

How to Thrive in (Post-COVID-19) Outcome-Based Education



Junaid Qadir

Director IHSAN Lab,

*Chairperson Electrical Engineering,
Information Technology University (ITU)*

7 Steps To Thrive in Post-COVID/21C OBE

Step 1): Begin With The End In Mind

Step 2): Upgrade Your Metacognitive Skills

Step 3): Aim for Holistic Learning

Step 4): Become Coachable

Step 5): Take Ownership of Learning

Step 6): Focus On Developing Authentic Skills

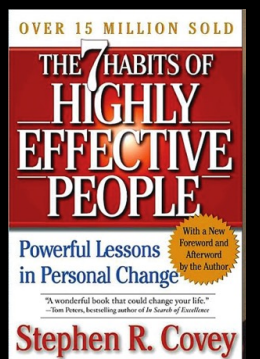
Step 7): Become a Lifelong Learner



BEGIN WITH THE END IN MIND



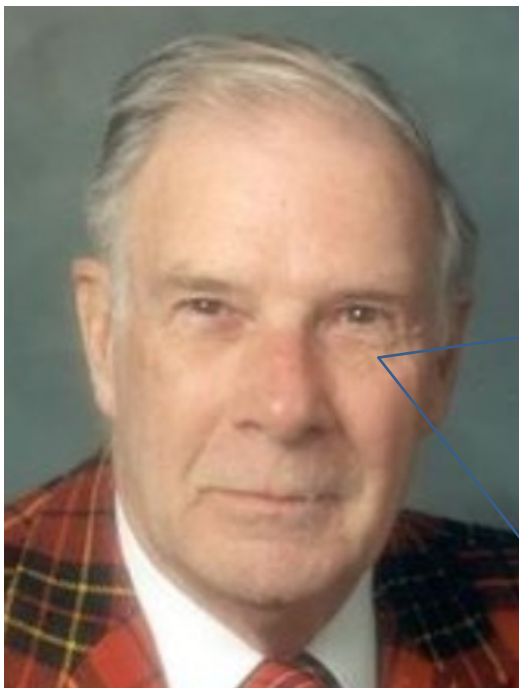
*To '**Begin with the End in Mind**' means to start with a clear understanding of your destination. It means to know where you're going so that you better understand where you are now and so that the steps you take are always in the right direction*



OBE is outcome-based



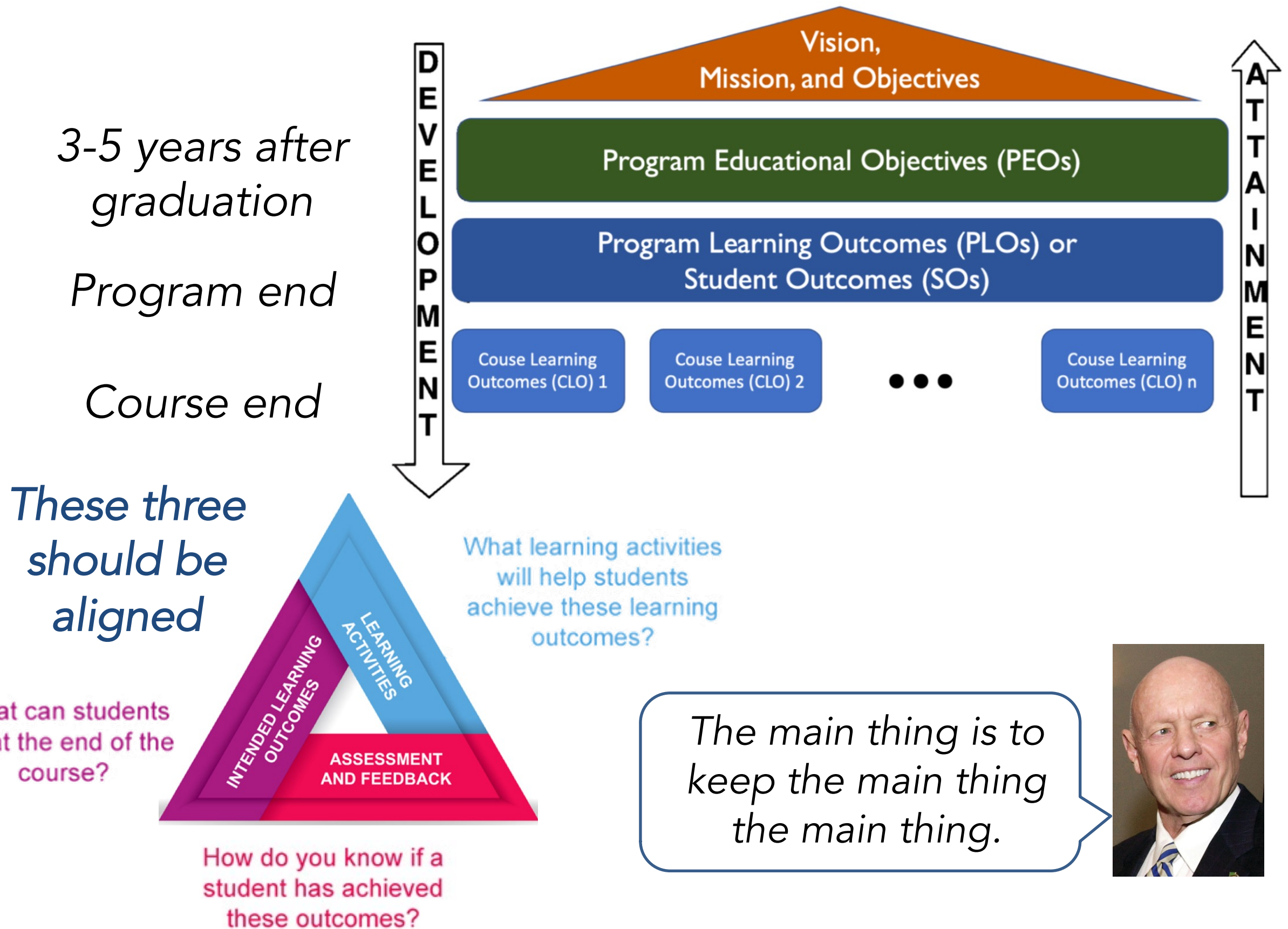
Hal Varian says the best advice he got on writing books was from Richard Hamming



*"Get together the exercises and exams that you expect the students to be able to solve once they've read your book, then write the book that shows them how to solve them. **The great thing about this advice is that it focuses you on the outcome you want to produce.**"*

This is excellent advice of course, but not only for textbook writers.

