The Empty Cup

"Teaching for Understanding" at 21st Century Edward Waters College

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“Hey! The cup is full! Why do you keep pouring tea?”

“Like this cup, you are full,” replied the Zen master.

“I can teach you nothing. Empty the cup you must.”

Unlike the Zen scholar, my cup is empty and held out, ready for the master to pour tea. As the *Tao De Ching* teaches, emptiness is what makes the cup useful. If inquiry is an empty cup, then I can pose the following: What happened in a final project that fostered teaching for understanding?

Sudden death of a Director at Edward Waters College made it necessary for the professor of record to take over administrative duties. That created a need to hire an adjunct professor to finish the last three weeks of the spring 2008 semester. Students had been studying learning theories for 11 weeks and were preparing oral and written reports for final assessments. What they needed was a specific way to organize thinking.

After collaborations with the professor of record, psychology department chair, and provost of the college, it became clear that I needed to design the project with Harvard University’s teaching for understanding (TfU framework. (Perkins and Unger, 1999) That would increase coherence among the six think tanks (workshops) comprising the project.

Also, students needed a specific approach to for interactive instruction. For this task, Howard Gardner’s MI approach served as an instructional design theory that required thinking in every phase of the session. The MI approach encouraged students to create intellectual products that made their thinking visible. (Gardner, 1999)

Finally, David Perkins, Gardner's colleague and fellow senior researcher at Harvard University, created the knowledge as design system for critical thinking. His method gave students a mental tool for understanding the respective learning theories the professor of record had assigned. (Perkins, 1986) Thus, two instructional design theories (one for designing, the other for delivery) rooted the final project in teaching for understanding. Additionally, Perkins' "knowledge as design" method of critical thinking became the specific tool students would ultimately use to organize thinking in their final oral and written reports.

Instructional Design

Project Zero (PZ) researchers in collaboration with classroom teachers all over the world had been developing the (TfU) framework for over a decade. TfU enabled me to set down a generative topic to focus instruction, a throughline to embed a value in each think tank, two related understanding goals to specify what learners must know, understanding performances to specify what learners must do to show what they know, and ongoing assessments to make visible what learners learned—a performance view of understanding. (Blythe, 1998; Perkins & Unger, 1999)

Thus, the design features for my application of the TfU framework became the following:

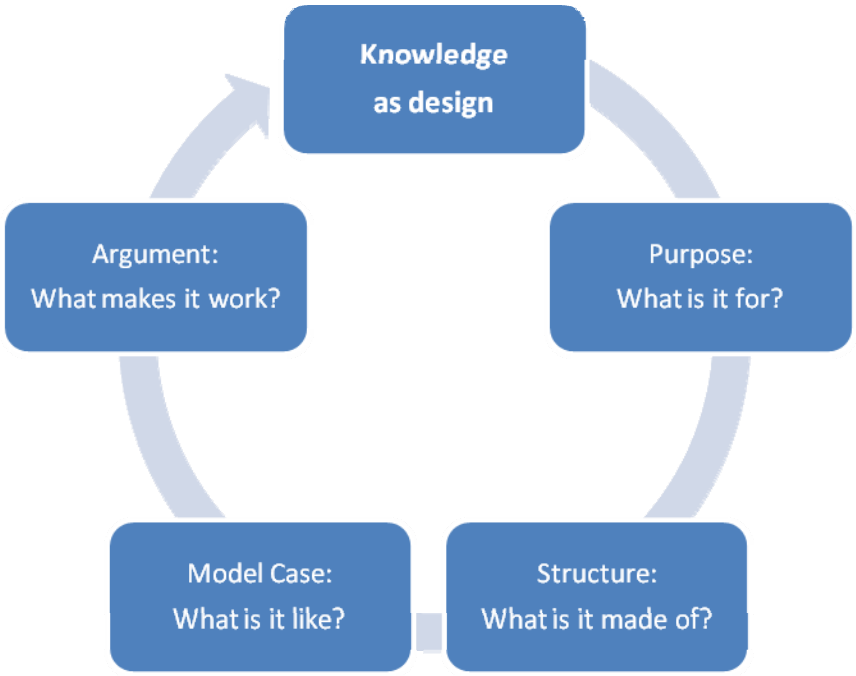
TfU Feature	**Meaning**	**Example**
Generative Topic	**Curriculum idea of interest to students and the facilitator**	**"Analyzing Learning Theories"**
Througline	**Core idea repeated throughout the project or course**	**"All learning integrates thinking and doing." (Senge et al, 2004)**
Understanding Goals	**Desired disciplinary knowledge**	1. **Understand how to analyze ideas with the knowledge as design method of critical thinking.** 2. **Understand how to organize thinking in a report about a learning theory.**
Understanding Performances	**What students do to show understanding as well as build new understanding**	**1. Students complete a KWL learning log on an article about knowledge as design.** **2. Students deliver oral reports organized with knowledge as design.**
Ongoing Assessments	**How the facilitator and students see performances of understanding**	**Students receive value neutral feedback in each think tank and the oral reports. Thus, they can self adjust; i.e. improve performances of understanding. (Wiggins, 1977)**

