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An Action Study of the Design, Delivery and Evaluation of an Undergraduate Course in Creative Problem Solving

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An action study of the design, delivery and evaluation of an
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AN ACTION STUDY OF THE DESIGN, DELIVERY AND EVALUATION OF AN
UNDERGRADUATE COURSE IN CREATIVE PROBLEM SOLVING

A project in Creative Studies

by □

Blake Godkin

Submitted in Partial Fulfillment

of the Requirements

for the Degree of

Master of Science

Buffalo State College,

State University of New York,

International Center for Studies in Creativity

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Dates of Approval:

Gerard J. Puccio
Professor
Chairperson of the Department of Creative Studies
Project Advisor

For the late, great Dr. Mary Murdock

TABLE OF CONTENTS

| | |
|--|------------|
| PROJECT OVERVIEW | 6 |
| SECTION I: PROJECT BACKGROUND..... | 7 |
| Introduction..... | 7 |
| Purpose of the Project | 7 |
| Rationale and Significance of the Project..... | 7 |
| Project Questions | 9 |
| SECTION II: REVIEW OF PERTINANT SOURCES | 10 |
| Introduction..... | 10 |
| Criteria Used in the Text Selection..... | 10 |
| Sources that Focus on the Broad Field of Creativity..... | 11 |
| Sources that Focus on the Creative Problem Solving Process..... | 14 |
| SECTION III: METHOD | 16 |
| Introduction..... | 16 |
| Rationale for the Method | 16 |
| Description of the Method..... | 17 |
| SECTION IV: RESULTS..... | 19 |
| Introduction..... | 19 |
| SECTION V: CONCLUSION | 166 |
| Introduction..... | 166 |
| Key Learning Points | 166 |
| Closing Remarks | 170 |
| REFERENCES..... | 172 |

PROJECT OVERVIEW

The purpose of this project was to prepare and carry out a formal action study documenting the design, delivery and evaluation of an undergraduate course that emphasized the development of students' understanding of creative thinking and the Creative Problem Solving process. This research project focused on a specific course that was available to junior and senior students at Texas A&M University in College Station, Texas. The title of the course was "Applications of Creativity and Creative Problem Solving" and the course was offered by the Department of Educational Psychology.

This project contains an investigation of selected literature sources that could serve as key texts for such a course in creativity and Creative Problem Solving. Detailed annotations were developed based on a set of specific criteria. The annotations summarize the key elements covered in the text, as well a point out potential challenges that might arise from the use of the text as a textbook for a creativity course.

The two qualitative analysis methods that were used in order to reach the recommendations and conclusions for this study were Within-Site Analysis and Cross-Site Analysis (Miles & Huberman, 1994). The author of this work, who served as instructor for the course, took detailed journal entries; detailing the design, delivery and evaluation of each class.

Three major pieces of data were collected and analyzed as part of the final Cross-Site Analysis: lesson plans from each class, the journal that was kept about the design, delivery and evaluation of each class and the Within-Site Analysis that was performed for each class day.

Lastly, overall learning points were developed from the Cross-Site Analysis performed across all the Within-Site Summaries. For the Cross-Site Analysis the writer looked at all three sections (Design, Delivery and Evaluation) of each Within-Site Summary; noting common threads that happened across all the class days. From this analysis, overall insights were developed into Key Learning Points that have the potential of impacting the future design and delivery of related courses on creativity and Creative Problem Solving.

SECTION I: **PROJECT BACKGROUND**

Introduction

Section I of this project introduces the problem that guided this research study. This section also presents the rationale for pursuing such a study, as well as the specific questions that guided the exploration of this project.

Purpose of the Project

The purpose of this project was to prepare and carry out a formal action study documenting the design, delivery and evaluation of an undergraduate course that emphasized the development of students' understanding of creative thinking and the Creative Problem Solving process. This research project focused on a specific course that was available to junior and senior students at Texas A&M University in College Station, Texas. The title of the course was "Applications of Creativity and Creative Problem Solving" and the course was offered by the Department of Educational Psychology.

My personal reason for pursuing such a research project was to gain a better understanding of the processes necessary for the formulation and implementation of a university level course that focused on creativity. My hope was to gain more insight into what it takes to become a university level instructor who specifically focuses on teaching students methods for nurturing their own creative thinking.

Rationale and Significance of the Project

As the emerging discipline of creativity becomes more wide-spread, different criteria must be met in order for such a vision to manifest. Murdock, Isaksen, Vosburg and Lugo (1993) were specific when saying "further steps must be taken" (p. 182) in order for the study of creativity to be accepted as a legitimate discipline. One way, they noted, is through "identifying, using, developing, and communicating" (p. 183) the creativity theories and models in different environments. This idea is further supported by Parnes' (1967) statement that "the practice element seems to be crucial to cultivating

creative behavior” (p. 12). Any program that is designed to strengthen a student’s understanding of creativity theory must allow that same student to practice so that he or she may have a better intellectual understanding of these theories. Parnes (1987) restates his original findings that college students who participated in courses focusing on creativity performed “significantly better” in the production, evaluation and development of ideas when compared to students who had not attended such courses. Students also found that the information gained from such courses increased their performance in other college courses. As a result of being exposed to creativity courses, these same students reported more productivity in areas of life other than academic endeavors that required creative behavior. Nickerson (1999) stated that society should not expect children who are taught how to be more creative in elementary school to necessarily be more creative as adults. Everyone has the potential to further enhance his or her own creativity. College students today are in an ideal position to learn methods for improving this potential. The higher education experience seems to give students this opportunity to explore and enhance their personal creative style and capacity by constantly exposing them to various and disparate fields of knowledge, and, at the same time allowing them to operate in an environment with enough scaffolding to allow for risk-taking.

There is presently a serious need, not only in academia, but also throughout society, for the continued development, delivery and evaluation of creativity enhancement programs (Nickerson, 1999; Parnes, 1987). Thus, action studies are needed to show how programs designed to enhance creativity are delivered throughout a person’s entire life, including post-secondary education. These programs must also be continually evaluated to ensure their effectiveness. While it is important that the key insights from one study not be overly generalized for the design and delivery of other such courses, Guba and Lincoln (1985) do note that the outcomes of an action study may be transferred from one context to another based on the similarities of the two contexts being compared (p. 124). For this study the evaluation component of the research was just as important in gaining acceptance for the Project as the design and delivery components that were used for the course.

Project Questions

The questions guiding this project were:

- How might a formal course in creative thinking and Creative Problem Solving be designed for undergraduate education?
 - a) What were the key design aspects with relation to the process and content of the course?
 - b) What elements of creativity were present with relation to the process and content of the design of the course?
- What might occur during the delivery of a course in Creative Thinking and Creative Problem Solving?
 - a) What key aspects of delivery were observed with relation to the process and content of the course?
 - b) What elements of creativity were present with relation to the process and content of the delivery of the course?
- What evaluations or recommendations could be made in regard to the design and delivery of such a course so that future educators of creativity courses may be better prepared?
- What elements of such a course, when evaluated, work best and what elements could be improved?

SECTION II: REVIEW OF PERTINANT SOURCES

Introduction

Section II of this project contains annotations of selected sources that could make suitable textbooks for an undergraduate course in creativity and more specifically, on the Creative Problem Solving Process. The annotations include the key elements of creativity that may be found in the texts as well as any concerns that have been found with reference to the source serving as a textbook for undergraduate students. The annotations have been categorized into two specific areas. The first section contains annotations of sources that focus on the broad field of the study of creativity and the second contains annotations of those sources that focus more specifically on the Creative Problem Solving Process.

Criteria Used in the Text Selection

The criteria used for the selection of the sources that focus on the broad field of creativity are the following:

- Is the source written in a language so that undergraduate college students can understand and apply what they read;
- Does the source provide a general overview of the field of creativity so that the reader is able to gain and introductory knowledge of the field;
- Does the source present specific methods and tools that will help the reader enhance creative skills; and
- Does the source include exercises that will provide the reader an applied understanding of methods for improving creativity.

The criteria used for the selection of the sources that focus on the Creative Problem Solving Process are the following:

- Is the source written in a language so that undergraduate college students can understand and apply what they read;

- Does the source provide information on the framework of the Creative Problem Solving Process, the divergent and convergent guidelines and divergent and convergent tools so that the reader gains a strong understanding of all the pieces of the CPS Process; and
- Does the source provide divergent thinking and convergent thinking tool sheets so that the reader has the opportunity to practice using the tools.

Sources that Focus on the Broad Field of Creativity

Adams, J. L. (2001). *Conceptual blockbusting: A guide to better ideas* (3rd ed.). New York: Perseusbooks Group.

James Adams wrote *Conceptual Blockbusting* (2001) in the mid 1970s. The book has been revised, but the information is still as pertinent and useful today as it was in 1974. The main focus of the text is defining mental blocks that inhibit a person's creativity and then giving the reader methods for breaking those blocks so that the reader may strive to use his or her creativity to the highest potential possible. Each chapter is devoted to a specific mental block that has been shown to prevent a person's maximum creative output. Adams not only presents good information about each block, but also includes the methods for overcoming such blocks. He also includes exercises that would serve well in helping, in particular, undergraduate students to see how powerful these mental blocks may be in preventing creative ideas from emerging. The usefulness of this book, as a textbook, is supported by the fact that it is currently being used for an undergraduate course on creativity at Texas A&M University. If an instructor chose to use this book as the primary text for an introduction to creativity course, he or she would need to provide supplemental information on the broader areas of creativity concepts such as person, process, product and press since this text does not completely cover these areas.

Davis, G. A. (1999). *Creativity is forever* (4th ed.). Dubuque, IA: Kendall/Hunt.

This is the fourth edition of *Creativity is Forever* (1999). This text served as one of the two primary textbooks for the undergraduate course in Creativity and Creative

Problem Solving that was taught as part of this research study. This book is easy to read and can effectively keep the attention of an undergraduate student. Davis gives a broad, but sufficient, overview of the field of creativity by separately devoting chapters to major areas of creativity research and application. This text is appropriate for anyone interested in gaining an introductory knowledge-base of the study of creativity. Some examples of the specific areas that certain chapters are devoted to are “Defining Creativity,” “Barriers and Blocks” and “The Creative Process.” Davis also includes chapters that focus on more specific areas such as “Creativity in Gifted Education.” Experience proves that this book is an effective textbook for an undergraduate course in creativity. One concern to mention about the content of the text is that Davis does not include much information with respect to the Creative Product and Creative Climate.

Fox, J. M., & Fox, R. L. (2010). *Exploring the nature of creativity* (3rd ed.). Dubuque, IA: Kendall/Hunt.

Exploring the Nature of Creativity (Fox & Fox, 2010) is the epitome of a textbook for an undergraduate course in creativity. The book begins with a basic introduction of the study of creativity. The authors then devote one chapter each to: Press, Person, Process and Product. The unique thing about this text, with reference to undergraduate students, is that the authors use a simple style of language that may be easily comprehended. Another positive aspect of the book is that the authors supply specific exercises at the end of each chapter that give the reader an applied understanding of the information that was presented. One concern with relation to the content of the chapter on “The Creative Process” is that the main focus of the chapter was on the articulated creative process of Creative Problem Solving. This of course is understandable since Creative Problem Solving was developed at Buffalo State College, where Mike Fox serves as a member of the faculty. However, if this book is to serve as a textbook for an undergraduate course on the broad discipline of creativity then it should include some information on the other articulated creative process models that have been developed.

Safer, H. T., & Torrance, E. P. (1999). *Making the creative leap beyond*. Buffalo, NY: Creative Education Foundation Press.

Making the Creative Leap Beyond (Safer & Torrance, 1999) is actually the revision of *The Search for Satori and Creativity* (Torrance, 1979). In the beginning of this text the authors provide a good overview of the different processes and methods for creative thinking that have been articulated over time by creativity scholars. The bulk of the text, however, is devoted to the skills that Paul Torrance attributes to being creative. Each of the skills are divided into individual chapters and are defined in detail by Torrance and Safer. The authors also give the reader methods and tools for enhancing each skill so he or she may make the leap to be more creative. This text would make a suitable textbook for an undergraduate course that focuses on teaching students how to enhance their creative abilities. It would have a positive addition if the text would had supplied a more in-depth explanation of the different methods that have been developed for the purpose of teaching people how to be more creative—for example the Torrance Incubation Model.

Starko, A.J. (2010). *Creativity in the classroom: Schools of curious delight* (4th ed.). New York, NY: Routledge.

Creativity in the Classroom (Starko, 2010) at first glance seems to be a text that would only be suitable for undergraduates majoring in elementary school education. However, Starko (2010) uses the first half of the book to explain the basic theories that are at the backbone of all creativity research. The text is written in such a way that any undergraduate student could understand these theories of creativity as well as how they are tied to practical uses. Now, throughout these introductions to the general creativity theories Starko (2010) does provide tips about how a classroom teacher can integrate this information into an educational environment. For this reason I would highly recommend this text for college courses that are designed for pre-service teachers. The second half of the text further supports this recommendation. Starko provides numerous ways to tie the creativity theories into all the major content areas that make up traditional K-12 curriculum.

Sources that Focus on the Creative Problem Solving Process

Dorval, K. B, Isaksen, S. G., & Treffinger, D. J. (2000). *Creative approaches to problem solving: A framework for change* (2nd ed.). Williamsville, NY: Creative Problem Solving Group - Buffalo.

This is the second edition of *Creative Approaches to Problem Solving: A Framework for Change* (Dorval, Isaksen & Treffinger, 2000). The main focus of this text is the Creative Problem Solving Process. Isaksen, Dorval and Treffinger (2000) included in-depth information about their framework of Creative Problem Solving and the divergent and convergent thinking tools, as well as the theoretical background behind the framework and tools. The authors use a different terminology than that of the original Osborn/Parnes CPS Model. One example of this change in language is that Isaksen, Dorval and Treffinger (2000) call the six stages of CPS by different names than did Osborn and Parnes. An unfortunate change from a classroom point of view is that the 1st edition, three-ring binder format was replaced with a hardbound format. This prevents the reader from removing, for instance, the divergent and convergent tool sheets. The ability to remove the divergent or convergent tool sheets allowed the reader to have in-depth practice with these tools. The formats of the pages in the 2nd edition are not designed in such a way that allows the reader to easily practice the tools that are presented in the book.

Firestien, R. L., Miller, B., & Vehar, J. R. (2001). *Creativity unbound: An introduction to creative process* (2nd ed.). Williamsville, NY: Innovation Systems Group.

Creativity Unbound: An Introduction to Creative Process (Firestien, Miller & Vehar, 2001) gives a simple overview of the tools and framework with reference to the Creative Problem Solving Process. The authors begin with a quick overview of the overall study of creativity and then explore CPS. This book would serve as a good textbook because the authors present how to use the divergent and convergent thinking tools before introducing the CPS Process and framework. This shows the reader that the tools and framework can work apart from one another. Firestien, Miller and Vehar

(2001) present the Creative Problem Solving Framework using different terminology than that of the Osborn/Parnes Model and Dorval, Isaksen & Treffinger (2000). It should be noted that *Facilitation: A Door to Creative Leadership* (Miller, Vehar & Firestien, 2001) was written to accompany *Creativity Unbound: An Introduction to Creative Process* (Firestien, Miller & Vehar, 2001). *Facilitation: A Door to Creative Leadership* was written for people who have a desire to learn the techniques necessary to become a Creative Problem Solving facilitator.

Parnes, S. J. (1997). *Optimize the magic of your mind*. Buffalo, NY: Bearly Limited.

This book was used as the other primary textbook for the course that was taught for this Master's project. It was a good textbook for an undergraduate course with a focus on Creative Problem Solving. *Optimize the Magic of Your Mind* (Parnes, 1997) was actually a revision of *The Magic of Your Mind* (Parnes, 1981). In this book Parnes (1997) uses the original language and syntax that was used when the CPS model was first developed. A positive of the book is that after Parnes (1997) introduces the CPS model to the reader, he progressively guides the reader as he or she gets accustomed to using the CPS Process. Parnes (1997) slowly introduces divergent and convergent thinking tools throughout this instruction of the CPS process thus alleviating any overwhelming feelings of having to digest a number of new thinking tools all at once. Unlike the other books that focus on CPS, Parnes (1997) does not provide blank tool sheets; thus the reader does not have a pre-developed form to use when he or she practices a particular tool. This format has value because does not give students a prescribed method for using a certain tool. This allows students to personalize and format the divergent and convergent thinking tools in a way that is suitable to their wants and needs.

SECTION III: **METHOD**

Introduction

Section III of this project contains a description of the method that was used for this research study and the rationale for the selection of that method.

Rationale for the Method

As stated in Section I the focus of the course that was taught for undergraduate students at Texas A&M University in College Station, Texas was on the understanding of creative thinking and the Creative Problem Solving Process. The course lasted fourteen weeks, and the process of instruction, as well as the students' practical comprehension of the material presented, was documented.

An action research approach was used to conduct the study. Action research allows instructors to “model for their students how knowledge is created” (Mills, 2000, p. 11). Stringer (1996) explained that the researcher must take a facilitative role and become a resource for those students being studied. In an educational setting the researcher, who in many cases is also serving as the instructor, is focusing “on the development, implementation, and testing of a new product, plan, or procedure” (Charles and Mertler, 2002, p. 301). The goal of action research is to document the process that takes place when a new program is being delivered. Action research also assists the students in developing their personal process for change (Stringer, 1996). As previously stated the outcomes of an action study may be transferred from one context to another based on the similarities of the two contexts being compared (Guba and Lincoln, 1985, p. 124). The two qualitative analysis methods that were used in order to reach the recommendations and conclusions for this study were what Miles and Huberman (1994) call Within-Site Analysis and Cross-Site Analysis.

Description of the Method

As stated by Miles and Huberman (1984),

Qualitative researchers are always interested in events: what they are, when they happened, and what their connections to other events are (or were), so as to preserve chronology and illuminate the processes occurring (a process, after all, is essentially a string of coherently related events) (p. 122).

Data Collection:

To document the data collected during the course of the semester, a personal journal was kept that contained daily notes regarding the design, delivery and evaluation of the course. Secondly, the lesson plans and lecture notes developed for the delivery of the course were collected. Lastly, at the conclusion of the semester, formative evaluations developed by the students, as well as by myself in reference to the effectiveness of the course material, were documented.

Data Analysis:

The methods of Within-Site Analysis and Cross-Site Analysis were used to examine the data (Miles & Huberman, 1994). The main advantage of these two types of analyses was that they are most effective if completed after all of the data are collected. This method allowed for more focus on the design and delivery of the class due to the fact that the data was captured in the midst of the course and without analysis, which occurred at the conclusion of the semester. Miles and Huberman (1994) also made the point that the presentation of such conclusions are best done in a non-narrative format. This prevents confusion as a result of information being spread out among multiple pages. This also makes it easier to search for relationships between different sets of data. For the study, the Within-Site Analysis allowed for the articulation any key content and process aspects that occurred during the design, delivery and evaluation of each individual class. The Cross-Site Analysis allowed me to compare and contrast the design, delivery and evaluation of individual classes in order to look for overall themes that existed in the content and process of the course as a whole.

As a result of the observational data, I developed recommendations to guide the design of future courses in creativity, as well as for the purpose of guiding further research projects sponsored by the Institute for Applied Creativity at Texas A&M University. Section IV of this Masters project contains findings and the lesson plans for each class delivered, the personal journal entries for each class and the self-evaluation data. Section V contains the students' evaluation data of the course and my recommendations for future development of creativity courses.

SECTION IV: RESULTS

Introduction

Section IV contains the raw data and Within-Site Analysis that was performed for each class day. The information is separated into the specific class days. For each class day that I taught, you will find lesson plans, the journal that was kept about the design, delivery and evaluation of each class and the Within-Site Analysis that was performed for each class day. As for specific analysis techniques, Miles and Huberman (1994) stated that one tactic for coding qualitative data is to review the raw data and “pick out the most salient points” (p. 54). From there major themes and relationships can then be mined through Cross-Site Analysis. Therefore, for this study, the specific analysis began with the organization of the journal entries into three categories: Design, Delivery and Evaluation. Then, each entry was analyzed, highlighting the salient points while maintaining the original categorization. As Miles and Huberman pointed out, a document summary form serves to put the raw data “in context...and give a brief summary” (p. 54). The noting of class number and date on each document summary form, as well as retaining the Design, Delivery and Evaluation categorization, helps to communicate context. Additionally, each summary form immediately follows the raw data (original Design, Delivery and Evaluation journal entries) to which it refers.

Lesson Plan: 14 January 2003: Class 1 of 28

Goals:

- Heighten the anticipation of the students with relation to the purpose of the course
- Explain the contract and syllabus for the course
- Explain the “4Ps” with relations to defining creativity

Objectives:

The students will be able to...

- understand to main purpose and goals for the semester long course
- understand what the “4Ps” stand for and how they are related to defining creativity
- walk away with, if it is not already understood, the understanding that all human beings are creative

Vocabulary:

1. Press (with relation to the 4Ps) = the environment in which creativity is flourished or squelched
2. Person (with relation to the 4Ps) = the characteristics associated with creative people
3. Product (with relation to the 4Ps) = the artifact of creativity; an artifact that is novel and useful
4. Process (with relation to the 4Ps) = the way in which a person creates; the way in which a person applies their creativity
5. Implicit Definition of Creativity = a persons intrinsic/personal understanding of what creativity means

Heightening Anticipation

- I. Based on “Capturing the Essence” a leap skill taken from *Creative Leaps Beyond* by Torrance and Safter
 - Video Clip: Movie “The Matrix”: Tea house sparring scene – it will capture the essence of the entire course
- II. Introduction of myself as the instructor as well as introduction of Joyce Juntune – representing the Institute for Applied Creativity
 - Joyce will explain her roll and the roll of the class as a future part of the Institute for Applied Creativity
 - Introduce myself and explain my background in creativity and CPS
- III. Introduction and explanation of the contract and syllabus
 - Explain the text situation – Parnes’ text not yet available
 - Explain assignments in detail
Note: Read the Assignments Paragraphs before explaining
 - Explain the libraries resources on creativity
 - Explain my Master’s Research Project and how the class will be involved
 - Point out pet peeve with relation to leaving class early – and explain reasons why

Digging Deeper

I. Joyce will explain the timeline and major scholars that are related to the study of creativity

II. “4Ps” Lecture: I will give a quick outline of the 4Ps as a framework for the most accepted “working definition” of creativity

Note: Make sure to first explain my inability to spell

Lecture Outline:

A. Mel Rhodes: wanted to find the grand unified definition of creativity

- He settled on four strands
- The “Four Ps” (1961) *An Analysis of Creativity*

B. PRESS (Climate / Environment)

- A Definition of Press = the environment in which creativity flourishes or is squelched
- (Davis) Press is a combination of the social and psychological factors that can effect creativity
- Press can start with one person and can be created in the environment of the mind
- In any environment there can be positive or negative creative climate: but you must have a positive creative climate for ideas too flourish; this is why a single persons human mind can stand alone as a creative climate
- For a Creative Climate to Exist:
 1. Must have a need for creating ideas (Rhodes, 1987)
 2. Must have motivation (Amabile)
 3. Must defer judgment
- By simply deferring judgment when ideas are being generated a single person can effect the creative climate of a group in a positive way

C. PERSON: ask question “Who does not believe that they are creative?”

- Everyone is creative
- Style vs. Level
- A Definition of Person = the characteristics associated with creative people
- Level: “How creative are you?”
 - According to Torrance level can be measured by fluency, flexibility, originality, and elaboration of ideas being generated
 - Torrance Test for Creative Thinking measure this – show copy of Torrance Tests
 - Explain Creative “Leap” Skills from Torrance and Safter text
- Style: “How are you creative?”
 - Your preference for implicit process
 - Can be measured by Adaptive ness vs. Innovativeness
 - No right or wrong style
 - Show copy of KAI
- Everyone has some sort of creative skill(s)

D. PRODUCT:

- The least researched of all the 4Ps

- A Definition of Product = the artifacts of creativity
- Most common definition of a Creative Product = an artifact that is NOVEL and USEFUL
 - Explain my belief with regards to the word USEFUL: unless you define USEFUL in a certain manner
 - NOVEL = element of newness
 - USEFUL = the extent to which it solves the problem
 Note: Others define useful as = “can it be used by society or a specific domain”

E. PROCESS:

- A definition of Process = the way in which a person creates or applies his or her creativity
 - The reason the students are taking this course
 1. Finding a problem
 2. Working on it (Generating ideas)
 3. Finding a solution
 4. Communicating results

Extending the Learning

- I. Read: DAVIS: pp. 39-49 (Defining Creativity)
- II. Assignment due for next class: Have each student formulate his or her personal definition of creativity
- III. Two questions to guide assigned reading:
 1. After reading what other scholars say, how would you define creativity?
 2. Where does your personal definition fit when comparing it to each of the 4Ps?

Sources Used to Prepare Class

1. Davis (1999) *Creativity is forever*
2. Torrance & Safter (1999) *Making the creative leap beyond*

Supplies Needed for Class

1. A copy of the contract and syllabus for each student
2. A copy of *Creativity Is Forever* and *Optimize the Magic of the Mind*
3. Lesson Plans Journal with “4Ps Lecture” notes
4. “The Matrix” DVD – have Herrington Media Center setup a computer with a DVD-ROM, projector, and speakers in the classroom before class

Design: 14 January 2003: Class 1 of 28

I know that warm-ups are imperative for each class day. I have decided to design each class, as well as the entire semester around the incubation model for that reason. I also want the warm-ups to relate in some way to the extending the learning aspect of the Incubation Model. I think it will be best to use the “Leap” skills outlined by Torrance and Safter in “Making the Creative Leap Beyond” as models for the class warm-ups and extending the learning exercises. Each day I will try to make the warm-ups and extending the learning exercises relate to a different leap skill. For the first day warm-up I will use “Highlight the Essence.” In reality I will use the first day to warm-up the students to the entire semester. I think that “Highlighting the Essence” of the semester will be effective in doing this. For this day I will also deliver a short lecture on the 4Ps. The assignment for the next class will be to “formulate your personal definition of creativity” and I think a short explanation of the 4Ps will help the students understand how to do such a task. I also will ask the students to read in one of their two primary texts, “Creativity Is Forever.” I want them

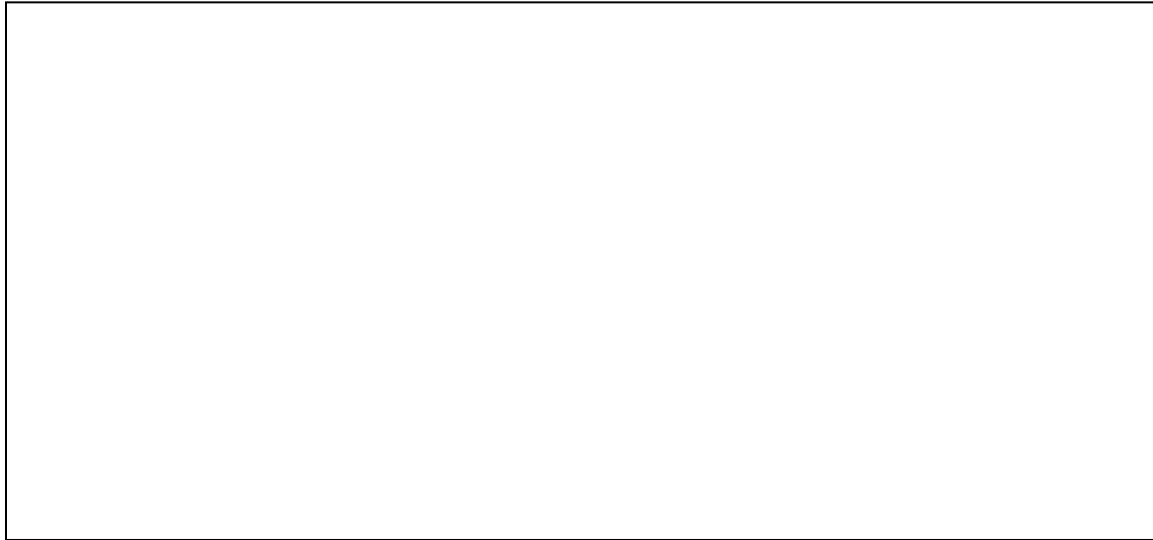
Delivery

In order to “Highlight the Essence” of the course, I decided to show the students a short video clip from a scene in the movie “The Matrix.” I showed the “Tea House” scene where Morpheus and Neo are sparring for the first time. I thought this scene would “Highlight the Essence” of this particular course best because Morpheus could only show Neo the door, Neo would have to decide if he wanted to walk through it. I explained that during the semester the students will learn processes, particularly CPS, which can enhance creative thinking ability. I also pointed out how they will learn to show others how to use CPS, but that they will only be learning how to help others think more creatively, they will not learn how to think more creatively for others. I then explained the contract and syllabus in detail. After that Dr. Joyce Juntune (the Texas A&M professor who hired me) gave a short lecture on the type of thinking that the world did before the 1950’s, which was when the study of creativity became so popular. I then began my lecture on the 4Ps, however, I ran out of time and was unable to finish it. So I told the students I would finish it up at the beginning of the

Evaluation

The size of the class ended up being smaller than I expected. I only have seven students, one of whom is a graduate student in educational psychology. I am excited about the smaller enrollment though. I feel it will allow for more intensive class discussions about the course material. The warm-up seemed to make an impression; however, it will be hard for me to tell this early in the semester. I did find it nice to have Dr. Juntune (a more experienced university level instructor) in the class so that I could get feedback on my instructional methods. I did notice that an hour and fifteen minutes does fly by very quickly, especially when the material is so rich with knowledge. I arranged the desks in a circle and refrained from standing up in the normal lecture position as much as possible. This, I believe, helped the students open up easier because I was there, not only to teach them what I knew about creativity and CPS, but also to learn what they knew and believed about creativity as well. I ran out of time and was unable to finish my lecture on the 4Ps. I will need to continually be aware of the time throughout the entire semester. The fact that there is only twenty

Design: 14 January 2003:



Delivery

next class. During this presentation of the 4Ps I was at least able to explain to the students what each “P” stood for.

Evaluation

minutes between classes doesn't give me much time for preparation either, something I really like to have. In the future it would be nice to teach this type of course in a two and half hour period, one a week, instead of a one hour and fifteen minute period, twice a week. It was a good idea to engage in course material the first day. This way the students got a taste of the kind of course they were enrolled in. However, in the future I wouldn't merely lecture on creativity the first day of a new semester; rather I would like to have the students engage in more hands on experiential activities. I would make the entire first class a warm-up to the whole semester. Perhaps using the first class to build a creative climate would be more important than discussing the syllabus. This would really break the paradigm of the first day.

14 January 2002: Class 1 of 28

I. Design

- Used Torrance's "leap" skill of "Highlight the Essence" to inspire the warm-up for this class because I wanted to Highlight the Essence of the entire semester; and
- Designed a presentation on the 4Ps in order to summarize the current ways in which creativity is defined.

II. Delivery

- Showed a video clip from "The Matrix" to illustrate that this course will focus on helping the students free their minds so that they can be more creative;
- Reviewed Contract and Syllabus so that the students could understand the purpose, goals and objectives of the entire course; and
- Began a lecture on the 4Ps to provide to the students basic information that will help them formulate their own personal definitions of creativity. I ran out of time and was unable to finish the lecture.