Educational objectives and learning outcomes



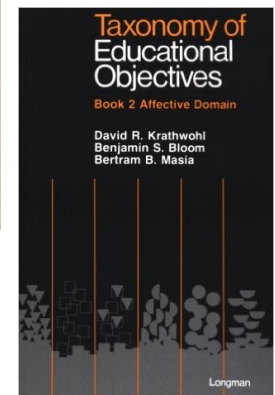
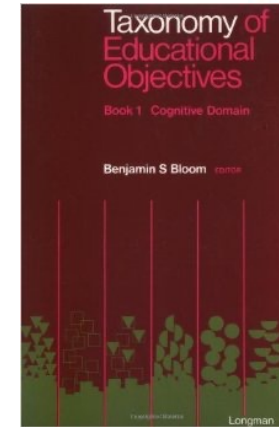


UPGRADE YOUR METACOGNITIVE SKILLS

Types and Levels of Learning



By educational objectives, we mean explicit formulations of the ways in which students are expected to be changed by the educative process. That is, the ways in which they will change in their thinking, their feelings, and their actions. There are many possible changes that can



1. Cognitive (knowledge-based)

"Cognitive" includes activities such as remembering and recalling knowledge, thinking, problem solving, creating.

2. Affective (emotive-based)

"Affective" includes objectives describing changes in interest, attitudes, and values, and the development of appreciations and adequate adjustment.

3. Psychomotor (action-based)

"Psychomotor" includes manipulative or motor skill area, which describe hands-on skills



Bloom's Taxonomy

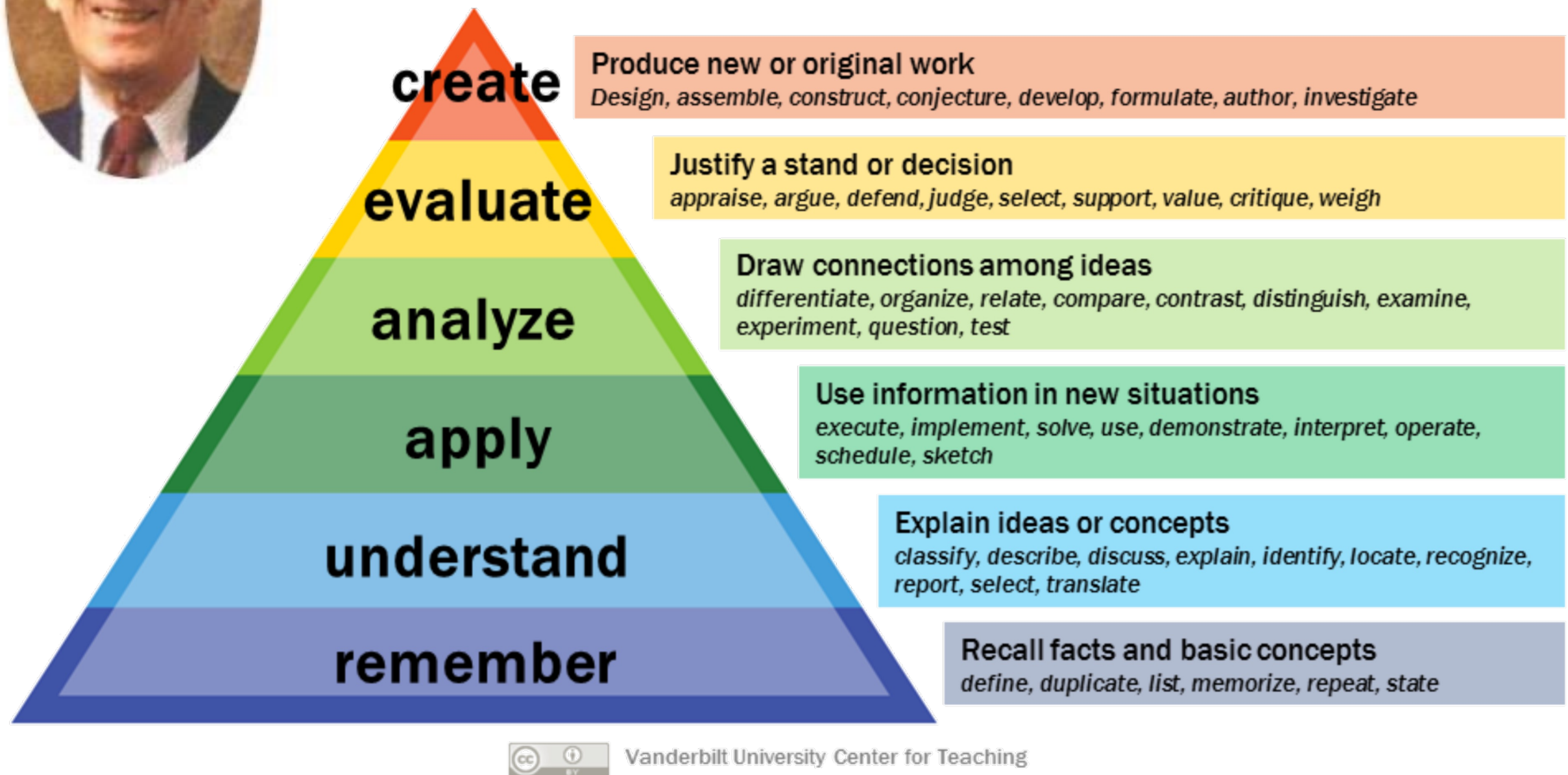


Figure 2: Bloom's Revised Taxonomy (2001) for the **cognitive domain** [Credit: Vanderbilt University Center for Teaching]

