Teach for Understanding

Constructivists Models and Strategies that Engage Diverse Learners for Successful Outcomes

VCCS Seminar for New Faculty

Dr. Rosalyn M. King, Presenter
Professor of Psychology and
Chair, VCCS Center for Teaching Excellence,
Northern Virginia Region

Northern Virginia Community College
November 2012

Overview

- *Session will present overview of constructivist perspectives, strategies and models to be used across disciplines.*
- *Will help teaching faculty to help learners build internal representations of knowledge and personal interpretations of the learning experience.*
- *Will help faculty to assist students to construct meaning from subject matter covered in your classes.*
- *Will introduce some workable models.*

Characteristics of the Community College Classroom

Students of all ages, abilities, backgrounds, and needs

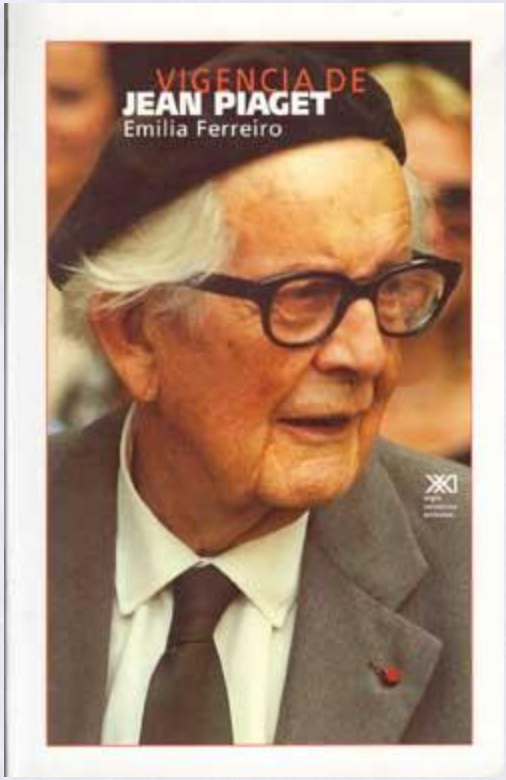
Diverse group of learners

Challenges design of instructional strategies

Challenges teaching

Challenges ability to connect learners to subject matter with successful outcomes

Constructivist Theory

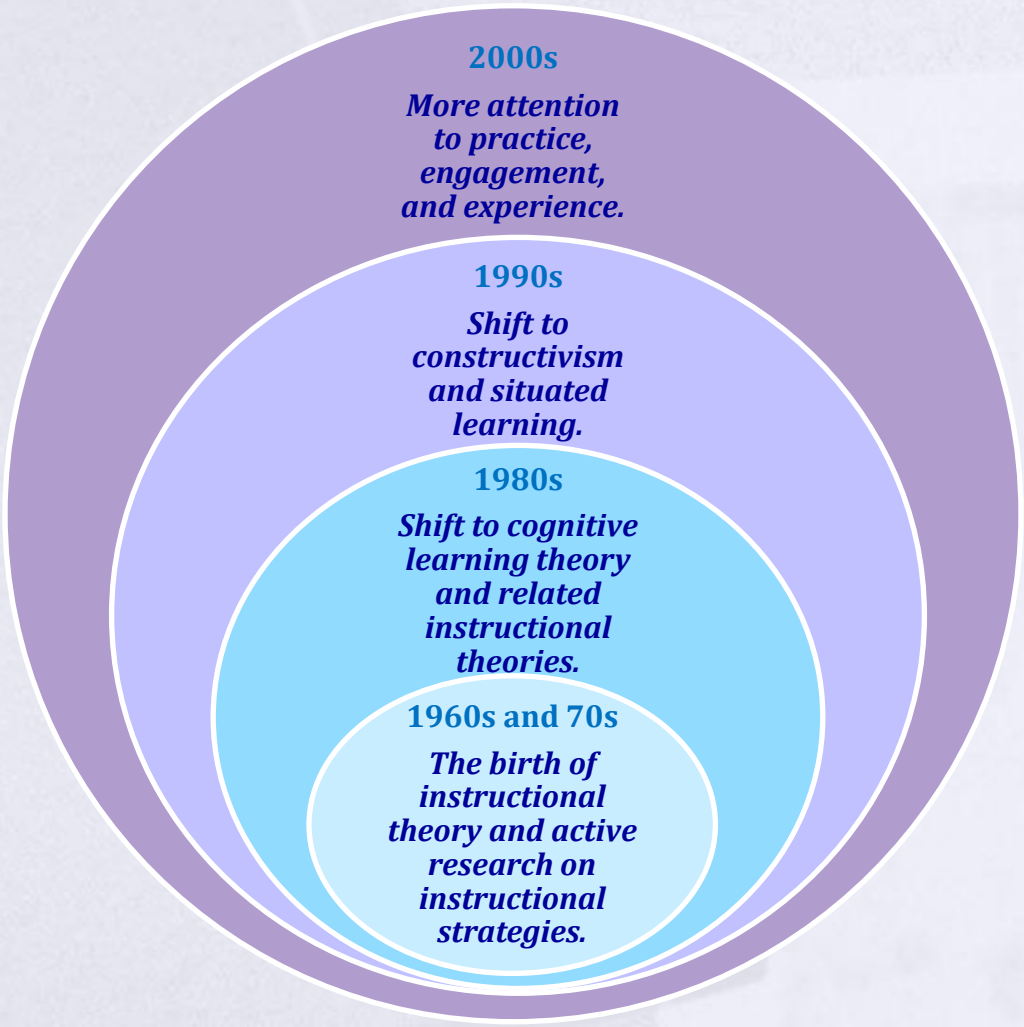


- A theory of *learning* and *knowing*. It tries to understand how we construct knowledge.
- An epistemological concept drawing from the fields of *philosophy, psychology and science*.
- Contributors *include Socrates, Dewey, Piaget, Vygotsky, Chomsky, Bruner* and others.
- *Socrates* believed that there were basic conditions for learning that resided in the cognition of the individual.
- *Jean Piaget*-major contributor.
  Genetic epistemology is the study of how knowledge (i.e., intelligence) develops.
- Piaget specifically wanted to know: ***How does knowledge grow; that is, how is intelligence created?***

Constructivist Theory

- ***Critical Theory***—a post-structuralist theory that places the learner (and learning) at the center.
- Is grounded in the lived experiences of those who daily encounter it.
- Social context, process and the quest for meaning take precedence.
- ***Constructivism*** is a theory or philosophy of learning based on the idea that ***knowledge is constructed by the knower based on mental activity*.**
- Constructivism can be defined as: ***"meaning making"*** rooted in the context of the situation…whereby individuals construct their knowledge of, and give meaning to, the external world.
- Constructivism has been around for a long time, but came into prominence in the early 1990s.

Constructivism vs. Historical Perspectives on Instruction



Constructivism-Basic Precepts

Learning is an active process of meaning-making gained in and through our experience and interactions with the world.

Learning is a social activity involving collaboration, negotiation, and participation in authentic practices of communities.

Where possible reflection, assessment, and feedback should be embedded "naturally" within learning activities.

Learners should take primary responsibility for their learning and "own" the process as far as possible.

Reflective Summary: *Definitions suggest a re-negotiation of teacher and learner roles. Instruction is not so much done to learners as it is meant to engage learners in a process of inquiry and activity.*

Basic Tenets of Constructivism

- *Learning results from **exploration, and discovery** and **meaning is constructed and reconstructed.***
- *Learning is a **community activity facilitated by shared inquiry**, including collaboration and cooperative inquiry.*
- *Learning occurs during the constructivist process where **students learn concepts while exploring their application** and learning **through discovery.***
- *Learning results from **participation in authentic activities** such as problems students that students might encounter in the **"real world."***
- *The **outcomes** of the learning experience are **unique and varied** in that learners **create knowledge from new information** based on their previous experiences.*

Constructivist Learning Theory

Theorists ask some of the following questions:

- *What does it mean to know something?*
- *How do we come to know it?*
- *How does this knowledge influence our thinking processes?*

Constructivist Teaching and Learning

- **Learners should be able to:**
  - *Construct meaning for themselves;*
  - *Reflect on the significance of the meaning; and*
  - *Make self-assessments to determine own strengths and weaknesses in learning;*
- **Teacher becomes….**
  - *Mediator of learning and thinking through engagement*
  - *Facilitator of understanding*
  - *Role shifts from "sage on the stage" to "guide on the side."*

