"THE LIGHTS ARE ON BUT NO ONE IS HOME"

THRESHOLD CONCEPTS: PORTALS TO A NEW WAY OF THINKING

PRESENTED BY

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- **First student: I understood it in class, it was when we went away and I just seemed to have completely forgotten everything that we did on it, and I think that was when I struggled because when we were sat in here, we'd obviously got help if we had questions but…..when it came to applying it….I understood the lectures and everything that we did on it but couldn't actually apply it, I think that was the difficulty.**

from G. Cousin, *Journal of Learning Development* Feb 2010

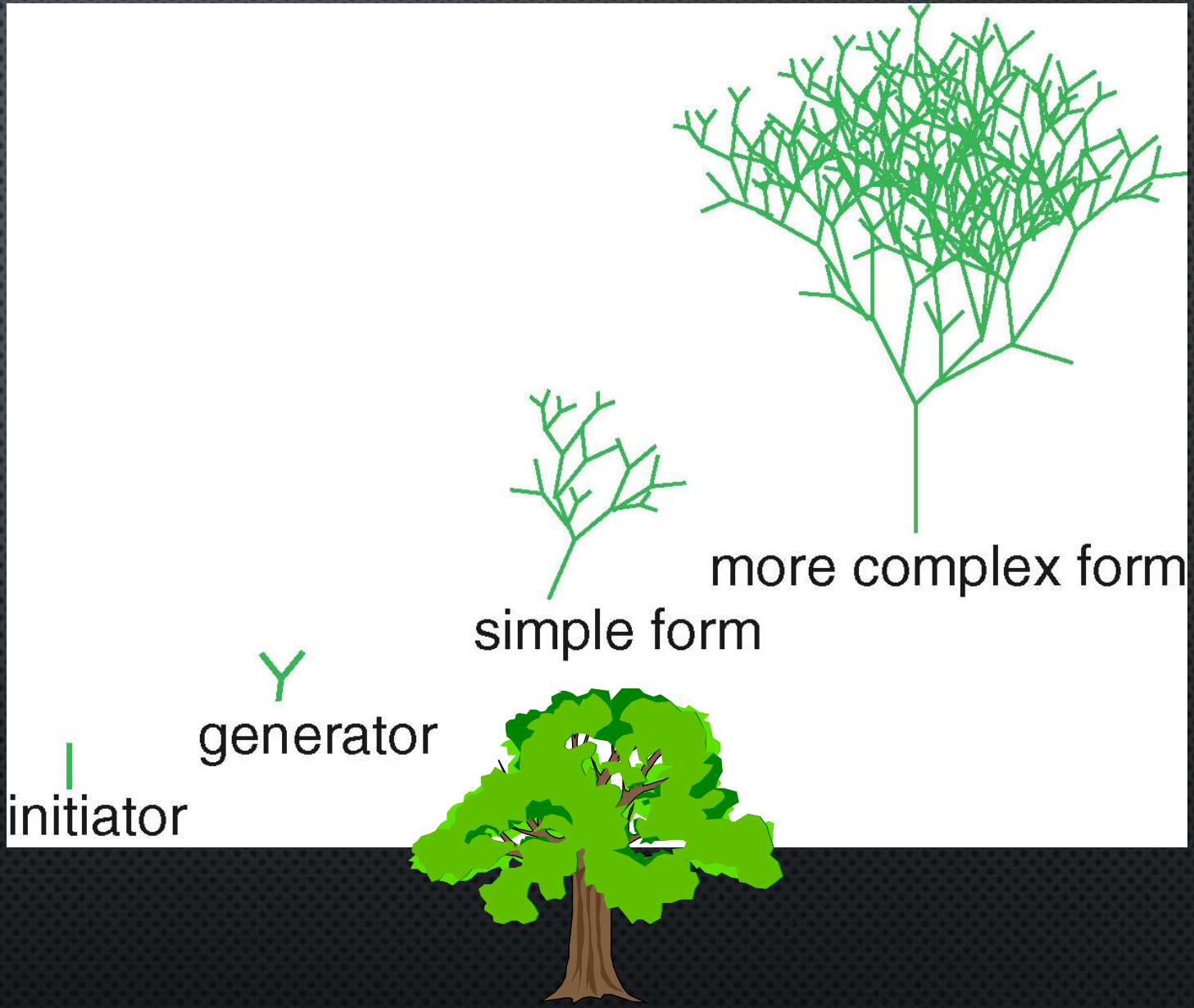
- Q. Did you feel the same as student 1?
- Second student: Yeah. I felt lost.
- Q. In lecture times as well?
- Second student: You know, I understood the concept for about let's say 10 seconds, yes yes, I got that and then suddenly, no no, I didn't get that, you know, suddenly, like this.