Via Negativa

Avoid common mistakes

What Every Student Should Know? 7 Learning Impediments & Their Remedies

Junaid Qadir

Abstract—Many well-intentioned students fail to thrive in a university environment, not due to lack of effort, but because of deficient mindset and/or methodology. While a wide variety of problems can result in sub-optimal learning performance, there are 7 main categories of learning impediments that hinder student learning with alarming regularity. You may be facing one, or more, of these impediments. Not to fret though; each of these debilitating impediments can be surmounted with self-awareness and some effort, paving the way for enjoyable, and productive, learning experiences. In this article, we not only identify the offending learning impediments, but also propose plausible remedial policies to counter each impediment.

“Is there anyone so wise as to learn by the experience of others?”—Voltaire.

1ST IMPEDIMENT: HAVING A FIXED MINDSET

Psychologists have highlighted the self-enforcing propensity of the human mindset in that human optimism and pessimism are both self-fulfilling. As Henry Ford had said, “Whether you think you can or think you can’t—you are right.” A *fixed mindset*, a mindset model proposed by researcher Carol Dweck [3], takes the pessimistic approach to the concept of intelligence and skill development. It characterizes a belief that intelligence or talent are *fixed* human traits that cannot be significantly developed beyond a certain degree. Students with fixed mindsets obsess over documenting their intelligence, instead of focusing on developing their intelligence. Many fixed mindset students are gifted students who have not learnt how to struggle, and the value of hard work. While they aced school subjects with little effort, when confronted with more significant intellectual challenges in university which require more effort, these students capitulate easily while resorting to the excuse of lack of aptitude. Why else would they—being such intelligent students—be confused?

What can be done: The antidote to this problem is to: i) have a growth mindset; ii) aim for mastery; and iii) use intrinsic motivation.

Catch phrase for the solutions: *Sky is not the limit; your mind is. Conquer your mind to realize your potential.*

Remedy 1: Have a Growth Mindset

A *growth mindset* student believes that hard work, grit, and conscientiousness, are the necessary factors that lead to success—brains and talent are just the starting point. A student with a growth mindset sees himself as being in the driving seat, and when confronted with a challenge is not averse to grappling with it for extended times. They can tolerate temporary failures without losing enthusiasm—indeed, they

treat mistakes as learning opportunities. Such a mindset also enables students to adopt the various solutions outlined in this article more easily. For example, students with growth mindset accept feedback from teachers more readily, and do not consider critical feedback as an attack on their person. Dweck’s research has shown that growth mindset characterizes successful people in a wide variety of fields, and is a reliable predictor of student success [3].

Remedy 2: Aim for Mastery

Educational psychologists have noted that students can have different attitudes towards studies—in particular, students can have a *performance orientation* or a *mastery orientation*, which critically impacts students learning habits. Students with mastery orientation are motivated by the desire to master a concept rather than by external rewards such as grades, degrees, fame, or teacher’s approval. Performance oriented tactics include rote-memorization, glancing at a problem’s solution before attempting the question, and learning problem solving by *observing* solved questions (without attempting to solve the problems independently). A student with a mastery orientation, on the other hand, focuses on the process and not solely on results; such a student is more likely to persist when faced with a challenging problem since the student recognizes that learning requires hard work. Paradoxically, while the explicit goal of a mastery oriented student is not extrinsic rewards, mastery of a subject often leads itself to these rewards.

Remedy 3: Using Intrinsic Motivation

Students’ motivation determines, directs, and sustains what they do to learn. Student motivation is boosted when they have *self-efficacy*—i.e., a belief that they can attain success. The student motivation is also based on the perception of the value of a particular goal (in terms of its relevance, utility, and importance). It is not only important for a student to be motivated, but also to have the right kind of motivation.

Extrinsic motivation refers to the motivation for external rewards such as grades, GPA, approval of others (mostly, parents and teachers). Intrinsic motivation—the more desirable kind of motivation which is known to foster deeper engagement, conceptual understanding, creativity—relies on the value of the learning activity itself for motivation. Previous research has noted that students with intrinsic motivation are more likely to engage in deeper learning and use the various strategies highlighted in this article [1].

Via Positiva

Become more effective

Learning 101: The Untaught Basics

Junaid Qadir and Muhammad Ali Imran

Abstract—Despite the accessibility of a wealth of information in the current era—in the form of books, universities, or online ‘massive open online courses (MOOCs)—well-intentioned hard-working students often fail to learn effectively due to deficient learning technique or mindset. Two reasons in particular hinder students from achieving their potential: firstly, the intuition of students regarding how learning works is often flawed and counterproductive; and secondly, despite significant progress in the research discipline of “learning sciences”, these hard-earned scientific insights have not yet filtered their way through the research community onto the students who stand to benefit most from this knowledge. In this article—titled “Learning 101: the untaught basics”—we aim to popularize the important insights learnt by the learning science researchers by making it accessible to students, who continue to largely use suboptimal intuitive learning techniques not knowing any better. The benefits of knowing these insights are immediate and substantial: we can use this knowledge to understand and calibrate our learning; it can also facilitate efficient learning (learning more in less time and avoiding “labor in vain”).

COMMON LEARNING IMPEDIMENTS

To learn optimally, we need to not only discover how to learn effectively, but also to identify and avoid common learning impediments. In our previous work [7], we identified seven common learning impediments (shown in Table I). These learning impediments emerge from deficient mindset (1,4), focus (2,3), support (5,6), and metacognition (7). These learning impediments are not insurmountable: three potential remedies for each learning impediment are identified in [7] as shown in Table I. A major impediment—arguably the mother impediment of all the listed impediments, if considered broadly—is “*Not Learning How to Learn*” (7). The overarching remedy for this impediment is to spend time to develop better metacognitive skills. Our aim in this article is to succinctly present the relevant research findings in an accessible manner so that learners can use this knowledge to improve their metacognitive skills and learning strategies.