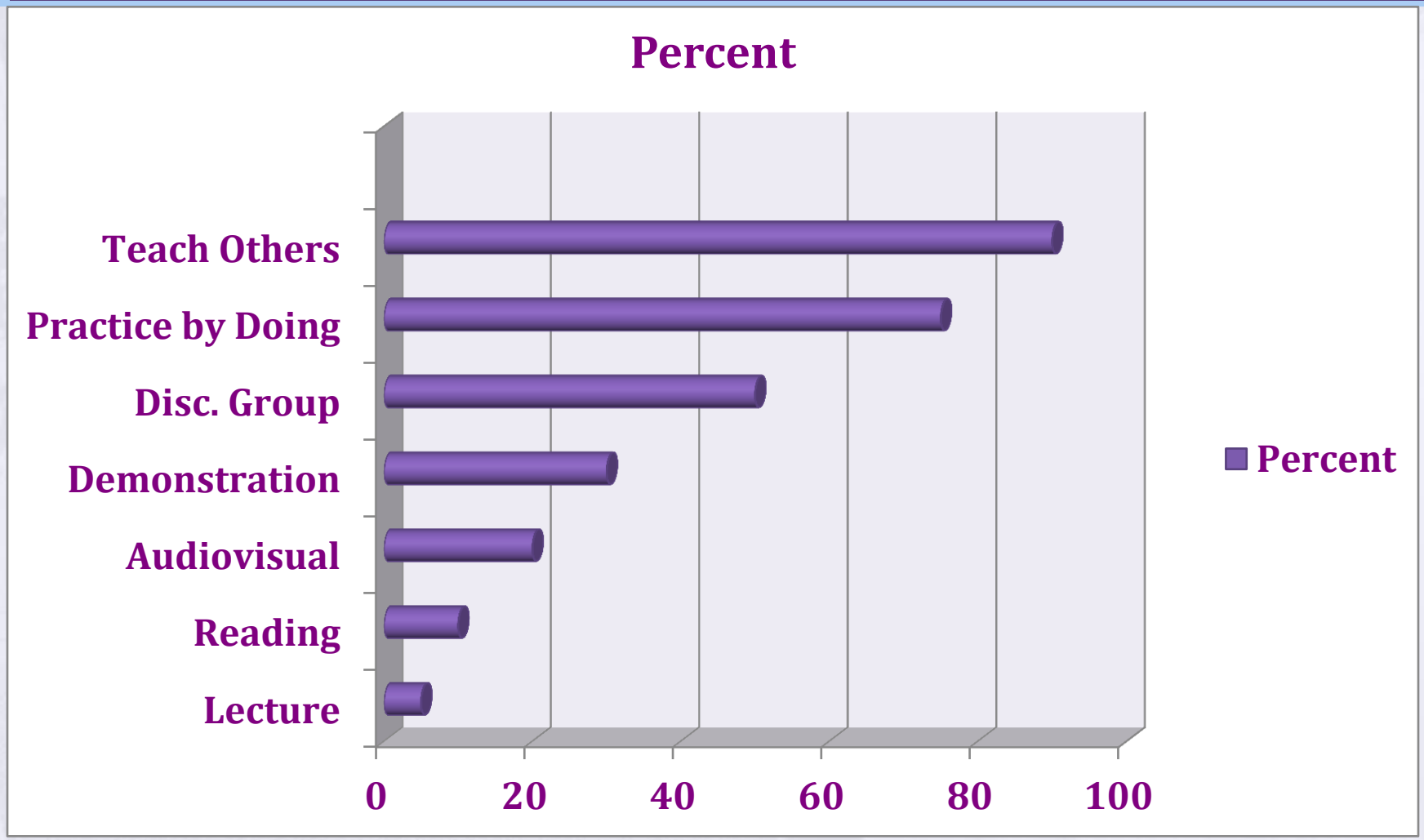
Instruction is not "done to learners" but is meant to "engage learners."

Education's Ideological Divide

Traditional	Innovative
Standardized tests	Authentic Assessment
Basic Skills	Higher-Order Thinking
Ability Grouping	Heterogeneous Grouping
Essays/Research Papers	Hands-On Projects
Subject Matter Disciplines	Interdisciplinary Integration
Chronology/History	Thematic Integration
Breadth	Depth
Academic Mastery	Cultivation of Individual Talents
Euro-centrism	Multiculturalism
Canonical Curriculum	Inclusive Curriculum
Top-Down Curriculum	Teacher Autonomy/Creativity
Required Content	Student Interest

Ferrero, 2006.

Teaching Method vs. Retention



A Comparison of Directed vs. Constructivist Models

A Comparison of Directed and Constructivist Models of Teaching and Learning

	Directed Instructional Models	Constructivist Models
Teaching/Learning Method	Teacher is center. Individualized work. Specific skill-based instructional goals and objectives. Teacher is knowledge giver (Sage of the Stage). Teacher transmits a set body of skills and/or knowledge to students. Students learn prerequisite skills required for each new skill. Teachers transfer knowledge. Sequenced, structured presentations and activities to help students process, encode, store and transfer (retrieve) information and skills. Traditional teacher-directed methods and materials are used: lectures, skill worksheets. Teachers master content, design courses learning master techniques of instruction. Polish presentation skills. Teachers are the experts.	Teacher is coach or facilitator of learning. Self-directed student as player. Global goals such as problem solving and critical thinking. Teacher is guide on the side. Teacher has students generate their own knowledge through experiences anchored in real-life situations. Students learn lower order skills in the context of higher order problems that require them. Students take responsibility for their own learning. Learning through problem-oriented activities, visual formats, and mental models; rich complex, learning environments; and learning through exploration. Nontraditional materials are used to promote student-driven exploration and problem solving. Teachers are the designers of learning environments. They study and apply the best methods for producing learning and student success. Learning is student focused and collaborative.
Assessment Methods	Uses traditional assessment: multiple choice, short answer, checklists of rubrics.	Uses nontraditional or authentic assessment, such as group products, web pages, multimedia projects, portfolios, student products graded with self-report instruments and rubrics.

A Comparison of Directed vs. Constructivist Models

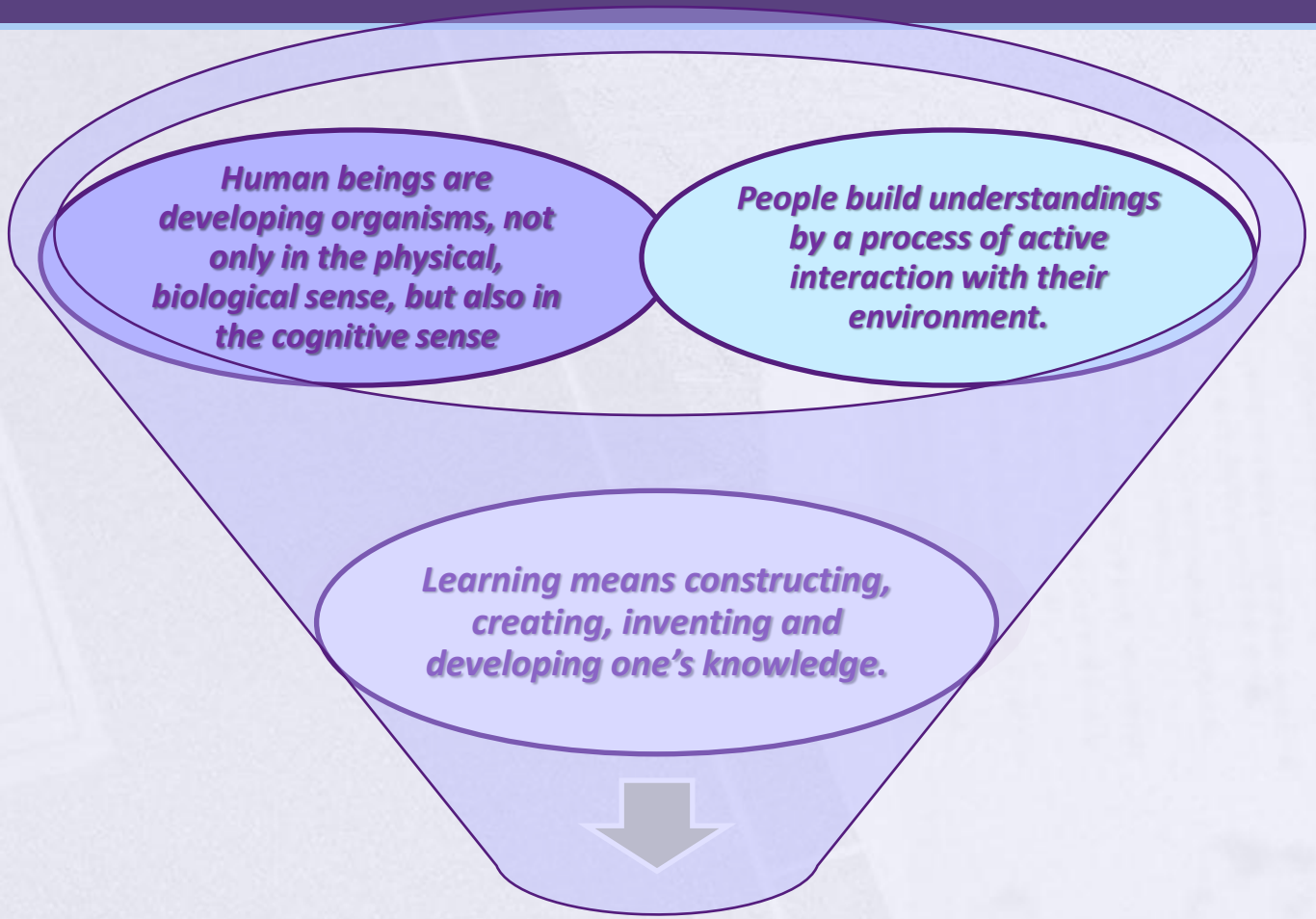
A Comparison of Directed and Constructivist Models of Teaching and Learning