(Perkins & Unger, 1998)

Instructional Delivery

Secondly, Howard Gardner's MI approach served as the method for delivering instruction in each of the six think tanks (workshops). Drawing on his multiple intelligences theory, the MI approach offered a structure with an almost infinite number of activities to foster deeper disciplinary understanding; each activity had been set in one or more of his nine intelligences. (Gardner, 1999, 2006) If the course had been for a whole semester instead of just three weeks, activities set in each of the nine intelligences would have touched each student's intelligence profile. Each student would have engaged theories of learning with the lenses of verbal linguistic, logical mathematical, musical, visual spatial, naturalistic, interpersonal, intrapersonal, bodily kinesthetic, and existential intelligences. (Gardner, 2006) In the case, of the three week project, needs of the students required emphasizing verbal linguistic intelligence, primarily.

For example, in the first think tank, the entry point was a verbal linguistic intelligence activity using a specific method of critical thinking to analyze an ordinary object for purpose, structure, model case, and arguments. Students used Perkins' knowledge as design to analyze a cell phone at four levels of depth:



(Perkins, 1986)

Next, as a powerful analogy, they performed Maya Angelou's poem "When great trees fall." Within the context of the "echo poem game," students echoed my dramatic reading of lines from the poem until they had performed the entire poem. Then, each young scholar selected one of four knowledge as design questions and completed a quick write strategy, writing for five minutes on the question. These activities were set in verbal linguistic intelligence with a touch of interpersonal intelligence.

David Perkins, a Harvard University researcher and former co-director of Project Zero Research Center, authored the knowledge as design method of critical thinking in the 1980s. He said any human made object or idea is a "structure adapted to a purpose." Therefore, any human made object or idea has a purpose, structure, model case, and argument. (Perkins, 1986)

That meant at least four knowledge as design questions could shape an analysis of Maya Angelou's poem:

- **Why did Maya Angelou write this poem? (purpose)**
- **How does she connect the great trees to great souls? (structure)**
- **How do great trees such as Asa Hilliard still impact on us? (model case)**
- **How might each of us impact on the future of psychology? (argument)**

Student responses in the quick write strategy spread across the four questions. So they, collectively, analyzed all four levels of the poem as an idea and drew (Gardner, 1983, 2006)

Finally, in multiple representations—the third part of Gardner's MI approach--students completed a KWL learning log about an article that expanded their understanding of knowledge as design. (Gardner, 1999) The KWL drew on verbal linguistic, visual spatial and interpersonal intelligences. (Gardner, 1983)

Instructional Outcomes

At the half way point in the final project, students were ready to apply knowledge as design to psychological ideas such as theories of learning. The professor of record had already assigned them to selected theories so each young scholar had the task of using purpose, structure, and model case, and argument— knowledge as design-- to organize an analysis of a given learning theory. They had to write their own questions. For example, the simple "what is it for" question became, in one case, "Why did Skinner create his theory of operant conditioning?" Another student analyzed Piaget's stage theory of cognitive development. This student asked, "Why did Piaget want to know how children developed cognitively?" Both students, thus, wrote purpose questions as well as questions for structure, model case, and argument. (Perkins, 1986) In turn, the questions shaped their answers and, thus, the oral reports.