LEARNING HOW TO LEARN

“The most useful piece of learning for the uses of life is to *unlearn what is untrue*”—Antisthenes

Despite our intimacy with the task of learning (through the trials and errors of everyday living), research has shown that our metacognitive judgment about learning—i.e., our intuitive understanding of how we learn—is flawed [2] and many of our well-established and commonly-accepted intuitive notions are not only incognizant of scientific findings about learning but *oppose* the optimal course of action. Unfortunately, the common societal attitude, and the general assumption in colleges

TABLE I: Common Learning Impediments & Remedies (Reproduced From Qadir [7])

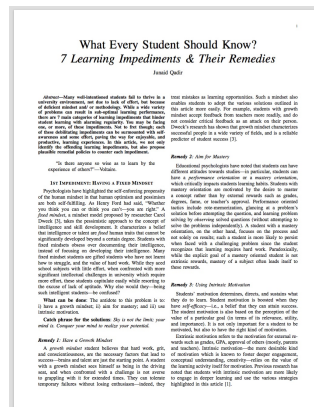
Impediment 1) Having a Fixed Mindset Solution: Conquer your mind to realize your potential. Remedy I: Have a Growth Mindset Remedy II: Aim for Mastery Remedy III: Using Intrinsic Motivation
Impediment 2) the Failure to Engage ‘Yourself’ in Learning Solution: Knowledge will not give you its part until you give to it all of yourself. Remedy I: Ask Questions Remedy II: Study More Actively Remedy III: Make Efforts to Enjoy the Subject
Impediment 3) the Failure to Manage Time Solution: Until we can manage time, we can manage nothing else. Remedy I: Form Good Habits Remedy II: Learn Mindfulness and the Art of Focusing Remedy III: Practice Prioritization and Discipline
Impediment 4) Failing to Realize that Failing is Key Solution: Err unabashedly and learn—like a child does. Remedy I: Embrace Failure and Impediments Remedy II: Make Peace with Confusion Remedy III: Value Effort over Intelligence, and the Process over Extrinsic Reward
Impediment 5) Failing to Realize that Learning is Social Solution: No one can do it for you, but you can’t do it alone. Remedy I: Have a Mentor Remedy II: Seek Feedback Remedy III: To Learn, Teach
Impediment 6) Being a Learning Monogamist Solution: Encourage learning polygamy. Remedy I: Avoid the Illusions of Learning Remedy II: Seek Diverse Knowledge Sources Remedy III: Adopt Diversity in Study Techniques
Impediment 7) Not Learning How to Learn Solution: Don’t be an highly qualified A grade sheep. Remedy I: Develop Metacognitive Skills Remedy II: Learn Critical Thinking Remedy III: Become a Lifelong Learner

For a more detailed elaboration of these impediments, see [7].

and universities, is that learners can automatically figure out the art and science of learning themselves. This is reflected in the way we emphasize the teaching of content and subjects in learning institutions but not the dissemination of information regarding optimal learning strategy.

There is a Taoist saying that in order to gain knowledge, one should add something every day, but to gain wisdom, one should subtract something every day. We propose that learners should supplant the erroneous intuitive learning model with an improved metacognitive model of how learning actually works. This exercise is especially timely keeping in mind

Via Negativa



J. Qadir,

“What every student should know: Seven learning impediments and their remedies,”
Potentials, IEEE, vol. 34, no. 3, pp. 30–35, 2015.

Impediment 1) Having a Fixed Mindset

Solution: Conquer your mind to realize your potential.

Remedy I: Have a growth mindset

Remedy II: Aim for Mastery

Remedy III Using Intrinsic Motivation

Impediment 2) the Failure to Engage ‘Yourself’ in Learning

Solution: Knowledge will not give a part of itself until you give to it all of yourself.

Remedy I: Ask Questions

Remedy II: Study More Actively

Remedy III: Make Efforts to Enjoy the Subject

Impediment 3) the Failure to Manage Time

Solution: Until we can manage time, we can manage nothing else.

Remedy I: Form Good Habits

Remedy II: Learn Mindfulness and the Art of Focusing

Remedy III: Practice Prioritization and Discipline

Impediment 4) Failing to Realize that Failing is Key

Solution: Err unabashedly and learn—like a child does.

Remedy I: Embrace Failure and Impediments

Remedy II: Make Peace with Confusion

Remedy III: Value Effort over Intelligence, and the Process over Extrinsic Reward

Impediment 5) Failing to Realize that Learning is Social

Solution: No one can do it for you, but you can’t do it alone.

Remedy I: Have a Mentor

Remedy II: Seek Feedback

Remedy III: To Learn, Teach

Impediment 6) Being a Learning Monogamist

Solution: Encourage learning polygamy.

Remedy I: Avoid the Illusions of Learning

Remedy II: Seek Diverse Knowledge Sources

Remedy III: Adopt Diversity in Study Techniques

Impediment 7) Not Learning How to Learn

Solution: Don’t be an highly qualified A grade sheep.