Instructional Needs/Problems Targeted	Accountability-all students must meet required standards.	Higher level skills-all students must be able to think critically and creatively and solve problems.
	Individualization-must help to meet the individual needs of students working at many levels.	Cooperative group skills-helps students learn to work with others to solve problems.
	Quality assurance-instruction must be consistent.	Increase relevancy: Students must have active, visual, authentic learning experiences that relate to their own lives.
	Convergent thinking-all students must have the same skills.	Divergent thinking-students must think on their own and solve novel problems as they occur.

Taken from a combination of sources, including Roblyer and Doering, Pearson, Allyn-Bacon Prentice-Hall.
Online: http://www.education.com/print/comparison-directed-constructivist.

Developed by Rosalyn M. King,
"Teach for Understanding: Constructivist Models and Strategies that Engage Diverse Learners for Successful Outcomes."

Conceptual Model of Constructivism



Henry, Michael (2009). Constructivism in the community college classroom. *The History Teacher* (36)1.

Quotes and Commentaries from Educators

Constructivism reminds us that order exists only in the minds of people, so when we as teachers impose our order on students, we rob them of the opportunity to create knowledge and understanding themselves. Our task, then, is to understand and nurture the learning and development of students. We must not do for them what they can and must do for themselves.

(Brooks, 1993, 70-71)

Brooks, J.G & Brooks, M.G. (1993). **The case for constructivist classrooms**. Alexandria, VA: Association for Supervision and Curriculum Development.

Quotes and Commentaries from Educators

- *"Educators will need to understand that learners will require a variety of different experiences to advance to different kinds and levels of understanding. "*
- *"Thus, we must bring our learners' prior knowledge to the forefront if they are to apply their current understandings to new situations in order to construct new knowledge."*
- *"To achieve this, educators need to spend time understanding learner's current perspectives and, based on this information, incorporate learning activities that have real world relevance for each learner."*

Kanuka, Hgeather and Terry Anderson. (1999). *Using constructivism in technology-mediated learning: Constructing order out of the chaos in the literature.* Online: http://radicalpedagogy.icaap.org/content/issue1_2/02kanuka1_2.html

Quotes and Commentaries from Educators

- *"Learners respond to their sensory experience by building or constructing in their minds, schemas or cognitive structures which constitute the meaning and understanding of their world."*

Saunders, W. (1992). The constructivist perspective: Implications and teaching strategies for science. *School Science and Mathematics,* 92(3), 136-141.

- *"Individuals create knowledge by linking new information with past experiences to create a personal process for meaning-making."*

(Ausubel, 1986; Bruner, 1990; Novak, 1998; Piaget, 1966)

- *"The Learner progressively differentiates concepts into more complex understandings and reconciles abstract understanding with concepts garnered from previous experience."*

Novak, J. (1998). Learning, creating and using knowledge: Concept Maps as facilitative tools in schools and corporations. Mahwah, NJ: Lawrence Erlbaum Associates.

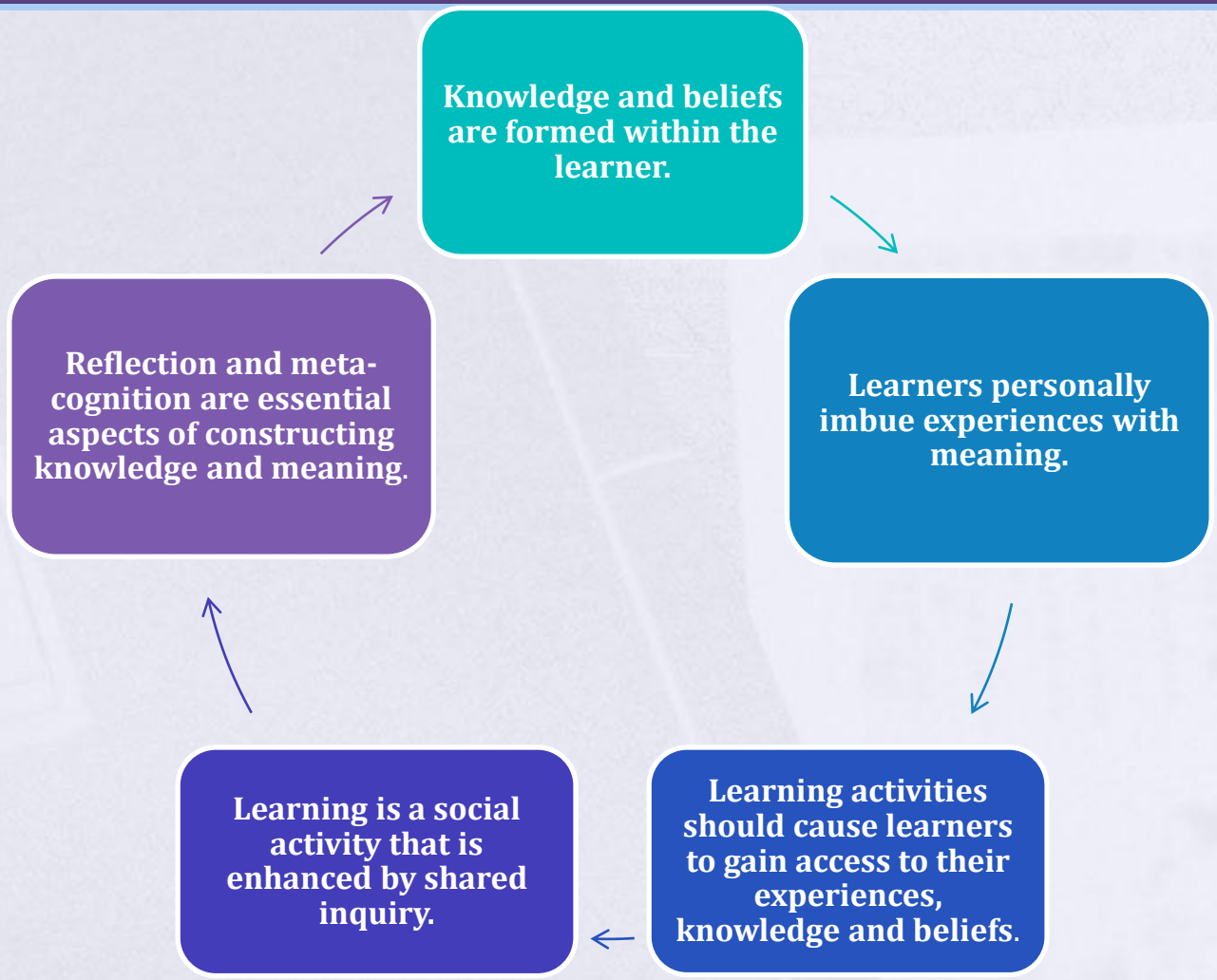
- *"New knowledge is made meaningful by the ways in which learners establish connections among knowledge learned, previous experiences, and the context in which learners find themselves."*

Lambert, L., Walker, D. Zimmerman, D., Cooper, J., Lambert, M.D., Gardner, M.E. & Ford Slack, P.J. (1995). *The constructivist leader.* New York: Teachers College Press.

