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Internship Portfolio

EME 6053 Current Trends in Instructional Technology

Department of Educational Research, Technology, & Leadership

College of Education

University of Central Florida

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### Reflection Paper

With an academic career objective in the area of education and training, I took my internship with Dr. Atsusi Hirumi and Dr. Donald Spencer in the course EME6053 “Current Trends in Instructional Technology” in fall 2005. The expected learning objectives for the internship included to enhance my understanding of teaching pedagogy and instructional design strategies, to apply the skills and knowledge learned in class, and gain experience in course designing and delivery.

### *Course Background*

EME6053 surveys current trends and issues of importance to the field of instructional technology, such as the key terms, history and current status of IDT, major trends in learning theories and instructional theories, presents a variety of trends, issues, and opportunities facing IDT professionals. It is a mixed-mode course with both web and classroom components for graduate students majored in the field of instructional design and technology (IDT). The whole course consists of four units, extending for 16 weeks. The class meet in classroom every other week. In addition, syllabus, reading materials, assignments, and all communications are to be carried in an online WebCT account.

My major responsibility was to create, revise reading materials and facilitate the learning activities of Unit 2 “How and Why People Learn”. This 4-week long unit focused on the major schools of learning and instructional theories, including behaviorism, cognitivism, constructivism, brain-based learning, situated cognition, learning styles, motivation, and problem solving. Students are required to read relevant theories and strategies, research on two learning theories or instructional approaches, compare the selected theories/approaches, and design 2 versions of lesson applying the principles of the selected theories/approaches.

### *Teaching Activities*

The following narrative describes my major activities in this teaching assignment through the aspects of content design & development, online facilitation, classroom facilitation, assessment & feedback, and technical issues.

#### *Content Design & Development*

EME6053 adopts the course template from Dr. Atsusi Hirumi's previous IDT course. As a co-instructional designer for unit 2, I created supplemental reading materials on neurobiological aspects of learning (aka. brain-based learning) that is increasing in popularity and significance these days. In the instructional materials, I presented the background information, basic brain facts, major representative theorists and their principles of brain-based learning, and also recommended additional book and web resources. The course supplemental content was created with Macromedia Dreamweaver and uploaded in EME6053 WebCT account to be accessed for all students.

Considering the course was targeted for graduate students, I wrote the content in direct, professional language, chunked the paragraphs into five easy-to-read sections, and integrated both text and graphics in the instructional materials. The supplemental materials were aligned with all other instructional events in Unit 2, such as objectives, readings, and assignment. Please refer to the attached appendices "Course Content" for further details on courseware design and development.

#### *Online Facilitation*

The biggest responsibility for online facilitation is to maintain online communications in the course account. We had two channels of communication online – discussion and e-mail. Three discussion topics related to Unit 2 had been set up: Assignment 2 Announcements &

Directions, Unit 2 Discussion, and Assignment 2 Questions. To keep an ongoing dialogue in each topic, I provided timely directions, feedback for any posted question, and offered additional resources for exploration on the theories. Students were encouraged to share their ideas and experiences regarding to the instructional theories and approaches that they had read during their learning process. Besides, I used e-mail to communicate with students individually on their assignment evaluation.

### *Classroom Facilitation*

In the regular bi-weekly class meeting, I prepared a series of learning activities -- scenario discussion and assignment review. At first, I briefly went over the theories and approaches that we had covered in the textbook and online reading materials to recall students' background information. One of the most important objectives of the class meeting was to provide students with opportunities to apply their knowledge on learning theories. Then, I offered 7 scenarios for discussion which they could refer to specific principles of the theories. In addition, some students brought a lot of questions on Assignment 2, and we used the later half of the class meeting to review assignment rubrics and draft work.

### *Assessment & Feedback*

Assignment 2 included 2 parts: (a) narrative to describe and compare 2 selected theories or approaches, and (b) 2 versions of lesson applying principles of the selected theories. Directions and rubric were provided as one part of the online materials. Students were given one chance to post assignment draft for initial feedback one week before the assignment due date. For each assignment both individual and group work, I offered 2-3 page feedback based on if they had met the each of the requirements in the rubric. One sample feedback was attached in the appendices.