Remedy I: Develop Metacognitive Skills

Remedy II: Learn Critical Thinking

Remedy III: Become a Lifelong Learner



J. Qadir and M. A. Imran,
“Learning 101: The untaught basics,”
IEEE Potentials, vol. 37, no. 3, pp. 33–38, 2018.

Desirable Difficulties:

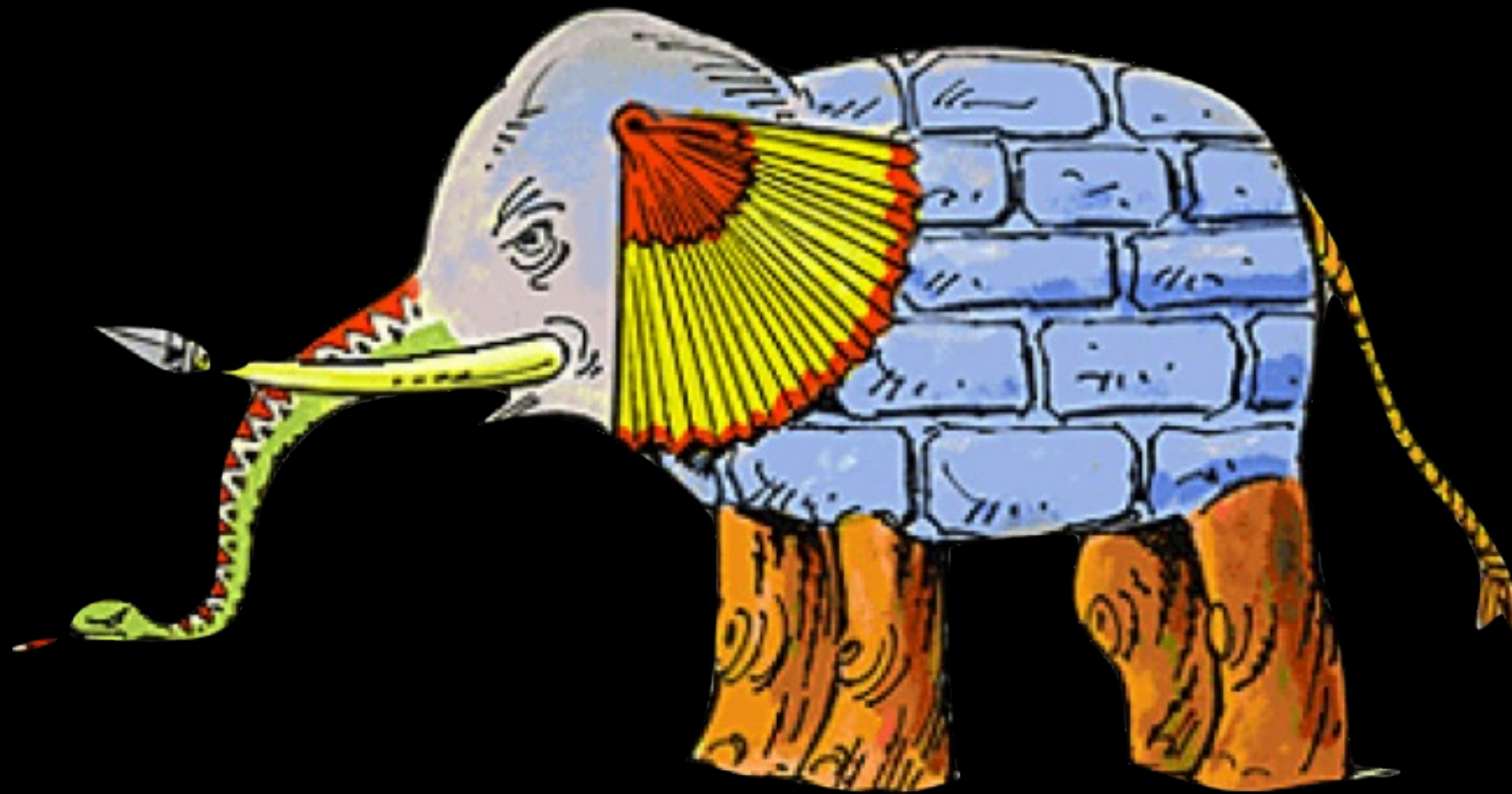
➡ 1) Effortful learning is better learning	<i>“Practice that’s spaced out, interleaved with other learning, and varied produces better mastery, longer retention, and more versatility. But these benefits come at a price: when the practice is spaced, interleaved, and varied, it requires more effort.”—Brown, Roediger, and McDaniel [11]</i>
2) To learn, you must forget, then interrupt forgetting	<i>“It is only what breaks that grows.”—Unknown</i>
➡ 3) Disfluency/discomfort can be good for learning	<i>“That which does not kill us makes us stronger.”—Nietzsche</i>

Undesirable fixations:

1) Fixating on perfection: Why mistakes are required	<i>“An expert is a man who has made all the mistakes which can be made, in a narrow field.”—Niels Bohr</i>
➡ 2) Fixating on fluency: Why fluency is not sufficient	<i>“Rising familiarity with a text and fluency in reading it can create an illusion of mastery.”—Brown, Roediger, and McDaniel [11]</i>
3) Fixating on discipline: The upside of variety	<i>“You don’t understand anything until you learn it more than one way.”—Marvin Minsky</i>

For efficient learning, use optimal learning techniques:

1) Testing/retrieval practice as a learning tool	<i>“In virtually all areas of learning, you build better mastery when you use testing as a tool to identify and bring up your areas of weakness.”—Brown, Roediger, and McDaniel [11]</i>
2) Spaced learning and inter-leaving	<i>“The truth is, nothing in learning science comes close [to spaced learning] in terms of immediate, significant, and reliable improvements to learning.”—Benedict Carey [12]</i>
3) Aiming for mastery	<i>“To be a sophisticated learner requires understanding that creating durable and flexible access to to-be-learned information is partly a matter of achieving a meaningful encoding of that information and partly a matter of exercising the retrieval process.”—Bjork, Dunlosky, and Kornell [18]</i>