During the final examination week, students delivered oral reports for both the professor of record and me. We gave each scholar value neutral feedback (Wiggins, 1977) along the lines of a two part protocol:

1. **What I appreciate about the talk is ____.**
2. **What you might do if you had a chance to deliver this talk again is____.**

We invited students to also give each fellow speaker feedback by using the protocol. So peers assessed each other in a way that framed improving performance and not just evaluation. (Wiggins, 1977) Grades, in fact, were reserved for the written report and came under the charge of the professor of record.

In all, teaching for understanding boiled down to the use of specific frameworks for designing and delivering instruction. At the heart, "understanding" involved using knowledge in new ways. That was how the PZ researchers at Harvard University saw the idea. (Blythe, 1998; Perkins, 1999) Whereas, teaching for understanding had meant helping students to use knowledge in new ways. (Blythe, 1998; Perkins, 1998; Perkins and Unger, 1999; Gardner, 1998; Fluellen, 2002, 2007) Students used their knowledge of knowledge as design to organize thinking about a learning theory in this final project. They experienced briefly what Vito Perrone once called an "education of power and consequence." (Perrone, 1998)

Observations

So what happened in a final project that fostered teaching for understanding? One outcome of the project was that 8 of the 10 oral reports students delivered that day did use knowledge as design to organize thinking about a given theory of learning. The eleventh student enrolled in the course showed up at the end of the final exam period reserved for the orals. However, as an outcome, 805 of students succeded. They used the knowledge as design method. But if rated with a 4 point rubric for oral delivery, the quality of their oral reports would have ranged from proficient to needs improvement (3 to 1 on a rubric).

Ideally, to enhance a performance of understanding, each report would have been treated as a trail run or (as Peter Senge likes to say) a "prototype." (Senge, et al, 2004) After the value neutral feedback, (Wiggins, 1977) students would have turned the reports into power point slide shows and presented them in a mini conference. More students might have scored advanced and proficient (4 and 3 respectively on a 4 point rubric for delivering informational oral reports).

Another observation bears noting. Nine of the 10 reports relied on secondary sources represented in the course text book. Only one student gathered primary documents to support the talk. This student's report was on Gestalt psychology. The student had pasted on a poster board pictures of founders, texts downloaded from the Internet, and pictures illustrating Gestalt concepts such as figure/ground. However, there was no evidence the student had evaluated the sources—a key to information literacy. (ALA, 1989) Nor was the student's use of knowledge as design explicit so the analysis suffered. Thus, the ideas in the report, though interesting, appeared to be almost random, making the report lack coherence. Yet, relatively speaking, it was the most ambitious of the reports

because of the obvious use of digital electronics to find primary sources in contrast with the reliance on secondary ideas from text books as evidenced in the other reports.

As for the class as a whole, the reports indicated that students needed more instruction along the lines of information literacy to go beyond the secondary sources provided in a single text book. American Library Association's landmark presidential (1989) defined information literacy as the capacity to know when information is needed and then to locate, evaluate, and create information. That means what did not happen in the final project was equally interesting as an outcome.

Conclusion

A final observation bears noting as well. The "Theories of Learning" course drew heavily on old views, mostly rooted in behaviorism. The curriculum left out constructivist theorist including more in depth attention to Vygotsky and Piaget. It left out the family of teachable intelligences theories: Gardner, 1985, Sternberg 1986, Langer, 1989, Perkins, 1995). It left no room for weaving in brand new insights emerging from brain research. (See Carl Zimmer's "The search for intelligence" in *Scientific American*, October 2008.) Students who were education and psychology majors needed a deeper course to prepare for graduate school or professional work as college graduates. So the course content needed a major make over.