The biggest issue that most students had for Assignment 2 was that they still needed detailed explanation for the directions and rubric. Therefore, it would be better if an assignment example could be given online as an illustration of the assignment directions and rubric, especially if this course would be offered as a totally web class in the future.

### *Technical Issues*

Technical issues had long been problems for online class instructors and students. A few students in this class had great problems to set up a presentation page and corresponding links online, due to their limited technical skills. I had tried my best to offer technical advice both in e-mail and went through the process for particular students in the class meeting. In the future, it would be recommended for this course to implement easy-to-use presentation tools, such as blog or wiki, considering that a number of the students might lack the technical background of creating web pages.

### *Conclusion*

EME6053 is a good opportunity for me to apply my knowledge on pedagogy and instructional design. I had been both an online and classroom facilitator for the 4-week-long mixed-mode unit. As an instructional designer, I created web pages on brain-based learning theory, integrating both text and graphic media. As an online facilitator, I utilized online instructing skills to maintain course content, upload grade, facilitate relevant communications in discussion and course mail, and provide feedbacks on assignments. As a classroom facilitator, I practiced my teaching philosophy, improved my presentation skills, and applied instructional strategies such as case study, collaboration to enhance students' learning. More importantly, I had found out my weaknesses in course design and delivery and learned from students'

suggestions. This internship opportunity is valuable assets for my future academic career as a teacher, trainer, and education researcher.

## Appendices

*Teaching Activity Schedule*

<b>Date</b>	<b>Task / Topic</b>	<b>Reading for Class</b>	<b>Activities and Assignments</b>
August 22 ~ August 31, 2006	Prepare online materials	NA	NA
September 1, 2006	Upload content module into course	NA	NA
September 8 ~ September 14, 2006	Online Unit 2: Learning Theories	Review module Read Chapter 4-8 Review supplemental Reading	Discussion Quiz 2
September 15, 2006	On Campus Unit 2: Learning Theories	NA	F2f discussion Scenario activity  Review drafts of A2: Applying Learning Theories
September 19, 2006	Online Unit 2: Learning Theories	NA	A2 draft reviewed Initial feedback
September 22, 2006	Online Unit 2: Learning Theories	NA	A2 Due on Sept. 25 Discussion
September 26	Online Unit 2: Learning Theories	NA	Feedback for A2 & Grade uploaded

*Course Content*

## Unit 2: How and Why People Learn

### Brain-based Learning

[Caines](#) | [Jensen](#) | [Others](#) | [Implications](#) | [Resources](#) | [References](#) | [Unit 2 Overview](#)

#### Background

The 1990s has been declared by the congress as the “Decade of the Brain” to enhance public awareness of the benefits to be derived from brain research (Bush, 1990). Based on the new neurological findings, educators began to explore the implications of brain research on teaching and learning, and made recommendations on instructional approaches accordingly to match training and school teaching more closely to the way students’ brains actually learn. Brain-based learning theory is based on the structure and function of the brain, and aims to synthesize brain research information with implications and applications for education and learning.

#### Brain Structure and Facts

In the last decade, scientists learned more about brain research than the previous one hundred years (Roberts, 2002). According to brain researchers, the human brain contains billions of nerve cells, or neurons that receive, process, and transmit information. The brain is divided into four lobes, each with its own distinct function for learning and reading, but every element of the brain is still interconnected in learning activities. The following image brings you to a website for more information about brain structure and functions.