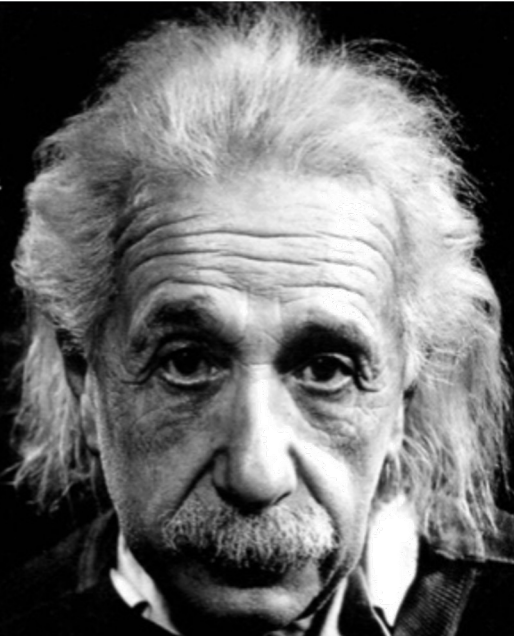


AIM FOR HOLISTIC
LEARNING

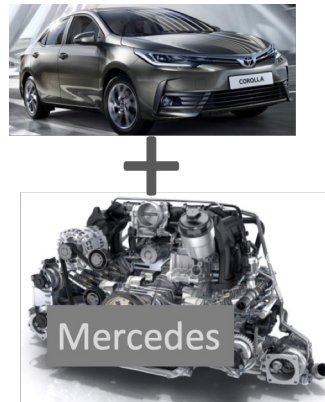
Becoming a Systems Thinker

"The significant problems we face cannot be solved at the same level of thinking we were at when we created them."

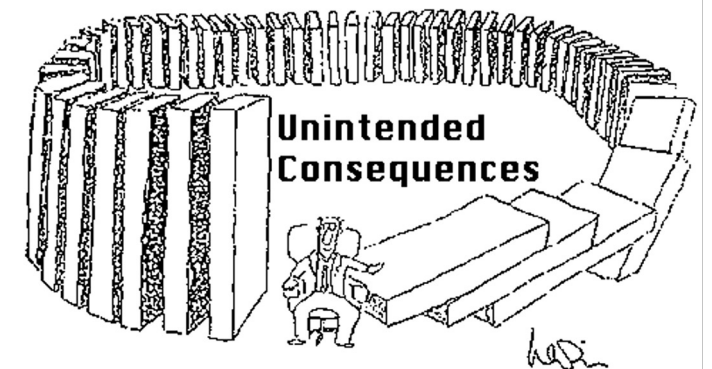
- Albert Einstein



Optimizing the parts rather than the whole

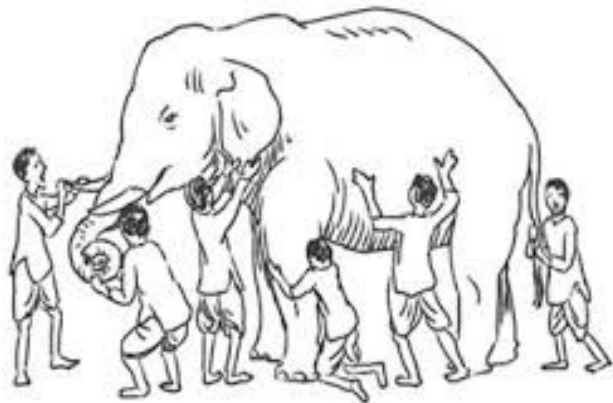


Unintended Consequences



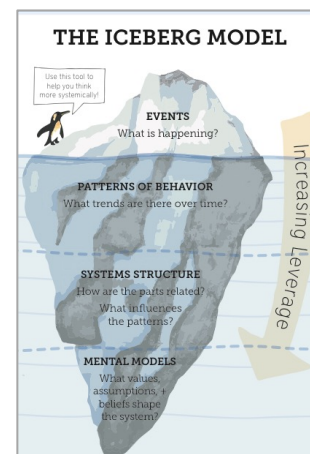
Mental models

dictates how we perceive reality based on our values, expectations, & experiences.



Symptom Treatment

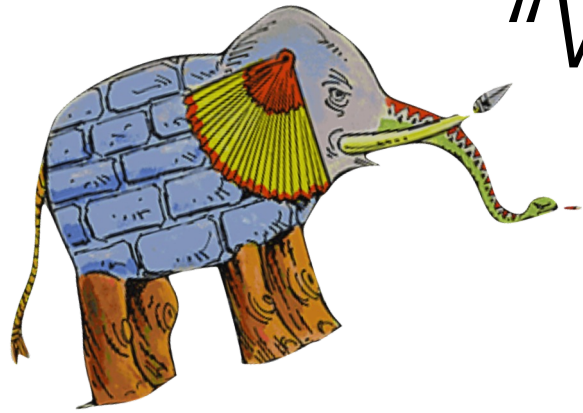
"There's always an easy solution to every problem that is neat, and plausible, but wrong." — H. L. Mencken



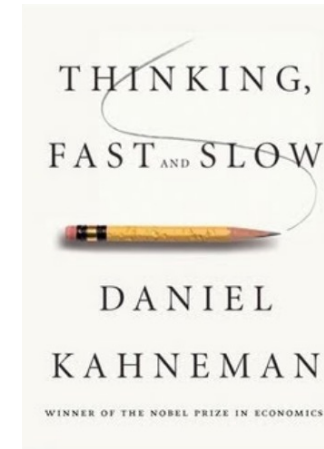
Policy Resistance

measures taken to improve a situation can directly make it worse due to policy resistance arising from people adapting

Building a latticework of models



"We're blind to our blindness.
We have very little idea of
how little we know."



"You've got to have models in your head. And you've got to array your experience—both vicarious and direct—on this latticework of models."

No one model alone is entirely perfect.

If a hammer is all you have, everything appears like a nail

A good collection allows us to remove blind spots to better make sense of the complex world through multidisciplinary thinking.



BECOME COACHABLE

Seek feedback



Students learn best when they receive formative feedback about specific qualities of their work along with concrete advice on what they can do to improve.

Seek Formative Assessment

Why assess?

(1) to assist learning; (2) to measure individual achievement; and (3) to provide accountability and to evaluate performance.

Summative Assessment



WHEN THE GUESTS
TASTE THE SOUP

Assessment “of” learning

Formative Assessment



WHEN THE CHEF
TASTES THE SOUP

Assessment “for” learning

In a landmark study, Black and Wiliam showed that formative assessments, in contrast to summative ones, return the more powerful effect on student learning.