III. Evaluation

- When teaching such a course during a regular Fall or Spring semester have the class meet 2 ½ to 3 hours one day a week instead of 1 hour and 15 minutes for two days a week;
- Always be aware that time flies when you are in creative flow;
- Consider engaging the students immediately in an activity that will create a creative climate on the first class day, the syllabus and roll sheet can always be discussed later;
- If you follow the standard procedures of a normal University level course on the first day you won't be capturing the essence of what a course on creativity is trying to teach; and
- Leave the students with a huge anticipation for the next class.

Lesson Plan: 16 January 2003: Class 2 of 28

Goals:

- Finish explaining the “4Ps”
- Explore each student's personal definition of creativity
- Explore how each student's personal definition of creativity fits with the 4Ps definition of creativity

Objectives:

The students will be able to...

- understand the complexity and diversity of implicit creativity
- have a good understanding of how their personal definitions of creativity related to the 4Ps definition of creativity as well as others leading creativity scholars' definitions of creativity
- explain each of the 4Ps with confidence of comprehension and detail

Vocabulary:

1. Level (as related to the creative person) = how creative you are?
2. Style (as related to the creative person) = how you are creative?
3. Novelty (as related to the creative product) = element of newness
4. Usefulness (as related to the creative product) = the extent to which the novel product solves the problem

Heightening Anticipation

- I. Leap Skill: “Elaborate-But Not Excessively”
 - A. Pass out a sheet of white paper to each student
 - B. Have students fold the paper in half across the width of the paper
 - C. On one half – have the students draw an abstract form of line art
 - D. “Pass your paper to the person to your left”
 - E. “Build off the form that you have in front of you and draw a visual representation of what creativity meant to you”
 - F. Have the students elaborate just a little on the drawing, “don't just quote your personal definition, elaborate a little.”

Digging Deeper

- I. Personal Definitions of Creativity
 - A. Reading (Hawking) excerpt and then explain my personal definition of creativity
“The process by which man understands the mind of God.”
Note: Give the new students time to formulate their personal definitions of creativity
 - B. Have students write their definitions on the other half of the white paper
“Write big!”
 - C. “Set your definitions aside for now”
- II. 4Ps Revisited
 - A. Summarize 4Ps: refer to Jan 14th lecture

- B. Explain “Style-Level” with relation to Person
- III. Coming Back to Personal Definitions
 - A. Have students read definitions “Don’t elaborate yet.”
 - B. Have the students decide which “P” each definition belongs under
 - C. Have students get into groups according to which “P” they belong to
 - D. Post definitions on board
 - E. Have students elaborate – but not excessively on their definitions with the other group members
- IV. Discussion of text (if time permits)

DAVIS text pp. 39-49

 - A. Discussion Questions
 1. (pg. 41) Do we need to persuade someone else that an act is creative for that act to be called creative?
 2. (pg. 42) What do you think of Lombroso’s theory?
 3. (pg. 45) From Perkins (1988), how can something come out of nothing?
...after the world was created by God, were there anymore truly innovative creations.
 4. (pg. 46) Refer to Mason’s definition: How can thinking creatively benefit the person thinking?

Extending the Learning

- I. Have students design the perfect classroom
 1. Split them up into their 4Ps Groups
 2. Using markers and paper: They can...
 - write what it should have, or look like.
 - draw what it will look like.
 - etc.
 3. “Remember don’t judge your ideas or the ideas of others.”
- II. Assignments: Due for next class
 1. Read: DAVIS text: pp. 49-63 and pp. 113-132
 2. Read: PARNES text: pp. 1-8
“As you read the DAVIS text, pp. 113-132 ‘The Creative Process’ remember the perfect classroom exercise, we will discuss its importance next week.”
 3. Read: “Reflections” section of PARNES text
- III. Two questions to guide assigned reading:
 1. What are the six stages of the CPS Process?
 2. Why is the process so unique when compared to other creative thinking process models?

Sources Used to Prepare Class

1. Davis (1999) *Creativity is Forever*
2. Torrance & Safter (1999) *Making the Creative Leap Beyond*
3. Parnes (1997) *Optimize the Magic of the Mind*

Supplies Needed for Class

1. Plain white paper
2. Mr. Sketch Stix Markers
3. Post-Its
4. (Hawking) Text
5. Text Books
6. Psychometric Tests
7. Lesson Plans
8. Extra Syllabi (Must make copies)

Design: 16 January 2003: Class 2 of 28

The main purpose of this class will be to explore what each student's personal definition is for the word creativity. To warm-up the students for this class I will be using the "Leap" skill of "Elaborate-But Not Excessively." I want to each student to summarize in simple terms his or her personal definition of creativity, which we will explore more in depth later in this class period. After the warm-up I will have the students write down their personal definitions of creativity, using large print on a large piece of white paper. Before they read their definitions I will finish the lecture on the 4Ps that was left over from last class. This way they have a good understanding of how most scholars categorize definitions of creativity. This will hopefully build on the reading that they should have done prior to this class day, because the reading I assigned in "Creativity Is Forever" specifically highlighted the major definitions for creativity that have been formulated by creativity scholars, and it also categorizes them (those definitions) into the 4Ps. I will then have the students read their definitions and along with the other students have each student decide which "P" their

Delivery

For the warm-up of this class I again used "Elaborate-But Not Excessively." I had each student draw a simple abstract line shape (example is in my lesson plans). Then they passed their artwork to another student. Using the other student's abstract line art I asked each student to build off the drawing and "Highlight the Essence" of what creativity means to them. I then had each student simply and quickly explain what his or her drawing meant. Then on the back of the same sheet of paper that the drawing was on I had each student write, in large print, their definition of creativity that they should have formulated as part of their homework that was assigned on 1/14/03. Before reading their definitions aloud I asked them to set aside the paper so that I could finish the 4Ps lecture. I attempted to make a basic outline of the 4Ps as well as their significance to the understanding of creativity. After finishing the 4Ps lecture I had the students read their personal definitions of creativity aloud. The students then decided which of the 4Ps each definition belonged under. Some of the definitions belonged under more than one "P". I then explained that just because a definition

Evaluation

When the students were presented with the directions to the first part of the warm-up, most of them understood and drew a simple abstract piece of line art. However, I did not make it clear that it should be simplistic, so a few students drew some very complex pictures. (Refer to my lesson plans to see a representation of the kind of drawing that I was expecting.) I was worried that this would make it difficult for the student who was handed the complex drawing to be able to build a pictorial representation of their personal definition of creativity. However, the complex drawings proved to be just fine for this exercise. I do believe that those students who had to use the complex drawings were forced to stretch to find a way to represent their own definition of creativity, which may have been very complex itself. I had used this activity as a warm-up for a facilitation that I did for a group of professionals. Both this time and the time previous the activity proved to be quite successful. Having run out of time on the 1/14/03 class I knew I needed to revisit the "4Ps" lecture that I had not been able to finish last class. I realized that for the future I will need to develop a

Design: 16 January 2003:

personal definition belongs under. I will then have the class discuss specific parts of the assigned reading that I requested they read before this class meeting. This text discussion is tentative because I learned from the last class, on 1/16/03, that I need to be aware that one hour and fifteen minutes can fly by. And, I don't want to rush the class discussion when we talk about the students' personal definitions of creativity. I have also formulated some specific questions with regards to the assigned reading. My hope is that if we do get to the text discussion, these questions will guide the communication so that the students and I together understand how everyone feels about certain issues that were brought up in the reading with relation to creativity. The questions I have formulated for discussion are outlined in detail in my lesson plans. For the extending the learning exercise I want to have the students engage in something that will allow them to incubate while reading their next text assignment which will be due on 1/21/03. The exercise will relate to the creative process. The reading assignment will include both the Gary Davis text as well as the Sidney Parnes'

Delivery

seemingly may belong under only one "P", that doesn't mean that it is less important than another student's definition. I used this exercise to show that everyone looks at creativity and the explanation of it in different ways. This showed the complexity of creativity and the complexity of the study of creativity. Being that we still had a good bit of time left in class, I then moved onto an open class discussion of the text that was assigned for reading after the 1/14/03 class. The assignment as stated in the syllabus was to read pages 39-49 of the Gary Davis text. The beginning of the reading touched on the 4Ps but also talked about a proposed 5th "P": Persuasion. I asked: "Do we need to persuade someone else that an act is creative in order for that act to be called creative?" This opened up quite a bit of discussion about persuasion and creativity. I controlled the dialogue a little to prevent too much digression from the subject of the question, but I did let the discussion progress forward for as long as time would allow. I then asked: "What do you think of Lombroso's theory that insanity and creativity are the same?" And lastly I asked the students: "How can thinking creatively benefit the

Evaluation

more succinct way to deliver the 4Ps information. I do believe however that the students were able to better grasp the 4Ps information which I was presenting simply because I had them read about the 4Ps in the Gary Davis text "Creativity Is Forever." Having the students read about the concepts in depth before they experience them in a classroom setting allowed for more opportunities of learning extensions and AHAS! I was very impressed with the students personal definitions of creativity that they were asked to develop for homework before coming to this class. Each definition showed a true desire by each student to fully explain his or hers' personal belief of what creativity is. It did not seem to me that any student believed this particular assignment was in any way frivolous or pointless. The diversity of the students definitions was also more reinforcing evidence of the complexity of creativity. After looking back on it, this seemed to be the most suitable and logical point to begin a class discussion of the text reading in the Gary Davis book, which focused on "defining creativity." I was glad that I decided to formulate questions before the discussion so that the

Design: 16 January 2003:

book "Optimize the magic of the mind", which is the other primary text for the course. I will use this exercise to also see how the students work in groups. As I was designing the lesson plan for this class day I found it helpful to make a list in my lesson plan journal of all the supplies and material that I will need for this class. I will continue to do this to ensure that I don't forget to bring any necessary materials to each class. I have also formulated two questions that I want the students to answer as they read each text assignment. The questions will help the students understand what the most important information is that they should gather from each reading.

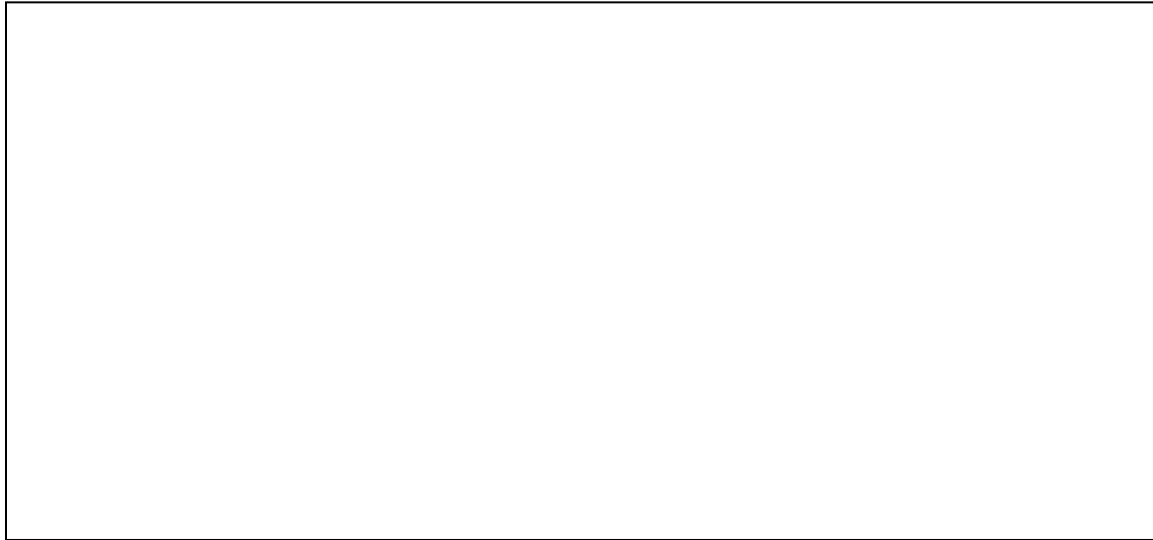
Delivery

person who is thinking?" I was only able to ask these three questions because class time was almost up. (A list of the other discussion questions that I intended to ask with relation to this reading assignment is in my lesson plans journal). After I closed down the text discussion I then moved into a group activity period at the end of class. My hope was that this particular activity would help extend the students understanding of the intuitive creative process. I also used this activity as an opportunity for me to see how each of the students interact with his or her fellow students as well as to see how each student reacts to working with a group. I passed out the Mr. Sketch Stix and white paper and gave them only about five minutes to produce on paper, the perfect classroom. I did make it clear that I did not care how they used the supplies to communicate their group's design. I told them they could draw what a perfect classroom would look like, or make a list of what they think are the attributes of a perfect classroom, or use any other means that they saw fit to communicate the group design. I then reminded the students of their reading assignment and presented the

Evaluation

conversation would have some frame of reference so that it would not digress off the subject. The first question I asked, "Do we need to persuade someone else that an act is creative for that act to be called creative?", lead to some very intriguing insights on the part of the students. During the course of the text discussion I did find myself needing to serve as a moderator so that the discussion stayed on track even though when I designed this part of the lesson I was hoping that I would be able to serve as a participant in the same capacity as the students. During the discussion the students did challenge other's opinions if they disagreed, however, their were a few times when I asked students who gave an opinion to give information that would support his or her opinion. This gave the students a real life example of the fact that when you express your belief, feeling, or opinion on a particular subject to a particular sector or domain of society, society in fact will expect you to support your statement with legitimate evidence. Again the short time frame of the class had to dictate the discussion. It was a shame that the conversation had to end. The students show quite

Design: 16 January 2003:



Delivery

two questions that I wanted them to answer while they read; as a way to guide their reading.

Evaluation

a passionate interest in the information being discussed. The text discussion also gave me an opportunity to see how well the students had synthesized and understood the information presented in the text as well as giving me the ability to see how each student reacted to group conversation. Before the end of class I did split the students into groups to participate in the "Perfect Classroom Activity." As the two groups worked on the activity I did notice that from the beginning some students were being critical and negative of his or her fellow teammate's design ideas. I knew this would be a perfect real life example of how being openly critical during divergent thinking can prevent the group from being fully successful in their engagement of a problem.

16 January 2002: Class 2 of 28

I. Design

- Used the “leap” skill of “Elaborate – But Not Excessively” to inspire the warm-up for this class because the class will focus on the student’s personal definitions of creativity;
- Plan to finish the presentation on the 4Ps because it will impact how the students discuss their own personal definitions of creativity;
- Designed specific questions to guide a class discussion about how key scholars have defined creativity. I will keep this activity tentative because the time allotted for class may run out; and
- To extend the learning on the creative process I decided an activity where the students will work in groups so that I can see how they work together. I also want to give the students a chance to get to know each other.

II. Delivery

- For the warm-up I asked each student to draw a visual representation of how they view creativity because I wanted them to have practice simplifying their personal definitions of creativity;
- As a class we discussed the students personal definitions of creativity and how they related to the 4Ps; and
- I allowed the groups to use any type of medium to solve the challenge that I presented so that they would be open and creative with the way they communicated their group’s solution.

III. Evaluation

- This warm-up gave the students another way to express their personal definition of creativity; aside from verbal communications;
- Clarify instructions! That is the responsibility of the instructor;
- It seemed that the students better understood the 4Ps information because they had to read about it before coming to class;
- Having the students read material that is related to the focus of each class day prior to the class in which the material is to be discussed gives each discussion so much more potential;
- Pre-selected discussion questions help me moderate the class discussions so that both the students and myself did not digress to far off the topic;
- When group activities are used at the beginning of the semester it can give me a good idea of how each student reacts to social interaction and group dynamics; and
- As a result of some of the students being critical of other students design ideas, the group exercise that I used gave me a springboard into the explanation of deferring judgment, which I was planning to discuss next class.

Lesson Plan: 21 January 2003: Class 3 of 28

Goals:

- Explore the students' implicit creative processes
- Explain specific creative processes as articulated by certain creativity research scholars
- Compare the students' creative processes to the scholars' articulated creative processes
- Articulate and demonstrate the idea that all problems have multiple solutions

Objectives:

The students will be able to...

- articulate their implicit creative process.
- compare their creative process to the articulated creative processes of specific creativity research scholars.
- explore the understanding that every problem has multiple solutions.

Vocabulary:

1. Preparation (according to Wallas) = looking at the "real" problem, clarifying the situation
2. Incubation (according to Wallas) = a period of being consciously absent from the solving of a problem while the subconscious works on making the connections in a unique way
3. Illumination (according to Wallas) = the AHA!, or EUREKA!
4. Verification (according to Wallas) = checking the solution
5. CPS = Creative Problem Solving

Heightening Anticipation

I. Leap Skill: "Visualize the Inside"

Note: "Visualize the Inside of their personal creative process"

1. Have students come into class and sit down
2. Ask them too: "Relax and close your eyes"
3. Have them think back and visualize the end of the last class: "Remember when I had you get into two groups and wanted you to work in your groups to solve the problem of 'how might we design the perfect classroom?'"
4. As they visualize the past activity have them reflect on the specific stages (cognitive, physical, etc.) that they went through to solve such a problem.
Note: For those who were not present for the last class ask he or she to visualize a time when they needed to solve a problem in a novel or unique way (when they needed to be creative)
5. Ask the students to vocalize the specific stages to the entire class
6. As the instructor / leader of the warm-up: write down the specific stages on the board
7. Ask the students to end their visualizations and to open their eyes again.

Digging Deeper

I. The Creative Process

- A. After writing down the creative process according to the student's experiences when they solved a problem, then
- B. Explain how the creative process was articulated into specific stages by the creativity scholars of Wallas, Torrance, Osborn / Parnes, and Davis
 1. The Wallas Model (pp. 117 of DAVIS "Creativity Is Forever):
 - Preparation: looking at the "real" problem, clarifying the situation
 - Incubation: a period of being consciously absent from the solving of a problem while the subconscious works on making connections in a unique way
 - Illumination: the AHA! Or EUREKA! that comes after incubation
Note: Mention the face of an AHA! (if possible show video made on AHA!, "Faces of AHA! by Jean-Pierre Issa and Blake Godkin)
Note: Basic facial expressions: Sad, Mad, Happy, Surprised, and AHA! – a combination of the previous four
 - Verification: checking the solution
 2. Torrance's Model (pp.117 of DAVIS text):
 - Sensing a problem or gap in information
 - Forming ideas or hypotheses
 - Testing and modifying the hypotheses
 - Communicating the resultsJohn Dewey (1933) compressed Torrance's stages into two:
 - A state of doubt or perplexity appears and thinking originates
 - Then, searching and inquiring begin in order to resolve the doubt issues
 3. Osborn / Parnes Model (pp. 118 of DAVIS text) "Creative Problem Solving":
 - Mess-Finding
 - Fact-Finding
 - Idea-Finding
 - Solution-Finding
 - Acceptance-FindingNote: For this process I will only outline the framework by mentioning the stages, I just want the students to understand how the divergent and convergent flow of this process works. I will also draw Parnes' "Accordion Model" to better illustrate this. Later I will dig into each step more specifically.
Note: Draw Osborn/Parnes CPS "Accordion Model"
 4. Gary Davis Synthesis of All Processes (pp. 116 of DAVIS text)
 - Clarifying the problem
 - Working on it
 - Finding a good solution

- II. Comparing the specified creative processes that were articulated by Wallas, Torrance, Osborn/Parnes, and Davis to the intuitive creative process that was articulated by the students during their warm-up at the beginning of this class. Note: They should all be very similar when the general stages are compared.
- A. Explain how when the Formal Creative Processes were articulated the scholars designed them so that anyone using the processes could move around (go in any order) among any of the stages of a specific process and you don't need to use all of the stages when solving one particular problem.
- B. CPS in particular was designed so that those using it can allow for a break (incubation) and then when the time is right come back to the process to tackle the problem.
- III. Creativity is about finding many solutions to one problem:
- A. Every problem has many solutions
Example: "Half of 8" problem (taken from Parnes' *Optimize the Magic of the Mind*.)
- B. To illustrate "multiple solutions" point have students do "coffee cup" design problem:
- Read problem
 - Have students draw solutions on paper
 - Then ask some students to draw their solutions on the board: ask them to label the drawings and then explain them to the class
- Note: The problem was designed around the solution of a coffee cup however without that information known, many, creative, unique solutions are rendered.

Extending the Learning

- I. Text discussion: Chapter 5 "The creative Process" in *Creativity is Forever* by: Gary Davis
Discussion Question:
1. "Can something come out of nothing?"
 2. "Is solving a problem the only way to express one's creativity?"
- II. Assignments for 1/23/03 class
- A. Read: DAVIS pp. 19-31
- B. Read: DAVIS pp. 44-54 "How do we overcome our blocks?"
Note: Must read the Davis pages before the Parnes pages if possible.
- III. Two questions to guide outside reading
1. What is deferring judgment?
 2. Why is it so important to creativity?

Sources used to prepare class

1. Davis (1999) *Creativity is Forever*
2. Torrance and Safter (1999) *Making the Creative Leap Beyond*
3. Parnes (1997) *Optimize the Magic of the Mind*

4. Gruber and Wallace: “The case study method and evolving systems approach for understanding unique creative people at work.” In Sternberg (1999) *Handbook of Creativity*

Supplies needed for class:

1. Mr. sketch stix
2. Plain white paper
3. Dry-erase markers for board
4. Text books
5. Lesson Plans

Design: 21 January 2003: Class 3 of 28

For the warm-up to this class I have decided to use the “Leap” skill of “Visualize the Inside.” I will ask the students to close their eyes and think about the activity that they did in groups at the end of the previous class, the “Design the Perfect Classroom” activity. I will ask them to voice the specific steps that they went through as they attempted to design the perfect classroom. I will then write down those steps on the board. The main purpose of this exercise will be to compare the steps of the students’ implicit creative process to the steps of specific creative processes that have been articulated by certain creativity scholars. Before performing the comparison I will explain some of the creativity scholars’ articulated processes. The specifically articulated creative process models that I will explain will be the models of Wallas, Torrance, Dewey, Osborn / Parnes, and Davis. After explaining the steps that these creativity scholars specified, I will then, along with the students, compare the students’ overall implicit creative process to the creative processes that have been developed by these creativity scholars. The implicit processes that will be outlined by

Delivery

Before the class even got started one of my students came up to me and said that she couldn’t get to sleep on the evening after the previous class day because she kept having more ideas for the “perfect classroom” and she found herself sitting at her desk writing them down. The warm-up for this class went fairly smoothly. I did ask the students to visualize their own personal process for creative thinking. I did not present any of the stages of the formal creative processes that had been formulated by creativity scholars in order to prevent the students from using those stages to explain their personal creative processes. I had the students work together to create a combined formal creative processes for the entire class instead of having each student articulate every stage that he or she personally uses when thinking creatively. After prompting the students to articulate the stages that make up their personal creative processes, it did take a few minutes before the students actually started to speak up. After writing down the stages that the class formulated as their personal creative process, I then dug deeper and explained the stages that the creativity scholars used to

Evaluation

I was very excited to hear that the “perfect classroom” exercise affected one of the students in such a way that she couldn’t stop thinking of ideas. A statement like that showed me that that specific extending the learning exercise, in some way, had an impact beyond the classroom. More than ever, as a result of what that student said, I could see the Incubation Model, specifically the “extending the learning” stage working for my class. The warm-up for this class seemed to fit even more perfectly now since it was an extension and re-visitation of the “perfect classroom” problem which I used to close down the last class. The students were quite engaged in the goal of trying to articulate their personal creative processes. This showed me that all the students were very aware of the stages that made up their personal creative processes, and that they were also aware that everyone else’s creative processes were very similar to their own. The warm-up was a successful way to help the students articulate the specific stages that they went through when they were creatively thinking. When I did ask the students to name the stages that they went through their

Design

the student and the processes articulated by the creativity scholars should all be very similar when the general stages are compared. This comparison should show the students how the formally articulated creative processes are merely humans' intuitive or implicit processes for creative thinking written down on paper in the form of stages. I will also explain how the scholars did not intend for any of their formal processes to be followed linearly, but designed them to be flexible so that people could move around between any of the stages as needed. I will then move into a hand-on explanation about how creative thinking has very much to do with finding many solutions to one problem. Using the "Half of 8" problem that Parnes uses in his book I will show how a seemingly simple math problem can have multiple solutions. I will then further demonstrate the idea of "multiple solutions" by using the "Coffee Cup" design problem. To extend the learning for the students I will open a class discussion on Chapter 5 of the Davis text, "The Creative Process," which the students should have read before coming to this class. For this text discussion I also formulated some

Delivery

articulate the creative process. On the board in front of the class, I wrote the stages that made up the students' personal creative process and beside those stages I wrote down the stages of each of the creativity scholars creative processes. After presenting the formal creative processes I then opened a discussion with the class that focused on the comparison of the class' creative process and the formal creative processes of the creativity scholars. When comparing the processes stage for stage, it was very obvious how similar the students' personal creative process was to the formal creative processes of the creativity scholars. After the comparison exercise I had the students engage in an exercise that I hoped would help demonstrate how one of the main advantages of the creative process, when it is used to solve problems, is its ability to help people get multiple solutions to that one problem. I used an example from the Parnes text called the "Half of 8" problem. I asked the students to answer the simple math problem of "What is half of eight?" Of course the first answer that was said by one of the students was "four." I then asked "What are some other answers that would

Evaluation

personal creative processes, I was finding myself having to prompt the students a little so that they could articulate exactly the steps that they went through when using their creative process. I did not tell them what the stage was, but there were specific cases where the students would explain in depth what the stage was and what they did during a particular stage of thought or action, but they could not simplify the explanation into a basic phrase. In these cases I did assist the students with simplifying their explanation into a simple phrase. After I started explaining the stages of the creativity scholars' creative processes I noticed that the students were excited to see how similar their process was to the creativity scholars' processes. They even wanted to give their process a name just as Osborn gave his a name: "CPS." This showed me how proud the students were that their personal creative processes were so similar to the ones that had been articulated by creativity scholars. After explaining the Creative Problem Solving Model which was defined by Osborn and Parnes I told the students that this process would be the process that I would be

Design

specific discussion questions in order to guide the dialogue if necessary. At the end of class I will assign the students to read from both the Davis text and Parnes text. Both readings focus on mental blocks and how to break metal blocks. I want the students to read about breaking mental blocks because the focus of the next class will be “deferring judgment” and “divergent thinking.”

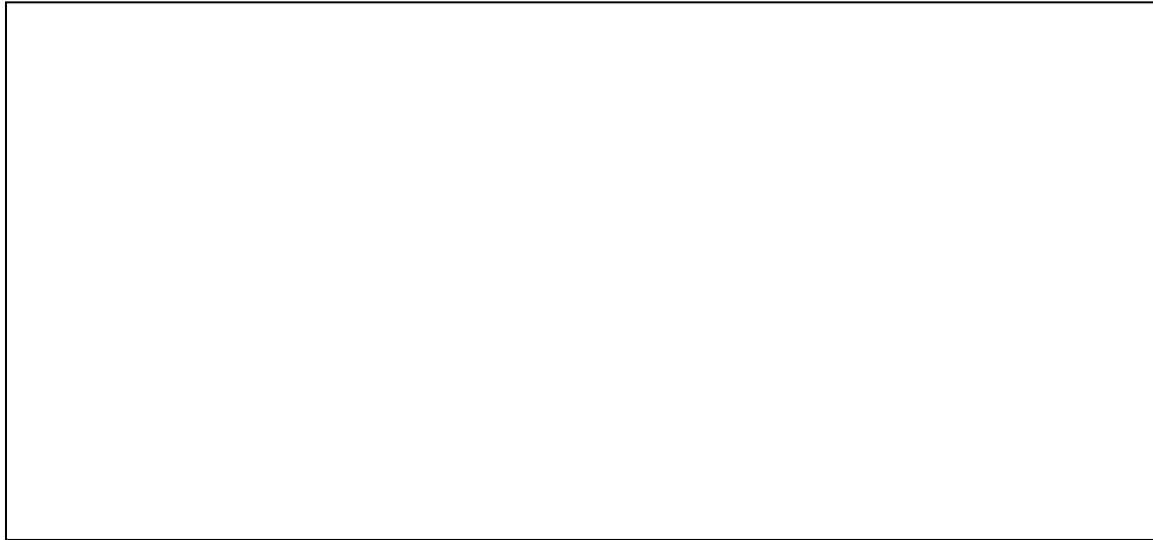
Delivery

satisfy such a problem?” With puzzled looks on the students’ faces, I then said, “Don’t just look at the problem as a math problem, look at the problem from other perspectives.” With this said the students could see how the problem could be a visual problem also. One student said, half of 8 is 0. This helped the other students catch on to the fact that a problem can have multiple solutions when you look at it from multiple perspectives. Many other answers came from the other students as they began to understand the principle behind the exercise. After that exercise I wanted the students to answer another problem statement in order for the students to gain a better understanding of how breaking mental blocks can help a person solve a problem in a more unique and creative way. For this exercise I told the students to pretend that they were part of a research and development team that needed to design a container for transporting an extremely hot and volatile chemical through a series of doorways. I read the students the rest of the criteria and asked them to draw what they think the container should look like in order for it to fulfill the necessary requirements outlined

Evaluation

spending a large part of the semester teaching the students how to use. I was going to spend more time digging deeper into a more detailed explanation of the Creative Problem Solving Model, however, I was aware that class time was starting to run short. When I moved into the “Half of 8” exercise I was excited, because I wanted to see how the students would respond to such an insight problem. After receiving the obvious answer of 4, it did take the class a few minutes and a prompt from me for them to begin to look at the problem from other perspectives, which in turn helped the students begin to render many other possible answers for this one problem. The “coffee cup” design problem also rendered very unique results. I was also excited to see all the many different and novel ways in which each student chose to solve this problem. The students were truly engaged in the exercise. Not only did these two exercises help the students better understand the concept that creative thinking allows a person to find multiple solutions to one problem, but some of the students had the desire after class was over to share with the rest of the class other insight problems

Design



Delivery

in the criteria. I then asked the students to draw what they had designed on the board so that the rest of the class could see the designs. All of the designs were very elaborate and creative. After that I explained that the volatile substance was in reality coffee and that the design could have been as simple as a coffee cup. However, I explained to the students that because the criteria did not expressly state that the substance was in fact coffee the students did not form a perceptual mental block about the potential of the container design, which in turn allowed for more creative design ideas. After these exercises I did have time to open up a text discussion about the “Creative Process” chapter of the Davis text that the students were to have read before this class. The first discussion question I formulated in order to open up this dialogue was: “Can something come out of nothing?” This opened up quite an intense discussion. Certain students had a stance for “yes” and certain students had a stance for “no.” Although the discussion was intense I was able to keep it under control because every student had respect for every other student. This particular discussion

Evaluation

that they had been exposed to. Many of the students stayed after class to discuss as well as try to solve these other insight problems. I could tell that this was helping to build a deeper camaraderie between the students. They all had a similar interest to solve these insight problems. Many of the students even found multiple solutions to these other insight problems, which showed me that they were catching on to the idea of “multiple solutions.” However, before class did want to have the text discussion about chapter 5 of the Davis text. When I asked my first discussion question, “can something come out of nothing?”, the dialogue started out smooth, however, it quickly became intense. Most of the students had a good reason for why they believed “yes” or “no.” Although certain students had made their stance on which way they believed, every student was willing to hear the others opinions on the subject. I do believe that had time not forced me to close the class down, this particular discussion could have gone on for some time. I did have another discussion question that I wanted the students to field, however, I didn’t want to end the discussion that was at hand

Design

Delivery

question did monopolize the entire time that I had allowed for the text discussion but I was glad that every student was so engaged in the subject matter. When I assigned the text readings that I wanted the students to complete before the next class I did tell them two questions that I wanted them to use as a way to guide the readings so that they would focus on what I thought was most important in the text assignment. The questions I asked them to answer as they read were “what is deferring judgment?” and “why is it so important to creativity?”

