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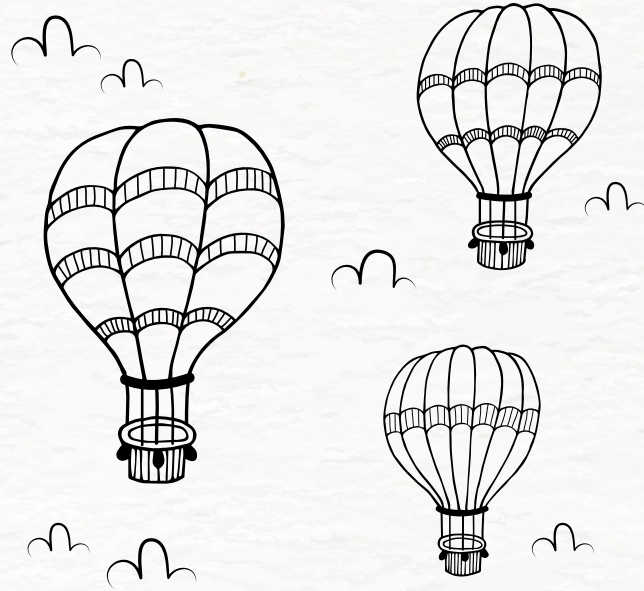
- Emotions influence the process and products of learning
- Certain emotions, such as math anxiety, have a rather stable presence
- Many emotions are more phasic in nature
- Emotions seem to be infused throughout academic development
- How emotions interact with knowledge, strategic processing, and interest in a predictable way is not evident



**Positioning emotions in the Model of Domain Learning is beyond my current understanding**

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## Challenges of Fostering Academic Development