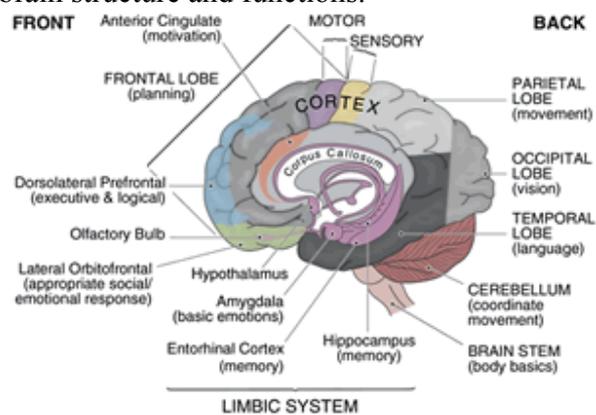


Figure 1. Brain Structure

<http://www.brainwaves.com/brain.html>

Experimentation has shown that the two different hemispheres of the brain are responsible for different manners of thinking. Many individual people have a distinct preference for one thinking styles. It is probably s/he is either left-brain or right-brain dominant. The following table illustrates the different thinking styles between left-brain and right-brain (Funderstanding, 2001b):

Table 1: Thinking styles between left-brain and right-brain

Left Brain	Right Brain
Logical	Random
Sequential	Intuitive
Rational	Holistic
Analytical	Synthesizing
Objective	Subjective
Looks at parts	Looks at wholes

**Marian Diamond**

One of the most exciting findings in brain research was originally reported by a group of researchers at the University of California-Berkley in the 1960s (Caine & Caine, 1991). Marian Diamond and other neuroscientists conducted experiments on rats to learn about the effects of environment on brain. The results showed that the rats in an enriched environment had a larger number of glial cells and also a greater number of connections in the brain than those rats in isolated and dark cages. This is referred to as “brain plasticity”, which means that much of the brain has the ability to change structure and chemistry in response to the environment.

**Renate Caine & Geoffrey Caine**

Renate Caine, professor of education at California State University, and educational consultant Geoffrey Caine have devoted much of their career researching how to help the brain learn better. They summarized 12 principles that can serve as a general theoretical foundation for brain-based learning (Caine & Caine, 1991, 1997):

- Principle 1: The brain is a complex adaptive system.
- Principle 2: The brain is a social brain.
- Principle 3: The search for meaning is innate.
- Principle 4: The search for meaning occurs through “patterning”.
- Principle 5: Emotions are critical to patterning.
- Principle 6: Every brain simultaneously perceives and creates parts and wholes.
- Principle 7: Learning involves both focused attention and peripheral perception.
- Principle 8: Learning always involves conscious and unconscious processes.
- Principle 9: We have at least two ways of organizing memory.
- Principle 10: Learning is developmental.
- Principle 11: Complex learning is enhanced by challenge and inhibited by threat.
- Principle 12: Every brain is uniquely organized.



Figure 2. Caines’ 12 Principles <http://www.cainelearning.com/principles.html>

Based on these principles, Renate identified three instructional approaches as the three interactive elements essential for the expansion of dynamical knowledge (Caine & Caine, 1991, 1997):

- ° The orchestrated immersion of the learner in complex experience – Creating learning

- environments that fully immerse students in an educational experience.
- The active processing of experience – Allowing the learner to consolidate and internalize information by actively processing it.
- Relaxed alertness as an optimal state of mind – Trying to eliminate fear in learners, while maintaining a highly challenging environment.

### **Eric Jensen**



Eric Jensen is another major researcher who has spent most of his life connecting brain research with applications to the classroom. Jensen has authored over 20 books about the applications of recent brain research to education and set up the Jensen Learning Corporation <<http://www.jlcbrain.com/>> to offer brain-based trainings to accelerate people's learning skills. In his books, he introduces the latest research finding in brain studies, and also recommends specific activities that are fun to do in classroom.