Evaluation

because it was so rich, and the students were so engaged in the dialogue. I was beginning to see that there will be times when I will have to allow the class to guide the process of instruction. In this case that proved to be more rewarding than sticking to a lesson plan. It was nice to see that proved in a classroom in which I was the instructor so that I could see that point proven first hand.

21 January 2002: Class 3 of 28

I. Design

- Used the “leap” skill of “Visualize the Inside” to inspire the warm-up for this class because I wanted it to directly relate to the “Perfect Classroom” group activity that the students participated in at the end of the last class;
- The main purpose around the design of this warm-up is to give the students and opportunity to compare their personal creative processes to the formal creative processes that have been articulated by creativity scholars;
- Designed a lecture on the formal creative processes defined by the scholars: Wallas, Torrance, Dewey, Osborn/Parnes and Davis in order to give the students and understanding of where and how creativity research started;
- Allowed time in the design of this class for two hands-on activities to illustrate the point that one main focus of creative thinking is to find multiple solutions to one problem; and
- Designed discussion questions to guide a class discussion on “Creative Process” so that the discussion stays on topic.

II. Delivery

- Before class started one student said she could not sleep because she kept getting ideas for the design of a “perfect classroom”;
- Had the students articulate the stages of their personal creative processes before presenting the creative processes that have been articulated by creativity scholars. I did this to prevent the students from using the scholars vocabulary to explain the stages of their processes; and
- The discussion question of “can something come out of nothing?” with relation to the “Creative Process” chapter in the Davis (2000) text caused a very intense discussion among the students.

III. Evaluation

- When the one student said she could not sleep because she kept thinking about other ideas for the “perfect classroom” I got excited because I could see that the Incubation Model (when used to teach creativity) was having a positive impact on the success of the class;
- After the warm-up exercise I could tell that the students had a good understanding of the stages that made up their own personal creative processes;
- This warm-up was also good because it was a direct extension of the “perfect classroom” exercise which I used at the end of Class 2;
- The students were excited to see how similar their personal creative process was to the creative processes of the creativity scholars;
- During the “multiple solutions” activity, the students took a few minutes to get past the obvious solutions so that they could stretch to the more unique and unorthodox solutions;

- The fact one discussion question, related to the “Creative Process” monopolized the entire class time shows that there will be times when I will have to allow the class’ desires guide my process of instruction; and
- Some students stayed after class and worked to solve other insight problems that other students had presented which showed me that the students were building positive relationships as a result of the goal to solve open-ended problems.

Lesson Plan: 23 January 2003: Class 4 of 28

Goals:

- Have the class explore how mental blocks can effect a person's creativity
- Explain how deferring judgment can help overcome mental blocks
- Explain the Osborn/Parnes "Accordion Model" for CPS
- Explain the four CPS guidelines for Divergent Thinking

Objectives:

The students will be able to...

- better understand mental blocks and how they can effect creative thinking
- understand how to use deferring judgment to overcome some mental blocks
- understand the four CPS guidelines for divergent thinking

Vocabulary

1. Creative Block = a mental block that can be an internal or external cause of repressed creative thinking
2. Divergent Guidelines = the guidelines used as part of the CPS Model to help guide the type of thinking that should occur during the divergent stages of the CPS Process
3. Deferring Judgment = to generate ideas without performing any type of evaluation (positive or negative) on the ideas produced

Heightening Anticipation

- I. Warmup: "Making Swing! Making it Ring": Torrance leap skill: A kinesthetic exercise so that students will get a physical understanding of what divergent and convergent thinking truly means:
 - A. First have students find a place in the classroom to stand where they are the furthest away from all other fellow students, you want each student to be facing the center of the room but at this point they should all be the farthest possible from all other students as well as the center of the room.
 - B. Then have students talk about how they feel. Have them compare it to the way they felt when they were seated in their desks and were closer in distance to all the other students.
 - C. Then have students close their eyes and slowly take steps towards the center of the room.
 - D. When they are so close together that they are touching, then ask them to open their eyes and explain how they feel about being very close together.

Note: This will physically show how during divergent thinking we are able to see all the possibilities and angles, but when we narrow our view during convergent thinking we only see a few possibilities.

Digging Deeper

- I. Syllabus Discussion

- A. Clarify structure of assignments section in case there is any confusion “the assignments listed under each class day are to be completed before the next class, unless otherwise noted.”
 - B. Remind students to begin looking for a topic for their literature analysis paper, have them write down any questions they have with reference to the study of creativity in their journals as a way to start.
 - C. Remind them about creativity learning journals and their tie to the implicit theory paper
- II. Text Discussion: Chapter 2: “Blocks and Barriers” in Davis (1999) *Creativity is Forever*
- A. Discussion Questions:
 - 1. pp. 21: “Is hate a result of repressed creativity?”
 - 2. pp. 29: “From the list of idea squelchers, what is one that is missing, or which one do you hear the most?”
 - B. Stories related to text:
 - 1. pp. 23: “Perceptual Blocks” – “Puzzle #3”: My perceptual block when looking at an answer key
 - 2. pp. 24: “Cultural Blocks” – “Asking Why” Asking why and get “Because I Said So” How they interact with other cultures (study abroad can be a remedy)
 - 3. pp. 26: “Emotional Blocks” – Emotional stress blocks creativity, so use creativity (CPS) to solve emotional problems, then move on
 - 4. pp. 29: “If you’re not part of the problem than you can possibly be part of the solution” – Having people in a CPS resource group that aren’t part of the problem is what will give you the most unique perspective and ideas.
- III. Text Discussion: Chapter 5: “How do we overcome our blocks” in Parnes (1997) *Optimize the Magic of the Mind*
- A. Discussion Questions
 - 1. What is deferring judgment?
 - 2. Why is it so important to creativity?
- IV. Lecture: Deferring Judgment and Divergent Thinking
- A. Deferring judgment is the best way to overcome mental blocks.
 - B. Deferring judgment is the key to the divergent thinking stages of CPS
- Note: Show Accordion Model Diagram of CPS (taken from Davis pp. 121) –This is the uniqueness of the CPS process.
- C. Deferring allows you to “strive for quality” so you can get many solutions to one problem.
 - D. You must practice deferring judgment.
 - E. When people complain that CPS/Brainstorming doesn’t work it’s because they don’t converge as well.
 - F. “Free wheel- get whacky and crazy.”

Note: Osborn: “It’s easy to take a really whacky idea and then dull it down a little, but it’s really hard to make a dull idea really whacky”: Deferring judgment helps you get whacky.

- V. What are the CPS guidelines for divergent thinking:
1. Defer judgment: no evaluation – neither bad nor good
 2. Strive for quantity
 3. Seek wild and crazy
 4. Piggy back: that’s legal in CPS

Extending the Learning

- I. 4-3-2-1 Exercise
 - A. Have students split into 2 groups: 3-4 students per group
 - B. Pass out large Mr. Sketch markers, tape, and flip chart paper
 - C. Draw on board a simplistic line symbol
 - D. For each symbol ask the groups to write down on flip chart as many ideas that come to mind when looking at each symbol
 - E. Have them use each divergent thinking guideline independently as they generate ideas for each symbol
 - F. Start with a 4 minute time limit and for each symbol reduce the time limit by one minute
 - G. At the end of the entire exercise ask the students “how they felt using Traditional Brainstorming?” “What was difficult about it?” “Was it what they thought Brainstorming truly was?”
- II. Read: *Parnes* pp. 55-65 “Completing the Creative Process –From Ideas to Action!”
- III. Do the exercises as you read.
- IV. Questions to guide the students’ reading
 1. What is convergent thinking with relation to CPS?
 2. Why is it so important to the success of CPS?

Sources Used to Prepare Class

1. *Davis*
2. *Torrance and Safter*
3. *Parnes*
4. *Firestien, Millar, Vehar: “Creativity Unbound”*

Supplies for This Class

1. Mr. Sketch large markers
2. Flip chart paper (or 18x24 newsprint)
3. Masking tape
4. Text books
5. This journal

Design: 23 January 2003: Class 4 of 28

For this class I used the “Leap” skill of “Make it swing! Make it ring” as my inspiration for the design of the warm-up. The idea behind this warm-up is to have the students participate in a kinesthetic exercise so that they will get a physical understanding of what divergent and convergent thinking means. My hope for this warm-up is that the students will see how divergent thinking allows a person to see all the possibilities and that convergent thinking allows a person to narrow his or her view so that they see only a few possibilities. Before digging deeper into the content this class day I will quickly clarify a few points with relation to the syllabus and assignments. Since the students were to have read the Davis chapter on “Mental barriers” and the Parnes chapter on “How to overcome our blocks,” I chose to formulate a few discussion questions so that the class can discuss the readings more in depth in order to gain a better understanding of “deferring judgment”. After discussing the Parnes reading assignment which focuses on “deferring judgment”, I will then give a more in depth overview of what “deferring judgment” and “divergent

Delivery

For the warm-up I had the students clear out all the desks from the center of the room. I then asked each student to find a spot on along the perimeter of the rooms’ walls and try to stand as far away from all the other students as possible. As I stood in the center of the room, I asked the student to close their eyes and take a large step towards the center of the room. As the students took each step closer to the center of the room, I asked them to open their eyes and tell the class how they felt. When the students were the furthest from the center of the room, most of them said they didn’t like not being able to see the details on the other students faces, but that it was nice to be able to see all of the parts of the classroom from one angle. As the students began to get closer to each other they began to say that they liked being able to see everyone in more detail, but that they were not able to see everyone one in their entirety. As the students stepped very close to the center and began touching each other, some began feeling uncomfortable and yet some liked the intimacy. One student even said they were feeling claustrophobic. I then asked the students to take a seat and I discussed with

Evaluation

I liked this warm-up a great deal simply because it was a good kinesthetic demonstration of divergent and convergent thinking. I did notice that in the future I need to be aware of certain traits that students may possess which in turn may make them uncomfortable when participating in such an exercise. For instance, when I had the students step very close to each other in the center of the room in order to demonstrate convergent thinking, one student did feel claustrophobic and was unable to get very close. For the future during the design stage of my lesson plans I need to look at all of the potential places where an activity could make a student feel uncomfortable, even the small ones. I may understand that talking about sex or race issues has the potential to make students comfortable, however I never really thought about a simple hands-on exercise making a student uncomfortable. This is an issue that I especially need to be aware for his class, since it is a more hands-on and experiential class. As I moved into the discussion of the syllabus I could tell that it was a welcome discussion by looking at the reactions of the students. It was obvious

Design

thinking” truly mean. The actual lecture notes that I used for this part of the class are better outlined in my lesson plans. I will then discuss with the class how “deferring judgment” and “divergent thinking” are so essential to the success of the Creative Problem Solving Model. As I continue to dig deeper into the content surrounding the concept of “divergent thinking” with relation to CPS, I will explain the four divergent thinking guidelines that were formulated as part of the CPS Process. In order to extend the learning of the students with relation to the four divergent thinking guidelines I will have the students end the class by participating in what I will call the “4-3-2-1” exercise. This exercise is designed to specifically illustrate each divergent thinking guideline by focusing the participants’ attention on each guideline one at a time. This exercise will also give the students a glimpse of what “Traditional Brainstorming” will be like. After completing this exercise I will then assign the students to read a select number of pages from the Parnes text which focus on bring creative ideas into action.

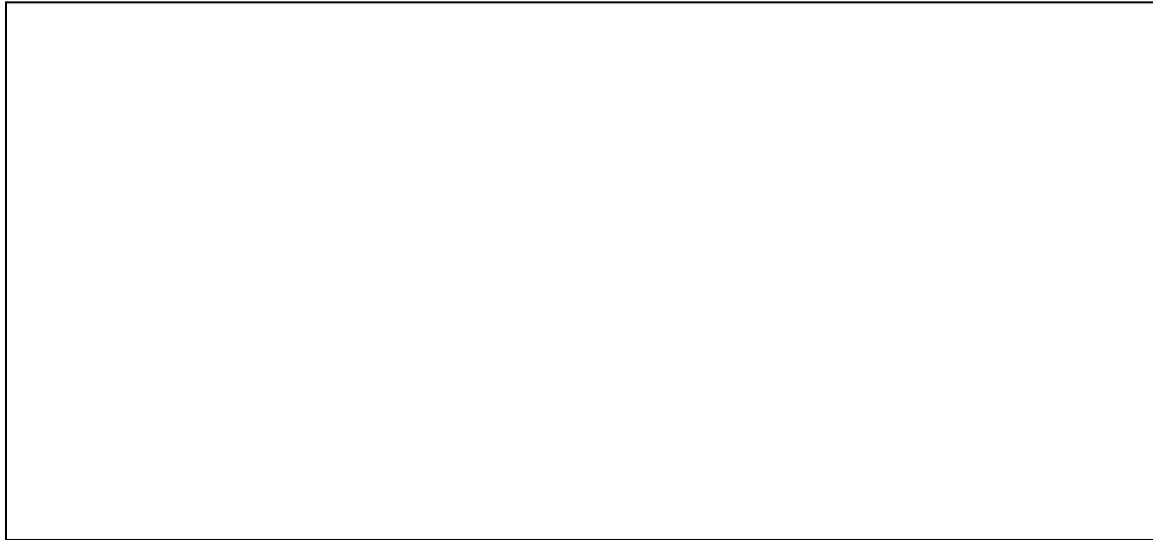
Delivery

them how this exercise was designed to demonstrate how divergent thinking is designed to give a person a broad view of the whole picture, and convergent thinking was designed to give a person a more narrow and specified view. After the warm-up exercise, I then discussed a few key points about the syllabus that I felt needed more clarification before the semester moved any further. Specifically I re-explained the structure of the assignments, I reminded the students to start looking for a topic for their literature analysis papers, and I better explained the creativity thinking journals and implicit theory paper. After further explaining the syllabus I then directed the class first in a discussion of the Davis text assignment, the chapter called “Blocks and barriers.” One of the discussion questions that I asked was, “Is hate a result of repressed creativity?” I also asked the students to look at the list of idea squelchers that is outlined in the chapter and name a squelcher that they believe exists but is not on the list. I then told a few stories about moments where the existence of mental blocks or the breaking of mental blocks have affected my creative thinking or the

Evaluation

that some of them were a bit confused about the structure of the more unorthodox assignments. I should be aware of this for the future, being that my class won’t ever be structured like a normal lecture course that most students are accustomed to. I could especially tell that the more open-ended assignments caused confusion. It was obvious that most of the students were use to having an exam, with only one set of right answers, as the main way of evaluation. When I presented assignments, such as the Implicit Theory Paper, which had no right or wrong answer, the students were in great need of clarification. As I moved into the text discussions the students were very interested in talking about the specific mental blocks that they were forced to deal with during their early school years. I was glad to see that the students were very interested and engaged in discussing mental blocks, not only what they were, but how each student had been affected in the past by such blocks. I liked the openness because I knew it was building more camaraderie among the students. I also could tell that the students were glad to hear my personal stories about how mental blocks

Design



Delivery

creativity of others. The purpose of the anecdotal stories was to give the students a more realistic and down to earth understanding of the affects of mental blocks. After discussing the Davis text I then had the class move onto a discussion about the Parnes text assignment, Chapter 5: "How do we overcome our blocks". The two main questions that I used to guide this discussion were, "what is deferring judgment?" and "why is it so important to creativity?" After fielding what the students felt "deferring judgment" was, which centered around the idea of withholding evaluation, I then explained how deferring judgment related to divergent thinking and how both terms related to Creative Problem Solving. I went into more depth about how Alex Osborn used "deferring judgment" as the cornerstone to the "divergent thinking" process of the CPS Model. After discussing the basics of "divergent thinking" I then explained the four divergent guidelines that were developed for use with CPS. After defining the four guidelines, I then used an exercise called "4-3-2-1" to extend the learning for the students on how important each guideline was to the success of CPS. I had the

Evaluation

affected my own creative output. This showed them that even their instructor had to struggle with such issues when using the creative mind. When I asked the students to define what they thought "deferring judgment" was it was nice to get responses like "don't evaluate". It showed me that they had been keeping up with their reading assignments. When I explained the four divergent guidelines I could tell that the students would not quite understand the specifics of each guideline until after I had them participate in the "4-3-2-1" exercise. After the exercise I did need to clarify the "piggy-backing" stage. I had a feeling that was a result of poor explanation on my part when I was defining the guidelines before the exercise. Something to remember for the future. I think that guideline in particular sounds confusing. When I asked if the students had any problems with the exercise, I could not have asked for a better response from one of the students, when they said: "As the scribe, I can't write fast enough in order to record all the ideas." This was a perfect statement for extending the learning into the next class. I told the students that they had just participated in

Design



Delivery

students split into two groups. Each group gathered around a set of flip chart paper. I then asked each group to pick a scribe to write on the flip chart. For the first round of the four round exercise I asked the students who were not acting as the scribe to generate as many words that come to their minds when they are prompted by an abstract symbol that I was going to draw on the board. For each round I had the students switch roles as scribes and ideators. For each round I also asked the students to focus on each individual divergent guideline, one at a time. For the first round I allowed the students to generate for four minutes, for the second I let them generate for three minutes, and so on. I actually found myself running out of time when I started the second round, class was almost over, so I only had the third round last for a minute and a half and the fourth round I stopped after forty-five seconds. After the exercise was concluded I asked the students if they had any problems with the exercise. One group did not quite understand the guideline of piggy-backing. Luckily the other group had grasped it very well during the ideation exercise and after I read

Evaluation

Traditional Brainstorming and that next class they would learn another recording method that would alleviate the scribe problem (I was of course referring to Stick'Em Brainstorming). I also found myself running out of time in class for the "4-3-2-1" exercise and having to adjust the time limit for each round. I need to be aware of this in the future because I want to have plenty of time to debrief this particular exercise with the students before the class ends.

Design

Delivery

some of the second groups ideas, the first group saw how piggy-backing, in its purest form, allowed the ideas to digress far from the original symbol, in turn allowing the ideas to be more novel. One student also stated that when they were the scribe they could not write fast enough in order to get everyone's ideas recorded on the flip chart. I told the students that they would soon learn another method of recording that would alleviate that exact problem. I ended the class by explaining that the exercise that they just participated in was Traditional Brainstorming as Alex Osborn designed it to be. Then I assigned another reading assignment in the Parnes text. The questions I told the students to think about as they read the text were (1) "What is convergent thinking with relation to CPS?" and (2) "Why is it so important to the success of CPS?"

Evaluation

23 January 2002: Class 4 of 28

I. Design

- Used the “leap” skill of “Make it Swing! Make it Ring!” to inspire the warm-up for this class in order to help the students get a more hands-on understanding of what happens during divergent and convergent thinking processes;
- Plan to clarify the syllabus to help prevent any anxiety that the student might have as a result of some of the more unorthodox assignments;
- Designed a few discussion questions related to the reading assignment on “mental blocks” so that the students gain a good understanding of “deferring judgment” and “divergent thinking”; and
- To extend the learning with relation to the divergent thinking guidelines I will have the students participate in a group activity that will focus on each guideline individually.

II. Delivery

- As the students participated in the warm-up exercise I would ask how they felt. Their responses helped me demonstrate the purpose of divergent thinking and convergent thinking;
- During the class discussion on mental blocks I shared stories with the students that demonstrated when my creative thinking was personally affected by mental blocks;
- As I had the students participate in the exercise which related to the divergent thinking guidelines I was forced to adjust the time of the last two rounds of the exercise because class time was running out; and
- At the end of the exercise, one student said they could not write fast enough in order to record all the ideas that were being said.

III. Evaluation

- One student felt uncomfortable with the warm-up exercise because they were slightly claustrophobic. In the future I need to be aware that a seemingly simple exercise may cause certain students to feel uncomfortable;
- The discussion of the syllabus was a welcome topic because some students were confused by the more open-ended and unorthodox assignments. This showed me that the students were accustomed to assignments that have only one set of right answers;
- As I shared my personal experiences where mental blocks affected my personal creativity I felt more connected with the students because I was showing them that I deal with the same problems as they do;
- In the future I need to make sure I clarify the divergent guideline of “piggy backing” because during the in-class exercise one group expressed that they did not understand that guideline;
- I was glad that one student stated that they could not write fast enough to record all the ideas of their group because such a concern will be a perfect segue into Stick’Em Brainstorming; and

- For the future I need to ensure that I plenty of time for this exercise and debrief of the divergent guidelines exercise.

Lesson Plan: 28 January 2003: Class 5 of 28

Goals:

- Explain and demonstrate Stick'Em Brainstorming
- Explain and demonstrate Forced Relationships
- Explain the 5 Convergent Guidelines for CPS
- Explain and demonstrate the Convergent Thinking Tool of "Highlighting" which encompasses: Hits, Clustering, and Restating

Objectives:

The students will be able to...

- understand how to use Stick'Em Brainstorming as a method for recording ideas
- understand how to use Forced Relationships as a tool for generating ideas
- understand the importance of convergent thinking
- understand the five Convergent Thinking Guidelines for CPS
- understand how to use the Convergent Thinking Tool of "Highlighting"

Vocabulary:

1. Stick'Em Brainstorming = a method used in CPS for recording ideas during divergent thinking stages of the process
2. Forced Relationships = a Divergent Thinking Tool designed to help break mental blocks in order to allow a person to generate more creative ideas for solving a particular problem
3. Convergent Thinking = the process by which a person narrows his or her thinking in order to find the most promising ideas which in turn will make the best solutions to a particular problem
4. Highlighting = a convergent thinking tool which encompasses Hits, Clustering, and Restating
5. Hits = a convergent tool by which the most promising ideas are selected from a group of ideas by way of using the Convergent Guidelines
6. Clustering = a convergent tool used to form similar ideas into groups in order to find a common idea by way of using the Convergent Guidelines
7. Restating = a convergent tool used to restate a particular ideas or cluster of ideas into a new problem statement or a more broad idea statement

Heightening Anticipation

- I. Warm-up: "Look at it another way"- Torrance "Leap" skill:
 - A. Using the "Yes, because" "Of course it is, because" game
 - B. Have students stand in a circle
 - C. The leader (me) starts the exercise by taking a very common place object (i.e. a pencil) and says that it is something completely different. Using fantasy I will say that it its something very strange.
 - D. Then I will pass the object to one of the students standing next to me in the circle.
 - E. They will need to say "of course it is a (fill in the blank), because..." and then by using physical attributes of the pencil they must describe why it is why I said it was.

Example: It's a calculator, because as you see the shiny part at the end of the pencil (the eraser mount) is the number display—Look at the pencil in another way

- F. Continue to pass the object around the circle until everyone has a chance to participate.

Digging Deeper

- I. Revisit the Divergent Thinking Guidelines
 - A. Make sure the students understand how to use all four guidelines and what each guideline is meant to render.
 - B. Practice guidelines using Traditional Brainstorming if necessary
- II. Revisit concerns with relation to Traditional Brainstorming that were posed during the 4-3-2-1 exercise that we did on 1/23/03
 - A. Ex. I can't write all the ideas down fast enough, they are saying so many ideas so fast
 - 1. How do we overcome this concern, it doesn't mean brainstorming is bad, you just have to overcome that block.
 - B. Field any other concerns
 - C. Demonstrate "Stick 'Em Up Brainstorming"
 - D. Use a simple problem to allow students to use "stick 'em up brainstorming"
 - E. Problem statement: HMW design the perfect classroom
- III. Learning a Divergent Tool
 - A. Along with the "perfect classroom" problem statement teach the students "forced relationships"
 - B. This divergent thinking tool will give them the ability to produce more unique ideas by breaking mental blocks
- IV. Understanding the Convergent Thinking Guidelines
 - 1. Be Affirmative: "What's good about it" still be positive about every idea: look for what's good about each idea, not for what's bad
 - 2. Be Deliberate: make sure to look at every idea, and look at every idea through the same non-judgmental eyes
 - 3. Check Your Objectives: the ideas should still help solve the problem/challenge at hand
 - 4. Improve Ideas: look for the ideas that have promise with more time and development
 - 5. Consider Novelty: look for the unusual, the whacky, the crazy
- V. Using the ideas generated for the problem statement in part III and have students converge on these ideas
 - A. Have them use the convergent tools of:
 - 1. Hits- the idea that strikes you
 - 2. Clustering- group the similar ideas
 - 3. Restarting- form each group in to a specific problem statement
 - B. For Problem Statements use:
 - 1. How to...(H2)

2. In what ways might...(1WWM)
 3. How might...(HM)
- C. Make them open-ended questions: no yes or no questions
Note: We will learn how to converge by using criteria later.

Extending the Learning

- I. Read: *Davis* pp. 73-105 “The Creative Person”
- II. Questions to guide the students’ reading
 1. What are the main categories that Davis uses to describe attributes of creative people?
 2. What is the “Threshold Theory” of intelligence and creativity?

Sources Used to Prepare Class

1. *Davis*
2. *Torrance and Safter*
3. *Parnes*
4. *Firestien, Millar, Vehar*: “Creativity Unbound”

Supplies for Class

1. Flip-chart paper
2. Mr. Sketch
3. Mr. Sketch stix
4. 3x5 yellow post-its
5. Dots
6. This journal
7. Texts
8. A regular #2 pencil
9. Forced Relationship object

Design: 28 January 2003: Class 5 of 28

Torrance's "Leap Skill" of "Look at it another way" lead me to the warm-up for this class day. I will have the students participate in another hands-on warm-up call "Yes! Because..." I decided to use this warm-up as an anticipation to the content that the students would be exposed to during this class. During this class I plan to show the students the divergent thinking tool of "Forced Relationships". This warm-up is very much related to that tool. After the warm-up I will review the divergent guidelines and then revisit the "4-3-2-1" exercise that the students participated in at the end of the previous class. The purpose of this will mainly be to show the students a method for overcoming the main concern that one student voiced about Traditional Brainstorming: "I can't write fast enough in order to record all the ideas that the other students are generating." As a result of this statement I will demonstrate Stick'Em Brainstorming. Using the "Perfect Classroom" design problem I will have the students come work as one resource group to generate ideas using the Stick'Em Brainstorming method. After they begin generating a good amount of ideas I will

Delivery

The warm-up was slow getting started. After I explained the purpose of the exercise, which was to: first have a student take an ordinary object and assign a different name to it (like calling a pencil a calculator) and then: second have another student look at the pencil from a different perspective so that by using the normal attributes of a pencil they could point out the attributes of a calculator (like calling the eraser the display screen). I used a pencil as the object but after each student would explain why it was a different object they were to then give it another name and then pass it to the next person. During the first round the ideas were more simple and basic but during the second round the students really stretched and assigned some really wild and crazy identities to the pencil. After completing the warm-up I had the students review the divergent guidelines to insure that they understood all four in detail. Then as a result of the concern that one student voiced with relation to the "4-3-2-1" exercise I showed the students how to use Stick'Em Brainstorming as a method for generating ideas which in turn alleviated the need for a scribe who would have to write down all the

Evaluation

I am noticing that it is taking more time to get the class started as the semester moves on. Students are starting to come in a few minutes after the class was scheduled to start. The problem with this is that there are only a small number of students in the class to begin with so I am forced to wait for the late arrivals before beginning the class. This is another reason why a two and half hour class would be more suitable for such a course. As the warm-up got started I did notice that during the first round the students were having problems thinking of wild and crazy ideas, however as they became more comfortable and saw how crazy my ideas were they became more free and open with their responses. It has so much to do with the climate that determines how creatively they respond. When I explained Stick'Em Brainstorming I could see that they were glad to learn another way to record idea other than using a scribe. I was very impressed when they began to generate ideas using the Forced Relationship tool. It took them a few minutes, but after the puzzled looks faded they were able to use the unrelated object to generate some really novel ideas to the "Perfect Classroom" design

Design

then explain how certain divergent thinking tools have been developed to help people break more mental blocks in order to generate even more creative ideas. At this point I will explain the “Forced Relationships” tool. I will then have them generate more ideas using the Forced Relationships tool. After concluding this divergent thinking process I will then explain what Convergent Thinking is and what the Convergent Thinking Guidelines for CPS are. After explaining in detail the guidelines I will then teach the students a Convergent Thinking Tool. I will show them how to use Highlighting, which encompasses Hits, Clustering, and Restating, as a way to narrow and focus on specific ideas that were generated during the Divergent Thinking stage. I plan to show them how to formulate problem statements when using the Restating tool if time allows. I may not be able to teach all the parts of Highlighting during this particular class day simply because of the time restraint. In order to touch all the parts of the 4P’s I will assign the students to read the Davis text chapter on the “Creative Person” so that we can discuss that content further during the next class.

Delivery

ideas. I used the problem of the “perfect classroom” design in order to allow the students to generate more ideas so that they could see the effectiveness of Stick’Em Brainstorming. I then showed the students how to use the divergent thinking tool of Forced Relationships which was very much related to the warm-up exercise. I explained that divergent thinking tools were developed to assist people in generating even more novel ideas. After the students were able to generate more ideas using Forced Relationships, I then moved into an explanation of the need for convergent thinking. I explained the need to narrow your focus on the ideas that were generated during divergent thinking so that a person or group could make an idea work as a real solution to a challenge. I then defined the Convergent Thinking guidelines that were developed for use with CPS. I then began to show the students the Convergent Tool of Highlighting which included the tools called Hits, Clustering, and Restating. The time that was left in class only allowed me to explain hits. But since the students had generated so many ideas using Stick’Em Up Brainstorming along with Forced

Evaluation

problem. One student did not feel like participating in the exercise but after inquiring I could tell that it was not because they didn’t understand how to use the tool it was simply because they were not feeling up to participating on this particular day. After this demonstration I did move into an explanation of the convergent thinking guidelines. Through talking with the students I could tell that they had not realized how important convergent thinking was to the success of a creative idea. I did run out of time and was unable to complete my explanation and demonstration of the convergent thinking tool: Highlighting. I almost wish I would not have started the explanation at all since all three parts of the Highlighting tool are related. However it was a bit of a blessing in disguise since it showed how Hits, Clustering, and Restating can be used together or separate from one another. I was glad that I plan to have the students read about the Creative Person which will be the focus of the next class. I don’t want them to only get an understanding of the Creative Process during the course of this class I want them to be exposed to all of the 4Ps.