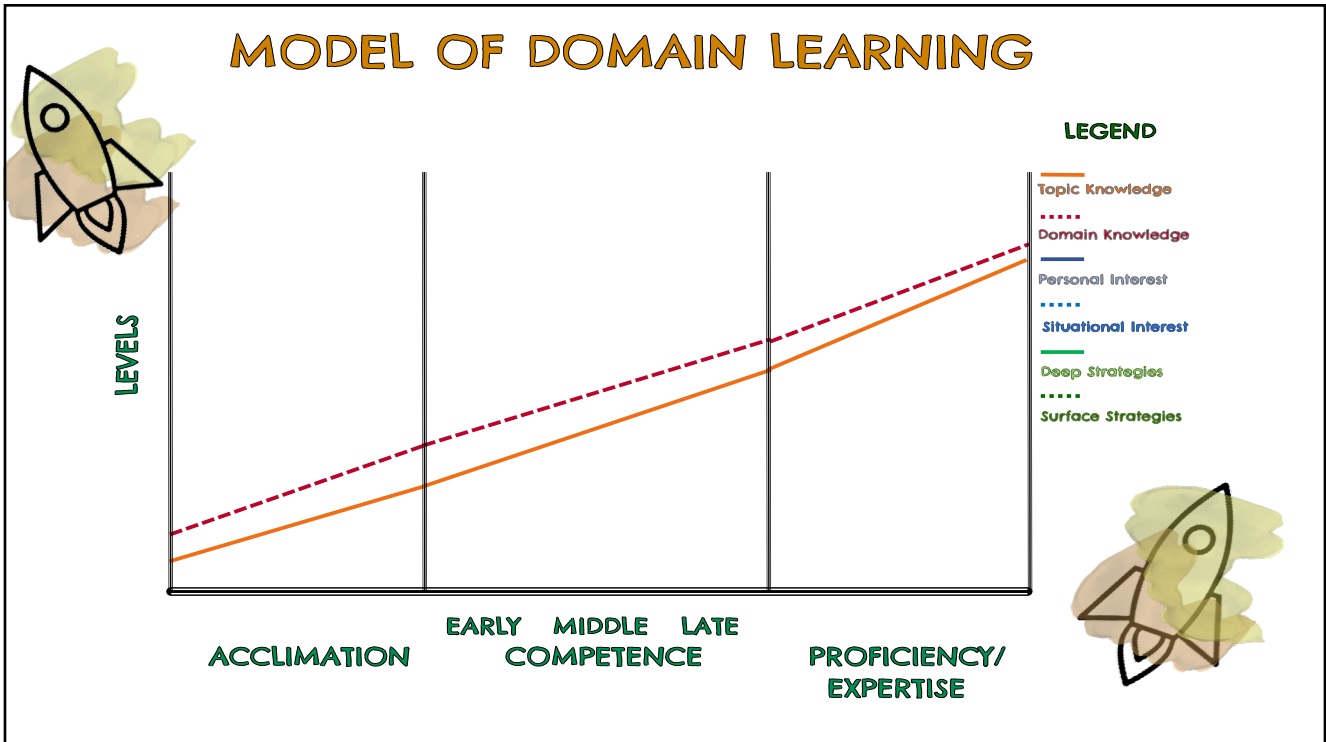


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- **Capability:** Students' acquisition of domain and topic knowledge is achievable with pedagogical guidance
- **Challenge:** Students' ability to forge a coherent base of principled knowledge remains a struggle



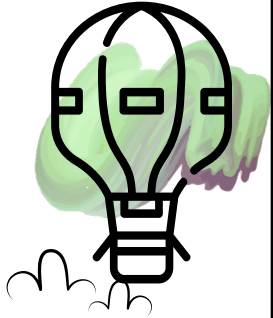
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The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge.






Stephen Hawking

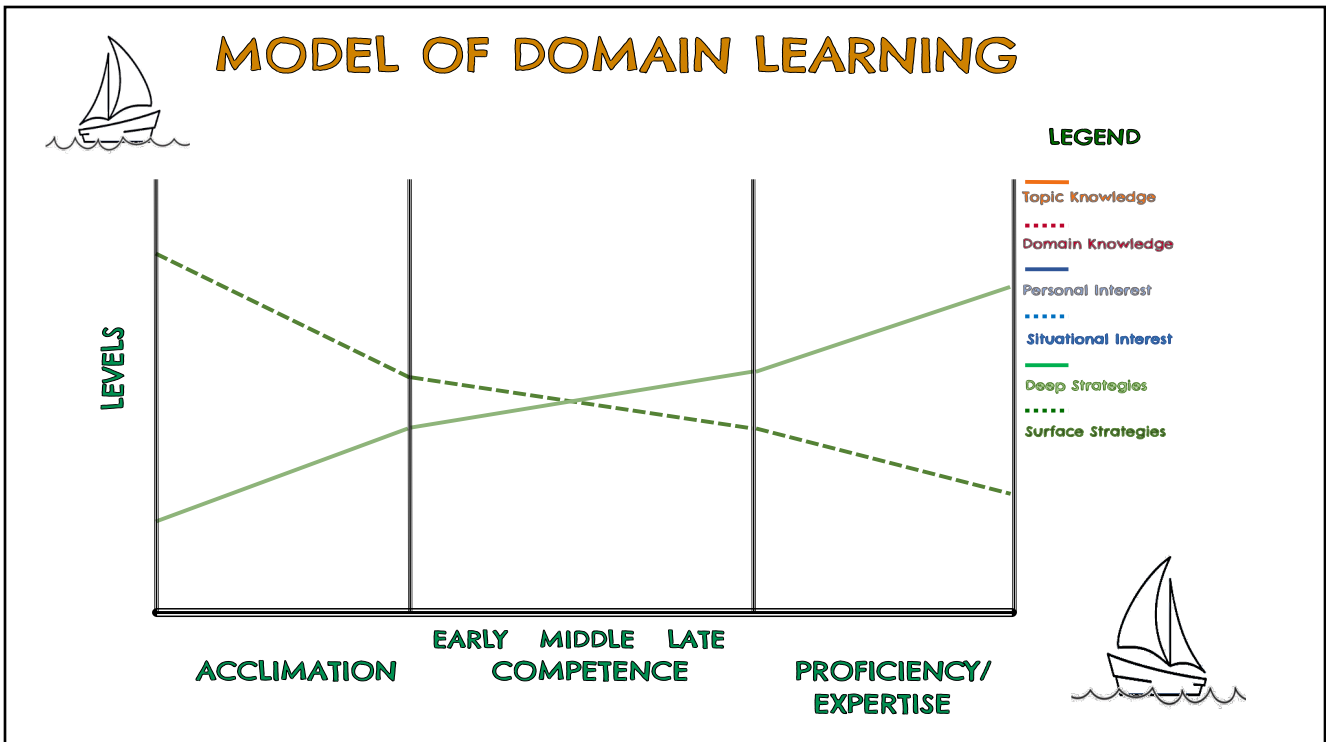
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- **Capability:** Procedural components of strategies can be trained
- **Challenge:** Strategic vs. skilled processing demands intentional, effortful, and personalized enactment



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A great many people think they are thinking when they are merely rearranging their prejudices.