Develop Self-Assessment Skills

With Self-assessment Skills:

Students learn how to regulate their studies, where they are, and where they need to go, and what they can do to get there.

“When students become their own teachers, they exhibit the self-regulatory attributes that seem most desirable for learners (self-monitoring, self-evaluation, self-assessment, self-teaching)”



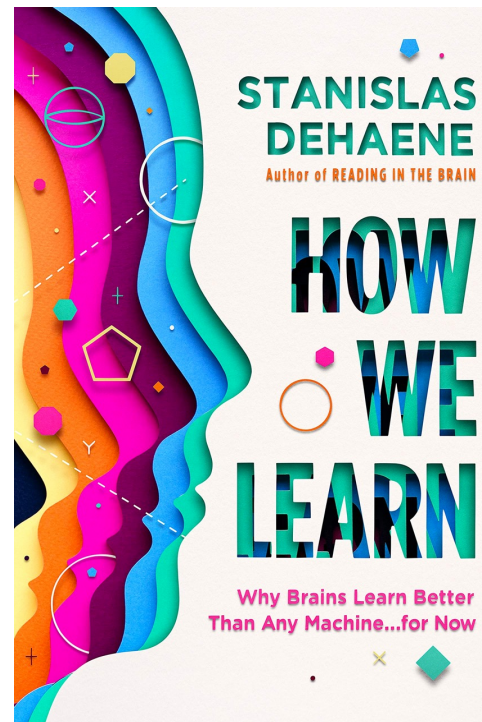
John Hattie.





TAKE OWNERSHIP OF
YOUR LEARNING

Active Learning



"Converging results from diverse fields suggest that a passive organism learns little or nothing. Efficient learning means refusing passivity, engaging, exploring, and actively generating hypotheses and testing them on the outside world."
—Stanislas Dehaene.

Leverage what can be leveraged



TED

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UDACITY



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Asking for help and collaboration



ICONS & INNOVATORS

Steve Jobs on the Remarkable Power of Asking for Help To achieve your greatest goals, sometimes all you have to do is ask. [🔗](#)

Steve Jobs calling Bill Hewett (the co-founder of HP) when he was a young boy.

His advice: "You gotta act. And you've gotta be willing to fail, ... if you're afraid of failing, you won't get very far."



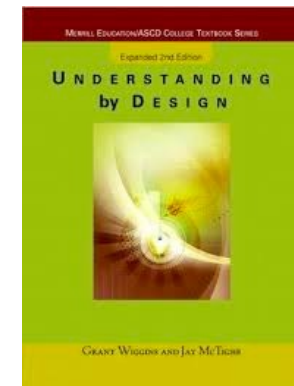
FOCUS ON DEVELOPING
AUTHENTIC SKILLS

What are authentic skills?

“The most important method of education ... always has consisted of that in which the pupil was urged to actual performance.”—Albert Einstein.

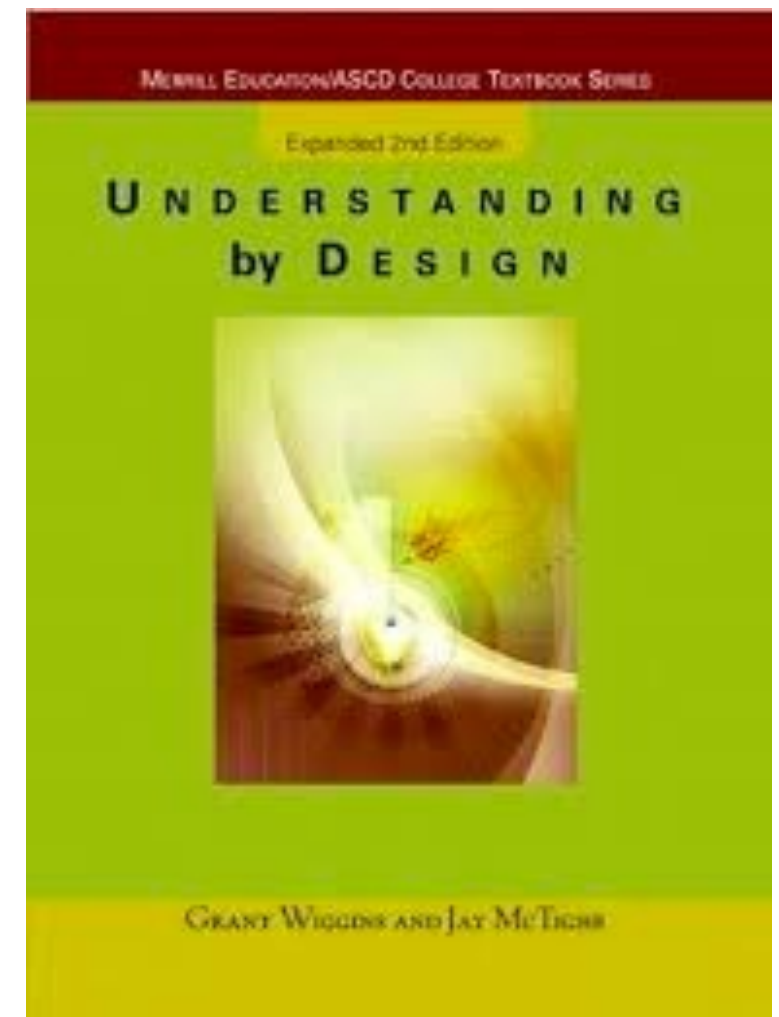
A performance task, problem, or project, is authentic if it:

- (1) *is realistic;*
- (2) *requires judgment and innovation;*
- (3) *engages the learner in “doing” the subject;*
- (4) *replicates or simulates real-world contexts;*
- (5) *assesses a learner’s ability to deal with an open-ended complex task by using a repertoire of knowledge and skills;*
- (6) *does not put artificial constraints on opportunities to practice, consult resources, obtain feedback, and refine performance.*