Like Caine and Caine, Jensen also stresses the importance of the plasticity of brain, and encourages teachers and trainers to immerse students in an enriched and positive-thinking environment. Besides, he recommends a few other specific areas of research that have important implications for learning, memory, schools and trainings (Jensen, 1996):

- The hormonal brain: hormones can and do impact cognition.
- The moving brain: how movement influences learning.
- The spatial brain: how space and relational learning & recall works.
- The attentional brain: prefrontal cortex, what really drives attention and ADD.
- The emotional brain: impact of threats on hormones, memory, cells and genes.
- The patient brain: the role of time in the learning process.
- The computational brain: the role of feedback in forming neural networks.
- The artful brain: the role of arts and music.
- The connected brain: how our brain is body and body is brain.
- The developing brain: what to do and when to do it; value of the first 3 years.
- The hungry brain: what to eat: the role of nutrition in learning and memory.
- The chemical brain: which chemicals do what & how to activate the right ones.

### **Other Researchers:**

David Sousa, an international educational consultant promotes Pulse learning theory, which tells teachers that learners need a diffusion time after a focused session. Sousa says that in a 40-minute period class, the first 20 minutes and the last 10 minute is the best teaching time, so a good lesson with the most retention is focused, diffused, focused.

Don Campbell, the founder of the Mozart Effect Resource Center <<http://www.mozarteffect.com/>>, outlines research on the connections between learning, creativity and exposure to music and shows how sound and music can stimulate learning and memory.

Brain-based instructors also do specific physical exercises with their students to assist learning. Carla Hannaford wrote “Smart Moves: Why Learning Is Not All In Your Head” about the physical exercises that help our learning potentials. In addition, Paul Dennison devised a Brain Gym < <http://www.braingym.org/index.html>>, where learners do exercises to connect their left and right hemispheres of the brain.

### **Implications and Limitations**

The expansion of natural science has brought the brain waves to our education world. Many educators are eager to take actions to match the school learning more closely to the way how brain learns and bring out students’ natural potentials and motivation to learn. Overall, the brain-based learning theory impacts education in four aspects (Funderstanding, 2001a).

- **Curriculum** – The schools need to place a balanced emphasis on the subjects of arts, social, and natural science. Teachers must design lessons around students’ interests and make learning a multiple, rich and interactive experience.
- **Instruction** – Teachers need to structure learning around real problems, and allow students to learn both inside and outside of classroom. Teachers also need to encourage team work and create a joyful learning atmosphere.
- **Assessment** – Teachers need to allow students to take charge of learning and the development of personal meanings and encourage learners to reach self-reflection and deeper meanings.
- **Learning disabilities** – Neurological testing may assist in diagnosing, treating, and evaluating the effectiveness of programs designed to ameliorate various learning problems (Driscoll, 1999).

However, brain-based learning has often been questioned and criticized about its credentials since the beginning (Davis, 2004). As the brain researches have been progressing rigorously only in the recent 15 years, there are a lack of longitudinal studies regarding the new cutting-edge neurological findings, as well as a paucity of evidence-based research applying these findings in school environment. It is recommended that the expertise combining several disciplines comprising neurophysiology, cognitive psychology, anthropology and social science is needed to make better progress in our understanding of learning and brain. Teachers cannot regard brain-based learning as a panacea or magic bullet to solve all education problems, but they need to keep abreast of the new neurological findings for directions to teach in a more purposeful and informed style.

### **Websites for Brain-based Learning:**

Brain Facts and Figures: Facts and statistics about the brains and body systems of different animals. <http://faculty.washington.edu/chudler/facts.html>

An animation to show the distinct functions of left brain and right brain:

[http://www.towson.edu/~mcmahon/generic/brain\\_dominance.swf](http://www.towson.edu/~mcmahon/generic/brain_dominance.swf)

Outline of the definition, principles and implications of brain-based learning.

[http://www.funderstanding.com/brain\\_based\\_learning.cfm](http://www.funderstanding.com/brain_based_learning.cfm)

How Julie's Brain Learns: Follow a typical student through her day at school--from the perspective of her brain. by Eric Jensen

[www.chms.k12.vt.us/article2.htm](http://www.chms.k12.vt.us/article2.htm)

The 12 principles and 3 instructional approaches that Caine and Caine have summarized for brain-based learning.