Design

Delivery

Relationships there was a large pool of ideas that allowed for a good demonstration of the Hits tool. I told the student that we would continue the explanation of these Convergent Tools at a later date. For the next class I assigned them to read the Davis text chapter on the “Creative Person.” I wanted to break away from the Creative Process instruction and make sure to touch on the Creative Person so that the students got a well rounded understanding of all the 4Ps. The two questions that I told the students to use a way to guide their reading for that chapter were: (1) “What are the main categories that Davis uses to describe attributes of creative people?” and (2) “What is the ‘Threshold Theory’ of Intelligence and Creativity?”

Evaluation

28 January 2002: Class 5 of 28

I. Design

- Used the “leap” skill of “Look at it another way” to inspire the warm-up for this class because, during class, I will be teaching the students how to use the divergent thinking tool of “Forced Relationships”;
- To alleviate the concern with relation to Traditional Brainstorming that was expressed at the end of the last class I will also teach the students how to use Stick’Em Brainstorming;
- Designed a short lecture to explain convergent thinking, its importance to creative output and the specifics of the convergent thinking guidelines so that the students understand how convergent thinking related to divergent thinking. If time allows I will also show the students how to use some convergent thinking tools to further help their understanding of the concept; and
- The students will be asked to read about the “Creative Person” so that they begin to gain more information about the other 4Ps.

II. Delivery

- During the first round of the warm-up the ideas that were generated were more mainstream and simple, during the second round the ideas generated became more unique and wild;
- Allowed the students to generate ideas using Stick’Em Brainstorming and Forced Relationships using a simple problem statement related to the “Perfect Classroom” design problem, which they exposed to during Class 2; and
- Was able to explain the importance of convergent thinking and the convergent thinking guidelines, but I was only had enough time to teach the students how to use the Convergent Thinking Tool of Hits.

III. Evaluation

- Some students are starting to come into class a few minutes late on a consistent basis;
- For the future I should remember to allow at least two rounds for the warm-up exercise used for this class because the students did not generate more wild and crazy ideas until the second round;
- The students appreciated learning Stick’Em Brainstorming as another way to record their ideas during divergent thinking;
- The students seemed to grasp and understand the purpose of Forced Relationships;
- One student was not willing to participate in the Forced Relationships exercise, but after inquiring I realize that it was not because they did not understand how to use the tool; and
- The fact that I was only able to teach the students the part of Highlighting called Hits ended up being a positive. The students were able to see first hand that all three parts of Highlighting can be used exclusive of one another.

Lesson Plan: 30 January 2003: Class 6 of 28

Goals:

- Class discussion on “The Creative Person”
- Continue to explain and have students participate in the use of the Highlighting
- Explain how the divergent and convergent thinking tools learned thus far can be used in CPS

Objectives:

The students will be able to...

- Better understand the attributes of creative people
- Use the all the segments of the convergent thinking tool: “Highlighting”
- Apply the divergent and convergent thinking tools learned thus far to CPS

Vocabulary:

1. Creative Person = the label given to a person when he or she exhibits creative attributes
2. Creative Attributes = the characteristics of a person that are attributed to making that person creative
3. Threshold Theory = a theory related to the comparison of intelligence and creativity: it states that every person must have a certain level of intelligence in order to reach a certain level of creative potential; however, after a person has reached that level, intelligence will have no greater barring on his or her continuing creative potential

Heightening Anticipation

- I. Warm-up: Leap Skill: “Highlight the Essence!” (*Creative Attributes of People*)
 - A. Print each students name on the back of an index card- the side with the lines
 - B. Pass the cards out to the respective students
 - C. On the blank side of the index cards have the students draw a picture that will “highlight the essence” of a creative trait that the student possesses
 - D. The instructor (me) will then collect the index cards
 - E. Then I will pass out the cars to the students, ensuring that no student gets their own index card
 - F. Each student will have to guess what the creative talent/attribute is that that student was trying to portray
 - G. Then, the student who drew the picture must stand up and explain his/her picture

Note: To move things along after a student explains their own drawing have them try to guess what the drawing represents that is on the card they are holding

Digging Deeper

- I. Text Discussion: *Davis* pp. 73-105 “The Creative Person”

- A. What is the threshold theory? -Scholar: Donald MacKiwnon
 - 1. The concept states that every person must have a certain level of intelligence in order to reach a certain level of creative potential
 - 2. However, after a person has reached that level, intelligence will have no greater barring on his or her continuing creative potential
- B. Discussion Questions
 - 1. Which category of the 16 categories of creative characteristics do you feel is strongest in you?
 - 2. Which category of the 16 categories of creative characteristics do you really want to improve?
Note: Have the students use these 2 questions to guide their personal CPS sessions that are due on 2/6/03.
Example: HMI improve my ability to take risks?
 - 3. Were the terrorists of 9/11 performing a creative act?
Note: Refer to Picasso's quote "Every act of creation requires an act of destruction"
- II. Continuing to Understand Convergent Thinking
 - A. Post flip-charts with ideas generated from class 1/28/03 for problem: "HMW design the perfect classroom?"
 - B. Continue instruction of "Highlighting Tools"
 - 1. Hits-already did
 - 2. Clustering-group similar ideas
 - 3. Restarting-form each group into a specific problem statement or idea cluster
- III. How do you form problem statements and idea clusters:
 - A. Use hints from handout "Restating Clusters" to make idea clusters, and problem statements for clusters produced by class.
- IV. Understanding how the information learned today works with the CPS Framework?
 - A. Lecture Discussion: Explain how the divergent and convergent tools learned so far can fit into the CPS framework

Extending the Learning

- I. Read: *Parnes* pp. 66-71 "Warming up to the full process"
- II. Questions to guide reading
 - 1. How can I use this information to improve a personal creative characteristic?
 - 2. How can you prepare someone else to use the CPS process?
- III. Explain guest lecture for 2/4/03 class:
 - A. Explain purpose of lecture "Using warm-ups in CPS"
 - B. Explain assignments due 2/6/03
 - 1. Read: *Parnes* pp. 72-89 "How about a stretch through the process?"
 - 2. Practice process as you read *Parnes* text; bring write-up to class

Sources Used to Prepare Class

1. *Davis*
2. *Torrance and Safter*
3. *Parnes*
4. *Firestien, Millar, Vehar: "Creativity Unbound"*
5. *Newstrom and Scannell: "The Big Book of Team Building Games"*

Two Things Students Should Take Away

1. How to use the "Highlighting" convergent thinking tool.
2. What the "threshold theory" means.

Supplies for Class

1. Handouts "Restating Clusters"
2. Index cards with students names
3. 3x5 yellow post-its
4. Mr. Sketch stix
5. Text books
6. Blue pens
7. Lesson Plans

Design: 30 January 2003: Class 6 of 28

For this warm-up I used the “Leap” skill of “Highlight the Essence” to inspire the design of the activity. The purpose of this activity will be to allow the class to discover a creative attribute that each student possesses. Because one of the main focuses of this class will be the “Creative Person” I thought that this would be a very appropriate way to heighten the anticipation for the material that will be explored later in the class. After the warm-up I will lead the class in a discussion of the Gary Davis text: the chapter that focuses on “The Creative Person”. I designed a mini-lecture that is outlined in detail in my lesson plans that I plan to deliver during this class discussion. The lecture will focus on Donald MacKinnon’s “Threshold Theory”. I have also designed discussion questions to help guide the discussion about “The Creative Person”. The main purpose of the discussion is the same as the warm-up activity: to give the students a chance to gain a better understanding of their personal creative attributes and also to help them gain an understanding of the creative attributes of their fellow students. I will then ask the students a question but I will not

Delivery

For the warm-up I asked each student to draw a picture that would represent and “Highlight the Essence” of a creative talent he or she possessed. I asked the students to represent a creative attribute or talent that no one else in the class would know that they possessed. I also asked the students not to label the drawings with their names. I then collected the drawings and asked the students to try and guess which drawing belonged to which class member. I could tell that the students enjoyed the challenge of trying to determine which creative attribute or talent belonged to which student. After allowing each student to discuss their talent in more detail I then moved into a mini-lecture about Donald MacKinnon’s “Threshold Theory”. I explained to the students how this theory applied to the creative person and then I used a set of discussion questions to lead the class in a dialogue about “The Creative Person”. The questions mainly focused on my desire to have the students explore their own creative attributes. I then asked my question related to the acts of 911. I could tell that many of the students were a bit frustrated because they could not discuss their responses and

Evaluation

Again, class is getting started later because some students are walking just a few minutes late. It is really hard to go ahead and start the class because the warm-ups don’t feel as strong without all the students present. I was excited that the students showed a desire to really get engaged in this particular warm-up activity. One reward of this type of warm-up was that it allowed the students to understand something about their fellow classmates that is not normally revealed. This is why I asked the students to highlight the essence of a creative talent that no one else would normally know. As I was explaining the Threshold Theory I was getting questions from some of the students that demonstrated their confusion with that particular theory. I had not prepared in advance any diagrams to visually show the theory; I merely drew them on the board as I explained it. For the future I will prepare diagrams and visual aides in advance to ensure that they are clear. Specifically for the future, with reference to this particular theory, I may just leave it out of the lecture and class material all together. The Davis text does discuss it in some detail so I may only cover it in future detail if

Design

allow them to discuss their responses and feelings until the next class. My reason for this stems from the idea of incubation. I want every student to have the chance to think about how they would respond to the question without the open influence of other student's responses. I will ask them to record their response on paper and then come to the next class prepared to discuss what they wrote. The question that I will ask is: "Were the terrorists of 911 performing a creative act?" Since I was unable to teach the students all the parts of the convergent tool of "Highlighting" I will continue that lesson during this class as well. During this class I plan to finish the lesson by showing the students how to use the "Clustering" and "Restating" tools. If time allows, after allowing the students to practice those convergent tools, I will then explain how the divergent and convergent tools that they have learned thus far can be applied to CPS. Since I will not be present for the next class I will assign the students read about using warm-ups before using CPS. This material will be explained in more detail by Dr. Joyce Juntune. For the next class she will be filling in for me.

Delivery

feelings about the question until the next class. However, they did show an appreciation for my request that they take time to incubate on the question before having the chance to respond. I then moved on to the continuing explanation of the convergent tool "Highlighting". I again used the ideas that the students generated around the problem statement: "HMW design the perfect classroom?" as a way to show the students how to use Clustering and Restating. The students had already preformed the Hits tool on the ideas that were generated for this problem statement so it was easier to show them how to use Clustering on these ideas than to produce and entirely new set of ideas. However, the time ran to short and I was unable to teach them how to use Restating. I was also unable to explain to them how to apply the divergent and convergent thinking tools that they had learned thus far to the CPS framework. Before the class ended I did explain to the students that Dr. Juntune would be teaching the next class in my place. I asked them to read a section in the Parnes text that would prepare them for her lesson on warm-ups for CPS.

Evaluation

during a class discussion on that particular section of reading, a student asks for more clarification with reference to the theory. I was very excited by the students desire to discuss their feelings with relation to my question about "911". The fact that many of them showed a desire not to wait until next class to discuss their responses showed their interest in the subject matter. Since it had been a few classes since I had taught the students how to use Hits I did fumble around a little bit as I began the explanation of Clustering. Even though I was glad that the students were able to see that Hits, Clustering and Restating could be used separately, I think for the future I will try to teach all three tools during one class period. The instruction process of these three tools in particular just seems to flow for smoothly when they are taught together. I did feel a bit frustrated when I ran out of time and was unable to also teach the students how to use Restating. I did not feel that the instruction of those three tools should be spread out over the course of three separate classes. I was also unsure how the students would respond to Dr. Juntune's instruction. I will have to wait and see.

30 January 2002: Class 6 of 28

I. Design

- Used the “leap” skill of “Highlight the Essence” as the inspiration for the design of the warm-up for this class so that the students and I can discover at least one creative attribute that each student possesses;
- Plan to lead a class discussion on the “Creative Person” to give the students a chance to gain a better understanding of their personal creative attributes and the creative attributes of their fellow students;
- Designed specific questions to help guide the class discussion on the “Creative Person”; and
- Designed a thought-provoking question that I will ask each student to respond to during a future class, so that each student will have time to incubate and formulate a response that is not influenced by other student responses.

II. Delivery

- Asked each student to draw a representation of a creative talent that he or she possesses so that the students had the opportunity to use a different method of expression;
- Delivered a mini-lecture on the “Threshold Theory” which is related to the “Creative Person” so that the students would gain a basic understanding of how intelligence is related to creativity; and
- While teaching the convergent tool of Clustering, the students used ideas that were generated for a problem statement from a previous class so that they would not have to spend time generating an entirely new set of ideas. This allowed them to focus exclusively on learning the new tool.

III. Evaluation

- The warm-up for this class allowed the students to understand something about their fellow classmates that is probably not normally revealed in a college classroom;
- For the future, only the more simplified theories of creativity should be included in the course content of an undergraduate, introductory course on creativity; and
- With reference to the convergent tools of Hits, Clustering, and Restating, even though they can be used independently of one-another, all three tools should be taught together, during one class day so that the instruction of the three tools flows more smoothly.

Lesson Plan: 4 February 2003: Class 7 of 28

Concepts:

- Explain the importance of using warm-ups before using the CPS Process
- Clarify the types of CPS warm-ups that exist
- Explain the differences between “content warm-ups” and “process warm-ups”
- Discuss what types of warm-ups work best in what situations

Goals:

The students will be able to...

- practice “content” and “process” warm-ups
- delineate the difference between a “content” warm-up and a “process” warm-up

Vocabulary

1. Content Warm-up (with reference to CPS) = a warm-up used during a CPS session that has a direct relation to the content of which the CPS session focuses on
2. Process Warm-up (with reference to CPS) = a warm-up used during a CPS session that has a direct relation to the process used during a CPS session

Note: This class was delivered by Dr. Joyce Juntune, a faculty member of the Department of Educational Psychology at Texas A&M University. I was out of town due to research business.

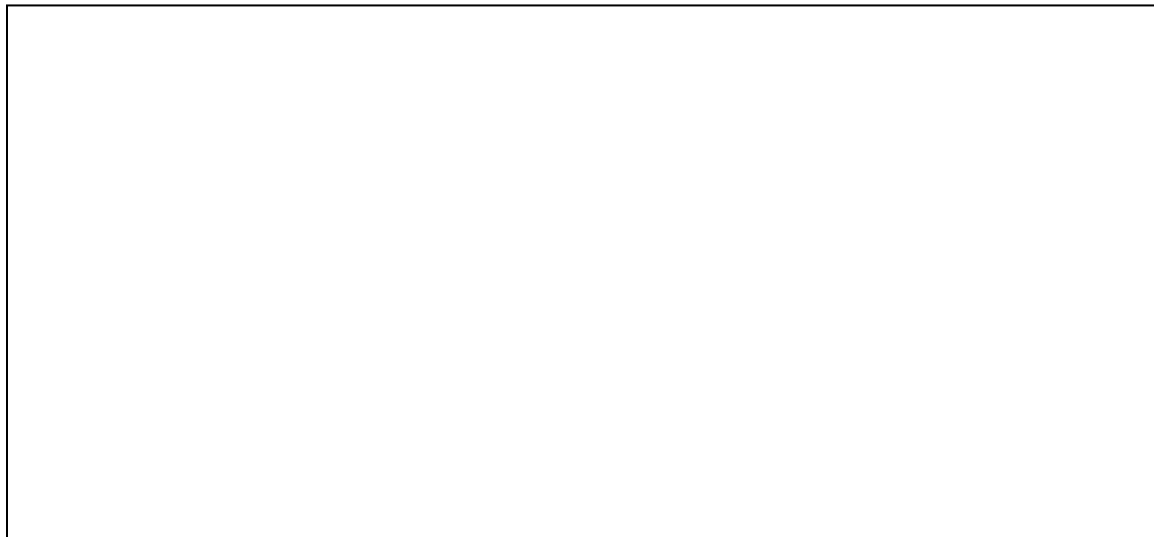
Design: 4 February 2003: Class 7 of 28

This class was designed and delivered by Dr. Joyce Juntune of Texas A&M University and the Department of Educational Psychology. I was not present for this class.

Delivery



Evaluation



Lesson Plan: 6 February 2003: Class 8 of 28

Concepts:

- Explain the affect of emotions on creative output
- Discuss how creativity can be used to express hate
- Discuss how destruction is part of creation
- Explain the specifics of the convergent tool “Idea Clusters”

Goals:

The students will be able to...

- see examples of how emotions and tragedy can affect a persons creative output in a positive way
- use questions to guide a research project
- express their personal beliefs with regards to “creativity used as a method of expressing hate”

Vocabulary:

1. Negative Creative Output = creative output that is produced in order to express a feeling of hate for the purpose of inflicting pain
2. Idea Clusters = a broad idea that generalizes a group of related ideas using an action verb
3. Process Warm-ups = warm-ups that help resource group members build anticipation and understanding for the process they are about to use (with reference to CPS) a warm-up used during a CPS session that has a direct relation to the process used during a CPS session
4. Content Warm-ups = warm-ups that help resource groups members build anticipation and understanding for the content that they will be focusing on (with reference to CPS) a warm-up used during a CPS session that has a direct relation to the content of which the CPS session focuses

Heightening Anticipation

- I. Warm-up: “Be aware of emotions” Leap Skill
 - A. I will discuss how the events such as the Columbia and Challenger Space Shuttle disasters have given people the drive to create magnificent products (i.e.: Challenger Learning Center)
 - B. Read from “To Engineer is Human” and discuss how failure is the stepping stone to greater success
- II. Class Discussion
 - A. Ask students to give their opinions with regards to the question: “Were the actions of the terrorists on 911, acts of creativity?”

Digging Deeper

- I. Revisiting Highlighting
 1. Hits
 2. Clusters
 3. Restating Clusters into Problem Statements

- Note: Just make sure students fully understand all parts of highlighting
- II. Understanding “Idea Clusters”
 - A. Using clusters that were developed during the 1/30/03 class, help students understand and develop idea clusters
 - B. Refer to clues and statement starters

 - III. Revisiting 2/4/03 class “Understanding Warm-ups for CPS” presented by Dr. Joyce Juntune
 - A. Ask students if they have any questions regarding the material that Dr. Juntune covered with regards to CPS warm-ups
 - B. Clarify any confusion that students have with relation to CPS warm-ups

 - IV. Literature Analysis Papers
 - A. Discussion of the requirements for the paper
 1. Papers Format
 - a. Introduction: why you (the student) are interested in this topic
 - b. Question(s) you are exploring
 - How you came to question(s)?
 - Why you are interested in exploring question(s)?
 - c. Details: the data / research that you found when you explored your guiding question(s)
 - d. Belief about outcome: your personal belief with relation to what you found when answering the question(s), do you or don't you believe the data that you found
 - e. Key Learnings: How will what you found affect you? How will you use the information you found? How could other use the information you found?

 - VI. Discuss Changing of Facilitation Project Requirements
 - A. I will not require that each student perform a CPS session using all 6 stages in order
 - B. They can work in groups and one person can facilitate one stage while the other is a process-buddy and then they can switch roles for another stage
 - C. Every student must facilitate at least one stage and perform both the divergent and convergent sections of whatever stage(s) they facilitate
 - D. The requirements for write-up are still the same as stated in the syllabus

Extending the Learning

- I. Read or Reread Parnes text pp. 72-89 and perform personal facilitation exercises
- II. Read Davis text pp. 167-187

Sources Used to Prepare Class

1. PARNES text
2. DAVIS text
3. “To Engineer is Human”
4. Torrance & Safter “Leap”
5. Firestien, Miller, Vehar

Supplies for Class

1. Text books
2. "To Engineer is Human" book
3. Flip chart paper
4. Mr. Sketch Stix Markers
5. Masking Tape
6. Lesson Plans
7. Write-up of Literature Analysis requirements
8. White board markers

Design: 6 February 2003: Class 8 of 28

For the warm-up for this class I used Torrance's "Leap" skill of "Be aware of emotions" as a guide in its design. While I was away from Texas the Space Shuttle Columbia was destroyed in a horrific accident. As a result I decided that part of this class should be devoted to discussing how emotions can affect the creative output of a person as well as how failure can help breed creative success. For the warm-up I plan to read a passage from the book "To Engineer is Human" that discusses success as a result of failure. After this warm-up I will then have the students discuss their responses to the question that I asked them to incubate over after the 1/30/03 class. I expect that the discussion will be intense and intriguing being that when I asked them to incubate on the question they were very eager to openly discuss it during the 1/30/03 class. They did not want to wait. I then plan to finally teach the students how to use the convergent tool of Restating. This is the last tool that belongs to "Highlighting". For this tool I will teach the students how to restate Problem Statements as well as Idea Clusters. I will then move onto a brief discussion about the

Delivery

The warm-up for this class was very personal to me because I had been involved with the Challenger Learning Center which was space flight simulator for kids that was developed in response to the Space Shuttle Challenger disaster. I did feel as though I was getting the point across to the students, that emotions do play a large roll in a person's creative output. From what I could tell the students were sensitive and appreciated that fact. Moving in to the discussion about the "911" question ended up being smooth because the warm-up had to do with how emotions can affect a persons view on a certain topic. It was very obvious that the students had really incubated on the "911" question. All the students were basically in agreement that the acts of 911 were in fact creative acts. They did agree that creativity has a huge potential to be used for the purpose of harming others, and that those who understand that fact are responsible for preventing their own creativity from being used in such a way. I was glad to see that there were no negative feelings or inappropriate comments made during this particular discussion. I again stumbled a little with the instruction of the

Evaluation

Having the discussion about how emotions can affect creative output really actually fit well with the already planned discussion of 911. Both the Columbia and 911 disasters were good examples for the students to see how emotions can breed either intense positive or negative creative output. It was a good thing that I forced the students to incubate on the 911 question. I feel in helped the discussion remain stable and smooth without any outbursts of inappropriate remarks. My absence from the last class may have been a blessing because it forced me to refocus the class to make sure we were on the same page and that the students had a good understanding of the material that had been covered during the course of the semester thus far. One key learning that I took away from after I taught the students how to use the "Restating" tool was that when explaining "Idea Clusters" I will tell students that each cluster should have an action word. This makes the cluster restatements actual ideas that can be evaluated and implemented. When I had to explain the difference between "process" and "content" warm-ups for the students who did not quite understand how Dr. Juntune

Design

pervious class in which Dr. Juntune taught the class in my absence. I asked her to teach the students how to use warm-ups before using CPS and I also asked her to teach the students the difference between “content” warm-ups and “process” warm-ups. The reason for the discussion will be to make sure that all the students understood the concepts that Dr. Juntune taught. After any needed clarification with relation to warm-ups, I will then explain in detail the requirements for the Literature Analysis Paper. Being that it will be due soon, I want to make sure that the students have a good understanding of my expectations for the assignment. During my trip to Buffalo which was what prevented me from being present to teach the last class, I discussed my course with my advisor Dr. Mary Murdock. We both agreed that for a one semester course that only partly focused on CPS, I should not require the students to facilitate a group through all six stages of the CPS Process. So during this class also plan to explain to the students that for the Facilitation Project, I will only require them to facilitate at least one whole stage of CPS. This class will partly be some what

Delivery

“Restating” tool. It had been a week since I had taught Clustering or even seen the students so digging deep into class material such as CPS was more difficult than having a class discussion. When I moved into the discussion about the material that Dr. Juntune covered during last class, I was forced to re-explain the difference between a process and content warm-up. The students did have a good understanding that warm-ups were necessary before beginning a CPS session, however they did ask me to demonstrate an example of a process and a content warm-up so that they could see the difference. By using separate examples of actual process and content warm-ups I was able to help the students see their differences. When I explained the Literature Analysis assignment in more detail I could tell that the students were more relieved. They were also very glad to see that I was not requiring as much with relation to the Facilitation Project. I did assign them to read or re-read if they had done so already the Parnes text section in which he guides the reader through an entire CPS process. I wanted them to get more practice using the stages on themselves.

Evaluation

explained it, I found that the students comprehended my explanation the best when I used old warm-ups that I had the students use in previous classes. The fact that the students were more relieved when I explained the Literature Analysis assignment with more detail was just another example that showed how most of the students were not use to open-ended assignments that had no prescribed way in which the student must follow in order to get a right answer. The reason I asked the students to re-read the Parnes text in which he guides the reader through all the stages of CPS was because I wanted them to keep getting comfortable with using CPS in their personal lives.

Design

of a catch-up class. Because of my absence from the last class I do feel the need to reconnect with the students and make sure that we are all on the same page with relation to the material that we have covered so far.

Delivery

Evaluation

6 February 2002: Class 8 of 28

I. Design

- Used the “leap” skill of “Be Aware of Emotions” to influence the design of the warm-up activity for this class because part of this class will be devoted to the discussion of how emotions can affect creativity. I also plan to lead a discussion on how failure can help breed creative success;
- Plan to review the concepts presented during Class 7, to ensure that the students understand “content” and “process” warm-ups;
- Plan to discuss some changes in the Facilitation Project because I have come to the decision that a one-semester, introductory course on Creative Problem Solving should not require students to perform a CPS Facilitation of all six stages of the CPS Process; and
- As a result of my absence from Class 7, I designed part of this class as a review session of the material that has been covered in the course to date.

II. Delivery

- Stumbled through the instruction of the convergent tool Restating, because it had been a week since I taught the Clustering tool;
- Presented specific and clear examples of “process” and “content” warm-ups because the students did not fully understand these concepts after they were presented during CLASS 7; and
- Assigned the students to re-read the section in the Parnes (1997) text in which he guides the reader through all the stages of CPS Process so that the students would get more practice using the CPS.

III. Evaluation

- The discussion about how emotions can affect creativity fit well with the discussion of the “911” disaster;
- Having the students incubate on their responses with reference to the question about whether the acts of “911” were creative or not helped keep the discussion stable and prevented inappropriate outbursts as a result of unclear thinking;
- My absence from CLASS 7 forced me to reconnect with the students which in turn helped to ensure that they had a good understanding of the course content that had been covered thus far in the semester;
- When I used warm-ups from previous class days as examples, the students were able to better comprehend the difference between “process” and “content” warm-ups.

Lesson Plan: 11 February 2003: Class 9 of 28

Goals:

- Explain the difference between thinking guidelines and thinking tools
- Explain and demonstrate other specific thinking tools for divergent thinking

Objectives:

The students will be able to...

- understand the difference between guidelines and tools
- understand how divergent thinking tools can be used specifically with the Creative Problem Solving Model
- gain a basic understanding of the divergent thinking tools of: Brainwriting, Morphological-Matrix, and SCAMPER

Vocabulary:

1. Divergent Thinking Guidelines (with relation to CPS) = concepts that were developed by Osborn and Parnes as a loose guide for any divergent thinking that is used during CPS
 - Defer judgment
 - Strive for quantity
 - Seek the wild and crazy
 - Piggy-back
2. Divergent Thinking Tools = thinking tools that can be used during divergent thinking in order to assist in the production of novel ideas

Heightening Anticipation

- I. Warm-up: "What if..." questioning game. Used for the Leap Skill of "Combine and Synthesize." The idea is that the students will understand that many of the divergent thinking tools were designed to help foster analogical thought in which a person combines two things that are unrelated in order to get a new and novel combination. They will be learning some more of those tools today.
 - A. Give every student a 3x5 yellow post-it note and a Mr. Sketch Stix marker
 - B. On the top half of the post-it have every student, in their own way, finish the statement "What if..."
 - C. Have each student pass his or her post-it to the student on his or her left (right)
 - D. On the bottom half of the post-it, have each student answer the "What if..." statement that he or she has now obtained
 - E. Have one student read the "What if..." statement on the post-it that they have obtained (don't allow them, however, to read the answer)
 - F. Then have the person to that student's left (right) read only the answer to the "What if..." statement that that student has obtained
 - G. Continue this cycle until all the "What if..." statements and answers have been read

Digging Deeper

- I. Revisit the previously learned Divergent Thinking Tools
 1. Traditional Brainstorming
 2. Stick'em Up Brainstorming
 3. Forced RelationshipsNote: Ensure that every student has a firm grasp of the previously learned tools.
- II. What is the difference between guidelines and tools
- III. Learning New Divergent Thinking Tools
 1. Brainwriting
 2. Morphological – Matrix (Idea Box)
 3. S.C.A.M.P.E.R.

Extending the Learning

- I. Remind them to make entries in their Creativity Learning Journals
- II. Have them continue to dig into the literature on creativity in order to find a suitable topic for their Literature Analysis Papers
- III. “Prepare yourself to receive an Aha! that will lead you towards a topic that you have passion for.”

Sources Used to Prepare Class

1. PARNES text
2. DAVIS text
4. Torrance & Safter “Leap”
5. Firestien, Miller, Vehar

Supplies for Class

1. Text books
3. Flip chart paper
4. Mr. Sketch Stix Markers
5. Masking Tape
6. Lesson Plans
8. White board markers
9. 3x5 Yellow Post-It Notes
10. Facilitator Toolbox

Design: 11 February 2003: Class 9 of 28

In the design of this class I will use an activity that was taught to me by one of my colleagues at the International Center for Studies in Creativity at Buffalo State College for the warm-up. This warm-up very much relates to Torrance's "Leap" skill of "Combine and Synthesize". The reason I wanted to use this activity to express the ideas behind this specific Leap skill was because during this class I will teach the students some more divergent thinking tools. The idea is to help the students understand that many of the divergent thinking tools were designed to help foster analogical thought in which a person combines to things that are unrelated in order to get a new and novel combination. After leading the warm-up I will revisit the previously learned divergent tools to ensure that all the students have a good grasp of those tools before moving on to the instruction of any new divergent tools. As a result of some student's previous confusion about what are divergent tools and what are divergent guidelines I will take a few minutes at this point in this class to make sure I clarify for the students what the differences are and what the explicit divergent and

Delivery

The warm-up went particularly well because the activity forced some really unusual combinations of "What if..." questions and answers. The exact format of the activity is outlined step by step in my lesson plans. I did take the time to explain the difference between thinking tools and thinking guidelines. After I explained the differences between tools and guidelines I asked the students to tell me the divergent guidelines and then I asked them to tell me the divergent thinking tools that they had learned so far. I decided to do this to ensure that my previous explanation had in fact been fully understood. By the students responses to my request I could tell that they were clear on the differences at this point. I stumbled just little with the instruction of Brainwriting because the Brainwriting forms that I was using for the demonstration, which I took from another CPS tool source, were formatted in a way that was a bit confusing for the purpose of teaching the tool. I had under-estimated my experience with this particular Brainwriting form. The forms were actually not formatted in such a way that was conducive to Post-It notes which I like to place on the Brainwriting

Evaluation

It was good that I reviewed the previously taught divergent thinking tools with the students before moving on to new tools. Some students did have a few clarification questions and I was glad that I helped answer those questions before confusing the students with a whole new set of information. For the future I will also make sure and clarify the differences between thinking tools and thinking guidelines much earlier in my introduction of either. It should have not gone this long into the semester without the students having a firm grasp on the theory behind such differences. I did realize though that pure practice would help the students really have a firm grasp on what are, for example, divergent thinking tools as opposed to divergent thinking guidelines. As a result of the confusion with result to the unusually formatted Brainwriting forms, for the future I will not teach this tool using forms at all. I have decided that it would be best to teach these types of tools without pre-constructed forms that are taken from a specific CPS tool book. I will teach the students more of the theory and basics behind the tools so that they are able to use simply white paper, post-its, and markers to

Design

convergent guidelines are as well as stating what the divergent and convergent thinking tools are that the students have learned thus far. After this brief clarification I will then move into the instruction of three more divergent thinking tools. The tools that I will teach the students how to use are Brainwriting, Morphological-Matrix, and S.C.A.M.P.E.R. As a result of my past experience with the short time frame of the class I am aware that I may not be able to teach the students how to use all three of these divergent tools. In order to ensure that the students focus on the content and process of the tool instruction and not the content of the problem statement I will keep the problem statement simple and I will pre-select the problem statement so that no unnecessary time is spent on determining a good problem statement. After the tools instruction I will then remind the students about their Literature Analysis paper and ask them to continue looking for a topic if they have not already decided on one.