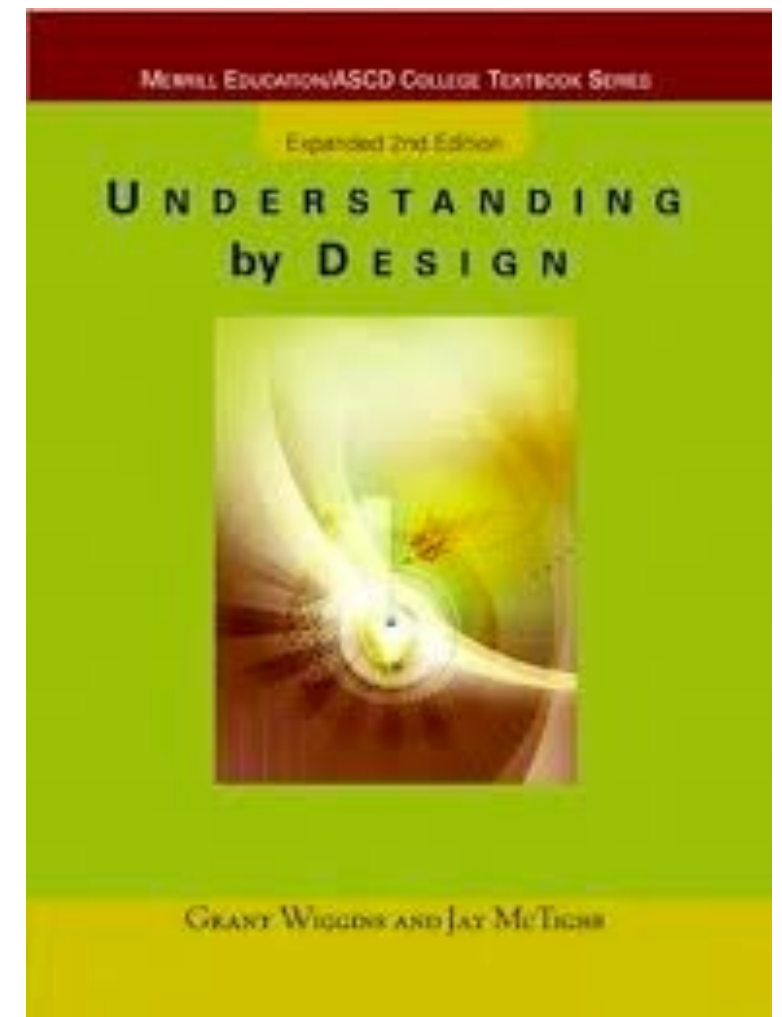
Develop “Understandings” of “Big Ideas”

“What we are claiming, based on both common sense and the research in cognition, is that no skill can be integrated into a powerful repertoire unless the learner understands the big ideas related to using the skill wisely.”
—Wiggins and McTighe.

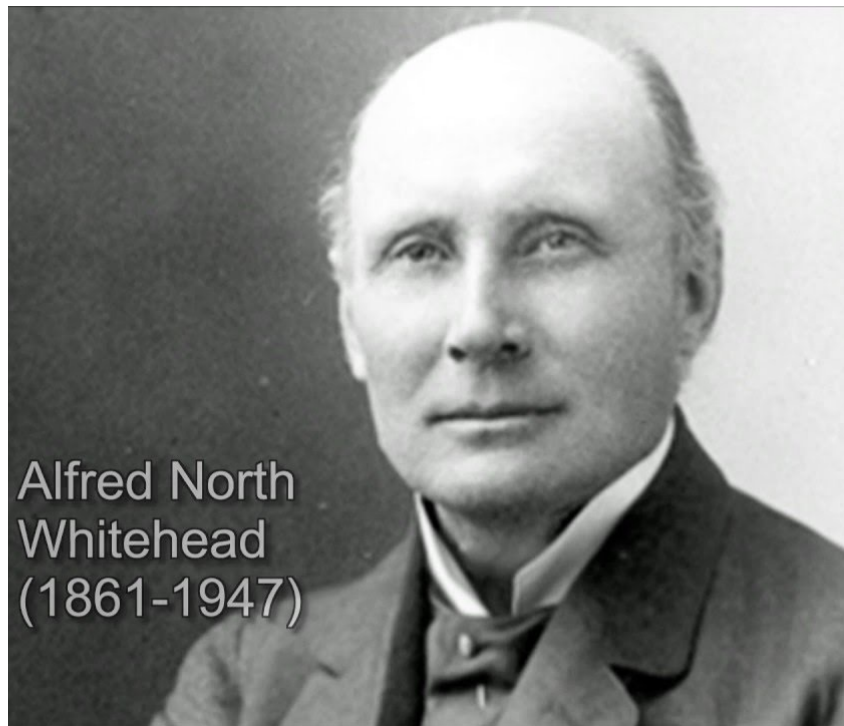


Transfer of Learning

"Transfer must be the aim of all teaching in school —it is not an option— because when we teach, we can address only a relatively small sample of the entire subject matter."
—Wiggins and McTighe.



Uncoverage Rather than Coverage



“Let the main ideas which are introduced be few and important, and let them be thrown into every combination possible.”



BECOMING A LIFELONG LEARNER

Lifelong learning

*“Give a man a fish, and you feed him for a day.
Teach a man to fish, and you feed him for a lifetime.”*

*When students acquire meta-skills such as learning how to learn, read, write, they bring this skill to every course and reap its exponential benefits—this effect is sometimes called the “**Matthew Effect**” or the rich get richer and the poor get poorer effect.*

“Education isn’t
something you can
finish”

- Isaac Asimov



*Life is like riding
a bicycle. To
keep your
balance you
must keep
moving*

Concluding remarks

Step 1): Begin With The End In Mind

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Thank you!



Junaid Qadir
Junaid.qadir@itu.edu.pk