<http://www.cainelearning.com/principles.html>

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*Face-to-face Class Agenda*

1. Self-introduction
2. Agenda
  - a) Scenario discussion
  - b) Assignment 2
    - i. Draft
    - ii. Rubrics
    - iii. Group work
3. Theory Introduction
  - a) Four categories of theory: behavioral, cognitive information processing, constructivist, and brain-based learning theories. Other important aspects of learning, such as human motivation, learning styles and problem solving.
4. Scenario Discussion
  - a) Activity Introduction
  - b) Scenario One Demonstration

**Department X**

As part of an organization-wide quality improvement effort, the head of a department sends her office manager and staff to training on the use of electronic mail. In addition to procedures such as logging on to the organization intranet to receive and send mail, the training included procedures for accessing the World Wide Web and locating and downloading information from the department's web page.

Within weeks after the training, the office manager routinely checks and reads her e-mail messages, but she receives either no messages or ones that were directed to her by mistake. She continues to use paper memos and office mail to correspond and conduct business. (Driscoll, 1999, p.32-33)

**Related Theory Principles**

- i. Behaviorism: TIP database
- ii. Principle:

**Rewards & Punishment**

Behavior that is positively reinforced will reoccur

Behavior is more likely to reoccur if it has been awarded, or reinforced.

- c) Read all seven scenarios and pick one which is relevant to your experience or to the theories that you are most familiar with.
  - d) Prepare for the scenario discussion. Research from the book and the Internet. Pull out key relevant principles and relate the principles with the scenario.
  - e) Discuss.
5. Break
  6. Assignment 2
    - a) Share drafts and ideas
    - b) Rubric elaboration
    - c) Questions
    - d) Group work

*Feedback Sample*

**Name(s):** XXX & XXX

**Date:** 9/23/05

**A2 Performance Assessment Rubric**

**Total** XXX/150pts

<b>Distinguished (150-135pts)</b>	<p><b>Narrative</b></p> <ul style="list-style-type: none"> <li>• Narrative identifies all key concepts and principles associated with each selected theory.</li> <li>• Narrative provides clear and concise description of how instructional materials demonstrate application of key concepts and principles associated with each theory.</li> <li>• Narrative compares and contrasts instructional materials in terms of design process and resulting products.</li> </ul> <p><b>Instructional Materials</b></p> <ul style="list-style-type: none"> <li>• Each lesson clearly applies key concepts, principles and events associated with selected learning theory or instructional approach.</li> <li>• Differences between lessons are clear and based on application of selected theories and/or approaches.</li> <li>• Basic instructional elements (objectives, assessments, and strategy) clearly aligned in each lesson.</li> <li>• Selection and application of technologies appropriate for learning environment and outcomes for each lesson. Technologies applied to enhance learning and are "surrounded" by activities and methods for learners use.</li> <li>• Each lesson is well organized and easy to navigate.</li> <li>• Each lesson presented in clear, concise and professional fashion.</li> <li>• Each lesson is free of cultural, ethnic or gender bias.</li> <li>• Graphic elements well-designed and contribute directly to learning in each lesson.</li> </ul>
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**Comments**

Excellent work A2. It is apparent that you spent considerable time reflecting on preliminary feedback and revising your assignment. Overall, your assignment demonstrates distinguished performance (as specified by the assessment rubric for A2 noted above). Again I thought you did an excellent job introducing the theories and your lessons, and your instructional materials were distinguishably-well done.

To provide feedback on your final copy, I copied my original comments made on your preliminary draft (noted in gray below), followed by new comments. I also added a couple additional comments at the end. Please review my comments and let me know if you have any questions or comments.

Baiyun

**Original Comments (09/16/05)**

- In your comparisons (at the end of your narrative), you did a good job comparing products (lessons), but did relatively little to compare the process you went through as you applied each theory (e.g., challenges you faced and decisions you had to make as you applied each theory and designed each lesson). I encourage you to compare and reflect on the design process across lessons.