In the case of Edward Waters College, an institution that began life in 1866 with the main purpose of educating former slaves, such a makeover challenge might begin with a brand new, 21st Century theories of learning course—one to model how other courses might be designed. That would mean creating a process for changing the course even more than creating a product. Such a model course would hold constant three factors of power teaching (teaching for understanding, information literacy, and Gardner's five minds of the future) (Fluellen, 2007; 2008), but it would include variable content always in construction as new insights about a discipline continued to emerge from research and practice. That would mean creating what Peter Senge and his colleagues called a "prototype" in their book *Presence: Human purpose and the field of the future.*

People often believe that you need to know how to do something before you can do it. If this were literally true, there would be little genuine innovation. An alternative view is that the creative process is actually a learning process, and the best we can possibly have at the outset is a hypothesis or tentative idea about what will be required to succeed. (Senge et al, 2004)

As Edward Waters College strives to become a top 100 institution of higher education, its larger purpose, a new empty cup becomes: <u>How might power teaching help to create a prototype 21st Century psychology course for college students?</u> Such an empty cup holds implications for all the courses offered at the college.

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References (annotated)

American Library Association (ALA). (1989). Presidential Committee on information literacy: Final report. Chicago: ALA.

A landmark in the information literacy field, this report coined the term "information literacy." Additionally, it provided historical context: describing the need for citizens in our nation who can find, evaluate, and create information, citizens who can use knowledge often gathered with digital electronics for the purpose of solving complex problems. The report argues also that information literacy has the promise of closing the economic gaps and educational deficiencies so present in our nation. Finally, it argues that libraries and schools must have prominent roles in creating information literate citizens.

Blythe, T. (1998). *The teaching for understanding guide.* San Francisco: Jossey-Bass.

After years of collaborations between teachers and researchers meeting at Harvard University over Pepsi and pizza, Tina Blythe and her colleagues at Project Zero (PZ) Research Center have connected best practices and cognitive research into a framework. The teaching for understanding (TfU) framework addresses basic curriculum questions: What content must be learned? How will the content be learned? How will we know the content has been learned?

A five part model for designing instruction based on a performance view of understanding, the TfU offers generative topic, throughline, understanding goals, understanding performances, and ongoing assessments as a whole approach—an "instructional design theory" as Charles Reigeluth classifies it. The framework remains one of the research strands at PZ, and every summer the center invites scholars from around the world to collaborate in the further development of TfU.

Fluellen, J. (2002). Teaching for Understanding: The next 100 years. Paper presented at the Twenty-fourth Education and Ethnography International Research Forum at University of Pennsylvania. ED467 519

One of the most frequently hit documents when researcher's use "teaching for understanding" as a search term," this paper provides an example of how the TfU framework can be applied to an ordinary school in an urban setting in the Northeast. Additionally, it connects the TfU framework with Howard Gardner's MI approach and Jean Piaget's reflecting abstraction model to give a three way look at what it means to teach for understanding. Finally, the paper describes best, worst, and probable scenarios about how teaching for understanding might evolve the next 100 years.

Fluellen, J. (2007). The Titmouse effect (power teaching in 2054—a meditation on the 2007 Urban Sites Conference of the National Writing Project). ED497 503

This paper is the most comprehensive discussion of the power teaching prototype to date. Indentifying four interactive factors (standards, teaching for understanding, culture of thinking, and teacher inquiry), the paper describes each factor and explains how they connect into a whole for improving student achievement. It, then, provides a real world example with fifth grade students at an urban magnet school for the arts in the South. Finally, the paper explores best, worst, and probable scenarios about how power teaching might evolve up to 2054—the one hundredth anniversary of Brown V Board of Education.