These educators indicate the importance of linking information and learning to contextual experiences that would engage learners and contribute to deeper understanding.

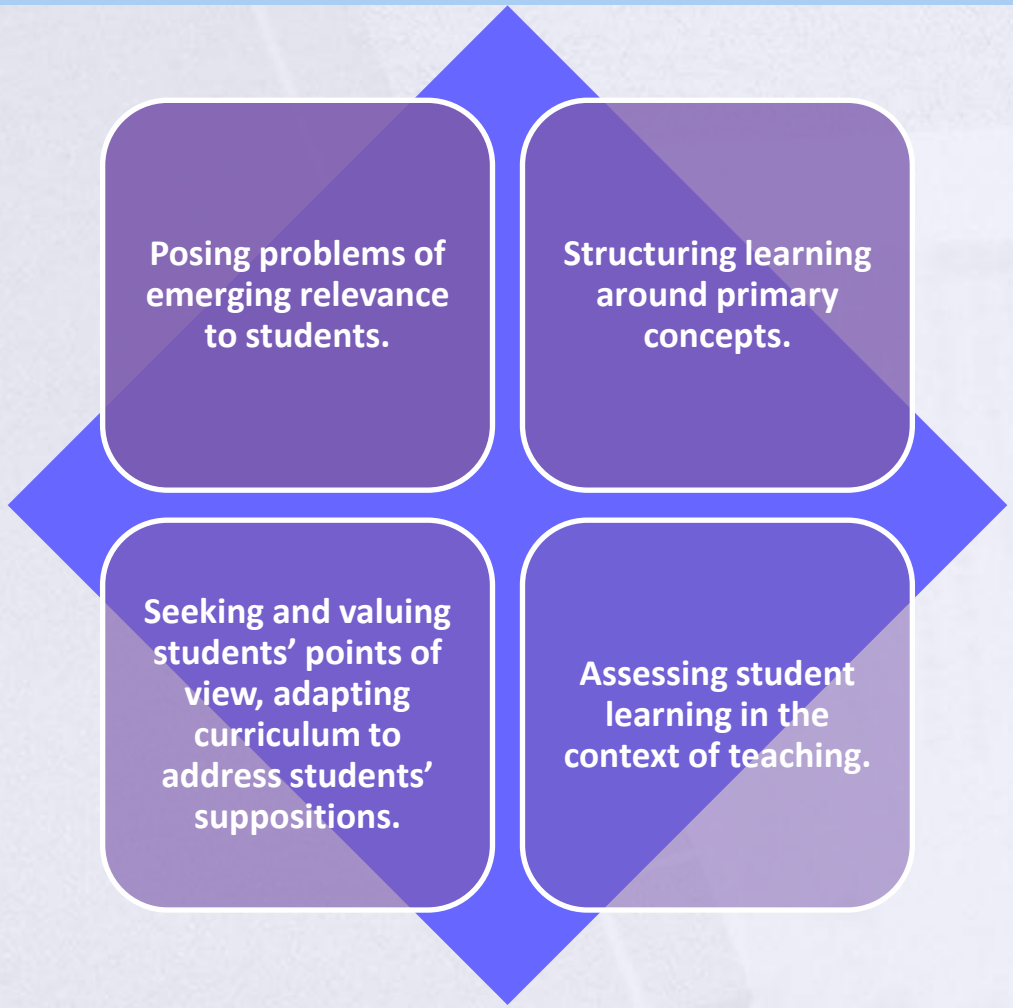
Multiple Principles of Constructivist Learning Theory

Lambert, et al. (1995)



Guiding Principles of Constructivism

Brooks & Brooks (1993)



Benefits of Constructivism

Corresponds to how people really learn.

Higher order learning outcomes.

Better integration of affect and emotion.

More relevance to job and out-of-the-classroom performance.

Constructing Meaning and Understanding

How do we Teach for Understanding?

What is Understanding vs. Knowing?

What is meant by understanding and how does it differ from knowing?

- *When a student knows something, the student can bring it forth upon demand-tell us the knowledge or demonstrate the skill.*
- *Understanding goes beyond knowing.*

"Understanding is a matter of being able to do a variety of thought-demanding things with a topic-like explaining, finding evidence and examples, generalizing, applying, analogizing, and representing a topic in a new way…Understanding is being able to carry out a variety of "performances" that show one's understanding of a topic while at the same time advancing it."

Perkins, David. (1993). Teaching for Understanding. *American Educator* (17)3, 28-35.

How Can We Teach For Understanding?

Make Learning a Long-term, Thinking-centered Process.

- Teaching is less about what the teacher does.
- More about what the teacher gets the students to do.

Provide for Rich Ongoing Assessment.

- Students need criteria, feedback, opportunities for reflection in order to learn performances of understanding well.
- Students need the above support from the beginning of any sequence of instruction.

Support Learning with Powerful Representations.

- Conceptual models in the form of diagrams with accompanying story lines, crafted according to principles can help students solve non routine problems that ask students to apply new ideas in unexpected ways.
- Well-chosen analogies often serve to illuminate concepts in science, history, English and other domains.

How Can We Teach For Understanding?

Pay Heed to Developmental Factors

- Teachers who teach for understanding would do well to keep in mind factors such as complexity, but without rigid conceptions of what students can and cannot learn by age and development.

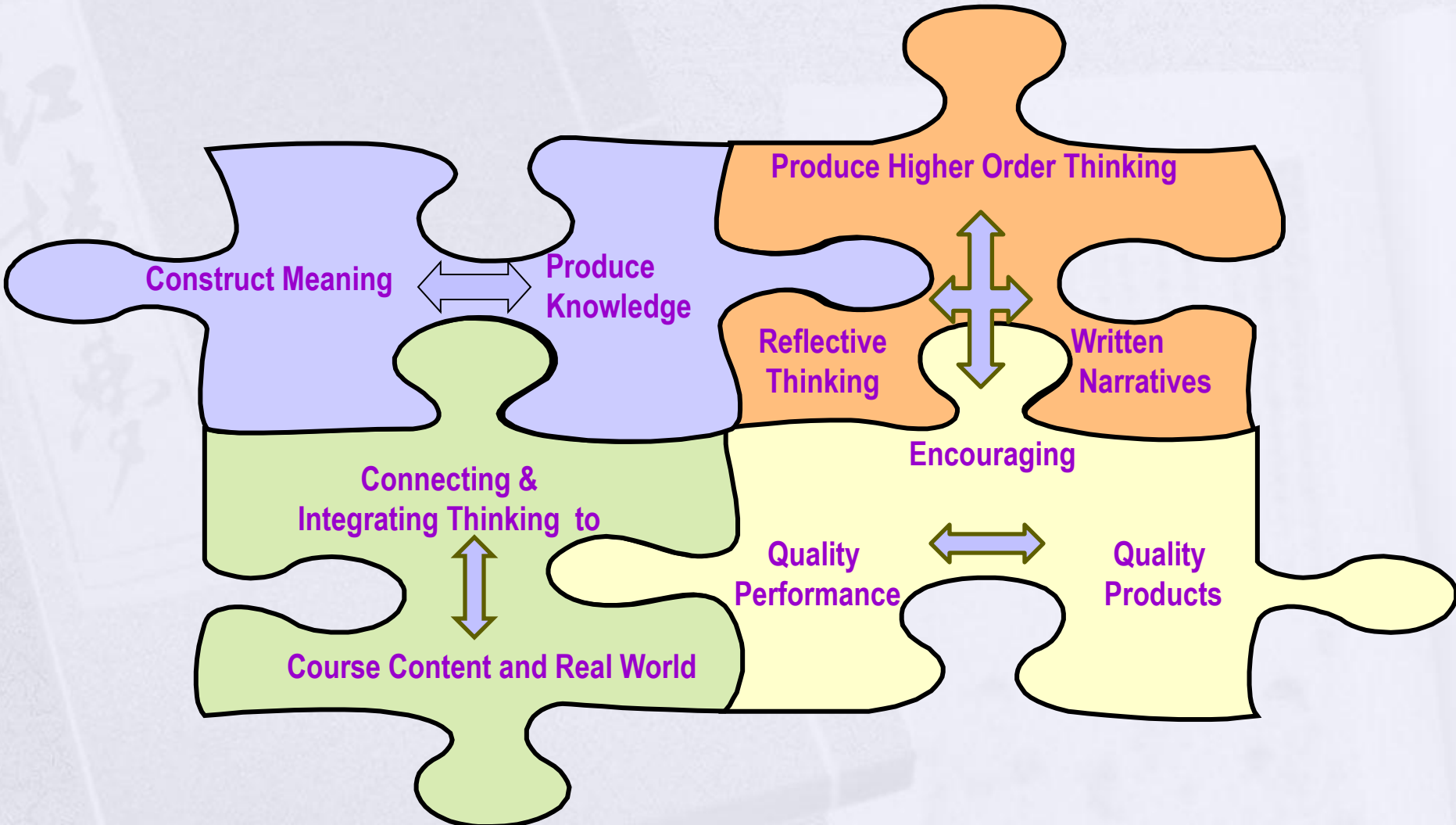
Induct Students into the Discipline

- This requires developing a sense of how the discipline works as a system of thought, its structure and logic.
- Conventional teaching rarely enlightens students to the way the discipline works and how one justifies, explains, solves problems, and manages inquiry within the discipline. Yet in the patterns of thinking lie the perfomances of understanding.