Delivery

forms so that after using the Brainwriting tool, especially with a group, it is easy for the facilitator to then transport the Post-Its to a flip chart so that they can be seen and read by the entire group at once. After I demonstrated the Morphological-Matrix using the problem of a needing a new idea for a fictional story the students asked how the tool could be used for other types of problems (i.e. Product Innovation). I then explained how the Matrix could generate multiple possibilities and that the categories were what determined the product that the ideas generated could be applied too. I unfortunately ran out of time and was unable to show the students how to use S.C.A.M.P.E.R. I did tell the students that I would teach them how to use S.C.A.M.P.E.R. during the next class.

Evaluation

construct such a divergent tool as Brainwriting. I was frustrated that I could not explain S.C.A.M.P.E.R. on the day that I had planned to do so. I do realize that I need to allow the class to flow in whatever fashion that is comfortable. I will make sure for the future, however, that because of this I need to keep the lesson plans more open to allow for spill-over from previous class days. That is the nice thing about not having exams that cover specific units or chapters. As a result I don't feel pressured to get a certain unit or tool or theory taught before a certain date. As long as the students are taught and understand the information before the end of the semester I will consider my instruction methods a success.

11 February 2002: Class 9 of 28

I. Design

- The “leap” skill of “Combine and Synthesize” influenced the warm-up for this class because I wanted to help the students understand that many of the divergent thinking tools were developed as a way to enhance analogical thinking;
- Plan to revisit the previously learned divergent thinking tools to ensure that the students have a good grasp of those tools before moving onto the instruction of new tools;
- Plan to clarify the characteristics of divergent thinking guidelines and divergent thinking tools since the students have expressed confusion about their differences;
- Designed a simple problem statement for use when teaching the new divergent tools to ensure that the students focus on the content and process of the tools, not the content of the problem;
- Designed a problem statement in advance so that class time can be focused on the learning new divergent tools and not on finding a proper problem statement; and
- Kept the lesson plan open enough so that any of the tools that I cannot teach as a result of time can be covered during another class.

II. Delivery

- After explaining the characteristics of the divergent guidelines and divergent tools, I then asked the students to verbalize the divergent guidelines. I then asked them to name the specific divergent tools they had learned so far in the course. I did this to ensure that they understood the differences between guidelines and tools; and
- Stumbled through the instruction of Brainwriting because the Brainwriting forms that I used were formatted in a confusing way.

III. Evaluation

- In the future I should clarify the differences between divergent thinking guidelines and divergent thinking tools early in the semester to prevent confusion during the instruction of new tools;
- I should more deliberately require the students to practice the CPS guidelines and tools outside of class so that they better understand the differences between the guidelines and tools;
- In the future I should not use pre-printed tool sheets when teaching the students how to use the divergent or convergent thinking tools. I think this will help the students gain a better theoretical understanding of the tools;
- For the future I need to keep the lesson plans more open in their design to allow for spill over from previous classes; and
- Not using traditional exams for evaluation reduces the pressure of needing to teach a certain amount of material or a specific unit of information by a particular date.

Lesson Plan: 13 February 2003: Class 10 of 28

Goals:

- Explain the divergent thinking tool of SCAMPER
- Review the convergent thinking guidelines
- Review the previously learned convergent thinking tools
- Explain how to use the convergent thinking tools of Evaluation-Matrix and Card Sort

Objectives:

The students will be able to...

- gain a better understanding of the divergent thinking tool of: SCAMPER
- clarify any concerns with relation to the use of the convergent thinking tools of HITS, CLUSTERING, and RESTATING
- gain an understanding of how to use the convergent thinking tools of Evaluation-Matrix and Card Sort

Vocabulary:

1. S.C.A.M.P.E.R. = a divergent thinking tool that includes a set of idea spurring questions which are categorized into seven different groups. Each group has a name that signifies what the questions focus on. The group names are: Substitute, Combine, Adapt, Modify, Put to Other Uses, Eliminate, Rearrange
2. Evaluation-Matrix = a convergent thinking tool developed for the purpose of evaluating idea again specific positively stated criteria
3. Card Sort = a convergent thinking tool developed for the purpose of prioritizing a set of ideas

Heightening Anticipation

- I. Note: As a way to heighten the student's anticipation for facilitating the CPS Process I will have one of the students lead this warm-up. I will have the student facilitate the "What if..." again, because it is fresh in their minds since I used it at the beginning of the last class.

Warm-up: "What if..." questioning game – Leap skill..."Combine and Synthesize"

- A. Give every student a 3x5 yellow post-it note and a Mr. Sketch Stix marker
- B. On the top half of the post-it have every student, in their own way, finish the statement "What if..."
- C. Have each student pass his or her post-it to the student on his or her left (right)
- D. On the bottom half of the post-it, have each student answer the "What if..." statement that he or she has now obtained
- E. Have one student read the "What if..." statement on the post-it that they have obtained (don't allow them, however, to read the answer)
- F. Then have the person to that students left (right) read only the answer to the "What if..." statement that that student has obtained

- G. Continue this cycle until all the “What if…” statements and answers have been read

Digging Deeper

- I. Revisiting Newly Learned Divergent Tools
* Specifically S.C.A.M.P.E.R.
- II. What are the Convergent Guidelines
 1. Affirmative
 2. Deliberate
 3. Improve Ideas
 4. Check in with Goals
 5. Look for the Unusual
- III. Revisiting Previously Learned Convergent Tools
 - A. Highlighting
 1. Hits:
 - use all Hits when clustering
 - use ideas with most Hits when moving into Evaluation Matrix
 2. Clustering
 3. Restating
- IV. Learning New Convergent Tool
 - A. Evaluation Matrix
 1. First diverge and generate criteria
 2. When generating ask…”What does my idea have to be for me to want to do it?”
 3. Phrase criteria as positive questions
 4. Don’t be too broad or too narrow
 5. Statement starters for criteria: “Will it…”, “Does it…”, “Is it…”
 6. Ask…”If (option), to what extent (criteria)?”

Note: Evaluation Matrix is not designed to find the idea with the highest score but to give you the opportunity to compare the strengths and weaknesses of the selected ideas against specific criteria. This will give you the opportunity to make the weaker ideas stronger by targeting the specific criteria that need improvement.

Note: Then you may want to diverge on how to overcome the low ratings of certain ideas.
 - B. Card Sort
This is used to rank and prioritize a specific number of ideas

Extending the Learning

- I. Use all the tools that have been taught to you thus far and complete the CPS Process again by using a personal problem and the Parnes text to guide you
- Bring last weeks and this write-up to the next class
- II. Read through p. 96 in the Parnes text as your guide through the process
- III. Continue to incubate and research information with relation to your desired topic for the Literature Analysis Paper

Sources Used to Prepare Class

1. PARNES text
2. DAVIS text
4. Torrance & Safter "Leap"
5. Firestien, Miller, Vehar

Supplies for Class

1. Text books
3. Flip chart paper
4. Mr. Sketch Stix Markers
5. Masking Tape
6. Lesson Plans
8. White board markers
9. 3x5 Yellow Post-It Notes
10. Facilitator Toolbox

Design: 13 February 2003: Class 10 of 28

For the warm-up to this class I will also use the “What if...” activity in order to express the Leap skill of “Combine and Synthesize”. However, as a way to heighten the student’s anticipation for facilitating CPS I will have one of the students lead the warm-up. The reason I will have them use the “What if...” activity is because it will be fresh in their minds since I used it during the last class. After the warm-up activity I will instruct the students in how to use S.C.A.M.P.E.R. since I was unable to teach them that tool during the last class. I will review the convergent thinking guidelines with the students and clarify any confusion that may stem from any specific guideline. After reviewing the convergent guidelines I will revisit the convergent tools that the students have already been taught: HITS, CLUSTERING, and RESTATING. I will do this because my plan for this class is to teach the students other convergent tools and I want to alleviate any confusion that may relate to the previously learned tools before moving onto new tools. I will then teach the students how to use the convergent thinking tools of “Evaluation Matrix” and “Card Sort”. In order to make

Delivery

When I asked one of the students to facilitate the warm-up that I used for last class I could see that they were nervous about such a task. However, they were willing to give it a try. I sat down in a desk with the rest of the class and the student that was chosen to lead the “What if...” exercise stood up in front of the class. They stumbled a little bit in getting the warm-up started but all in all it was a successful facilitation of a warm-up activity. I then moved to the review of the Convergent Guidelines and the previously learned tools of HITS, CLUSTERING, and RESTATING. I did have to clarify that any idea that is hit should be clustered if the person decides to use CLUSTERING after using HITS. As I opened up the instruction and demonstration of the Evaluation Matrix tool I did point out that a good transition from HITS to Evaluation Matrix is to evaluate the ideas that got the most hits. When I facilitated the students in the use of the Evaluation Matrix they did have trouble generating positive criteria. One main reason for this was because they did not really use the convergent guidelines well in choosing the best ideas that solved the problem when they were

Evaluation

I really enjoyed observing the student who facilitated the warm-up. They were comfortable. I believe that had a good bit to do with the fact that the students and myself, over the semester so far, had created a strong creative climate that allows for risk taking and a willingness to be open. It was a good thing that I reviewed the convergent guidelines and the convergent tools that the students had learned thus far before moving onto my explanation of any new convergent tools. The need for me to have to clarify certain points with relation to the HITS, CLUSTERING, and RESTATING showed me that in the future I need to ensure that such points should be expressed when such tools are first taught to the students. Before teaching the Evaluation Matrix I should have checked to make sure that the ideas that were being used to evaluate actually did match the main goal of solving the problem statement. For this reason I was glad that I used a simple and pre-determined problem statement as the avenue for teaching such a tool. If the problem statement had been very complex I am sure that there would have been many more problems with relation to

Design

the instruction of the new tools more engaging and not as strenuous on the students I will use a simple problem statement that I have already formulated so that the class will not have to focus on the content of the problem but on the content and process of the thinking tools that I will be teaching. My desire is to ensure that the students gain a good understanding of the basic principles and theories of the tools so that they can be personalized by the students to any capacity they see fit. I will then ask the students to practice their newly learned tools on a personal problem using the Parnes text as a guide and CPS as the model by which to apply the tools. This will be assigned for homework and I will ask the students to bring the write ups to the next class.

Delivery

using the HITS tool to narrow. Another reason for the criteria generation problem was that because I wanted to save time I merely asked for a few suggestions for criteria instead of going through an entire divergent process of generating many criteria and then having the students select the most suitable criteria. Time really affected the flow of this class. The shortness of time actually prevented me from being able to move on from the Evaluation Matrix to the instruction of the Card Sort tool. I will have to teach the students how to use that tool later.

Evaluation

the instruction of this tool. For the future to ensure that the criteria generated by the students is in fact positively stated, I will ask the question of "Do you want (criteria)?" for each set of criteria. If the answer with relation to a piece of criteria is "no" then that criteria will, not need to be thrown out, but in fact restated so that it is worded in a positive way to ensure that it will get an answer of "yes". Also in the future, when I teach this tool I need to allow enough time in the class to let the student diverge and generate lots of criteria statements so that the students can then properly use a convergent tool like HITS to select the most suitable criteria for use with the Evaluation Matrix.

13 February 2002: Class 10 of 28

I. Design

- Plan to have one of the students facilitate the warm-up that was used during Class 9 as a way to heighten the students anticipation for the Facilitation Project;
- Will use the warm-up from Class 9 because the process of its delivery will be fresh on the student's mind;
- Plan to revisit the previously learned convergent thinking tools before teaching new tools in order to alleviate any confusion that the students may have; and
- Designed a simple problem statement for the convergent tools that will be newly introduced during this class to help the students focus on the content and process of the new tools and not the content of the problem statement.

II. Delivery

- Discussed specific pointers that would help the students make more smooth transitions from one convergent tool to another since they were learning more convergent tools during this class; and
- During the instruction of the Evaluation Matrix I decided to forgo having the students fully diverge to generate criteria and then converge to select the most suitable criteria. I did this because I did not want to run out of time in class; however, the students ended up having problems generating positive criteria.

III. Evaluation

- It was good that I reviewed the convergent tools that the students had already learned before teaching new tools because they needed clarification on Hits, Clustering and Restating;
- In the future I need to make sure that any concerns that students have about a particular tool are expressed and dealt with before moving onto the instruction of a new tool;
- In the future, before I teach the convergent tool, Evaluation Matrix, I should teach the students how to check that the ideas generated fit the convergent guideline "check with the objective";
- For the future I need to teach the students how to check that the criteria generated for an Evaluation Matrix are positively stated. They should ask the question of "Do you want (criteria)?" for each criteria statement; and
- When teaching the Evaluate Matrix I need to make sure that students have enough time to diverge in order to generate a large amount of criteria so that they can properly converge in order to select the most suitable criteria.

Lesson Plan: 18 February 2003: Class 11 of 28

Goals:

- Review the Convergent Tool “Evaluation Matrix”
- Explain the requirements of a CPS Problem Statement: Ownership, Motivation, and Imagination
- Explain in depth the CPS stage of Mess-Finding
- Explain in depth the CPS stage of Fact-Finding

Objectives:

The students will be able to...

- fully understand how to use the convergent thinking tool “Evaluation Matrix”
- grasp and understand the three requirements of a CPS Problem Statement: Ownership, Motivation, and Imagination
- have a better understanding of the CPS stages: Mess-Finding and Fact-Finding
- understand some of the divergent and convergent thinking tools that are best for use with the CPS stages of Mess-Finding and Fact-Finding

Vocabulary:

1. Ownership (when applied to a CPS Problem) = it is your problem to solve / you are accountable or are willing to be held accountable for the outcome of the problem
2. Motivation (when applied to a CPS Problem) = you want action or implementation with regards to the problem or challenge
3. Imagination (when applied to a CPS Problem) = the problem need / requires a novel or a set of novel solution(s)
4. Mess-Finding = the first stage in the CPS Process where a person or persons strive to identify a goal, wish, or challenge that you may have
5. Fact-Finding = the second stage in the CPS Process where a person or persons strive to collect all the pertinent data that is associated with the goal, wish, or challenge

Heightening Anticipation

- I. Warm-up: Leap Skill “The Problem” – understanding the true problem
 - A. I will write a really long problem statement on the board, it will have a lot of facts and data
 - B. I will then ask the class to make the statement more broad and open-ended so that it is easier to generate multiple solutions
 - C. They will need to simplify it by taking out the data that can better be used as part of the Fact-Finding stage of CPS
 - D. The problem statement I will use for this exercise: “I what ways might we design a comfortable and inexpensive whit bathroom toilet that has a seat which never gets cold and a flusher that doesn’t make any noise so then when I am talking to a friend by telephone they won’t know I am in the bathroom?”

Digging Deeper

- I. Review: Evaluation Matrix
 - A. Review the selected ideas from the pervious class
 - B. Review how to generate and criteria
 - C. Review how to select from a list of generated criteria the positively stated and most suitable criteria to be used in the Evaluation Matrix
- II. Understanding the MESS-FINDING stage of CPS (PARNES text pg. 73 “Discovering Challenges”)
 - A. Explain both how to diverge and converge in the Mess-Finding stage
 - B. To use CPS for your Mess you need
 1. Ownership: it is your problem to solve / you are accountable or are willing to be held accountable for the outcome of the problem
 2. Motivation: you want action or implementation with regards to the problem or challenge
 3. Imagination: the problem need / requires a novel or a set of novel solution(s)
 - C. Some Divergent Tools for M-F:
 1. Open-ended Questions
 2. Brainstorming – all three types
 - D. Some Convergent Tools for M-F:
 1. Ask questions with regards to Ownership, Motivation, and Imagination requirements
- III. Understanding the FACT-FINDING stage of CPS
 - A. Ask: WHO? WHAT? WHEN? WHERE? WHY? HOW? with relation to the challenge
 - B. Why do you need facts: we don’t want to bog down the Problem Statement with facts because that will prevent the most ideas possible to be generated, some of the most unrelated ideas that don’t seem to fit with the entire context and facts related to the problem end up being the most rewarding solutions
 - C. Some Divergent Tools for F-F:
 1. All three types of Brainstorming
 2. Open-ended Questions
 - D. Some Convergent Tools for F-F:
 1. HITS: make sure Data is relevant to Challenge
- IV. Discuss the Literature Analysis Topics
- V. Further discuss the change in the Facilitation Project Assignments

Extending the Learning

- I. Ask the students to focus on using just Mess-Finding and Fact-Finding for a personal problem and to write up results in Creativity Learning Journals

Sources Used to Prepare Class

1. PARNES text
2. DAVIS text
4. Torrance & Safter “Leap”

5. Firestien, Miller, Vehar

Supplies for Class

1. Text books
3. Flip chart paper
4. Mr. Sketch Stix Markers
5. Masking Tape
6. Lesson Plans
8. White board markers
9. 3x5 Yellow Post-It Notes
10. Facilitator Toolbox
11. PDA

Design: 18 February 2003: Class 11 of 28

For this class the students will be gaining more expertise in the use of the CPS Stages of Mess-Finding and Fact-Finding. For that reason I have designed the warm-up to highlight the Leap skill of "The Problem". The purpose for the design of this warm-up is to help the students understand that the more abstract and open ended a mess statement is, the more abundant the number of ideas will be and as a result the more novel the ideas generated will be. I also designed this warm-up to help students understand how to separate specific facts about a challenge from the challenge statement itself. Because of the fact that I ran short of time last class I want to make sure that the students have fully grasped the concepts related to the convergent tool "Evaluation Matrix". My main goal for revisiting the Evaluation Matrix tool is to show the students the method of using the question "Do I want (criteria)?" to ensure that the criteria being used for the Evaluation Matrix is in fact positively stated. After clarifying the Evaluation Matrix I will then explain the CPS stages of Mess-Finding and Fact-Finding more in depth. I have designed a short lecture with regards to the

Delivery

The students really did well with the warm-up. They were able to pick out the pieces of information that were not needed for the challenge statement to be successful. They were able to determine the difference between finding facts that support a challenge statement and finding an open-ended succinct challenge statement that works for gaining insight. To explain the method of questioning the positive wording of criteria for the Evaluation Matrix tool by way of asking "Do I want (criteria)?" for each piece of criteria generated, I used the criteria that was generated by the students during the last class when I first introduced the tool. When I explained to the students how to use the requirements of Ownership, Motivation, and Imagination to determine if CPS is a suitable process for solving a certain challenge, I did have trouble explaining the Imagination requirement. The problem arose when I said that the Imagination requirement is in place to determine if the challenge could use creative thinking in order to get solutions. With that one student asked "Well, can't creativity be used on every challenge no matter what it is?" I stumbled through the process of

Evaluation

The warm-up proved to be a good way to demonstrate to the students how to prevent mess statements and problem statements from getting bogged down with a lot of data and facts. I could tell from the student's reactions that they had a firm grasp with relation to generating positive criteria for the Evaluation Matrix after I explained how to question the criteria using the "Do I want (criteria)?" question. The mini-lecture on Ownership, Motivation, and Imagination was a good piece for showing the students how CPS can be used and what its benefits are to challenges. With relation to the confusion around the Imagination requirement I will make sure and tell the story about the student's back-pack zipper to the rest of the students at the beginning of the next class. This helped the student that asked me the related question to better understand the Imagination piece so I expect that the rest of the students will grasp the information much better with this very applicational story. Part of teaching a new course about an especially new discipline of study is coming to the understanding that there will be times when a student or colleague asks me a question that I will not have

Design

three requirements which determine if CPS should be used for a person or persons challenge or not: those three requirements are Ownership, Motivation, and Imagination. I will show the students how to use these three requirements to determine if a person or persons challenge should be solved using CPS. I will then show the students methods for collecting data for the purpose of gaining more insight into a challenge being explored. I will also show the students how to converge and focus on the pertinent data related to the challenge being explored. Along with these methods I will teach the students which divergent and convergent tools are best used with the CPS stages of Mess-Finding and Fact-Finding. After this exploration of those two CPS stages I will ask the students to discuss their progress with the Literature Analysis Papers and specifically I will determine if every student has or has not found a more narrowed topic to focus his or hers research on. If time allows I will also clarify any confusion with relation to the changes in the Facilitation Project requirements. For home work I will ask the students to specifically use the CPS

Delivery

explaining this particular requirement so that the question was correctly answered, however, I did realize that I will need to get more in depth information about the Imagination requirement so that during the next class I will be able to give the students a much better explanation of that particular requirement. As I explained in more detail the specific stages of Mess-Finding and Fact-Finding I not only explained how certain aspects of those stages worked but I also demonstrated the function of each stage by exploring a challenge that the students had a personal interest in resolving. For this particular lesson I had the students generated “I wish...” statements in order to determine the best mess to use in the demonstration of the rest of the stages. I used the students almost as if they were part of my creative brain, generating ideas for my personal problem. This way they could see how a single person could use the specific stages in order to resolve a more personal challenge. I used a challenge that the students had interest in so that they would be engaged in the diverging and converging parts of the stages that I was teaching them to use. I could

Evaluation

a clear answer too. For the future I need to be very frank and humble and say to the students that I do not have a clear answer to their question but that I will do research and find the answer so that they can have clarity. I do believe that by creating a climate in my classroom from the very beginning of the semester that showed the students that I was here to learn from them just as they are here to learn from me, the students were in complete appreciation of the fact that I don't know everything and that I will try to find a better answer to the best of my ability. Breaking the CPS stages down and teaching only a few of them in depth per day, I believe, helped to show the students how well the stages could stand alone. But I do believe it was good that I did show at least two of the stages more in depth during one class sitting because that gave the students a good understanding of how well the stages of CPS transition from one to another when they are used together. The students were also glad to see how the divergent and convergent tools could be used in the delivery of the stages as well as which kinds of tools worked best with specifically Mess-Finding and

Design

stages of Mess-Finding and Fact-Finding on a personal challenge and then to record the outcomes in their Creativity Learning Journals which we will discuss later in another class. I will ask the students to do such a task because I want them to continually be practicing CPS in their personal lives so that they are more comfortable with the process when they perform a group facilitation of the process.

Delivery

have just generated ideas by myself as they watched how I used the stages but this way they were interested in the process as a result of the content. I also used this opportunity to show the students for the first time, the fluidity of the transition between the stages. At the end of class I was discussing the Imagination requirement for CPS challenges with the student who asked the question "Well, can't creativity be used on every challenge no matter what it is?" Another student was having problems with their back-back zipper. This gave me a perfect way to explain the Imagination piece. I explained to the inquiring student that the student with the broken zipper could use CPS to find a creative way to fix the back-pack or they could simplify and probably save time and money by going out and buying a twenty dollar back-pack. The student then became very clear about the Imagination requirement.

Evaluation

Fact-Finding. The process of using a common student problem proved to be a good way to get the students engaged in the process material. By facilitating myself through the methods and having the students serve as my divergent and convergent mind of thought I was able to show them the process more intensely because I did not have to worry about the content. This was good for me as the instructor because having to worry about the content and process of the material being presented would have made the instruction of the stages very difficult and perhaps more confusing for myself and in turn for the students.

18 February 2002: Class 11 of 28

I. Design

- Designed the warm-up for this class based on the “leap” skill of “the problem” to help the students understand that the more open ended a problem statement is the more abundant the ideas will be. I also designed the warm-up to help the students grasp how to separate facts about a problem from the problem statement itself;
- Plan to revisit the Evaluation Matrix tool to show the students the method of asking “Do I want (criteria)?” in order to ensure that each criteria selected is positively stated;
- Designed a mini-lecture to present the guidelines used for determining if CPS should be used to solve a particular challenge or not; and
- After I have taught the CPS stages of Mess-Finding and Fact-Finding, I will ask the students to deliberately practice those two stages so that each student will get more comfortable with each stage before having to facilitate for group.

II. Delivery

- To demonstrate how to use the question of “Do I want (criteria)?” I used the criteria that was generated during Class 10;
- Had trouble explaining the Imagination requirement (one of the guidelines used to determine if CPS should be used on a particular challenge) because I said that the Imagination requirement is used to determine if a challenge “could” use creative thinking;
- When explaining the Mess-Finding and Fact-Finding stages I used a challenge that the students had a personal interest in so that they would be more engaged in the exercise; and
- For a more in-depth experience of how to use the Mess-Finding and Fact-Finding stages, I had the students diverge and converge as if they were a part of my own creative mind so that they would see firsthand how a single person would use these stages.

III. Evaluation

- The warm-up proved to be a good way to demonstrate how to prevent mess-statements and problem-statements from getting too overwhelmed and narrowed by data;
- The students had a firm grasp on the method of generating positive criteria for the Evaluation Matrix tool after I explained how to use the question “Do I want (criteria)”;
- When I explain the Imagination requirement use to determine if CPS should be used to solve a particular problem or not, I should use the story about the student’s back-pack zipper (see lesson plan Class 12) as a way to explain how challenges must require as well as need novel and unique solutions in order for CPS to be used as a suitable process for solving such challenges;

- For the future, when a student asks a question that I do not have a suitable answer too, I need to be more deliberate and tell him or her that at this point I don't know the answer but that I will do the necessary research in order to find an answer;
- Teaching an in depth lesson on only one or two of the CPS stages during one class period helps to show the students how well each stage can be used independently;
- It was also a positive that I taught an in depth lesson on at least two CPS stages during a single class period because the students gained a good understanding of how to transition from one stage to another; and
- Having the students serve as my creative mind allowed me to solely focus on demonstrating how the process works because I did not have to focus on generating my own ideas.

Lesson Plan: 20 February 2003: Class 12 of 28

Goals:

- Explain in depth the CPS stage of Problem-Finding
- Explain how to use the divergent tools “Ladder of Abstraction” and “Word Dance”
- Explain how to use the convergent tools “Card Sort”

Objectives:

The students will be able to...

- grasp a better understanding of the CPS stage “Problem-Finding”
- gain a good understanding of the divergent tools “Ladder of Abstraction” and “Word Dance”
- gain a good understanding of the convergent tool “Card Sort”

Vocabulary:

1. Problem Finding = the third stage in the CPS Process which focuses on helps a person or persons find the best problem statement that will render the most promising solutions to a challenge
2. Ladder of Abstraction = a divergent thinking tool designed to help a person or persons develop the most promising problem statement
3. Word Dance = a divergent thinking tool designed to help a person or persons develop as many possible variations of a problem statement

Heightening Anticipation

- I. Warm-up: Based on Leap Skill “Look at It Another Way”
 - A. This warm-up is very much related to the divergent tool of “Ladder of Abstraction” which the students will be learning how to use in today’s class
 - B. Have the students clear away the desks from the front of the room
 - C. Ask them to stand at least two arm lengths apart from one another
 - D. For the first student in the line I will ask them to formulate a simple “I wish...” statement
 - E. Then I will ask the student to say the “I wish...” statement in the form of a “How might I...” statement to the next student in the line
 - F. The second student will need to ask the first student “Why do they want (statement)?”
 - G. Then the first student will need to formulate one answer in response to the “Why...” question
 - H. The second student will then need to turn that “Why...” statement into a “How might I...” statement and then say that statement to the third student
 - I. This will continue until the last student has formulated a final “How might I...” statement
 - J. Finally the class will discuss how the process by which the first “HMI...” statement turned into the final “HMI...” statement

Digging Deeper

- I. Revisiting the Ownership / Motivation / Imagination requirements for a CPS Challenge
 - A. A question arose at the end of the class from one student “Doesn’t every challenge have room for creativity”
 1. Use the example of “The Broken Back-pack Zipper” to explain how CPS is designed to be used on challenges that require creativity in order to get a new and novel solution that has not been gotten before using CPS
 2. “The Broken Back-pack Zipper”: At the end of the last class one of my students at a broken zipper on their back-pack. Now they could have spent a lot of time using CPS to figure a really novel solution to fixing the zipper. Or they could go spend a few dollars and buy a new back-pack. The easiest solution may not be very creative or less expensive but sometimes it is the most effective and efficient.
- II. PROBLEM-FINDING
 - A. How to turn a mess into a good PROBLEM STATEMENT
Note: Use a student’s real mess to demonstrate how to form good problem statements from a mess
 - B. Put the Fact somewhere else: remind students that the FACT-FINDING stage is for storing the facts
- III. Tools for Diverging in the Problem-Finding Stage
 - A. LADDER OF ABSTRACTION: Teach the students how to use Ladder of Abstraction
 - B. WORD DANCE: Teach the students how to generate multiple problem statements using Word Dance
- IV. Tools for Converging in the Problem-Finding Stage
 - A. Make sure you still have Ownership, Motivation, and require Imagination
 - B. HITS
 - C. CARD SORT: teach students how to prioritize a set of problem statements using the tool of Card Sort (if time allows, this tool can be taught during the lesson on Solution-Finding)

Extending the Learning

- I. Dig deeper into your Literature Analysis Research

Sources Used to Prepare Class

1. PARNES text
2. DAVIS text
4. Torrance & Safter “Leap”
5. Firestien, Miller, Vehar

Supplies for Class

1. Text books
3. Flip chart paper

4. Mr. Sketch Stix Markers
5. Masking Tape
6. Lesson Plans
8. White board markers
9. 3x5 Yellow Post-It Notes
10. Facilitator Toolbox
11. PDA

Design: 20 February 2003: Class 12 of 28

For this warm-up the Leap skill of “Look at it Another Way” encouraged my process of design for this warm-up. The main reason that I will use this activity to warm-up the class is because I want to build some unconscious anticipation in the student’s minds for some of the new divergent thinking tools that they will be exposed to later in the class. Specifically this particular warm-up activity directly relates to the Ladder of Abstraction, as I intended for it to do so when I designed the warm-up. As far as I know this is an original group activity, and because it has never been used before as well as being a group activity I am very curious how it will work with the class. I do hope that it makes the instruction of the Ladder of Abstraction thinking tool easier for the students to comprehend. The main purpose of this class today will be to teach the students some more in depth concepts and methods of process with relation to the CPS stage of Problem-Finding. The reason that I am only going to focus on the one stage is because I feel that this stage in particular is the major determining factor in the student’s success with the CPS Model as a personal model for change. I will explain

Delivery

The warm-up that I designed for this class got started a little late because some students were a few minutes late for class. I had originally designed the warm-up for use with a particular number of people so I was forced to wait for the late arrivals. The warm-up did not go as smooth as I had hoped. The design process rendered what I thought a somewhat smooth activity but when I applied it, it was not as seamless as I had thought. I had to follow each student to make sure that they said the right phrases in order to get the right responses from the following students. Although the warm-up was not very smooth in its application I did make sure that the lesson that was to be learned from the activity did get across to the students. After explaining the importance and theory behind the Problem-Finding stage, I then moved into an in depth instruction of the divergent thinking tools of “Ladder of Abstraction” and “Word Dance”. The instruction of Ladder of Abstraction became a little more difficult than I had envisioned. I decided to draw a graphical representation on the board to explain how the levels of Abstraction changed when the tool was used.