Fluellen, J. (2008). Theories of Leaning: Prototype for a 21st Century seminar. (Unpublished curriculum designed for Edward Waters College).

Uses the three factors of power teaching to create a prototype psychology seminar. Thus, it connects teaching for understanding, information literacy, and Gardner's five minds of the future into a coherent whole. From a systems view, the prototype offers fundamental solution to the problem of delivering high quality education in an era of increasingly underprepared college students.

Fluellen, J. (2009). Power Teaching: Prototype for 21st Century Education. Power point slide show presentation for the World Future Society general assembly, July 2009, Chicago, Illinois.

Presents the three factors of power teaching and an interdisciplinary problem that provides context. On the one hand the factors are fundamental to high quality education. On the other the interdisciplinary problem demands a search of history, psychology and systems thinking for refinements to the factors or even for replacing them with better factors. Thus, the prototype balances constancy and change.

Gardner, H. (1983). Frames of mind: The theory of multiple intelligences. New York: BasicBooks.

Intended to debunk the long held view that intelligence could be reduced to an IQ, multiple intelligences theory argued that the average human being across cultures had seven intelligences: (1) verbal linguistic, (2) logical mathematical, (3) musical, (4) visual spatial, (5) bodily kinesthetic, (6) interpersonal, and (7) intrapersonal. Each intelligence has its own set of core capacities and amble evidence from psychometric research and brain research. For the average person, each intelligence can be developed across a life span with teaching, coaching, and experience.

Gardner, H. (1999). MI approach. In C. Reigeluth (Ed.) *Instructional-design theories and models: A new paradigm of instructional* theory. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

Drawn from his multiple intelligences theory of human potential, the author suggests a three part method of teaching for disciplinary understanding: entry point, powerful analogy, and multiple representations. Each part can rely on an activity using one or more of his nine intelligences. Therefore, over time, students get to use at least one of the intelligences he or she has at promise as a spring board for deeper understanding. Listed as an instructional design theory along with teaching for understanding in Charles Reigeluth's compendium of new paradigm instructional design theories, this approach serves deeper disciplinary understanding.

Gardner, H. (1998). Melding traditional and progressive perspectives. In M. S. Wiske (Ed.), Teaching for understanding: Linking research with practice (pp 345-350).

This chapter explores the traditional view of understanding and a performance view of understanding. The author cites a 1946 report of the National Society for the Study of Education. The report sought to measure understanding and called for an education beyond rote memorization of facts. However, the author says the approach advocated by Project Zero Research Center draws on recent cognitive discoveries and, thus, a theoretical framework. Finally, the author concludes as follows: "Transcending stale and unproductive controversies, education for understanding puts the focus of education where it should be: on people's ever-increasing grasp of the world."

Gardner, H. (2006a). *Five minds for the future.* Boston, Massachusetts: Harvard Business School Press.

Several reviewers have considered this book another Howard Gardner breakthrough idea. As the author explains, five minds of the future might best be thought of as capacities rather than new intelligences. Thus, the disciplined mind, synthesizing mind, creating mind, respectful mind, and ethical mind are each a way of being in the world instead of a way of solving problems or fashioning intellectual products such as an intelligence—his 1983 definition of intelligence. He argues that while these five minds have been present in modern human beings for some time, the age in which we live with its complex problems on global scale, demand that schools and workplaces cultivate the widespread development of five minds of the future. The quintet of minds is more valuable than ever given a global economy and problems of historic proportions.

Gardner, H. (2006b). Multiple intelligence: New horizons. New York: BasicBooks.

Reflects on 20 years of the development of multiple intelligences theory and emphasizes it implications for educational practice.