Teach for Transfer

- Helping students make the connections they might not make.
- Helping students to cultivate mental habits of connection-making.
- Asking students to go beyond the information given, tackling some task of justification, explanation, example-finding that reaches further than anything in the textbook or the lecture.

In Constructivist Teaching for Understanding--Students Can....



Five Standards of Instruction and Assessment

- ***Higher Order Thinking***

  (manipulating information & ideas to transform meaning & enhance understanding)

- ***Depth of Knowledge***

  (substantive character of ideas and level of understanding demonstrated)

- ***Connectedness to the World***

  (examining the extent to which class has meaning beyond instructional content)

- ***Substantive Conversation***

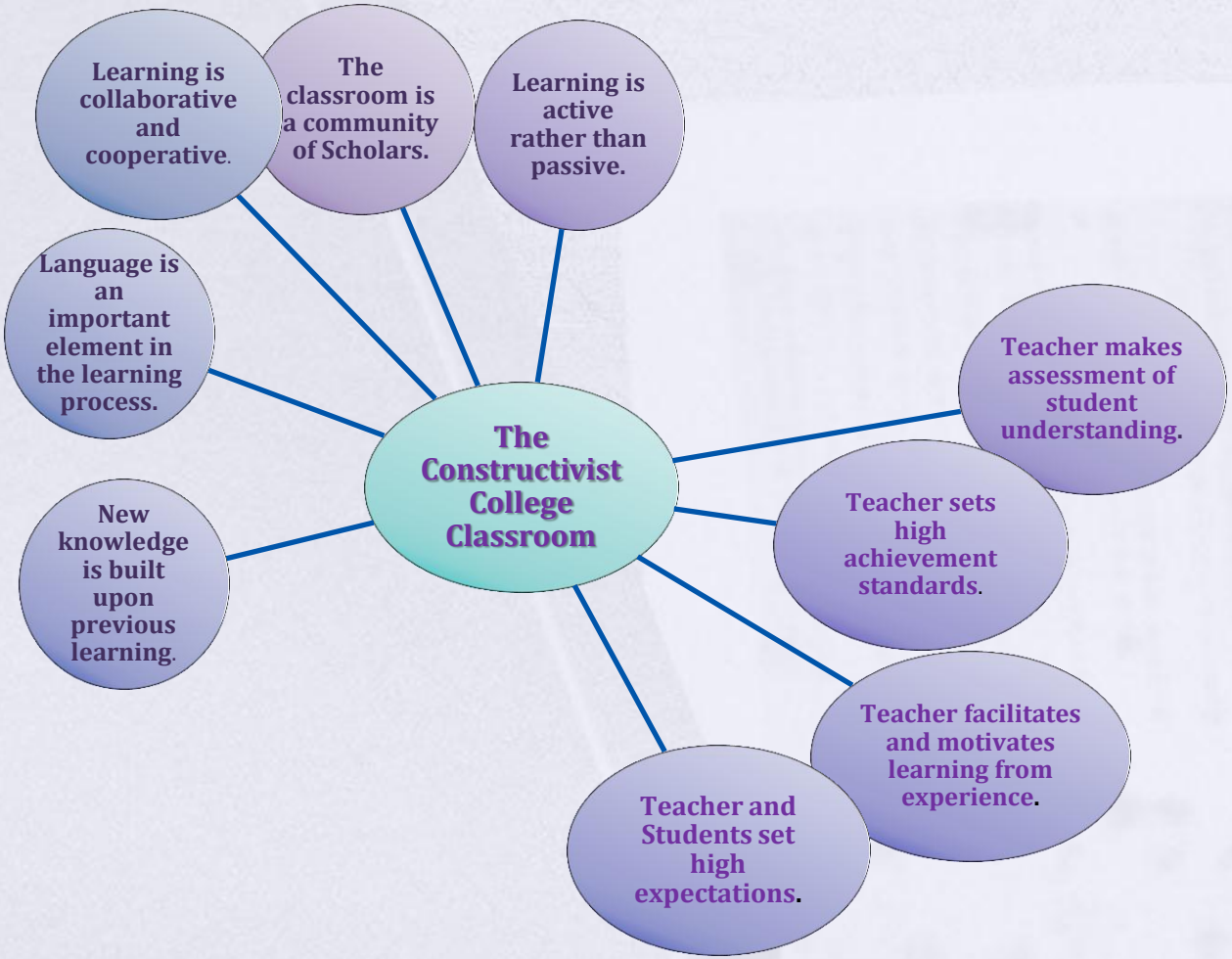
  (thinking and interaction displayed in making distinctions, applying ideas, forming generalizations, raising questions and not just reporting experiences, facts, definitions, etc.)

- ***Social Support for Achievement***

  (conveying high expectations, respect and inclusion of students in the learning process)

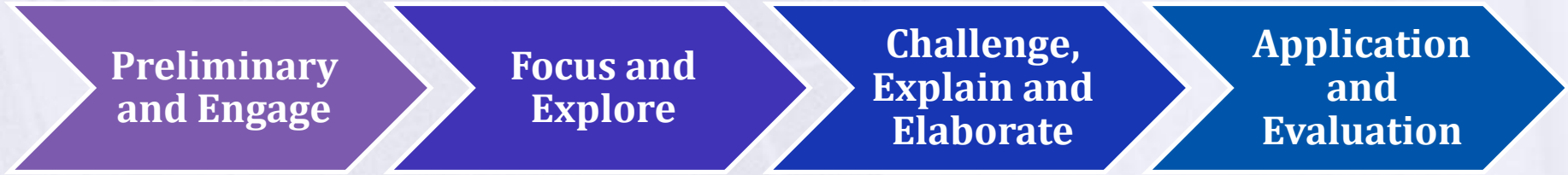
Newmann & Wehlage (1996)

Characteristics of Constructivist Classrooms



Constructive Phases of Learning

(Harry, 2003)



Role of Teachers

Shift instructional strategies and alter content based on student responses.

Inquire about students' understanding of concepts before sharing their own understanding of concepts.

Encourage students to engage in dialogue, both with teacher and each other.

Allow wait time after posing questions.

Provide time for students to construct relationships and create metaphors.