Evaluation

With reference to the future use of this particular warm-up activity I will make sure and re-design it so that it is more flexible with relation to the number of students or people that can be involved in the use of the activity. I will also remember this recommendation for all other new activities that I create. I also need to design a better way to explain, in simple and perhaps graphical terms, how the activity is to be used so that it alleviates any confusion from the participants. I find it very positive to explain in depth the importance and theory behind each of the stages of CPS before I move into an in depth instruction of their application so that the students have a good understanding of the significance of each stage when they are used separately or together. With reference to the instruction of the “Ladder of Abstraction” for the future I will make sure to design an already drawn graphical representation of how the tool works with reference to a particular problem statement. I will make sure that the diagram is clear so that any confusion will be alleviated. Also for the future I should only show how the Ladder of Abstraction works with reference to one or two levels of

Design

to the students that the main reason why this stage, according to most creativity scholars, is so important is because understanding a person's true problem is fifty percent of solving the problem. Before digging deep into the Problem-Finding stage I will revisit with the class the Ownership, Motivation, and Imagination lecture that I delivered during the last class. I will do this so that I can tell the rest of the class the story about the student's back-pack zipper and how that relates to the Imagination requirement piece. Even though only one student specifically had a question with reference to their confusion about how I explained the Imagination piece, I do suspect that other students may have also been confused about how to use the Imagination piece to determine if CPS should be used on a particular challenge or not. I will then show the students some specific methods and tools that can be used with the Problem-Finding stage. Specifically I will show the students how to use the divergent tool of "Ladder of Abstraction" and "Word Dance" because these two tools in particular were designed for the purpose of helping a person or group to determine the most ideally

Delivery

However, because the "Ladder of Abstraction" tool is, by mere fact, a more confusing thinking tool, the drawings got confusing when I would start to reiterate certain aspects of the tool. The instruction of this tool did take longer than I had anticipated. I did not feel that the students were able to fully grasp the tool as I had desired. I explained to them that this tool is very confusing and it does require a good bit of practice to get comfortable with it. When I moved into to the instruction of the Word Dance tool the students were able to grasp its concepts more easily. When I moved into the explanation of the convergent tools that could be used with the Problem-Finding stage, I had planned to show the students how to use the convergent tool of "Card Sort" but because of the extra amount of time that I had to give to the instruction of "Ladder of Abstraction" I was unable to teach "Card Sort".

Evaluation

abstraction change. Moving to far up or down the ladder with respect to a particular problem statement can also cause much confusion on the part of the student's comprehension of the tool. I did find it positive however that I taught the students how to use a more difficult tool like Ladder of Abstraction along with a more simplistically comprehended tool like Word Dance. I feel like even though the students may go away not fully understanding on part of the lesson they are not going away from class completely confused about all of the parts of the lesson for that particular class.

Design

formulated problem statement which will in turn allow for the most successful use of this particular stage. I will then show the students some particular tools, some of which they have already been taught, that are good for the purpose of converging on the problem statements that are generated during the divergent thinking part of this stage. I will explain to the students again how the Ownership, Motivation, and Imagination requirements can also be used, although not considered a convergent thinking tool, as a way to determine which problem statement(s) to explore further for use in the Idea-Finding stage of CPS. The new convergent tool that I **will teach** to the students, if time allows, is **"Card Sort"**. I will **demonstrate** how using this tool, which is a prioritizing tool, **can help the students, if they have a number of good problem statements** to explore, **to put the statements in order** from the most important to the least important.

Delivery

Evaluation

20 February 2002: Class 12 of 28

I. Design

- Designed the warm-up for this class by using the “leap” skill “Look at it Another Way,” so that I would build students anticipation for learning new divergent thinking tools. This particular warm-up relates directly to the Ladder of Abstraction, one of the new divergent tools the students will be learning during this class;
- Plan to only cover the Problem-Finding stage during this class because I feel the students comprehension and success in using this one stage is key to their success in using CPS as a whole;
- Before teaching the Problem-Finding stage, I plan to revisit the mini-lecture on the Ownership, Motivation and Imagination requirements that I delivered last class, so that I can better explain the Imagination requirement. I will use an anecdotal story that is related to one of the students back-pack zippers;
- One of the main purposes of this class will be to show the students how to use the divergent tools of Ladder of Abstraction and Word Dance, because these tools were designed to help a person determine the most appropriate problem statement for a particular challenge; and
- If time allows, I will teach them the Card Sort tool so that if they find themselves with a number of well formulate problem-statements then they will have a tool to help prioritize those problem statements.

II. Delivery

- Before I could start the warm-up, I had to wait for the students who were late arriving to class because the warm-up would only work properly if all students were present to participate;
- As a result of poor design on my part, during the warm-up exercise I was forced to follow each student to make sure that they said the right phrases so that they would get the right responses from the other students;
- During the explanation and demonstration of the Ladder of Abstraction I found it best to explain using a graphical representation that I drew on the board so the students could literally see how the levels of abstraction changed; and
- Was unable to teach the students how to use the convergent tool Card Sort, because of the time that I had to spend on clarifying the Ladder of Abstraction.

III. Evaluation

- For the future I will redesign the warm-up activity so that it is more flexible with relation to the number of students that are needed for it to work properly;
- Found it to be a positive to first explain the importance and theory behind each of the stages of CPS before moving into the in-depth instruction of how each stage is used. This helps the students gain a good understanding of the significance of each stage when they are used separately as well as with the other stages;

- For the future when I plan a lesson on the Ladder of Abstraction, I will design an already drawn graphical representation of how the tool works to ensure that it is clear and free of confusion;
- For the future I will only show how to use the “Ladder of Abstraction” with one or two levels of change in abstraction to prevent the confusion that can be caused from moving too far up or down the ladder, away from the original problem-statement; and
- Found it to be good practice to show the students how to use a more confusing tool like Ladder of Abstraction along with a very simplistic tool like Word Dance. The students may leave class not fully understanding one part of the lesson but they will not leave class completely confused about all parts of the lesson.

Lesson Plan: 25 February 2003: Class 13 of 28

Goals:

- Explain and demonstrate standard procedures for using literature database search resources in order to gather a specific set of sources with relation to a specific topic
- Explain and demonstrate how to use the CBIR – Creativity Based Information Resources search database

Objectives:

The students will be able to...

- gain a better understanding of how to use literature database resources in order to find information and sources on a specific topic
- grasp how to use such database search resources as the CBIR in order to find information specific to the field and study of creativity research and application

Vocabulary:

1. CBIR – Creativity Based Information Resources = a literature database developed at the International Center for Studies in Creativity to help people find resources that specifically focus on creativity and the study of creativity

Note: The purpose of this class will be to give the students an opportunity to go to the library so that they can do in some in depth research for their Literature Analysis Papers. The reason I will be using class time for this is for a couple of reasons: (1) I want to give the students a chance to ask me any questions that they might have about research methods and (2) I want the opportunity to show the students, hands-on, how to use specific literature search databases; specifically the CBIR – Creativity Based Information Resources which was developed to help people find resources primarily focused on creativity and the study of creativity.

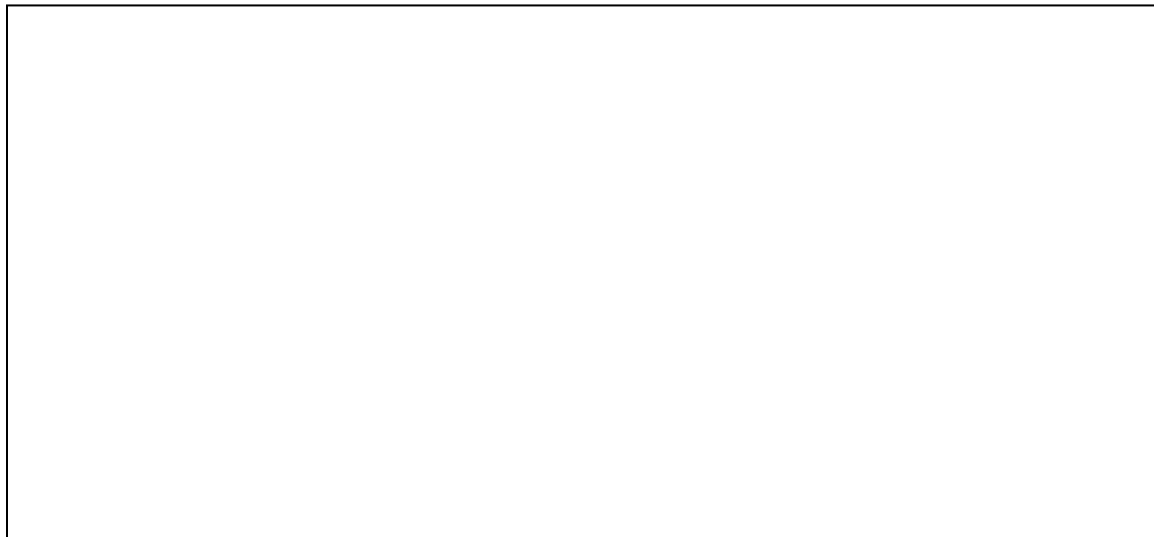
Design: 25 February 2003: Class 13 of 28

The purpose of this class will be to give the students an opportunity to go to the library so that they can do in some in depth research for their Literature Analysis Papers. The reason I will be using class time for this is for a couple of reasons: (1) I want to give the students a chance to ask me any questions that they might have with regards to research methods and (2) I want the opportunity to show the students, hands-on, how to use specific literature search databases; specifically the CBIR – Creativity Based Information Resources which was developed to help people find resources primarily focused on creativity and the study of creativity.

Delivery



Evaluation



25 February 2002: Class 13 of 28

I. Design

- Designed this class to give the students an opportunity to go to the library during class time so that they can do some in-depth research for their Literature Analysis Papers while having the chance to ask me questions with regards to that assignment; and
- Planned to take some time during this class to show the students how to use the resource search database, CBIR- Creativity Based Information Resources This resource was developed to help people locate resources that primarily focusing on creativity and the study of creativity.

Lesson Plan: 27 February 2003: Class 14 of 28

Goals:

- Review the CPS stage of Problem-Finding
- Explain in depth the CPS Stage of Idea-Finding
- Explain the transition from Problem-Finding to Idea-Finding
- Explain where each divergent tool lies on the novelty vs. implementation spectrum
- Explain the CPS stage of Solution-Finding
- Introduce the tool P.P.C.O.

Objectives:

The students will be able too...

- understand the CPS stage “Idea-Finding”
- understand the CPS stage “Solution-Finding”
- understand which divergent tools help produce ideas that are highly innovative and which divergent tools help produce ideas that are highly implementable
- pick between the tools P.P.C.O., Evaluation-Matrix or Card Sort when using the CPS stage of “Solution-Finding”

Vocabulary:

1. Idea-Finding = the fourth stage in the CPS Process where a person or persons generate ideas around a particular problem statement
2. Solution-Finding = the fifth stage in the CPS Process where a person or persons select ideas that would best solve the problem statement that they were generated for
3. P.P.C.O. = a convergent thinking tool developed for the evaluation and comparison of a small number of ideas

Heightening Anticipation

- I. Warm-up: Leap Skill “Produce and Consider Many Alternatives”
 - A. “Sports”
 - B. Using traditional brainstorming I will serve as the scribe and ask the students to list all the sports that they can think of
 - C. As they begin generating, if there is a lull in the ideation, I will prompt the students with ideas spurring statements like
 1. “Name indoor / outdoor sports”
 2. “Name winter / summer sports”
 3. “Name sports that don’t require any type of ball”
 4. “Name extreme sports”
 5. “Name sports that are shown on television”
 6. etc.

Note: This warm-up will help students produce many ideas for a simple problem statement. It will also give them a demonstration of a simple warm-up they can use when they are facilitating CPS. And, it also will show the students how they can direct the ideation around a particular problem without explicitly using a tool

– just using idea spurring statements will allow them to see how I use SCAMPER in a personalized way without even thinking consciously about it.

Digging Deeper

- I. Revisit Problem-Finding and the chosen problem statement from the last class
- II. Idea-Finding:
 - A. Explain the transition from Problem-Finding to Idea-Finding
 - B. Diverge:
 1. Discuss which CPS divergent tools render the most novel ideas
Note: Refer to the diagram in the Firestien, Miller, Vehar text “Creativity Unbound”
Note: Explain that the more novel ideas are normally harder to implement and the more implement-able ideas are normally less novel
 2. Have students generate ideas using Stick ‘Em Brainstorming for the problem statement that was formulated during the last class using the Problem-Finding stage
Note: This will be done so that the students, during one class sitting, will be able to see what it is like to diverge and converge in the Idea-Finding stage
 - C. Converge
 1. Have the students use HITS to find the most promising ideas
- III. Solution-Finding
 - A. Which CPS Tool should you use when finding a solution?
P.P.C.O / Evaluation-Matrix / Card Sort
Note: Explain that the number and type of ideas that you have, or the number and type of ideas you have as a result of converging in the Idea-Finding stage will determine which of the three tools (P.P.C.O., Evaluation-Matrix or Card Sort) you should apply to those ideas during the Solution-Finding stage
 - B. Diverge:
 1. Have the students determine which tool to use and then have them apply to the ideas
 - C. Converge:
 1. Explain that the tool that is used for the divergent part of Solution-Finding may also carry over into the convergent part of Solution-Finding (i.e. with reference to Evaluation Matrix: you diverge to generate the criteria and then converge by evaluating the selected ideas against the selected criteria)
 2. Allow the students to converge on the ideas selected from the Idea-Finding stage
 3. Explain that the Solution-Finding stage is designed to make the ideas that were selected in the Idea-Finding stage into workable solutions, not to weed out the ideas that just don’t work as well as you thought

Note: Remind the students that Joyce will be filling in for me for the next class and that she will be teaching them the more in depth concepts of the Acceptance-Finding stage

Extending the Learning

- I. Literature Analysis Paper is due next class
The students should submit the paper digitally by either email or by posting it to the classes WebCT internet site by Tuesday March 4th

Sources Used to Prepare Class

1. Parnes text
2. Firestien, Miller, Vehar

Supplies for Class

1. Text books
2. Flip Chart Paper
3. Mr. Sketch Markers
4. Masking Tape
5. Lesson Plans
6. White Board Markers
7. 3x5 Yellow Post-Its
8. Facilitation Toolbox

Design: 27 February 2003: Class 14 of 28

The warm-up activity for this class which was inspired by the Leap Skill “Produce and Consider Many Alternatives” was designed to help the students produce many ideas for a simple problem statement. It will also give them a demonstration of a simple warm-up they can use when they are facilitating CPS. And, it also will show the students how they can direct the ideation around a particular problem without explicitly using a tool – just using idea spurring statements will allow them to see how I use SCAMPER in a personalized way without even thinking consciously about it. When I move on to teach the students more details related to the CPS stages of Idea-Finding and Solution-Finding, which will be the main goal of this class, I will use the problem statement from the previous class so the students can see the transition between all the stages as well as see the entire CPS Process used on one problem. I also don’t want to waste time re-generating suitable problem statements so that I could teach the Idea-Finding and Solution-Finding stages during this class. During my instruction of the Idea-Finding stage I will discuss the novelty continuum which

Delivery

When teaching the students about the novelty output of each divergent thinking tool I drew the continuum on the board so they got a good visual understanding of where each tool lied on the scale. I gave the students the dots and asked them to perform the convergent tool of HITS on the ideas that were generated for the problem statement while I was teaching them the Idea-Finding so that they could have more practice converging. I wanted more of a balance between their classroom experience with the divergent and convergent thinking tools because I was feeling that they were practicing more diverging tools. I explained to the students that the CPS stages of Solution-Finding and Acceptance-Finding required real detailed convergent thinking so that chosen ideas could become implement able solutions. I wasn’t able to finish with my explanation of the Solution-Finding stage. Specifically I was unable to dig deeper into my instruction of the convergent tools: “P.P.C.O.” and “Card Sort”. I chose to wait on teaching these two tools until another class because I did not want to rush P.P.C.O because the theoretical background behind it is very thick.

Evaluation

For this class I found that it was good that I taught the CPS stage of Idea-Finding and Solution-Finding in the same class so that the students could see the transition of the ideas between the two stages. However, I didn’t finish my entire instruction of the Solution-Finding stage. Along with that, I was unable to teach the students how to use the convergent thinking tool “P.P.C.O.”. I will have to ask Dr. Joyce Juntune to explain the transition between the Solution-Finding stage and the Acceptance-Finding stage. However, I will not ask her to teach the students how to use the “P.P.C.O.” and “Card Sort” tools. I would rather teach the students how to use those tools for the first time myself. I do hope that the students are able to understand how Joyce will be teaching them. I’m starting to realize that for the future I need to I need to finish major parts like teaching a particular stage and not expect another, although CPS Process conscious, instructor to make up that lesson for me.

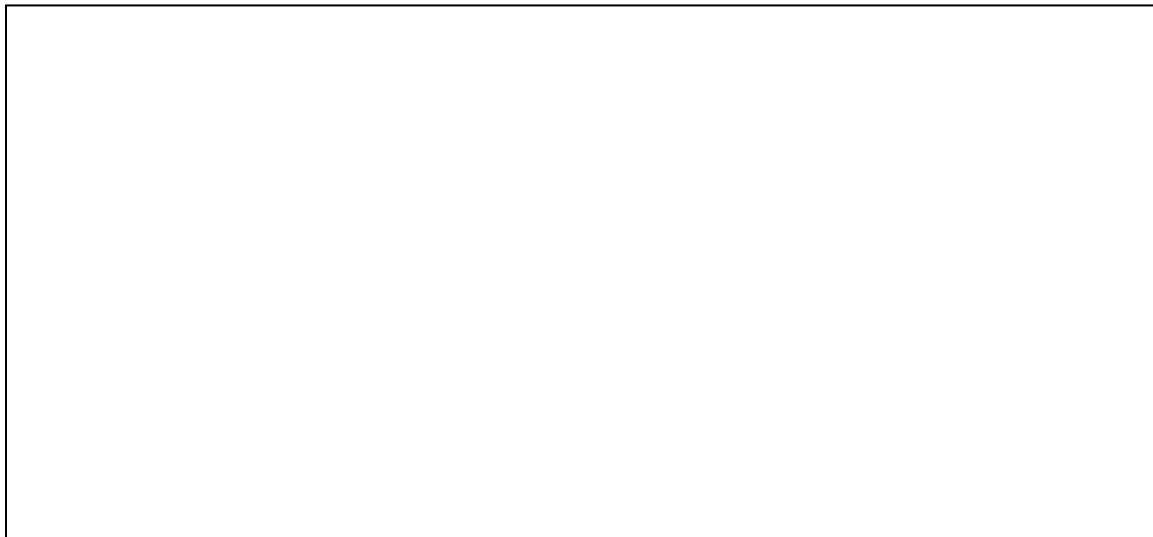
Design

explains which divergent tools render the most novel ideas so the students can see which tools will more likely help people generate the most novel ideas. I will also explain that greater novelty can make an idea more difficult to implement. I will ask them to perform a simple Stick 'Em Up Brainstorming for the previously formulated problem statement as part of my instruction of the Idea-Finding stage so they can see how diverging and converging work together for the Idea-Finding stage. Before this class they will have only really used diverging and converging separately and not specifically with relation to a particular stage. I will then move onto a deeper explanation of the Solution-Finding stage and show the students three specific tools and explain that the number and type (i.e. one idea stands head and shoulders above the rest) of ideas selected from the Idea-Finding stage usually can determine which of the three tools to use for the Solution-Finding stage.

Delivery



Evaluation



27 February 2002: Class 14 of 28

I. Design

- Plan to use a warm-up activity based on the “leap” skill “Produce and Consider Many Alternative.” This will provide the students with a simple warm-up that they will be able to use when facilitating CPS for others. I also Wanted to show the students how they can enhance divergent thinking by using simple idea spurring statements instead of an explicit divergent thinking tool;
- Designed an in-depth lesson on the Idea-Finding and Solution-Finding stages that will use the problem statement generated during the previous class so the students will see the entire CPS Process used for one challenge. I also want to use the problem statement from the previous class to prevent the loss of time that would come as a result of generating a new problem statement;
- Designed a mini-lecture to explain where each divergent thinking tool lies on the novelty scale so that the students understand which tools render more novel solutions and which tools render the more easily implement able solutions; and
- Allowed enough time in the class design to have the students diverge and converge through the Idea-Finding stage because they have not yet used divergent thinking and the convergent thinking together, in one stage, during the same class period.

II. Delivery

- When explaining the novelty scale I drew the scale on the board and placed the divergent tool Where it belonged on the scale so that the students got a visual understanding how much novelty each tool will render with respect to the other tools;
- While digging deeper into the instruction of the Idea-Finding stage I had the students perform the HITS tool on the ideas that they had generated so they would get more deliberate practice with convergent thinking; and
- Because time was running out I chose to wait until the next class to explain the convergent tools, PPCO and Card Sort. I was planning to teach the students how to use the tools when I further explained the Solution-Finding stage.

III. Evaluation

- Was a positive that I taught an in depth lesson about the Idea-Finding and Solution-Finding stages during one class so that the students could see the transition that an idea makes into an implement able solution; and
- For the future I need to teach the major in-depth parts of a particular lesson, for example the in-depth instruction of a CPS stage, and not give that kind of responsibility to a substitute instructor.

Lesson Plan: 4 March 2003: Class 15 of 28

Goals:

- Review the CPS stage of Problem-Finding

Objectives:

The students will be able to...

- communicate implement-able solutions to problems or challenges
- creatively gain acceptance for solutions to problems or challenges

Vocabulary:

1. Acceptance Finding = the sixth and final stage in the CPS Process where a person or persons generate a plan of action for communicating and gaining acceptance for a particular problem solution

Note: This class was delivered by Dr. Joyce Juntune; a faculty member with the Department of Educational Psychology at Texas A&M University. I was out of town due to research business.

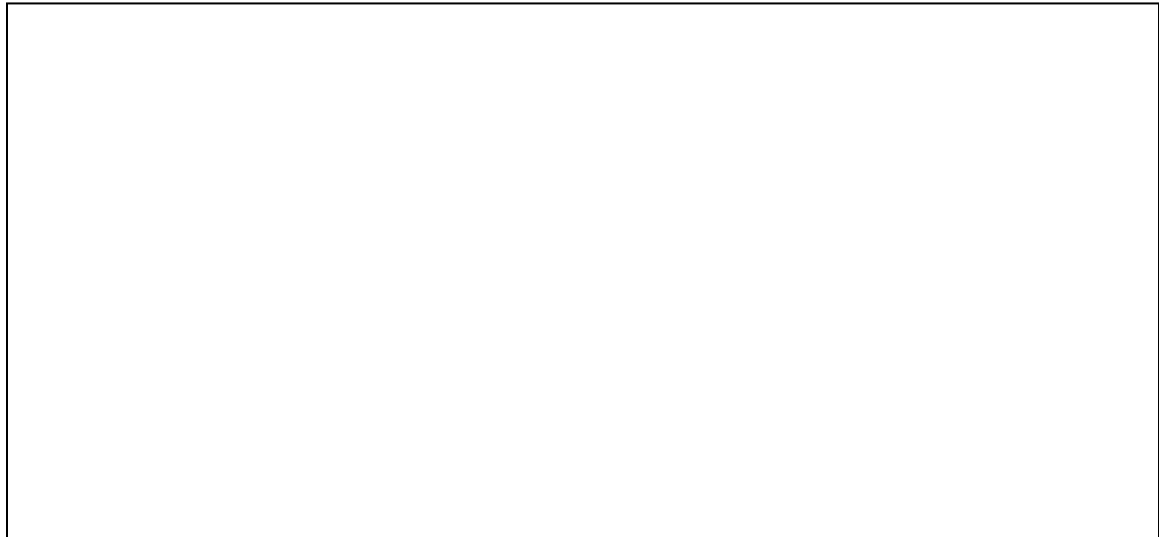
Design: 4 March 2003: Class 15 of 28

This class was designed and delivered by Dr. Joyce Juntune of Texas A&M University and the Department of Educational Psychology. I was not present for this class.

Delivery



Evaluation



Lesson Plan: 6 March 2003: Class 16 of 28

Goals:

- Explain the general theories of self-actualization
- Explain how the general theories of self-actualization effect society

Objectives:

The students will be able too...

- make a parallel between the general self-actualization theories that Dr. Sweeney spoke about and the theory of “self-actualizing one’s creativity” that is discussed in Chapter 1 of the Davis text book

Vocabulary:

1. Self Actualization = Becoming all you can be
2. Self Actualization of your Creativity = Allowing your creativity to become all it can be

Note: This class was delivered by Dr. Don Sweeney; a faculty member with the Department of Landscape Architecture and Urban Planning at Texas A&M University.

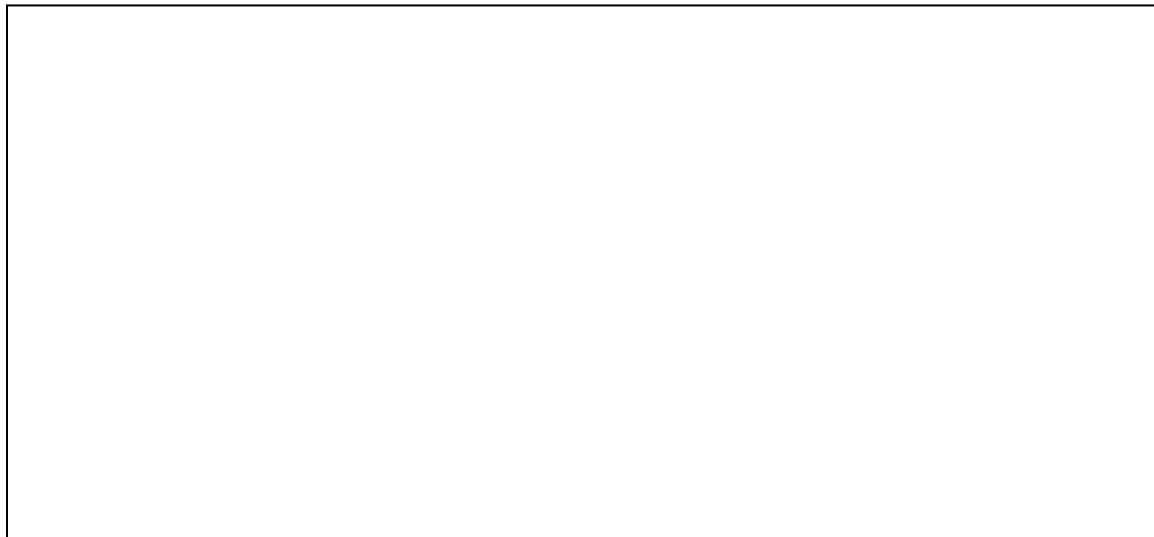
Design: 6 March 2003: Class 16 of 28

For this I asked Dr. Donald Sweeney of Texas A&M University and the Department of Landscape Architecture and Urban Planning, who is a systems planner and futurist, to speak to the students about “Self-Actualization.” I asked the students to read Ch. 1 in the Davis text which focuses on self-actualizing one’s creativity. I wanted Dr. Sweeney to speak so that the students could make a parallel between the theories discussed in the book and how they are currently being practiced in society.

Delivery



Evaluation



Lesson Plan: 18 March 2003: Class 17 of 28

Goals:

- Review the CPS stages of Solution-Finding and Acceptance-Finding
- Explain my “SWARM method of CPS” so that the students gain a better understanding of Facilitating the CPS Process for other people

Objectives:

The students will be able too...

- begin to understand different ways to facilitate the CPS process for other people

Vocabulary:

1. SWARM method of CPS = placing only basic guidelines onto the CPS process and allowing people in a group to individualize the stages and tools for themselves

Heightening Anticipation

- I. Warm-up: Leap Skill “Let It Swing! Let It Ring!”
Note: Kinesthetic activity that will be done outside
 - A. Students will first try to navigate around trees and other obstacles while connected arm to arm with the mutual goal to get from one point to another as a team
 1. They will be unable to bend their arms at the elbows – they have to keep their arms fully extended and locked stiff
 2. They must be creative in their journey as they navigate around the trees and obstaclesExamples:
 - The way you walk
 - The path you take
 3. One main rule to remember: “Don’t hurt anybody, especially any one’s arms!”
 - B. Students will then have to navigate from one point to another through the same set of trees and obstacles as a team but this time they can be disconnected
 1. Each person can choose to pick his or her own path
 2. They must still be creative in their journey
 3. One main rule to remember: “Don’t run into anybody else”
 - C. Return to classroom
 - D. Explain that the warm-up activity will help the students transition into the main section of material that will be covered in today’s class

Digging Deeper

- I. Revisit Joyce’s lesson on Solution-Finding and Acceptance-Finding that she delivered for me in my absence during the last class. Make sure that the students fully grasped the information that she taught.
- II. Moving towards a better understanding of Facilitation of CPS

Lecture: “My SWARM method of CPS”

A. Paradigm of CPS for most people:

- Its linear
- Must use tools exactly as they were designed
- Must use all six stages in order

B. Like a swarm of bees the SWARM method of CPS allows you to...

- personalize the divergent and convergent tools and methods
- jump around between the stages
- just use tools and not explicitly use the stages
- be very flexible

Note: A swarm of bees looks quite organized from the outside but it is very chaotic on the inside, however, the swarm still reaches its goal.
A formation of F-14 fighters is very organized and rigid both inside and out. It is not very flexible, yet, it too also reaches its goal.