William James

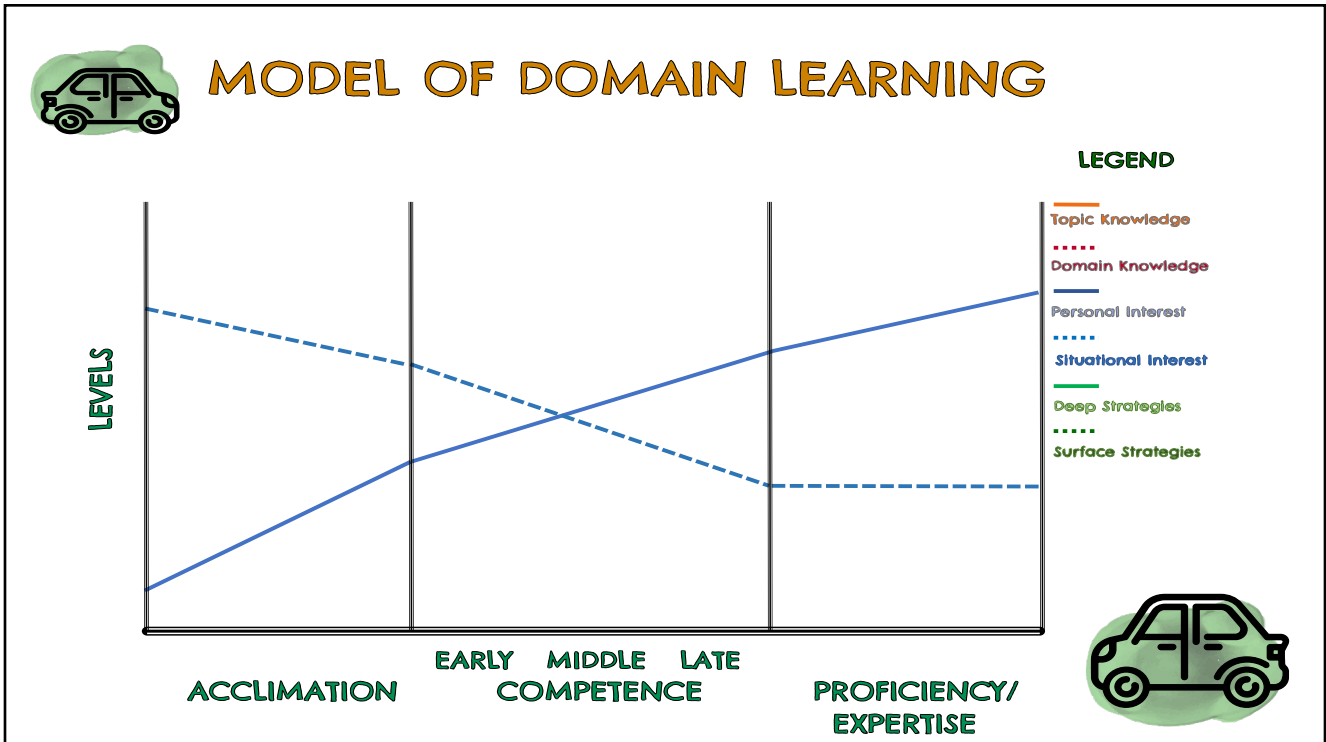
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- **Capability:** A stimulating learning environment can feed students' situational interest
- **Challenge:** There need to be meaningful spaces and places for students to pursue their true interests as they are learning



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To be interested is to be absorbed in, wrapped up in, carried away by, some object. To take an interest is to be on the alert, to care about, to be attentive.