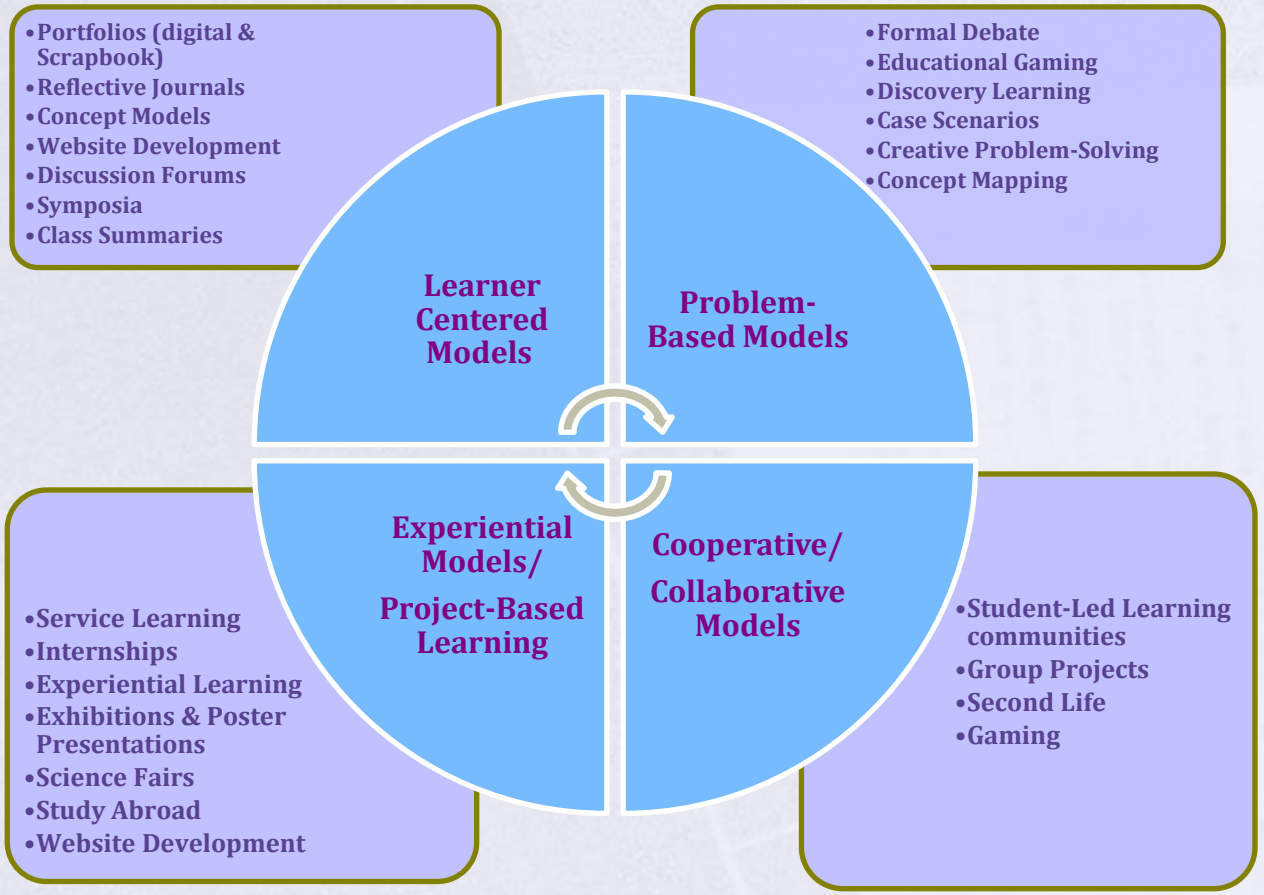
Nurture natural curiosity.

Teaching for Understanding

SELECT EXAMPLES OF MODELS AND STRATEGIES

Instructional Models and Strategies

Differentiated Instruction, Flipped Classroom, Authentic Instruction



Portfolios

Description

- A showcase of student performance. Artifacts, items, objects, or articles as examples of students' understanding and learning in a subject.
- Core of the portfolio are reflective narratives connecting to discipline content.
- Exhibits what students have learned , skills, talents and understanding of concepts and content.
- Attempts to restructure learning and instruction.
- Designed to present a broader and more genuine picture of learning.

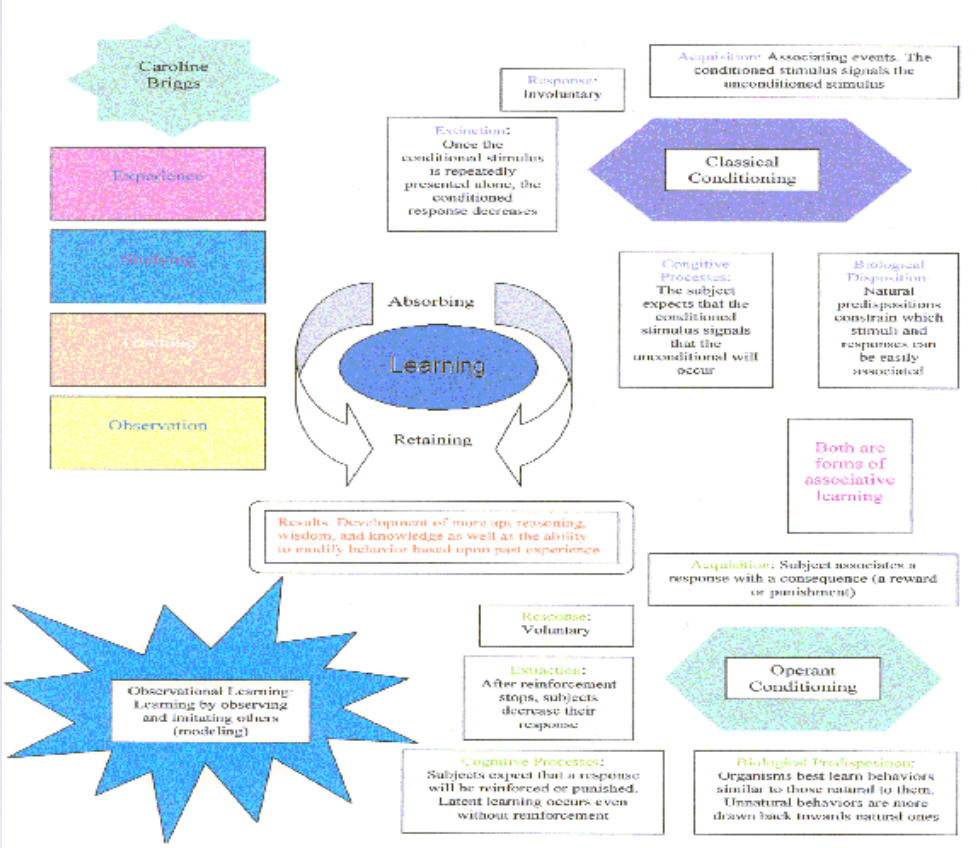
Action Steps: How To Get Started

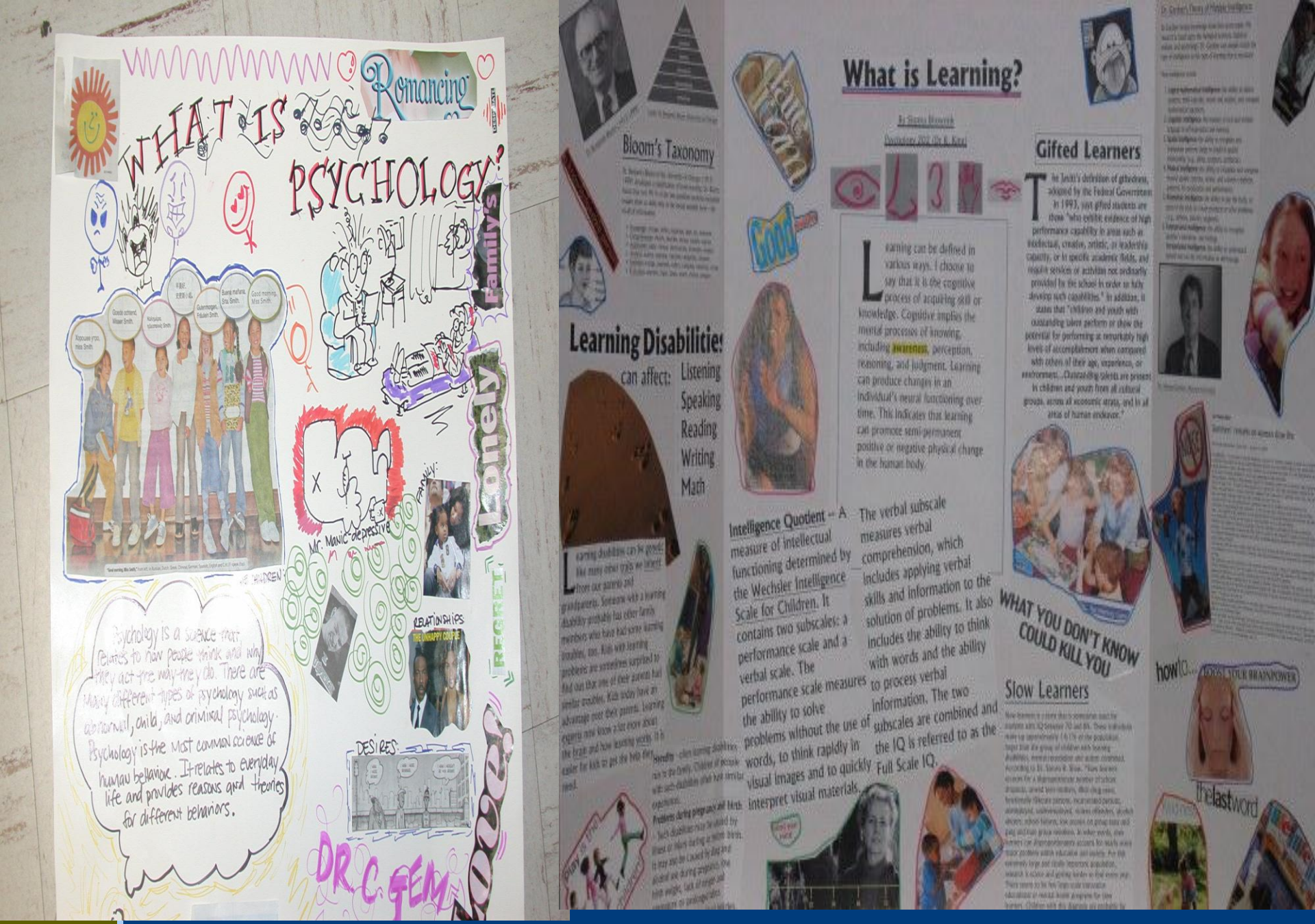
- Review Pertinent and Related Research
- Conceptualize Model(s)
- Develop Set of Written Guidelines For Students to Follow
- Develop Assessment Criteria
- Develop Assessment Form for Student Feedback
- Implement Model in Classroom
- Reflect on Reactions and Experiences
- Collect Model Portfolios for Future Students to Use as Guide
- Compile and Evaluate Student Comments
- Continually Modify and Improve Techniques