Note: Show diagram from original manuscript write-up

Extending the Learning

- I. Read: Parnes text – pp. 111-144
- II. Begin looking for a client for the Facilitation Project

Sources Used to Prepare Class

1. Parnes text
2. Firestien, Miller, Vehar
3. My paper on the “SWARM method of CPS”

Supplies for Class

1. Text books
2. Lesson Plans
3. White Board Markers
4. Facilitation Toolbox

Design: 18 March 2003: Class 17 of 28

The design of this warm-up was inspired by the Leap Skill “Make It Swing! Make It Ring!” The first part of the warm-up is designed to show the students that the linear practice of the Creative Problem Solving Process teaches people that with a group you can use the divergent and convergent thinking tools but you are unable to easily personalize the tools. If you do veer off the beaten path to far with relation to the tools too much you might, like in the kinesthetic exercise, hurt someone or collide with them. The second part of the warm-up will show the students that a non-linear or swarm approach to the practice of the Creative Problem Solving Process allows for each person who is using the process to personalize the tools in order to suit their own needs and desires. I will explain though, that with this method you still can’t run into people (i.e. you must defer judgment just like in the linear method), but it is open enough and flexible enough so that you can change the tools and process around to fit you. With this type of practice you do not have to worry about hurting or disturbing others as they use the tools and process because the other people are able to be as

Delivery

The fact that the warm-up activity for this class was kinesthetic activity was particularly good for this class. The activity got the students out of their chairs and engaged after a week long Spring Break vacation. For the last week the students have not had to sit in small, uncomfortable desks in a white room with florescent lights. This activity got the students moving. This activity was good for me as well, I did not realize until class started how drained my Spring Break vacation trip had made me. I needed a boost back into the instruction mode and this warm-up helped do that. Before moving deeper into my SWARM Method I did review what the students should have learned from Dr. Juntune during the class on March 4th. I did find that I had to clarify the Acceptance-Finding stage for a few students who had not quite understood how Dr. Juntune had taught it. When I began my in depth lecture on the SWARM Method of CPS I found that it was helpful for the students and my self that I used diagrams to show how the SWARM Method works. I explained to the students how I came up with the SWARM Method through reading an article that did not

Evaluation

For the future when a class that I am teaching meets back for the first time after a long vacation like Spring Break, I will make sure that the entire class time is designed around kinesthetic instruction so that I can help the students get their energy back. I need to make the class focus on reactivating their brains. This kind of class design will not only help the students get re-acclimated to my course but it will also help them get re-engaged with their other courses as well. For me as an instructor before a class like this I need to consciously reactive myself, because for this class I was drained and I think that part of the reason the students energy was so low was because they could not feed off of my high energy, it was not existent for this particular class. With reference to having to revisit the content that Dr. Juntune taught the students during the March 4th class, this was the second time that the students were unable to fully grasp how Dr. Juntune taught the information. This has shown me that for the in a future class when I need another person to fill in for my absence from the class I will not ask them to teach on the direct content of the course focus. I will merely ask them

Design

flexible as you. After the warm-up I will quickly touch base with the students with relation to the class on March 4th in which Dr. Juntune taught the class in my absence. I want to make sure that the students fully grasped her explanation of the parts of Solution-Finding that I was unable to teach, as well as the transition into and the content of the Acceptance-Finding stage. I will then dig into the lecture that I prepared which focuses on what I call the SWARM Method of CPS. This lecture is designed to show the students the potential flexibility of the CPS Process and that the CPS Process and the divergent and convergent thinking tools that are used to compliment the CPS Process can be manipulated and personalized so that they can better suit an individual's or group's needs and desires.

Delivery

specifically focus on the field and study of creativity. I did this to show that the students should explore other research and information gathered by other domains and disciplines other than creativity as they search for their Implicit Theory of Creativity. I told them “don't just read the class text books to find your Implicit Theory, look at other domains because creativity effects and is effected by other research and knowledge that is produced by other disciplines; it is not just the 4Ps of Creativity.”

Evaluation

to teach something that is perhaps off topic but related to the focus of the class in some way. An example of this would be Dr. Sweeney's lecture of “self-actualization”. Another example would be asked an instructor to teach about Systems Theory or Chaos Theory. This will not only give the students exposure to information from other domains and disciplines of study, but it will also take the pressure off of me to ensure that the instructor teaches a specific set of information so as to make my return to the class more efficient. It will also prevent the students from getting confused about the direct content of the course. With reference to my lecture on my SWARM Method of CPS, I would have liked to have a video, or more polished diagrams to help me explain the theory. I also noticed that because I had not looked over the theory since I had written the paper explaining the theory, which was many weeks again, my lecture and explanation of the theory was not as smooth as it would have been had I done it immediately after I had written the paper. This is something to remember for the future.

18 March 2002: Class 17 of 28

I. Design

- Designed the warm-up for this class based on the “leap” skill “Make it Swing! Make it Ring” to help the students see how the flexibility of the CPS Process will help someone personalize the process to his or her own specific and unique needs;
- Allowed enough time in this class design to touch base with the students with the reference to Class 15. I had a substitute instructor fill in for my absence and I wanted to ensure that the students fully grasped the Solution-Finding and Acceptance-Finding stages; and
- Designed a lecture for this class to show the students the potential flexibility of the CPS Process and how the stages and tools can be manipulated and personalized so that they can better suit an individual’s or group’s needs and desires.

II. Delivery

- The warm-up was a kinesthetic exercise and forced the students to get out of their seats and get engaged in an activity. This seemed to be a necessity because the students had just returned from a week long Spring Break vacation and needed to be stimulated;
- Used diagrams to explain the structure of my personal theories related to the potential flexibility of the CPS Process to help the students grasp the concepts more easily; and
- Explained to the students that the formulation of the theory I was explaining was the result of an article I had read that was not related to the field of creativity. I wanted them to understand how important information in other domains is to the formulation of theories and concepts in the field of creativity.

III. Evaluation

- For the future when students return for the first time to class after a long vacation, like Spring Break, I need to make sure that the entire class is designed around kinesthetic instruction so that the students get reengaged in active learning;
- For the future, as the instructor, when returning from a long vacation I should consciously regain my own energy for teaching before reentering the classroom. I believe that part of the reason that the students’ energy was low was because they could not feed off my energy since it was also low;
- For the future when I need another instructor to teach a class for me as a result of my absence or when I ask a guest lecturer to speak to my class, I will not ask that person to cover material that is considered key content of the course. I will do this to prevent the students from getting confused with the course content; and

- For the future when I present my lecture on the potential of the CPS Process I should have a video or more polished diagrams to help better explain the theory in a visual manner.

Lesson Plan: 20 March 2003: Class 18 of 28

Goals:

- Review the Divergent Thinking Tools

Objectives:

The students will be able too...

- effectively use all the Divergent Thinking Tools that have been discussed in class to date

Vocabulary:

1. N/A

Heightening Anticipation

- I. Warm-up: Leap Skill “Let the Humor Flow – and Use It”
 - A. This warm-up activity is based on the improvisation game called “Props”
 - B. For this activity I will split each team into teams of two
 - C. Each team will be give an object that has no utilitarian function and cannot be identified as a particular everyday object (the objects that I will use for this activity were made by me from different materials)
 - D. Each team will have to use the prop to perform a humorous short skit with the purpose of making all the other students laugh
 - E. After one team performs a skit then the next team will perform a skit and this will continue for 2 rounds
 - F. Then the teams will swap “props” and perform another 2 rounds

Digging Deeper

- I. Tool Review – Divergent Tools
 - A. Ask the students to write down and major concerns they have with relation to their comprehension of all the divergent thinking tools they have learned thus far this semester
 - B. List all the divergent tools that they have learned on the board
 - Traditional Brainstorming
 - Stick ‘Em Up Brainstorming
 - Brainwriting
 - Forced Connections
 - Word Dance
 - S.C.A.M.P.E.R.
 - Morphological-Matrix (Idea Box)
 - Ladder of Abstraction
 - C. For each tool ask the students to voice the concerns they wrote down
Note: If for any tool no one voices a concern just move onto the next tool

Extending the Learning

- I. Read: Parnes text – pp. 145-154

Sources Used to Prepare Class

1. Parnes text
2. Firestien, Miller, Vehar

Supplies for Class

1. Text books
2. Flip Chart Paper
3. Mr. Sketch Markers
4. Masking Tape
5. Lesson Plans
6. White Board Markers
7. 3x5 Yellow Post-Its
8. Facilitation Toolbox

Design: 20 March 2003: Class 18 of 28

For the warm-up to this class which will focus on the Leap Skill of “Let the Humor Flow – and Use It”, I wanted to show the students how humor can affect the success of the divergent and convergent thinking tools, the creative process, and the ideas that are generated. The design of this warm-up was taken from the Television Show “Who’s Line Is It Anyway”. On the show the skit is also called “Props”. I wanted the students to grasp the point that they should use humor to make the divergent and convergent thinking tools and the Creative Problem Solving Process as well as their Implicit Creative Process more rich and successful when it comes to creative output. With relation to the content of this class, in which I will tackle any concerns that any of the students have with relation to all of the CPS Divergent Thinking Tools that the students have been taught thus far this semester, I will attempt to hit home the point that the students should “know your tools and know how to use them in many different ways.” The main purpose of this review is to ensure that the students have a good, strong grasp of the divergent tools they have learned.

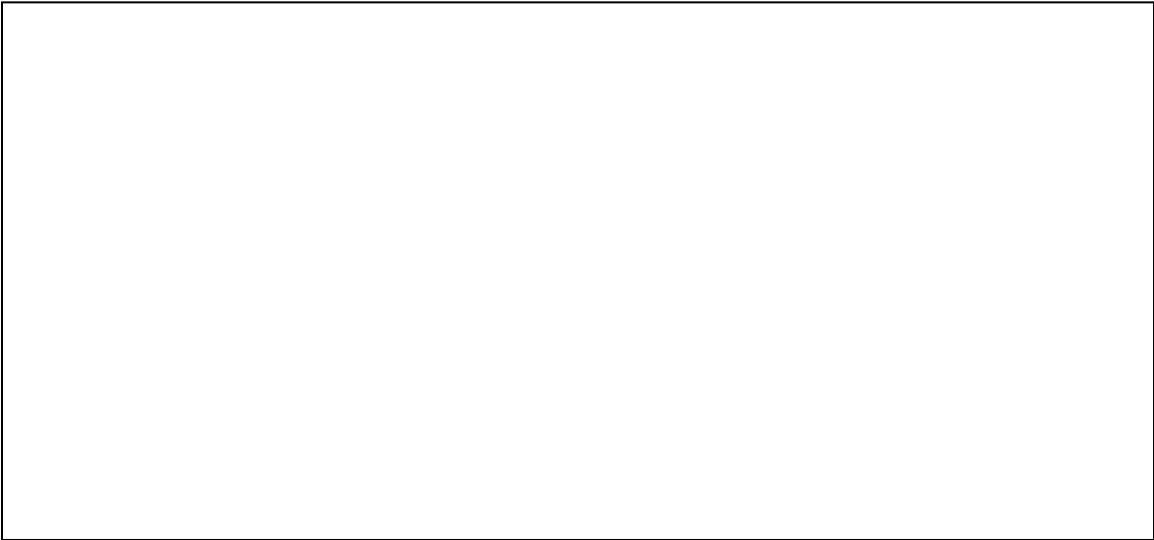
Delivery

As a result of the warm-up activity the students were able to laugh which, I noticed, helped the more internal and introverted students open up to the rest of the class. The students were also glad to have a change of scenery. Before having the students participate in the warm-up activity I decided to take the materials and students outside. It was a nice day and I felt like being out of the white walled room with not much natural light and in an environment that is very open and natural would be more conducive to the humor that I wanted the students to use for this activity. As a result of one of the students being absent from the class this day I had to pair up with one of the students so that every student could participate in the activity. This was very enjoyable for me because this activity is one of my favorite improvisation skits. I also like the opportunity to be involved in the class to the same capacity as the students. I felt like a student and not like an instructor which for me made the experience much more fun, instead of just getting to watch the students perform their skits. When we dug into the main content for this class I did ask the students to voice their concerns

Evaluation

The method by which I asked the students to voice their concerns with relation to any of the divergent thinking tools that they had learned thus far this semester proved to be a good way to ensure that each student had completely grasped each tool. Some students did need a complete review of certain tools. This showed me that I had not taught those specific tools well from the beginning of their introduction to the students. So as a result this activity turned out to be a huge learning experience and effective evaluation of my effectiveness in introducing, explaining and demonstrating the divergent thinking tools that I had been teaching. For the future I will take more care in continually asking the students to make some type of formal or informal evaluations of my effectiveness as an instructor as many times as possible throughout the course of a semester. This will ensure that the students are grasping the information more than any exam ever would.

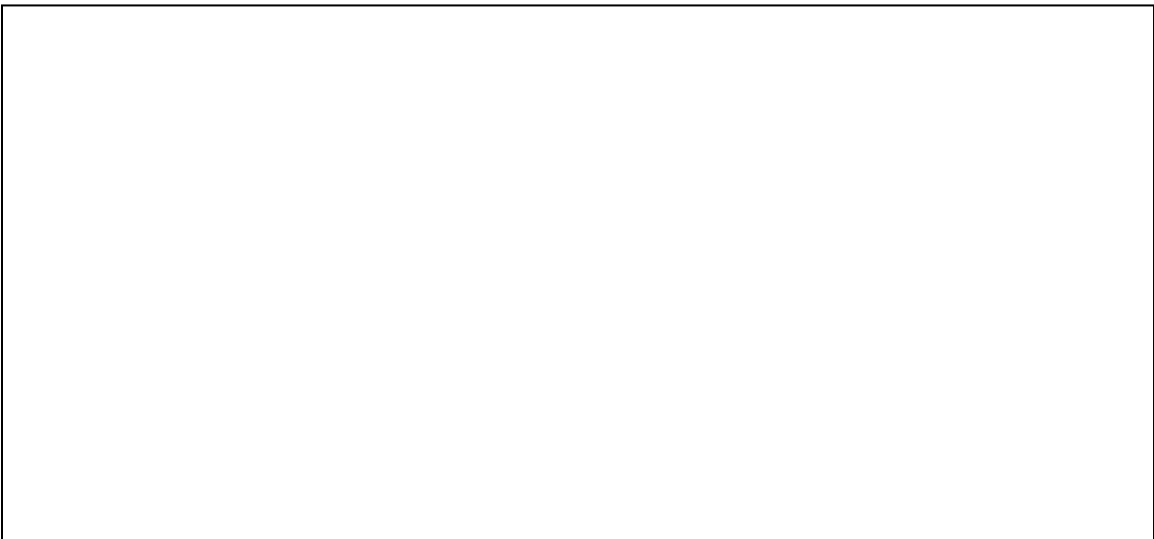
Design



Delivery

about the tools that they were confused about. I did ask them to formulate their concerns in the form a “How to...” statements so that they could see how helpful using a positive statement starter was to making a concern have the potential for being made to work. I told them “Stating your concerns in ‘How to...’ statements allows you to face your concerns, tackle them and then overcome them.”

Evaluation



20 March 2002: Class 18 of 28

I. Design

- Designed the warm-up activity for this class by using inspiration from the “leap” skill “Let the Humor Flow” as well as the impromptu comedy skit “props” in order to show the students how the use of humor can positively affect the success of the divergent and convergent thinking tools; and
- Designed this class to review with the students all the divergent thinking tools they have learned this semester so that I can not only help them overcome any concerns they might have with a particular tool but also to make sure the students have a good grasp of each tool so they can use them in many different ways.

II. Delivery

- Had the students perform the warm-up activity outside to give them a more open climate with the hope that the openness would help the students be more free with their thoughts and humor; and
- When reviewing the divergent tools that the students had learned this semester I asked them to voice any concerns that they had with a particular tool in the form of a “How to...” statement so they could see how using a positive statement starter can help a concern be overcome.

III. Evaluation

- Having the students state their concerns about their comprehension of each divergent thinking tool was a good way to ensure that each student has grasped the basics of each tool;
- As a result of some students needing a complete review of how certain tools work, I realized that I have not effectively taught how to use certain tools;
- The review of the divergent tools proved to be a good learning experience and an effective evaluation of my effectiveness in introducing, explaining' and demonstrating to the students how to use the tools; and
- For the future I will take more care in continually asking students, throughout the semester, to complete some type of evaluation of my effectiveness as an instructor. This will help me gauge whether or not the students are grasping the information that I am presenting.

Lesson Plan: 25 March 2003: Class 19 of 28

Goals:

- Review the Convergent Thinking Tools

Objectives:

The students will be able too...

- effectively use all the Convergent Thinking Tools that have been discussed in class to date

Vocabulary:

1. N/A

Heightening Anticipation

- I. Warm-up: “Keep Open” – Anecdotal story that shows how keeping open can help you find acceptance for a solution to a problem
 - A. Read story from Firestien book “Leading on the Creative Edge” about Art Frye and how he got the Post-It Note accepted by 3M and consumers
 - B. Explain how converging in CPS is not only for finding the best solution to a problem but it is also about finding acceptance for that solution

Digging Deeper

- I. Tool Review – Convergent Tools
 - A. Ask the students to write down and major concerns they have with relation to their comprehension of all the convergent thinking tools they have learned thus far this semester
 - B. List all the convergent tools that they have learned on the board
 - Highlighting
 - Hits
 - Clustering
 - Restating into “Problem Statements” and “Idea Clusters”
 - Evaluation-Matrix
 - Card Sort
 - P.P.C.O.
 - C. For each tool ask the students to voice the concerns they wrote down
Note: If for any tool no one voices a concern just move onto the next tool
- II. I will have to do an in depth instruction of Card Sort and P.P.C.O. because I never really got to do an in depth explanation and instruction of those two tools before this class

Extending the Learning

- I. Review Parnes text – pp. 111-144
- II. Continue preparing for Facilitation Project

Sources Used to Prepare Class

1. Parnes text
2. Firestien, Miller, Vehar

Supplies for Class

1. Text books
2. Flip Chart Paper
3. Mr. Sketch Markers
4. Masking Tape
5. Lesson Plans
6. White Board Markers
7. 3x5 Yellow Post-Its
8. Facilitation Toolbox

Design: 25 March 2003: Class 19 of 28

The warm-up which is based on the Leap Skill of “Keep Open” will be used to help the students see a real life situation that shows an example of when acceptance-finding was used to get a solution to be a big success. It will also be used to show that Acceptance-Finding was not designed as part of the Creative Problem Solving Process for the purpose of giving someone the opportunity to list the Assistors and Resistors to and idea and then to make a Plan of Action for implementing that idea, but it was also designed to help people go out and find acceptance in a creative way for that idea. The same method of instruction will be used, with reference to fielding the students concerns about the convergent thinking tools that they have been taught, that I used for the divergent tools during the last class. However, I do realize that I will have to start from scratch with my instruction of the convergent tools: “P.P.C.O.” and “Card Sort” because I have not yet been able to introduce those tools to the students.

Delivery

Some of the students had missed classes when I had explained certain converging tools so I was forced to go back and completely re-explain from the start some of the convergent thinking tools that I had taught in the past. There were not too many big questions about the Evaluation-Matrix tool which made me feel that they had fully grasped that tool. I had been worried about the student’s comprehension with relation to that tool because when I first introduced and taught the students how to use Evaluation-Matrix they didn’t quite understand it. I was not surprised when the students voiced their concerns about the fact that they did not know anything about the convergent tools: “P.P.C.O.” and “Card Sort”. I knew that I was going to have to start from the beginning with the instruction of those two tools. I was glad that I did have an ample amount of time to teach those tools. I knew that I would need time since they are both very different types of tools as well as being quite thick in their structure.

Evaluation

My desire for this class was to be a review of the previously learned convergent thinking tools so that, like the last class, I could make sure that the student’s had a full grasp of how to use each tool. However I was forced to completely re-teach some of the divergent and convergent tools that I had already introduced to the class earlier in the semester as well as having to introduce new tools that I had not had the chance to introduce before this class. With this said for the future I need to make sure that I have taught all the tools that I am going to review during a class like this. I felt like some of the students were getting redundant information, especially with reference to the tools that I had to completely re-teach as a result of students who had been absent in the past and needed some old tools completely re-taught from the beginning. For the future I should find a way to help catch up the absent students so that this class that is designed for tool review can focus more deeply on the questions about details related to the use and structure of specific thinking tools instead of having to focus on the surface / beginner instruction of certain tools.

25 March 2002: Class 19 of 28

I. Design

- Designed the warm-up for this class based on the “leap” skill “Keep Open,” because I wanted the students to see an example of a real life situation when acceptance-finding was used to turn a solution into a big success. I also want to show that Acceptance-Finding was not just designed to give people the opportunity to list assistors and resistors for an idea or for making a plan of action, but that it can also help people go out and find acceptance for a particular idea in a creative way; and
- Designed this class to review with the students all the convergent thinking tools they have learned this semester so that I can not only help them overcome any concerns they might have with a particular tool but also to make sure they have a good grasp of each tool.

II. Delivery

- Had the students state their concerns with each convergent tool in “How to...” statements. I was not surprised when all the students asked for a complete review of the tools PPCO and Card Sort since I had not yet been able to fully explain those tools; and
- Provided extreme detail with respect to the PPCO and Card Sort tools so that the students had a good grasp on all the convergent tools that I had introduced during this semester.

III. Evaluation

- For the future I need to make sure that I have introduced and fully explained the tools before conducting review of those tools; and
- For the future I should find a way to help the students that were absent when I first introduced a particular tool to gain the needed information so that they are ready for a review of the tools. During a review I want to focus more on the details of the use and structure of a specific tool instead of having to focus on the introduction and surface of a tool.

Lesson Plan: 27 March 2003: Class 20 of 28

Goals:

- Explain the purpose of a “Facilitator Tool Kit”
- Explain and show what supplies make up a “Facilitator Tool Kit”
- Explain which Divergent and Convergent Tools work best with each CPS Stage
- Explain the Task Analysis Process
- Explain what a Process Buddy is and what the purpose of a Process Buddy

Objectives:

The students will be able too...

- construct an effective “Facilitator Tool Kit”
- decide which Divergent or Convergent Tool works best with each CPS Stage
- use the Task Analysis Process before performing a CPS Facilitation for a client
- successfully and efficiently use a Process Buddy as well as serve as a Process Buddy

Vocabulary:

1. Facilitator Tool Kit = a collection of materials that are used by a CPS Facilitator so that he or she can more effectively facilitate the CPS Process for a person or a group of people
2. Task Analysis Process = the process used by a CPS Facilitator so that they can gain the maximum amount of information from a client about the challenge or problem before the Facilitation takes place
3. Process Buddy = a person that assists a CPS Facilitator with the processes of a CPS Facilitation

Heightening Anticipation

- I. Warm-up: Leap Skill: “Breakthrough – Extend the Boundaries” an activity in group dynamics from the book “Joining Together” by Johnson and Johnson
 - A. Have a normal day of the week broken down into two hour increments and then write the break down on the board
 - B. As the students come into class have them pick a section of time and ask them to write two tasks they normally do during that span of time in the space on the board that I provided for that time
 - C. When all the time slots are filled in have the students work as a group to separate the tasks that require only themselves to perform from the tasks that require another person or group of people

Note: This activity should show that a large amount of the tasks the students perform during a normal day require other people

 - D. Parallel this fact with the idea that CPS can be used to solve a personal problem, but it can also be used to facilitate another person’s or groups of person’s problem

Digging Deeper

- I. What is a “Facilitator Tool Kit”

- Show the supplies that are good for a facilitator to have so that a CPS Session runs smoothly – be specific with relation to each of the divergent and convergent tools
- II. What divergent and convergent tools work best for each CPS stage?
- A. Explain and list on the board which CPS stage or Stages work best with each divergent and convergent tool that the students have been taught thus far this semester
- B. Divergent Tools:
- | | | |
|----|----------------------------|-----------|
| 1. | Traditional Brainstorming | Any Stage |
| | Stick 'Em Up Brainstorming | |
| | Brainwriting | |
| 2. | Force Connections | P-F / I-F |
| 3. | Ladder of Abstraction | P-F / I-F |
| 4. | S.C.A.M.P.E.R. | I-F |
| 5. | Word Dance | P-F |
| 6. | Morphological-Matrix | I-F |
- C. Convergent Tools:
- | | | |
|----|-----------------------------------|-----------------------------|
| 1. | Hits | Any Stage |
| 2. | Clustering | P-F / I-F / S-F / A-F |
| 3. | Restating into Problem Statements | P-F / I-F / A-F |
| 4. | Restating into Idea Clusters | I-F |
| 5. | Card Sort | M-F / P-F / I-F / S-F / A-F |
| 6. | Evaluation-Matrix | S-F |
| 7. | P.P.C.O. | S-F |
| 8. | S-M-L (Action Plan) | A-F |
| 9. | Assistors / Resistors | A-F |
- III. How do you do a Task Analysis and a Debrief? Why are they necessary?
- A. Pass out sheet of Task Analysis questions to each student and explain
- B. Explain how to conduct a debrief after a CPS Session
- IV. What is a Process Buddy? How can they help the Facilitator?

Extending the Learning

- I. Review Parnes text – pp. 145-154
- II. Review divergent and convergent tools and facilitation methods from notes and text. Be prepared to facilitate any one of the divergent or convergent tools in front of the class during the next class.

Sources Used to Prepare Class

1. Parnes text
2. Firestien, Miller, Vehar

Supplies for Class

1. Text books
2. Masking Tape
3. Lesson Plans
4. White Board Markers

5. Facilitation Toolbox

Design: 27 March 2003: Class 20 of 28

The purpose of the warm-up activity for this class, which is designed around the Leap Skill “Breakthrough – Extend the Boundaries” and an exercise from the book “Joining Together” by Johnson and Johnson, will be to show the students that a large amount of the tasks that humans perform during a normal day require other people to be involved. I will parallel this understanding with the idea that Creative Problem Solving can be used to solve not only personal problems and challenges but it can also be facilitated to help a group of people solve a group problem. After the warm-up I will show the students what a Facilitator Tool Kit is so that they understand the supplies and materials that are good for someone to have if they wish to facilitate a group through a CPS Session as opposed to only using the CPS Process on them selves. I will then show the students what tools work best for each CPS stage so that they can more easily decide before facilitating a CPS Session which tools they will need to prepare to use after it is decided which stages they will be facilitating. I will give the students a list of Task Analysis questions and explain how to conduct a Task

Delivery

For the warm-up activity I had the students fill in the time slots as they arrived in order to save time. I had the students use me as the scribe while they decided which tasks only required themselves so that every student could be involved in the decision making process. The tasks that required only themselves to perform I crossed off with a line so that the tasks that require groups to perform would be more highlighted. About half of the tasks were left after the cross off which showed the students that about half of their day requires interaction with other people. This was less than I had expected according to the research the “Joining Together” text presented, but the student’s reactions showed their understanding of the importance of them learning how to facilitate the CPS Process for groups. After the warm-up I drew a matrix on the board that showed each tool and which stages each tool worked best in so that the students could get a good visual comprehension of that information. I handed out the Task Analysis Question sheets that were produced by different faculty at Buffalo State so that the students had samples of the types of questions that have been used in the

Evaluation

For the future I will not try to pack all this information into one day right before a major project is due in which the information could be useful for the project’s success (i.e. the Facilitation Project). This puts a lot of pressure on the students to synthesize this information right before needing to use it for such a project. I did not like the fact that I had to breeze through my delivery of the Task Analysis and Debrief information. For the future I need to spend at least a whole class day on those two pieces. I should also give each student a chance to practice a Task Analysis in class with a fellow student just as I did with the divergent and convergent thinking tools; I gave the students time to practice them in class so that they could ask me questions. It was good that I had the Task Analysis question sheets since I did not have much time to dig deeply into the Task Analysis lesson. If I had spend more time on teaching the Task Analysis and Debrief methods I would not have had to feel obligated to offer to help the students with their outside Facilitation Projects. Again this is just another example to show that I should not try to teach students anything about how to

Design

Analysis. During this explanation I will share with the students that a Task Analysis helps the facilitator determine where the client is with relation to the challenge they have so that the students know which stage to start with when facilitating a CPS Session. I will then explain how to conduct a debrief after a CPS Session and then make the point that the purpose of a debrief is to help the Facilitator improve his or her skills for future CPS Sessions. I will also briefly explain the role of a process buddy so that the students know that they can ask someone else to handle the small details of a CPS Session which will allow them as the Facilitator to focus on the overall Session, Client and Resource Group's needs.

Delivery

past and proven to help facilitators determine where a client is with relation to the CPS Stages. I did explain that I could serve as the student's process buddy or they could use a fellow student to be their process buddy if they desired to have the assistance for their Facilitation Project. I did this as a way to lesson the burden of the student's first time CPS Facilitation. I also said that I could sit in on their Task Analysis of the client and help them to plan the CPS Session if they were not comfortable doing it alone.

Evaluation

facilitate the CPS Process in the same semester that I teach those same students, for the first time, how to use the Creative Problem Solving Process Model for themselves.

27 March 2002: Class 20 of 28

I. Design

- Designed warm-up based on the “leap” skill “Break through-Extend the Boundaries,” and an exercise from the book, *Joining Together* (Johnson & Johnson, 1994) in order to show the students that a large amount of the tasks that humans perform during a normal day require other people. I will parallel this understanding with the idea that CPS can be used to overcome, not only personal challenges, but that it can also be facilitated to help a group of people overcome a challenge;
- Plan to show the students what a Facilitator’s Kit looks like so that they understand what supplies and materials are good to have if someone wants to facilitate a group through the CPS process; and
- Designed a mini-lecture to show that students what divergent and convergent thinking tools work best with each CPS stage so that they can more easily decide, before facilitating a CPS session, which tools they will need to prepare to use.

II. Delivery

- Because some students were consistently arriving a few minutes late to class, as each student arrived I had he or she do a part of the warm-up individually. After everyone arrived and preformed their part of the warm-up, I then lead the whole class in a discussion about the activity and how it applies to the class content;
- Drew a matrix on the board that showed each divergent and convergent tool along with the CPS, stages that each tool works best with, so that the students could get a visual comprehension of the information;
- Presented the students with questions that are samples of questions professional facilitators use to perform a Task Analysis so the students would have an understanding of how to perform that type of interview;
- Explained how a process buddy can assist a facilitator during a CPS facilitation. I told the students they could use a process buddy for their own Facilitation Projects to help lessen the burden of a first-time facilitation; and
- I also stated that I would sit in on the Task Analysis Interview and help with the planning of any student’s Facilitation Session if any student felt uncomfortable doing in without guidance.

III. Evaluation

- For the future I will not teach all the information from this class right before a major facilitation project is due because this type of information would be a major asset to the students during the planning stages of such a project;
- For the future I need to devote at least an entire class to the in-depth instruction of the Task-Analysis and Process Planning pieces of CPS;
- When teaching a lesson on how to perform a Task Analysis, for the future I should have the students pair up practice the Task Analysis Interview with their partners; and

- The fact that I did not have enough time in this semester to deliver an in-depth lesson on Task Analysis and Process Planning shows that I should not try to teach any principles of facilitation during an introductory course on CPS.

Lesson Plan: 1 April 2003: Class 21 of 28

Goals:

- Allow the students to facilitate at least one Divergent and Convergent thinking tool in connection with a CPS Stage

Objectives:

The students will be able to...

- facilitate a Divergent Thinking tool in connection with a CPS Stage
- facilitate a Convergent Thinking tool in connection with a CPS Stage

Vocabulary:

1. N/A

Heightening Anticipation

- I. Warm-up: "leap" skill – "Be Flexible"
 - A. Have students fold their arms across their chest
 - B. Then ask them to unfold their arms
 - C. Thirdly, ask the students to fold their arms in the opposite way (i.e. if the first time, they naturally folded their arms right over left, then have them fold their arms left over right)
 - D. Ask them: "How did this make you feel?" "Did this make you feel uncomfortable?"