Nice job comparing the key decisions that you had made in the design process. No further comments or concerns here-well done.

Original Comments (09/16/05)

- In your comparisons (at the end of your narrative), it would have been good to identify and describe what you think the relative advantages and disadvantages are of each approach relative to your lesson (in other words, which approach do you think would be most effective and why). I encourage you to reflect on when you would use each theory based on your experience. You have done an excellent job comparing and contrasting the two theories, as well as the two lessons. In the “Advantages and Disadvantages” part, you discuss the advantages and disadvantages of the two lessons relative to each theory. Some of the advantages you mentioned about Gagne's instructional model attribute more to your lesson design instead of the theory, such as the visual examples and self-paced learning. I especially like the part you brought up matching the instructional method to the delivery system. This is always an interesting area to consider in designing and developing instruction.

Original Comments (09/16/05)

- Elicit is spelled wrong (Elecit) in your comparison.

It is correctly spelled now. Please note the “instructional” in “and this instrutional model allows several different learning styles” in the second paragraph of “Advantages and Disadvantages” is spelled wrong.

Lesson 1 - Gagne's Conditions of Learning/9 Events of Instruction

Original Comments (09/16/05)

- You identified key principles associated with Gagne's theory-that's good. However, you really should have referenced where you derived the principles. It appears that you took them directly from the textbook.

“References” is spelled wrong. In addition, please adhere to APA format for references in later assignments.

Original Comments (09/16/05)

- As you noted, one (if not the primary principle) associated with Gagne's theory is that different internal and external conditions are necessary to facilitate different types of learning outcomes. As such, you should have classified your terminal objective and noted what specific external and internal conditions must be met to facilitate achievement of your terminal objective as classified according to Gagne. Your narrative alludes to a number of internal and external conditions. The problem is that it is not clear if the conditions are based on classification of your terminal objective.

You classified your objectives within the Intellectual Skills category. Good! You could also elaborate a little more on this. Are the conditions based on your classification? Does the classification help you decide on certain components of your instructional materials, such as assessment?

Original Comments (09/16/05)

- It is stated that “Add information about the categories of learning targeted in this lesson” at the end of the Gagne's Theory of Instruction. Please elaborate on this, or delete the sentence if no additional information is stated.

No problem with this now.

Original Comments (09/16/05)

- Great work on the interactive activity! You have not only applied Gagne’s 9 events but other effective strategies in this lesson!

Again, your lessons are well-designed and clearly integrated the key principles and events of Gagne’s theory.

Lesson 2 – 5E’s

Original Comments (09/16/05)

- Narrative description of 5E’s strategy is clear. Please remember to reference the resources.

Please use APA format for your references. Examples of APA style references can be accessed at: <http://www.thewritesource.com/APA/APA.HTM>

Original Comments (09/16/05)

- One of the most important differences between behaviorism and constructivism is evaluation. In behaviorism, evaluation is based on meeting specific objectives, whereas in constructivist perspective, the evaluation is much more subjective. You might consider using rubrics to create evaluation items for the second lesson. Additional information on creating rubrics can be accessed at <http://school.discovery.com/schrockguide/assess.html#rubrics>

Your lesson is very interesting! I am sure the students will like it too. Great activities! One thing you could improve on is the language you use in the rubric. I am afraid the students will have some trouble understanding this rubric.

Original Comments (09/16/05)

- Collaboration is greatly promoted in constructivist learning environment. I noticed that you designed a group activity in the Elaborate stage, but you failed to point it out in the comparison and contrast of the two approaches at the end of the narrative.

You included student-student interaction in the comparison. Well done!

Additional comments:

- In the first lesson, you have two objectives. The second one is to let students classify organisms into their correct trophic levels. Do you have any evaluation item to assess students if this objective has been met?
- In the 5E’s lesson, the sequence of “Engage and Explore” seems to be wrong. I am wondering if you are using the video for engaging and group work for exploring, but the lesson indicate the opposite.