- Well, from not knowing what it is to knowing what it is, that is the big step one. So that can be knowing how to apply the concepts that we use.

- There are some things you learn, you suddenly think, wow, suddenly everything seems different…you now see the world quite differently.

2010

The brain learns by building and stabilizing neural connections (see Leamnson, 1999). Practices that clearly promote building and stabilization make sense.



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WHY FRACTALS?

- THE NEURAL NETWORKS THAT WE DEVELOP THROUGH LEARNING ARE FRACTAL.
- FRACTAL QUALITIES PERMEATE ALL WE THINK, FEEL, AND DO.
- TEACHING IS AN EXERCISE IN STIMULATING GROWTH OF FRACTAL NEURAL NETWORKS IN OTHERS AND OFTEN HELPING OTHERS BUILD BETTER REPLACEMENT NETWORKS.

Bloom's Taxonomy

Of the Cognitive Domain

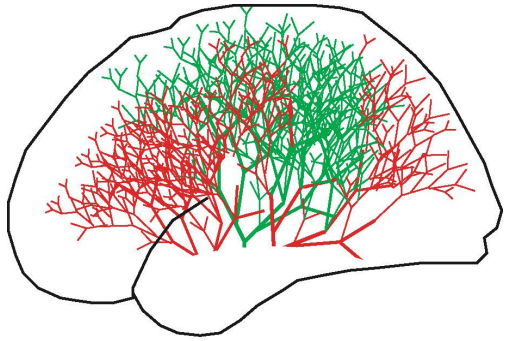
Question type often sounds like...	***Reasoning level***
"Who ...?" or "What ...?"	**1. Recall**
" Explain." "Predict." "Interpret." "Give an example." "Paraphrase...."	**2. Comprehension**
"Calculate." "Solve." "Apply." "Demonstrate." "Given ___. Use this information to…."	**3. Application**
"Distinguish." "Compare" or "Contrast" "How does ___ relate to___?", "Why does ___."	**4. Analytical**
"Design." "Construct." "Develop." "Formulate." "Write a poem." "Write a short story….."	**5. Synthesis**
"Evaluate." "Appraise." "Justify which is better." "Evaluate ___ argument, based on established facts." "What if....?"	**6. Evaluation**

Fixed Mindset Beliefs: If your intelligence is "high" enough, work should not be a challenge. Challenges are traps because they can show that your intelligence is weak.

Growth Mindset Beliefs: Challenges are the means to growing your intelligence. Challenges are non-threatening and even enjoyable because you use them to benefit yourself.

All learning produces complex interconnected affective and cognitive synaptic “wiring.” (Note-this is just "the wiring"…what happens when it comes alive?)

DEFINITION OF TRANSFORMATIVE LEARNING



TRANSFORMATIVE LEARNING REFERS TO LEARNING THAT IS BASED ON REFLECTION AND THE INTERPRETATION OF THE EXPERIENCES, IDEAS, AND ASSUMPTIONS GAINED THROUGH PRIOR LEARNING (PALLOFF AND PRATT, 1999).

SELF REFLECTION

DEVELOPING CRITICAL THINKING IS ESSENTIAL TO THE SUCCESS OF THE ADULT LEARNER.