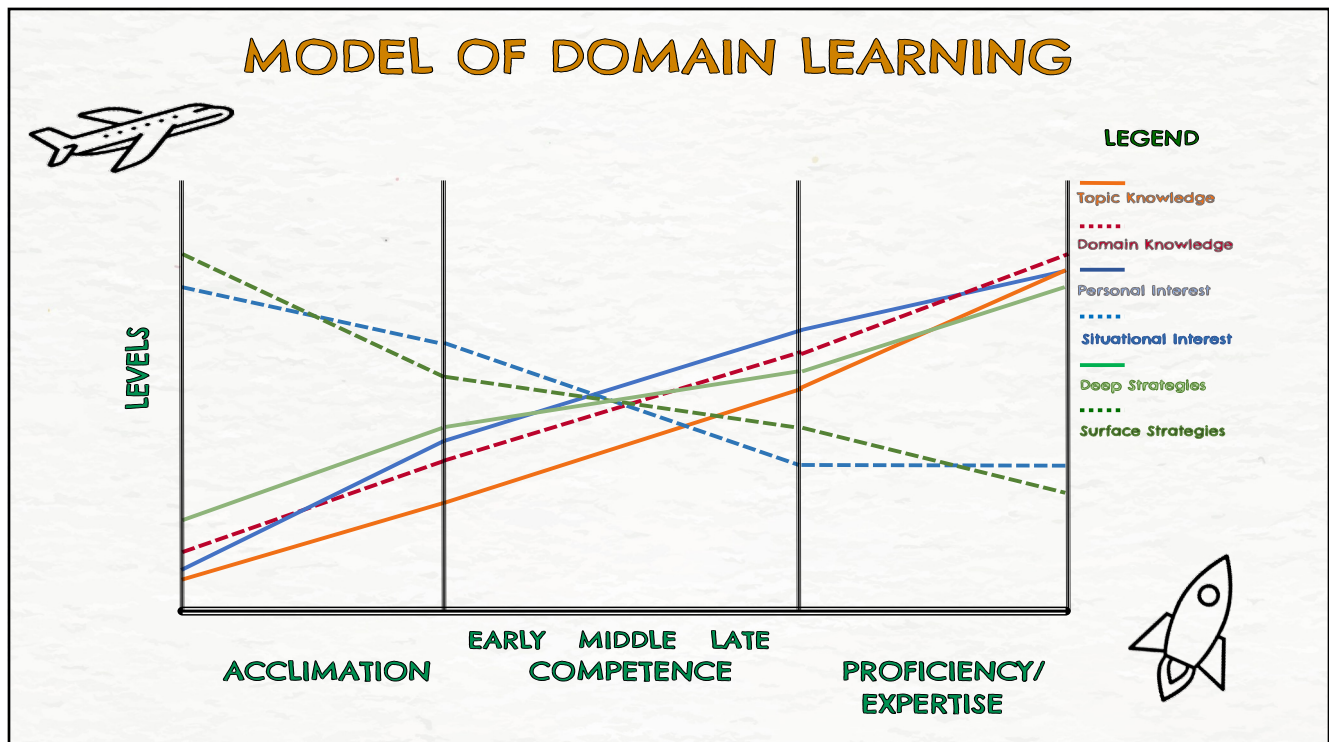
John Dewey

30

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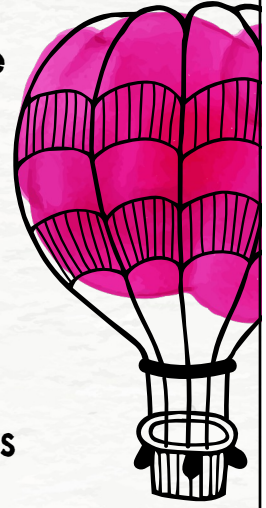


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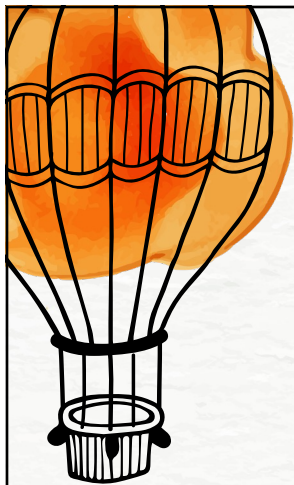
## Final Thoughts

- Strength in any one component of the MDL can propel someone forward while in acclimation
- The educational system is structured to foster students' development of competence
- From mid-competence onward, the impetus for continued growth must come largely from learners themselves
- Ultimately, it is the orchestration of knowledge, strategies, and interest that sustains development over the lifespan



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Continuous growth in **knowledge, strategies,** and **interest** should be demonstrable outcomes of students' academic experiences and should be how we judge the quality of education we provide.



Patricia Alexander

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**QUESTIONS?**

**THANK YOU!**