Concept Models

Description

- A concept is a cognitive conceptual framework displayed in graphical form. It may group similar events, ideas, objects or people.
- Elements of cognition that help to simplify and summarize information.
- Aids in memory, understanding and thinking.
- Can be used to summarize readings, lectures, making notes in seminars, reviewing for an exam, working on an essay, definition construction, paradigm shifts, creative writing, developing models and more.




WHAT IS PSYCHOLOGY?
Romancing
Family's
Lonely
REGRET
Mr. Manic-depressive
FAMILY:
RELATIONSHIPS
THE UNHAPPY COUPLE
DESIRES:
DR. C. GEM
Psychology is a science that relates to how people think and why they act the way they do. There are many different types of psychology such as abnormal, child, and criminal psychology. Psychology is the most common science of human behavior. It relates to everyday life and provides reasons and theories for different behaviors.
What is Learning?
Bloom's Taxonomy
Learning Disabilities
can affect: Listening
Speaking
Reading
Writing
Math
Learning can be defined in various ways. I choose to say that it is the cognitive process of acquiring skill or knowledge. Cognitive implies the mental processes of knowing, including awareness, perception, reasoning, and judgment. Learning can produce changes in an individual's neural functioning over time. This indicates that learning can promote semi-permanent positive or negative physical change in the human body.
Intelligence Quotient – A measure of intellectual functioning determined by the Wechsler Intelligence Scale for Children. It contains two subscales: a performance scale and a verbal scale. The performance scale measures the ability to solve problems without the use of words, to think rapidly in visual images and to quickly interpret visual materials.
The verbal subscale measures verbal comprehension, which includes applying verbal skills and information to the solution of problems. It also includes the ability to think with words and the ability to process verbal information. The two subscales are combined and the IQ is referred to as the Full Scale IQ.
Gifted Learners
WHAT YOU DON'T KNOW COULD KILL YOU
Slow Learners
how to...
the last word

Student Websites and WebQuests

Student Websites

- Cognitive Psychologists: William James & Aaron Beck-A. Cales
- Psychological Tactics & Appeals in Advertising-A. Cales
- What is Psychology?

WebQuests for Constructivist Learning

- A WebQuest is an inquiry-oriented lesson format in which most or all the information that learners work with comes from the web.
- WebQuest.org

Simulations & Gaming

- Second Life-A Constructivist Approach to Learning
- Games to Teach-MIT

Other Models

- New Ways of Understanding Math

Service Learning

Description

- **Service Learning** *enhances education and gives students the opportunity to serve in their chosen field of study and increase their civic responsibility.*
- **Community colleges** *in more than 40 states currently offer service learning.*

Goals

- **For students:** *An opportunity to enrich and apply knowledge learned in the classroom in applied settings.*
- **For faculty and college:** *Move from teacher-centered, to learning centered, to community-centered pedagogy.*
- **Shared Ownership:** *Expanding the classroom into the community and vice versa.*

Service Learning: Examples of Models

- ***Project Management Course:*** *Integrated SL. Involves gutting and rebuilding dilapidated houses in the Inner City. (Seattle Univ.)*

- ***Leadership and Team Development Course:*** *10 hours of direct service by each student (whole class or teams). Identify a human service need not being adequately met by an existing social service institution. Examples of Service, shelters (maintenance), special service facilities that feed, shelter, train, counsel. Special services to the mental and physical challenged.* (Seattle Univ.)

- ***Other Projects:*** *Neighborhood cleanup and restoration; creation of wetlands; wilderness trail maintenance; re-vegetation projects to return native vegetation to beaches and parklands.* (Seattle Univ.)

- ***Financial Accounting Class:*** *For final exam, students had to find a community service organization that needed accounting consultation and work with them to serve their accounting needs. Project must involve setting up or modernizing the organization's account system or converting an existing manual system to a newer computerized system.*

Service Learning: Examples of Models

- **Principles of Management:** *Class of 48 had to plan and deliver a coordinated 6 week tutoring program in a middle school. Each student gave 12 hours.*
- **Marine Biology and Ecology:** *Students took trays of animals from aquariums to elementary schools to explain what is being learned about Marine Biology and Ecology.*
- **Media technology:** *Students provided agencies with technical assistance in information technology.*

Written Reflective Narratives

- ***Distinguishes SL from other forms of experiential education.***
- ***Links service experience to course materials, readings and lectures.***
- ***A continuous and deliberate process involving analysis, synthesis, disciplined and critical thinking, as well as introspection.***
- ***Makes consistent and strong connections between service, course topics, content, and objectives.***

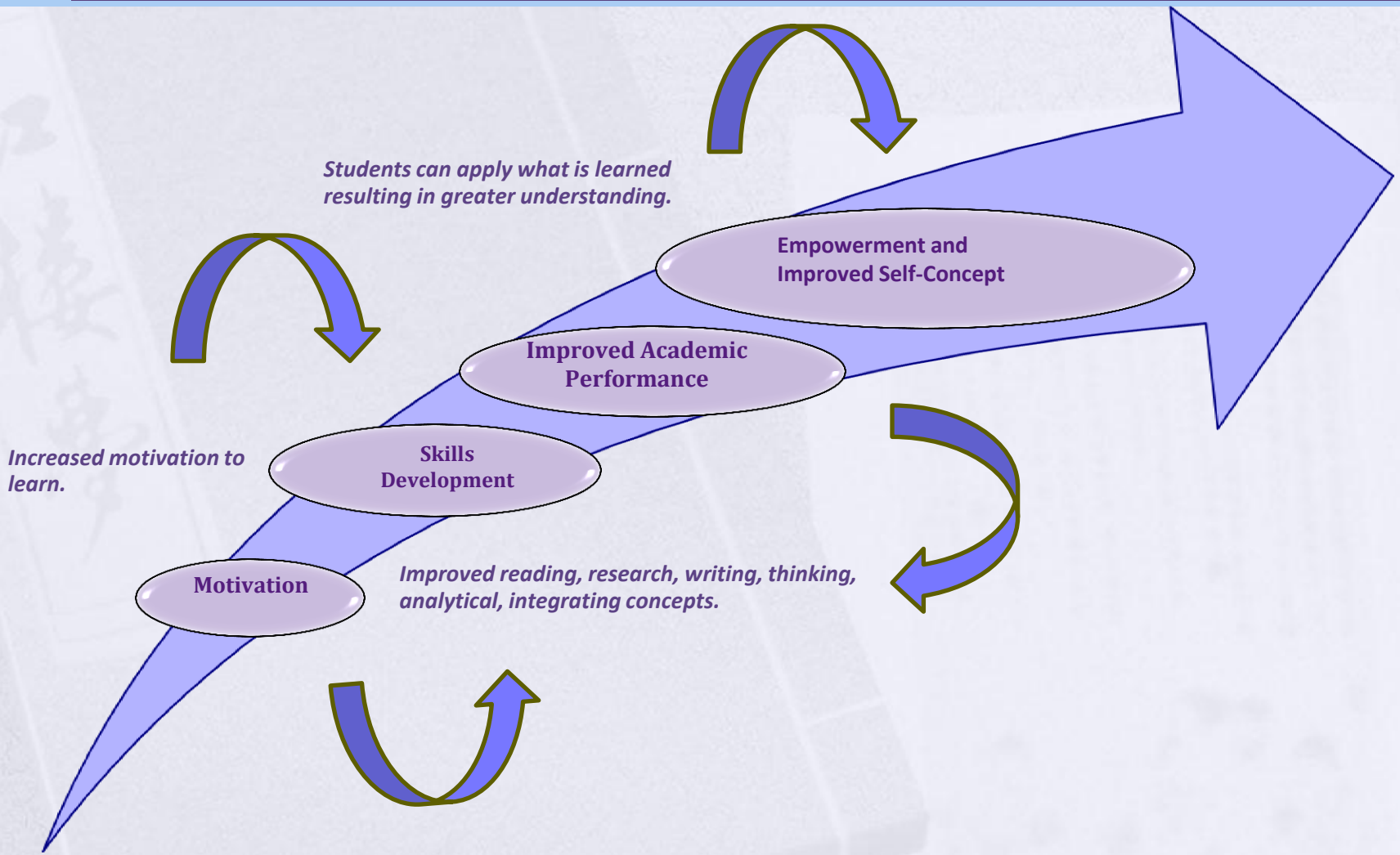
A Developmental Psychology Class in the Field

A total class service learning project at the Loudoun County Transitional Home for displaced families.