- AWARENESS OF ONE'S SELF IS ENCOURAGED: THIS CAN BE PRACTICED THROUGH **MINDFULNESS**
- THE LEARNING MAY OR MAY NOT OCCUR ON THE CONSCIOUS LEVEL.
- LEARNING IS THE PROCESS BY WHICH BEHAVIORAL CHANGE, KNOWLEDGE, SKILLS, AND ATTITUDES ARE ACQUIRED (BOYD, R. D., J. W. APPS, AND ASSOCIATES, 1980).

4 BARRIERS TO CRITICAL THINKING: #1 INTELLECTUAL DEVELOPMENT

- POOR CRITICAL THINKING SKILLS RESULT OF COGNITIVE FACTORS OF LOW ACADEMIC PREPAREDNESS.
- MOST 18 YEAR OLDS DO NOT HAVE A VALUE SYSTEM OR WAY OF VIEWING THE WORLD IN EMPATHETIC TERMS. THEY SEE THE WORLD MYOPICALLY.

BARRIER #2 HABITS OF MIND

- Intellectual habits affect learning
- Tendency to look at everything from ones own perspective
- **Intellectual habits that are important:**

a. Intellectual humility
b. Courage
c. Empathy
d. Integrity
e. Perseverance
f. Autonomy
g. Confidence in reason

BARRIER #3 MISCONCEPTIONS

- Learning often requires "unlearning" first
- Howard Gardner "The Unschooled Mind, 1991
- Discuss misconceptions about the foodservice industry:

a. Cooking is about compiling ingredients and adding heat to make then taste good.

b. Chefs are entertainers and like to spend time with their customers.

c. Chefs are fat and have big egos

d. Others?????

BARRIER #4 COMPLEX REASONING

- Thinking/understanding is deeper than knowing
- Is able to identify relevant issues within a complex
- Real world problems have no single or obvious solution
- Warrant serious human attention

<u>When working with students in introductory courses look at the following:</u>

a. Identify issues as they pertain to the subject matter
b. Recognize relevant contexts
c. Frame their own and other people's perspectives on issue