Perkins, D. (1986). *Knowledge as design.* Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Any human made object or idea is a structure adapted to a purpose. That is what David Perkins says about the core idea of his method of critical and creative thinking. That means any human made object or idea is a structure adapted to a purpose. Four baseline questions, then, might serve to analyze an object or idea: What is it for? What is it made of? What is it like? What makes it work? Each baseline question can morph into an almost infinite number of more sophisticated questions. The knowledge as design method of critical and creative thinking has a wild card dimension: invent your own design. In addition to reasoning, the method can be used as a framework for writing, reading, speaking, and listening.

Perkins, D. (1995). *Outsmarting IQ: The emerging science of learnable intelligence.* New York: The Free Press.

One of a family of teachable intelligence theories to emerge in the last 25 years of cognitive research, learnable intelligence theory explicitly connects the traditional view of intelligence with views that add value. Native endowment is the first of this three part view of intelligence. But unlike the psychometric belief that intelligence is a relatively stable score, the author says that native endowment can increase with experience or "experiential intelligence." More so, with "reflective intelligence" as person might increase native endowment as much as one standard deviation. At the core, the researcher believes that no matter how high a person's IQ, his or her performance of intelligence can be improved.

Perkins, D. (1998). What is understanding? In *Teaching for understanding: Linking research with practice*. Martha Stone Wiske, editor. Jossey-Bass Inc. San Francisco.

In plain English, the research describes several common sense examples of how people come to understand. At the core, the researcher argues that people show understanding in a performance and, in addition, show understanding by using new knowledge in a new situation. The transfer of knowledge is what is best shown in a demonstration in the author's performance view of understanding. The value of this extended definition of the construct understanding is the central place of the concept in teaching for understanding.

Perkins, D. and Unger, C. (1999). Teaching and learning for understanding. In C. Reigeluth (Ed.) *Instructional-design theories and models: A new paradigm of instructional* theory. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

Charles Reigeluth includes teaching for understanding in his compendium of new paradigm instructional design theories. As such, the method is particularly useful as a best practice tool of planning instruction. It connects content standards, instruction, and assessment in a seamless whole.

Perrone, V. (1998). Why do we need a pedagogy of understanding? In *Teaching for understanding: Linking research with practice*. Martha Stone Wiske, editor. Jossey-Bass Inc. San Francisco. (pp. 13-38).

After summarizing the historical context for teaching for understanding, the author argues for an "education of power and consequence." Such an education fosters problem solving, problem posing, and creation of intellectual products. Schools, then, would shift from fact based approaches to thought demanding tasks. The author argues that such a rigorous approach must become widespread in our nation given the high demand for thinking citizens.

Senge, P. et al (2004). *Presence: An exploration of profound change in people, organizations, and society.* New York: Doubleday.

Best known for his "fifth discipline" which provide a systems view of learning organizations in businesses and more recently school, Peter Senge with his colleagues at MIT have created a new idea about learning organizations. U theory provides an explanation of deep learning in sustainable organizations. In brief, the U has three parts. In the first part the individual or organization soaks up knowledge of the field. Then, the person or organization can become the knowledge and experience the stillness needed to foster insights. Insights or decisions can then come naturally the way a Kung Fu master acts without thinking. Finally, the insight or decision becomes realized. The U is not static so it can repeat many times. In addition, two other core ideas from the authors are these: "prototype" as an innovation to Work out over time and this new view of learning: "all learning integrates thinking and doing."

Wiggins, G. (1997). Feedback: How learning occurs. AAHE Bulletin, November V50 3, American Association of Higher Education.

Learners need feedback in order to learn well. That is the core idea of this article. But not any feedback works well. What works best, the researcher argues, is value neutral feedback—discussion of performances without the sting of judgment, using a standard and describing what the learner did and did not do eye to eye with the standard. The researcher says such feedback must be followed by the learner's self adjustment more than just self assessment. The learner must have an opportunity to perform the desired work again to improve performance.

Zimmer, C. (2008). The search for intelligence. *Scientific American* (October) 68-75.

Updates the quantitative view of human intelligence with summaries of new developments in genetics and brain research. Concludes that 21st century education might optimize instruction with knowledge of students' genetic profiles.