Student Learning Outcomes

In Constructivist Classrooms

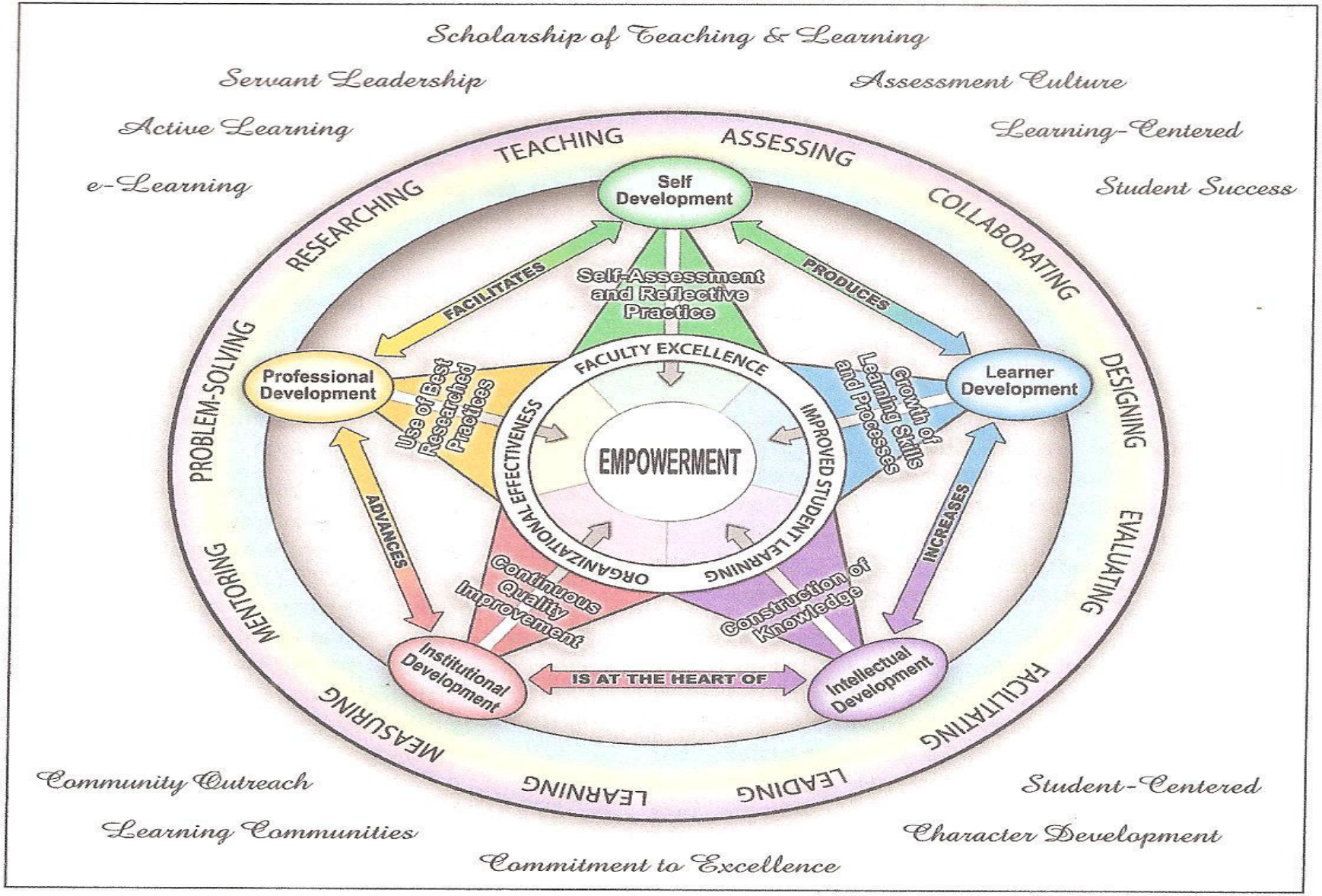
Student Learning Outcomes in Constructivist Classrooms



Role of Lecture and Differentiated Instruction

- ***Constructivists methodology does not eliminate lecturing*** as an instructional tool.
- ***Teachers must still must spend significant time at the podium***.
- Lectures provide a context in which to place class discussions of critical issues and concepts and to build further understandings.
- ***Teachers must still convey new information and interpretations of concepts.***
- ***Constructivist strategies also do not preclude other types of teaching methods*** in the classroom.
- ***Teachers are encouraged to find the correct balance in differentiating instruction in the classroom.*** (See the research findings on the differentiated classroom.)

Figure 1 Compass of Higher Education



Teaching in the 21st Century-Video

http://www.youtube.com/watch?v=bjgKzrkMetU&feature=related

References

Ausubel, D.P., Novak, J.D., & Hanesian, H. (1986). *Educational psychology: A cognitive view. New York: Werbel and Peck (reprinted).*

Bergen, Doris. (2008). **Human development: Traditional and contemporary theories. New Jersey: Pearson-Prentice Hall.**

Brooks, J.G & Brooks, M.G. (1993). **The case for constructivist classrooms. Alexandria, VA: Association for Supervision and Curriculum Development.**

Brooks, J.G & Brooks, M.G. (1999). In search of understanding: The case for constructivist classrooms.

Bruner, J. (1990). *Acts of meaning. Cambridge, MA: Harvard University Press.*

Daley, Barbara J. (2002). Facilitating Learning with Adult Students through Concept Mapping. *The Journal of Continuing Higher Education, (50)1, 21-31.*

Dyck, Brenda. (2009). Using a constructivist model in the classroom: An internet hotlist. Online: http://www.wired-and-inspired.ca/constructivism.

Harry, Vickie. (2009). Constructivist learning and teaching. Online: http://www.maisk-6scienceinquiry.org/teaching.htm.

Henry, Michael (2009). Constructivism in the Community College Classroom. The History Teacher (36)1. Online: http://www.historycooperative.org/journals/ht/36.1/henry.html

References

Jonassen, D. H. & Welsh, T. (eds). (1993). Designing environments for constructive learning. New York: Scientific Affairs Division.

Kanuka, Heather and Terry Anderson. (1999). *Using constructivism in technology-mediated learning: Constructing order out of the chaos in the literature. Online:* http://radicalpedagogy.icaap.org/content/issue1_2/02kanuka1_2.html

Matthews, William J. (2003). Constructivism in the classroom: Epistemology, history and empirical evidence. *Teacher Education Quarterly*, Summer.

Novak, J. (1998). Learning, creating and using knowledge: Concept Maps as facilitative tools in schools and corporations. Mahwah, NJ: Lawrence Erlbaum Associates.

Perkins, David. (1993). Teaching for Understanding. *American Educator (17)3, 28-35.*

Piaget, J. (1966). *The psychology of intelligence. Totowa, NJ: Littlefield, Adams.*

Saunders, W. (1992). The constructivist perspective: Implications and teaching strategies for science. *School Science and Mathematics, 92(3), 136-141.*

Vygotsky, L. (1962). Thought and language. (E. Hanfman & G. Backer, Trans.) Cambridge, MA: MIT Press (Originally published in 1934)

Wilson, Brent (2011). Constructivism in Practical and Historical Context. In Bob Reiser & Jack Dempsey (Eds), Current Trends in Instructional Design and Technology (3rd Edition). Upper Saddle River NJ: Pearson prentice Hall.