POPCORN
POPCORN

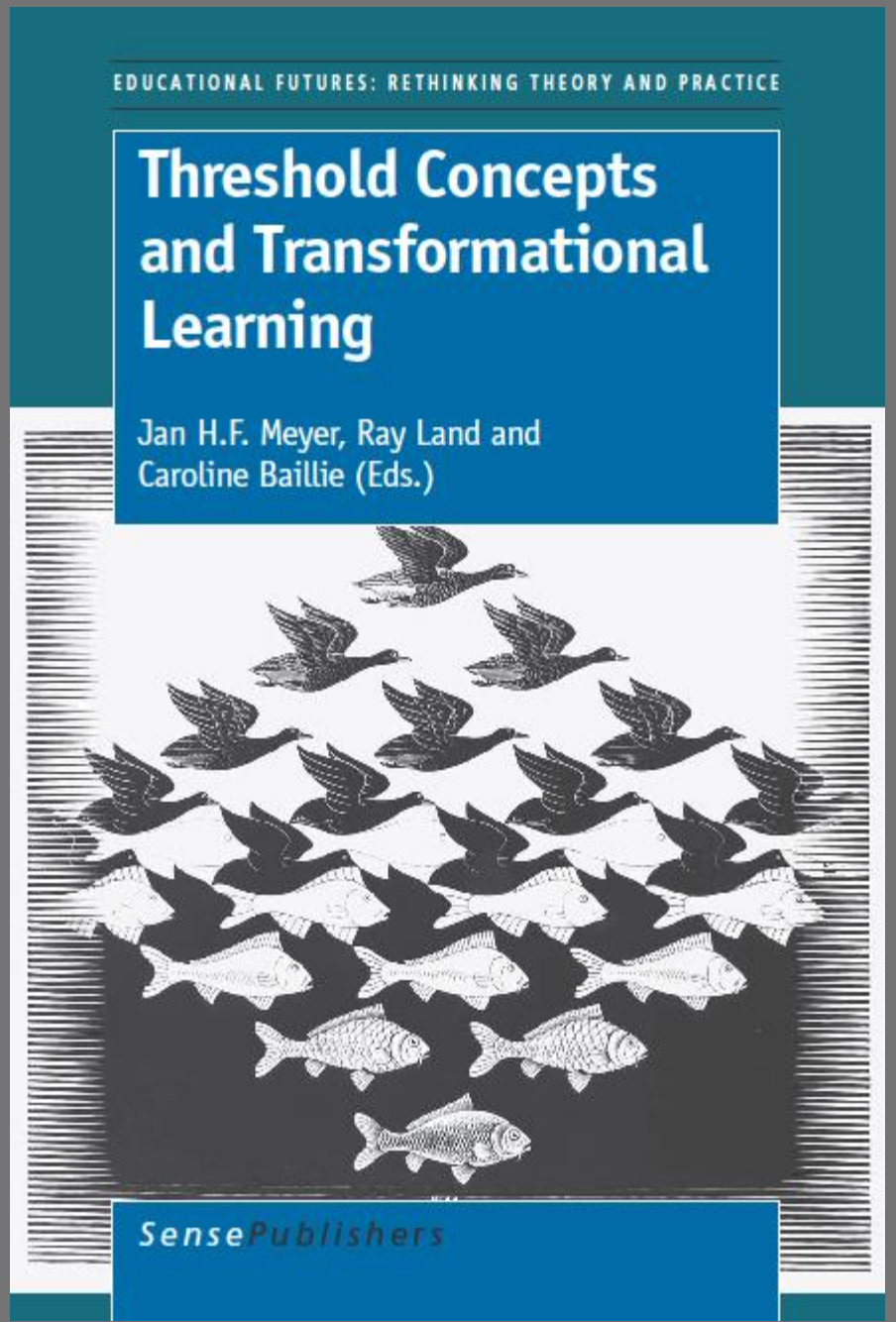
= 60 grams of Sat Fat


POPCORN

=


POPCORN

=



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‘CONCEPT?’

‘A UNIT OF THOUGHT OR ELEMENT OF KNOWLEDGE THAT ALLOWS US TO ORGANIZE EXPERIENCE’

JANET GAIL DONALD (2001)

‘LEARNING TO THINK: DISCIPLINARY PERSPECTIVES’

THRESHOLD CONCEPTS

A Threshold Concept is discipline-specific, focuses on understanding of the subject and…has the ability to transform learners' view of the content.

Unlike a core concept which is a conceptual building block that progresses understanding of the subject; it has to be understood, but it does not necessarily lead to a qualitative, different view of the subject.

FEATURES OF A THRESHOLD CONCEPT

THE USUAL DESCRIPTION OF "THRESHOLD CONCEPTS" LISTS THESE FIVE CHARACTERISTICS:

- TRANSFORMATIVE
- IRREVERSIBLE
- INTEGRATIVE
- BOUNDED
- TROUBLESOME

CONSIDERATIONS FOR COURSE DESIGN

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JEWELS IN THE CURRICULUM

THRESHOLD CONCEPTS CAN BE USED TO DEFINE POTENTIALLY POWERFUL TRANSFORMATIVE POINTS IN THE STUDENT'S LEARNING EXPERIENCE. IN THIS SENSE THEY MAY BE VIEWED AS THE 'JEWELS IN THE CURRICULUM'.

IMPORTANCE OF ENGAGEMENT

Existing literature regarding teachers who want students to develop genuine understanding of a difficult concept points to the need for ENGAGEMENT eg. They must ask students to

explain it

represent it in new ways

apply it in new situations

connect it to their lives

and NOT simply recall the concept in the form in which it was presented (Colby, et.al, 2003: p263)

LISTENING FOR UNDERSTANDING

HOWEVER, TEACHING FOR UNDERSTANDING NEEDS TO BE PRECEDED BY LISTENING FOR UNDERSTANDING.

WE CAN'T SECOND GUESS WHERE STUDENTS ARE COMING FROM OR WHAT THEIR UNCERTAINTIES ARE. IT IS DIFFICULT FOR TEACHERS TO GAZE BACKWARDS ACROSS THRESHOLDS.

RECURSIVENESS (REPEATED MOTIONS OR FUNCTIONS)

THE NEED FOR THE LEARNER TO GRASP THRESHOLD CONCEPTS IN RECURSIVE MOVEMENTS MEANS THAT THEY CANNOT BE TACKLED IN A SIMPLISTIC 'LEARNING OUTCOMES' MODEL WHERE SENTENCES LIKE 'BY THE END OF THE COURSE THE LEARNER WILL BE ABLE TO….'

UNDERMINE THE COMPLEXITIES OF THE TRANSFORMATION A LEARNER UNDERGOES (POST-LIMINAL VARIATION).

CONSIDERATION OF THRESHOLD CONCEPTS TO SOME EXTENT 'RATTLES THE CAGE' OF A LINEAR, OUTCOMES-BASED APPROACH TO CURRICULUM DESIGN.

TOLERATING UNCERTAINTY

Learners tend to discover that what is not clear initially often becomes clear over time. So there is a metacognitive issue for the student (self-regulation within the liminal state) and a need for the teacher to provide a 'holding environment' (Winnicott 1960)

KEEP IT SIMPLE: THE CORE IDEA

POACH	FRY	GRIDDLE	SAUTÉ	CARAMELIZE	HERBS/SPICES
POELE	BRAISE/STEW	GRILL	GRIDDLE	CURE/BRINE	SMOKE
	SUSTAINABILITY		**FLAVOR**	LOCAVORE	
SOUS VIDE	PIQUANT/SPICY	BAKE	CARAMELIZE	SWEET & SOUR	UMAMI ACIDIC

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KEEP IT SIMPLE: THE CORE IDEA

YIELDS P & L COSTING SOPS MATH CONVERSIONS

ORDERING RECEIVING MENU PLANNING ISSUING INVENTORY

REVENUE- COSTS = $$$$PROFIT

REVENUE SALES INGREDIENTS SANITATION NUTRITION THEFT MANGEMENT

STANDARDIZED RECIPES SALES & SERVICE PRICING

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CULINARY ARTS AND THE BUSINESS OF FLAVOR

- **BUSINESS-** ACCOUNTING, MARKETING, LAW, MANAGEMENT, ORGANIZATIONAL DEVELOPMENT, LEADERSHIP
- **MEDIA-COMMUNICATIONS-** FOOD TV, EDUCATION, SOCIAL MEDIA, INTERNET
- **SOCIOLOGY –** MAN'S NEED FOR FOOD, TRIBAL CUSTOMS, TEAM WORK, TRADITIONS, CULTURES, CUSTOMER SERVICE
- **HISTORY- WHY, WHERE, WHEN, HOW FOOD CAME TO BE OR TRAVEL**
- **ECONOMICS –** LAWS OF ECONOMICS-SUPPLY & DEMAND
- **MATH-** ADDITION/SUBTRACTION/DIVISION/ MULTIPLICATION-%- $- ALGEBRA-STATISTICS
- **THE SCIENCES**: BIOLOGY-BOTANY - CHEMISTRY – PHYSICS- METEOROLOGY, NUTRITION, SANITATION

EXAMPLE: SAUSAGE MAKING-WHAT DOES THE STUDENT NEED TO DECIPHER?

1. WHAT TYPE OF GRIND: COARSE, MEDIUM OR FINE
2. WHAT TYPE OF FAT TO PROTEIN RATIO: 50/50/; 33/33/33; 60/40; OTHER
3. WHAT TYPE OF SEASONING AND WHY?
4. HOW DOES THE FRICTION IN THE GRINDER AFFECT THE QUALITY OF SAUSAGE? DO WE GRIND ON LOW, MED OR HIGH?
5. HOW DOES OTHER INGREDIENTS LIKE MILK POWDER, DEXTROSE, TCM AFFECT THE SAUSAGE?
6. WHEN DO WE USE ICE AND WHY, HOW MUCH?