Digging Deeper

- I. Practicing the Facilitation of a Divergent and Convergent Tool and Moving through the CPS Process at the Same Time:
 - A. The students will facilitate a divergent and convergent tool for me as the client and the rest of the class will serve as the resource group
 - B. Problem Statement: (based on a common problem used for practicing the CPS process) "IWWMI use 500,000 pounds of frozen turkey?"
 - C. Assign each student to facilitate one of the divergent and one of the convergent tools that they have learned over the course of the semester
 - D. Ask the first student to start with problem finding. I will list off the pertinent facts before starting as though I had already completed the Mess-Finding and Fact-Finding stages
 - E. The divergent and convergent tools that are to be facilitated are in a specific order so that each tool is matched with its most suitable stage
 - F. Randomly assign each student to facilitate one divergent and one convergent tool
 - G. This facilitation activity will take two days to complete
 - H. When all of the tools have been facilitated, I will then share with the students how CPS was used to solve this problem for a real company and because of CPS the idea of microwavable T.V. dinners was born
- II. The organization of the tools with reference to the CPS Stages

Problem-Finding Stage:

- Ladder of Abstraction (Divergent)
- Word Dance (Divergent)
- Card Sort (Convergent)

Idea-Finding Stage

- Stick 'Em Up Brainstorming (Divergent)
- Forced Connections (Divergent)
- S.C.A.M.P.E.R. (Divergent)
- Brainwriting (Divergent)
- Morphological-Martix (Divergent)
- Hits (Convergent)
- Clustering (Convergent)
- Restating into Idea Clusters (Convergent)

Solution-Finding Stage

- Traditional Brainstorming to Generate Criteria (Divergent)
- Evaluation-Matrix (Convergent)
- P.P.C.O. (Convergent)

Acceptance-Finding Stage

- Assistor / Resistor (Divergent/Convergent)
- S-M-L (Convergent)

Extending the Learning

- I. If you have not facilitated both or any of your tools yet, review the tools that you are assigned to facilitate and be prepared for the next class to facilitate them

Sources Used to Prepare Class

1. Parnes text
2. Firestien, Miller, Vehar

Supplies for Class

1. Text books
2. Flip Chart Paper
3. Mr. Sketch Markers
4. Masking Tape
5. Lesson Plans
6. White Board Markers
7. 3x5 Yellow Post-Its
8. Facilitation Toolbox

Design: 1 April 2003: Class 21 of 28

For this warm-up which is related to the Leap skill "Be Flexible", I will ask each student to cross his or her arms in front of his or her chest. I will then ask them to uncross their arms and then re-cross them in the opposite way. I will ask "How does that feel?" "Is it uncomfortable?" It should feel uncomfortable. I will use this exercise to explain that facilitating the CPS Process for a group of people is much different than using it for your self on a personal problem. It may feel uncomfortable at first, especially if you don't like getting up in front of people. I will use this exercise to stress the point about being flexible with relation to trying new experiences but also to stress the point in a quick manner because for the next two classes the time will be really tight if I want to finish all the activities that I have planned. For this class the students will get randomly assigned by me to facilitate on divergent and one convergent thinking tool so that they can feel what it is like to facilitate both types of thinking while in a safe laboratory type of climate. I am using a fun and simplistic problem statement so that it is easier for the students to facilitate the divergent and

Delivery

The warm-up moved quickly but it did make an impact on the students understanding of the importance of being flexible with their exposure to new experiences. As the students began to facilitate the divergent and convergent thinking tools, it was obvious that the students had really understood and grasped the instruction of each of the tools that they were facilitating. They were all very successful and effective in their facilitations. One student who had to facilitate the divergent thinking tool, S.C.A.M.P.E.R. was very nervous as they began to facilitate the tool. At first this student did not feel that they really knew how to facilitate the tool well. However, this student merely asked two or three simple idea spurring questions with relation to the problem statement and the ideas, especially the wild and crazy ideas, really started to flow from the resource group. As the ideas began to flow this same student became more and more comfortable and confident with their facilitation abilities.

Evaluation

The warm-up activity was good, it made its point but was short and simple which was really necessary for this class. It was nice to see that the students, even though some of them admitted that they were uncomfortable facilitating in front of the class, were willing to flex a little and take a risk by trying something different and new. It was even better to be able to watch those stretching experiences positively affect the student's personality and demeanor in class.

Design

convergent thinking processes of myself (the client) and the rest of the students (the resource group). I will have each tool assigned to a specific stage of the CPS Process starting with Problem-Finding. I will assign each tool to the stage that I feel it works best with. I will state a few pertinent fact and explain that the facts were a result of me having already completed the Mess-Finding and Fact-Finding stages. The reason I will have the students start with Problem-Finding is because I feel that they will learn more about the effectiveness of each tool if we specifically only focus on the Problem-Finding, Idea-Finding, Solution-Finding, and Acceptance-Finding stages of the CPS Process. Whatever tools the students do not get to facilitate during this class will be completed during the next class day.

Delivery

Evaluation

1 April 2002: Class 21 of 28

I. Design

- Prepared to use a warm-up activity that related to the “leap” skill of “Be Flexible” because I wanted to help the students realize that facilitating the CPS Process for a group of people is much different than using the Process for a personal challenge and that it might feel uncomfortable. I wanted them to understand that being flexible helps alleviate that discomfort;
- Designed this class to give each student the opportunity to facilitate one divergent thinking tool so that they can feel what it is like facilitate while in a safe climate;
- Designed a simple challenge for the students to facilitate so that the facilitation is less stressful on the students; and
- Decided to begin the facilitation exercise with the Problem-Finding stage because I believed that the students will learn more about the effectiveness of each tool if the class focuses on the Problem-Finding, Idea-Finding, Solution-Finding and Acceptance-Finding stages.

II. Delivery

- During the facilitation one student was very nervous as they began to facilitate one of the divergent thinking tools. At first this student was very honest in admitting that they did not feel like they knew this tool well enough to facilitate it. However, as the ideas began to flow this student became more and more comfortable and confident with their facilitation abilities.

III. Evaluation

- It is obvious that the experiences that force the students to stretch outside their comfort zone positively affect their personality and demeanor in class.

Lesson Plan: 3 April 2003: Class 22 of 28

Goals:

- Allow the students to facilitate at least one Divergent and Convergent thinking tool in connection with a CPS Stage

Objectives:

The students will be able too...

- facilitate a Divergent Thinking tool in connection with a CPS Stage
- facilitate a Convergent Thinking tool in connection with a CPS Stage

Vocabulary:

1. N/A

Note: The design of this class was merely a continuation of the content that did not get completed during Class 21 on April 1st. Refer to the design notes for Class 21 in order see what the process and content was. I will not lead a warm-up activity for this class.

Extending the Learning

- I. Review section on “Facilitation” in Parnes text. Pay attention to what he says about debriefing a CPS session. Be prepared to discussing debriefing for Class 23.
- II. Complete Facilitation Project and Write-up. Write-up must be digitally submitted by Tuesday, April 15th.

Sources Used to Prepare Class

1. Parnes text
2. Firestien, Miller, Vehar

Supplies for Class

1. Text books
2. Flip Chart Paper
3. Mr. Sketch Markers
4. Masking Tape
5. Lesson Plans
6. White Board Markers
7. 3x5 Yellow Post-Its
8. Facilitation Toolbox

Design: 3 April 2003: Class 22 of 28

The design of this class was merely a continuation of the content that did not get completed during Class 21 on April 1st. Refer to the design notes for Class 21 in order to see what the content was.

Delivery

I did not take the time to facilitate a warm-up activity for this class. I just wanted the students to dig right into the content of the class by immediately picking up with the tool facilitation where the class left off at the end of the last class. The class was able to complete the facilitation of all the tools so that each student was able to have an in-class experience with facilitating one divergent and one convergent thinking tool. Before the class ended I did explain that the problem statement that I am using for these two classes was in fact a real problem statement from a poultry company. And, as a result of using CPS the company invented microwavable T.V. dinners. I told the students about the nature of the problem statement to give them just another example of how CPS has positively affected an organization's growth in some way.

Evaluation

The fact that I did not use a warm-up for this class really affected the dynamics of the class. The students had gotten so accustomed to having at least a simple activity at the beginning of each class to get them focused on the class so that they could be engaged more easily in the content. By not having a warm-up activity the result unfortunately was quite a bit of confusion in getting the class started. I did this to save time but in reality it took more time away from the class because the students were not deliberately lead into a focused mode. For this class the main key learning that I can bring away for the future is the need for warm-ups. They are a must. Even with a short time frame something, even simple, is necessary. However, no matter how long or short the class is, heightening the anticipation of the students and warming the students up to the days content is always a must.

3 April 2002: Class 22 of 28

I. Design

- Designed this class as a continuation of Class 21 to give each student the opportunity to facilitate one convergent thinking tool.

II. Delivery

- Did not facilitate a warm-up activity for this class because I wanted the students, when they arrived to the classroom, to immediately engage in the class content by beginning their facilitation of the convergent thinking tools; and
- Explained to the students that the problem statement used during this class and class 21 is a real problem statement that, as a result of using CPS to solve, rendered the invention of microwavable T.V. dinners. I did this to show the students another example of how CPS has positively affected an organization's growth.

III. Evaluation

- Not using a warm-up activity for this class negatively affected the dynamics of the class. The result was that the students were confused as we began class. It took more time to get the class started because the students did not have a warm-up activity to deliberately focus their attention on the class content; and
- For the future I realize that no matter how much time is allowed for the class, warm-up activities are a key part of an affective class dynamic.

Lesson Plan: 8 April 2003: Class 23 of 28

Goals:

- Explain the debriefing process that is normally performed after a CPS Facilitation Session

Objectives:

The students will be able too...

- debrief a person or group of people after they have facilitated the CPS Process

Vocabulary:

1. CPS Debrief = the process of synthesizing all the information (content and processes) that was exchanged during a CPS Facilitation Session. A CPS Debrief is performed by the CPS Facilitator after the CPS Facilitation Session has taken place.

Note: Dr. Joyce Juntune was supposed to teach this class in my absence. At the last minute, when I was already out of town she notified me that she would be unable to teach the class. I was forced to notify the students that they would not be having class for this day.

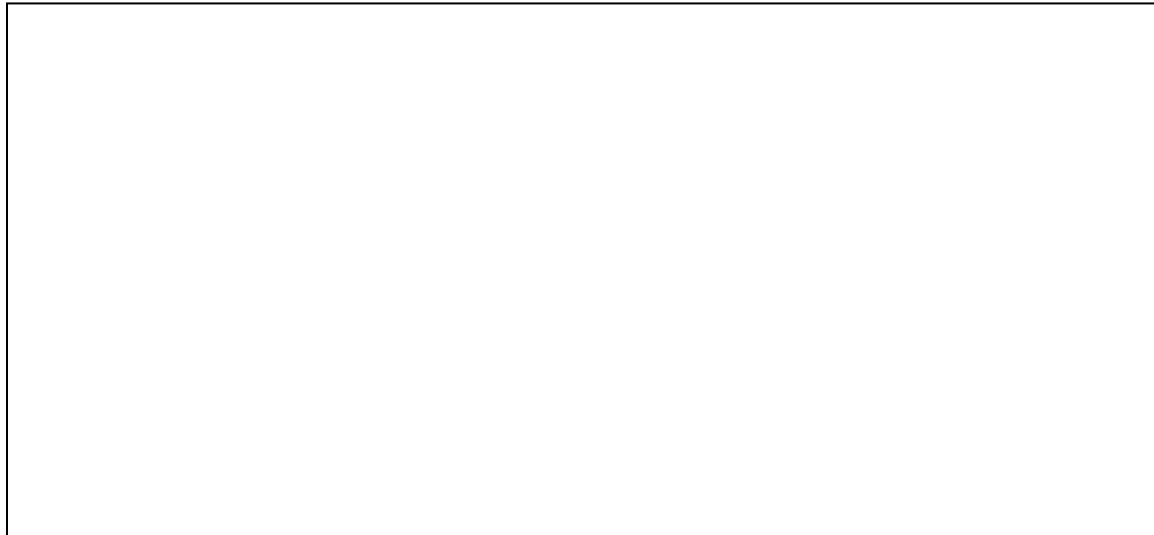
Design: 8 April 2003: Class 23 of 28

Dr. Joyce Juntune was supposed to teach this class in my absence. At the last minute, when I was already out of town she notified me that she would be unable to teach the class. I was forced to notify the students that they would not be having class for this day.

Delivery



Evaluation



Lesson Plan: 10 April 2003: Class 24 of 28

Goals:

- Explain the debriefing process that is normally performed after a CPS Facilitation Session

Objectives:

The students will be able too...

- debrief a person or group of people after they have facilitated the CPS Process

Vocabulary:

1. N/A

Note: For this class I asked Professor Rodney Hill of the College of Architecture at Texas A&M University to speak to the students about the creation of new knowledge and the future of knowledge in our society. I wanted this lecture to follow the students' facilitation project submissions so that they could see how important understanding deliberate and teachable creative processes will be in the future world market. I want them to understand that "those who have the tools for creating knowledge will be the leaders in tomorrows economy."

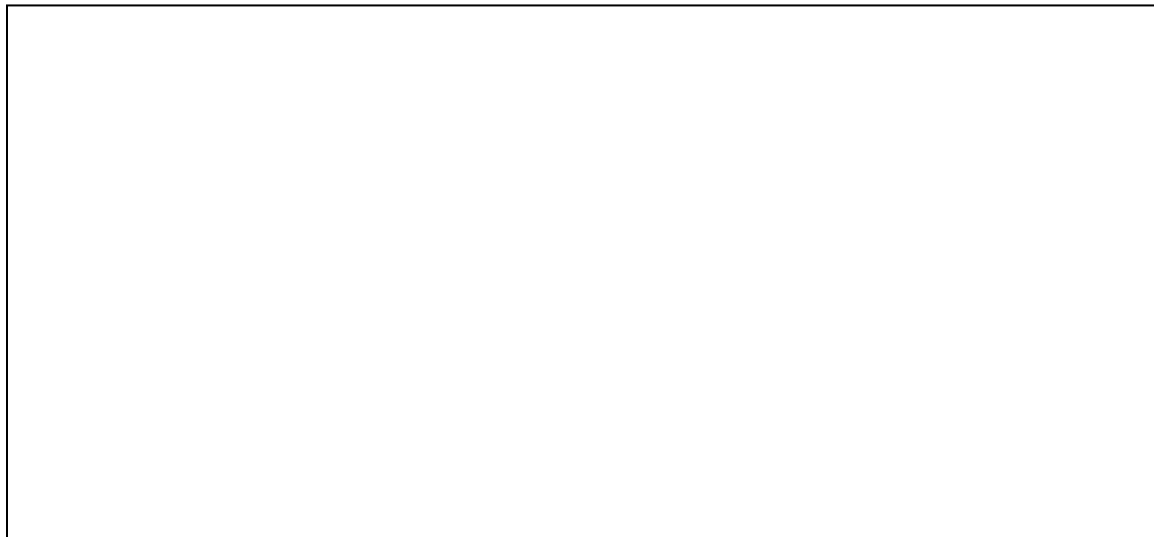
Design: 10 April 2003: Class 24 of 28

For this class I asked Professor Rodney Hill of the College of Architecture at Texas A&M University to speak to the students about the creation of new knowledge and the future of knowledge in our society. I wanted this lecture to follow the students facilitation project submissions so that they could see how important understanding deliberate and teachable creative processes will be in the future world market. I want them to understand that “those who have the tools for creating knowledge will be the leaders in tomorrows economy.”

Delivery



Evaluation



Lesson Plan: 15 April 2003: Class 25 of 28

Goals:

- Discuss the definition and importance of Implicit Theories of Creativity
- Explain my Implicit Theory of Creativity – “Third Culture Semantics”

Objectives:

The students will be able to...

- understand what an Implicit Theory of Creativity is and why it is important
- construct their own Implicit Theory of Creativity

Vocabulary:

1. Implicit Theory of Creativity = a single person’s own, un-juried theory of creativity

Note: This class was canceled due to a central Texas power outage that left the Texas A&M University campus and the entire town of College Station without electricity. I decided to move my lecture on “Third Culture Semantics” to the next class. For the next class I will also allow time to explain in more detail the Implicit Theory Paper assignment.

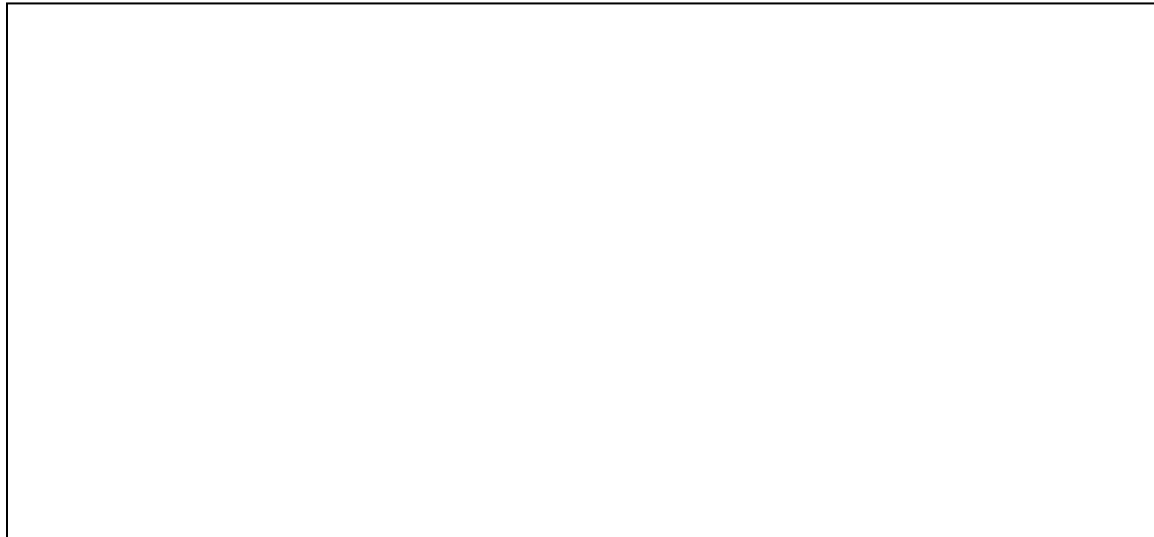
Design: 15 April 2003: Class 25 of 28

This class was canceled due to a central Texas power outage which left the Texas A&M University campus and all of the town of College Station without electricity. I decided to move my lecture on "Third Culture Semantics" to the next class. For the next class I will also allow time to explain in more detail the Implicit Theory Paper assignment.

Delivery



Evaluation



Lesson Plan: 17 April 2003: Class 26 of 28

Goals:

- Discuss the definition and importance of Implicit Theories of Creativity
- Explain my Implicit Theory of Creativity – “Third Culture Semantics”

Objectives:

The students will be able too...

- understand what an Implicit Theory of Creativity is and why it is important
- construct their own Implicit Theory of Creativity

Vocabulary:

1. Implicit Theory of Creativity = a single person’s own, un-juried theory of creativity

Heightening Anticipation

- I. Warmup: “leap” skill – “Be Original”: “look for the original way to look at creativity”
 - A. What is Language?
 1. Ask the students to brainstorm out loud all the ways they think a human can communicate
 2. Then ask the question “If speaking, and writing, and drawing, and hand gestures are part of language, then is thinking part of language; can you have a language of thinking?”
(This will be a thought provoking question, not for discussion. Its’ purpose will be to direct the students’ pattern of thought into my lecture on “Third Culture Semantics”)

Digging Deeper

- I. What is an example of an Implicit Theory?
Lecture: “Third Culture Semantics” - One of my Implicit Theories
 - A. Will present to the students one of my implicit theories related to my studies of creativity
 - B. Refer to lecture outline and notes
- II. Discuss implicit theory paper requirements:
 - A. Explain what I expect from the students implicit theory papers
 - B. Must be at least 300 words long
 - C. Do not write for more than 3 hours
 - D. Write the entire paper in one sitting, don’t take any long breaks
 - E. You can use your creativity learning journal as a reference for organizing your thoughts but do not put any source citations in the paper
(The style and presentation can be left up to the students own preferences)

Extending the Learning

- I. Each student will submit a printed copy of their Implicit Theory Papers – due next class
Creativity Learning Journals are due next class

Sources Used to Prepare Class

1. Parnes text
2. Firestien, Miller, Vehar
3. My paper on “Third Culture Semantics”

Supplies for Class

1. Text books
2. Lesson Plans
3. White Board Markers

Design: 17 April 2003: Class 26 of 28

The purpose of the warm-up for this class, which was inspired by the Leap skill “Be Original”, will be to help the students understand that an implicit theory of creativity is all about looking at the study and discipline of creativity in an original and novel way. I want the students to understand that even though there is a discipline focused on the study of creativity that there is still plenty of room for creative and novel thinking in that discipline and especially in the research and development of the discipline. The idea behind this particular warm-up activity for this class is to have a segue into my lecture on one of my implicit theories called “Third Culture Semantics” which focuses on the language of thinking creatively. I will present my “Third Culture Semantics” lecture so that the students can see what type of thinking is involved in the explicit formulation of an Implicit Theory. After my lecture I will then explain what I expect of the students with relation to their Implicit Theory Papers so they are not confused when they begin writing.

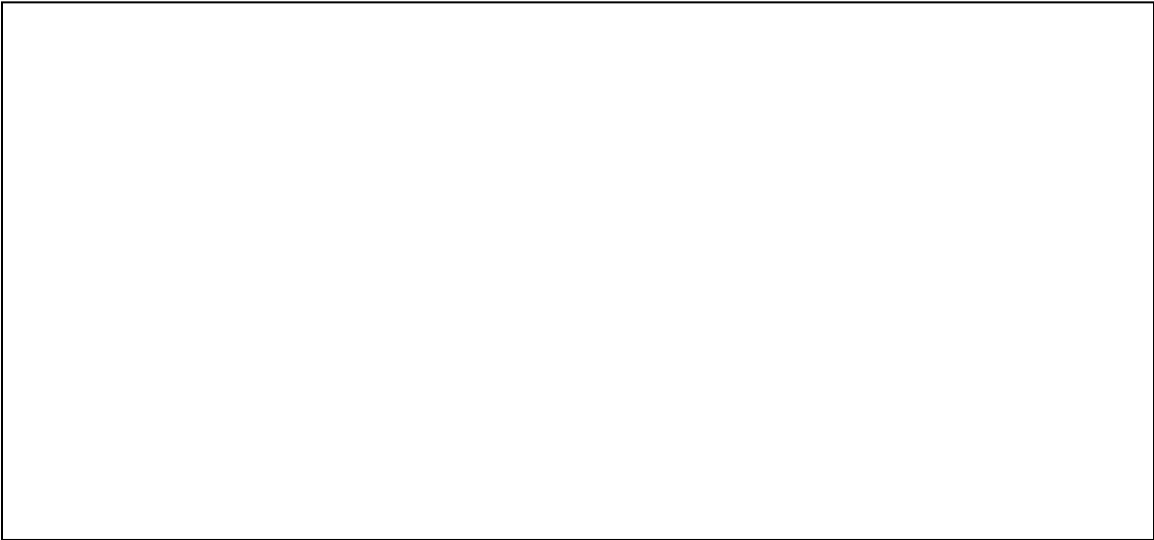
Delivery

I found that the students were quite intrigued by my thought provoking question that I asked at the end of the warm-up activity. I was glad that I asked it because I do believe that it caused the students to start incubating as well as anticipate the content that I was about to present in my lecture on “Third Culture Semantics”. I had a set of diagrams that I had already prepared which I used to open up the context and background of the theory. I could tell that by presenting the background of my theory in the form of visual diagrams the students were more easily able to grasp the concepts that I was trying to get across to them. Many of the students voiced their intrigue with the subject matter of my theory and were very interested to see the future of who the theory would develop. This made me happy to see that the students were excited about my personal beliefs and theories related to the study of creativity. After I finished my lecture and began to explain what I expected from the students with relation to their Implicit Theory Papers I did explain that my personal theory had been in development for almost a year and in no way to expect them to present their

Evaluation

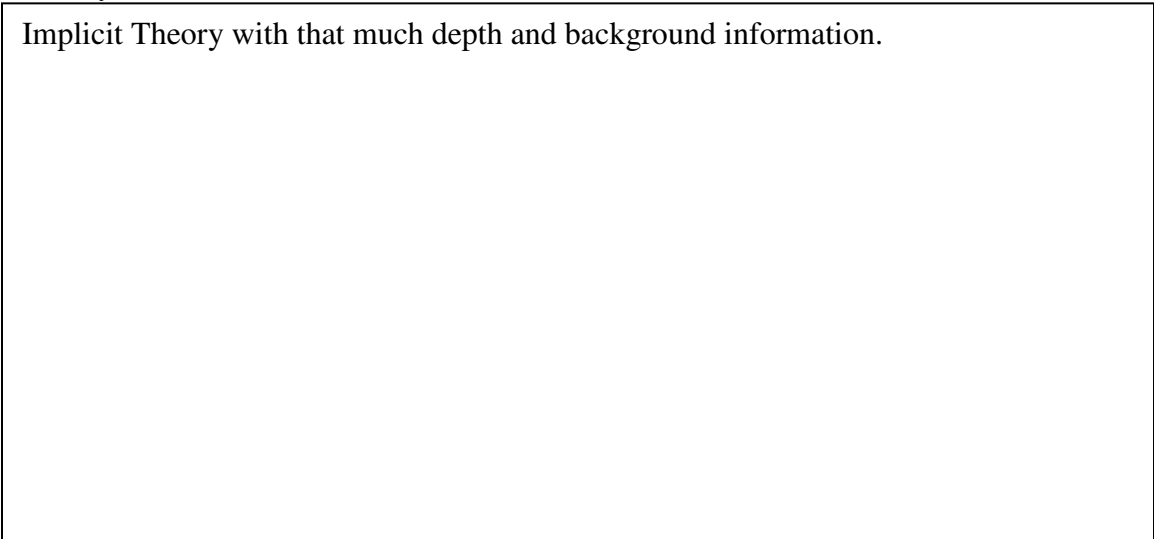
I was not sure if the warm-up that I had designed as an anticipation activity for my “Third Culture Semantics” lecture would in fact help the students to begin to grasp from the beginning of class the concepts and information that I was trying to portray in my explanation of the theory. However I did find that the rhetorical question that I asked before beginning my lecture was a good way to provoke the student’s thoughts and incubation on the subject. I realized over the course of the semester I had not asked thought provoking questions that just merely asked the students to incubate and not respond. For the future will make sure to make that a big part of the content of any class that I teach. For the future with relation to this lecture and content area I will redesign the warm-up activity so that it is more engaging since the lecture itself was more about me talking and presenting information I feel that the warm-up should be a more kinesthetic or active warm-up so that the students can have a more engaging experience mentally as well as physically.

Design

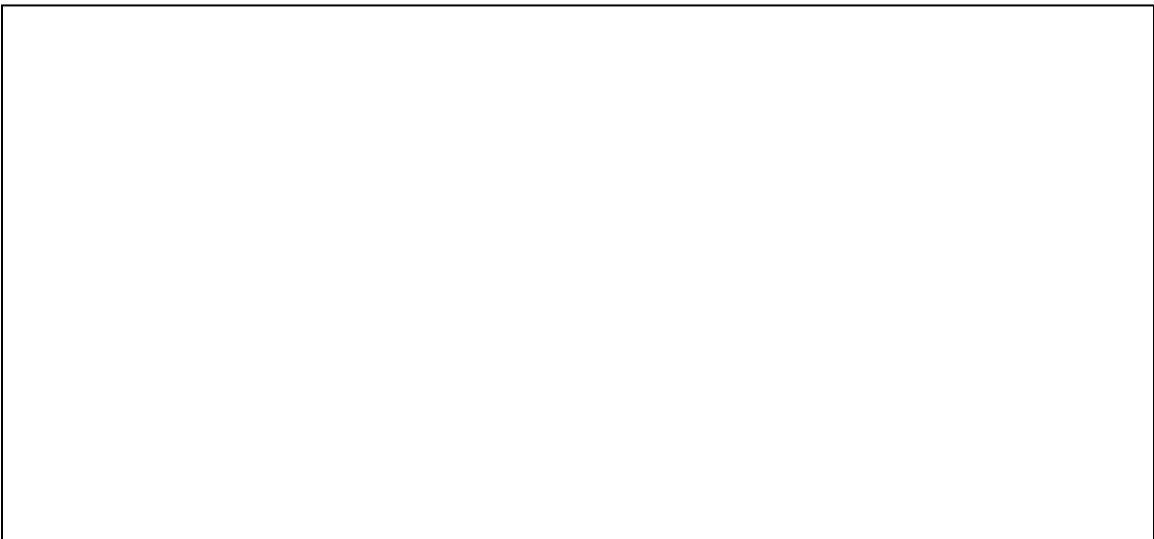


Delivery

Implicit Theory with that much depth and background information.



Evaluation



17 April 2002: Class 26 of 28

I. Design

- Designed the warm-up activity for this class based on the “leap” skill “Be Original” to help the students understand that an implicit theory of creativity is partly a result of a person looking at the study and discipline of creativity in his or her own original and novel way. I also want the students to understand that even a discipline that focuses on the understanding of creativity has plenty of room for original and novel thinking; and
- Designed a lecture on one of my own implicit theories of creativity called “Third Culture Semantics” so that the students will have a chance to see what type of thinking is involved in the formulation of an implicit theory.

II. Delivery

- Asked a question at the end of the warm-up activity in order to further heighten the students’ anticipation for my lecture on “Third Culture Semantics”; and
- Presented the background information related to my implicit theory in the form of diagrams so the students could also visually grasp the concepts of the theory.

III. Evaluation

- The question I asked at the end of the warm-up activity proved to be a good way to provoke the students’ thinking around the subject of my lecture on “Third Culture Semantics”;
- For the future, throughout the semester, I need to ask more thought provoking questions that will give the students more opportunities to incubate on specific course content; and
- For the future, with relation to the content delivered during this class, I need to redesign the warm-up activity so that it is more engaging and kinesthetic since the actual content is delivered using a more standard lecture format.

Lesson Plan: 22 April 2003: Class 27 of 28

Goals:

- Demonstrate for the students how I facilitate a CPS Session using a Problem Statement, Client and Resource Group
- Explain the purpose of a Resource Group

Objectives:

The students will be able too...

- see how a more experienced CPS Facilitator works with a real Problem Statement, Client and Resource Group

Vocabulary:

1. Resource Group = a group of people who are brought in to help generate ideas during a CPS Facilitation Session

Heightening Anticipation

- I. Explain that during this class the students will have the opportunity to participate in a CPS Session where they will be able to see their instructor facilitate

Digging Deeper

- I. Warm-up: "What if..." questioning game.
 - A. Give every student a 3x5 yellow post-it note and a Mr. Sketch Stix marker
 - B. On the top half of the post-it have every student, in his or her own way, finish the statement "What if..."
 - C. Have each student pass his or her post-it to the student on his or her left (right)
 - D. On the bottom half of the post-it, have each student answer the "What if..." statement that he or she has now obtained
 - E. Have one student read the "What if..." statement on the post-it that they have obtained (don't allow them, however, to read the answer)
 - F. Then have the person to that student's left (right) read only the answer to the "What if..." statement that that student has obtained
 - G. Continue this cycle until all the "What if..." statements and answers have been read

Note: I will participate in this warm-up by writing on a post-it the statement "What if I have \$25,000 dollars?" as a way to segue into the problem statement that I will facilitate during this class

- II. The Problem Statement: "IWWMW use \$25,000?"
- III. Fact-Finding: have the student who presented me with the article about the competition that related to the above problem statement read aloud the competition's rules and regulations
- IV. Idea-Finding: have the students and any visitors serve as the resource group and ask them to generate ideas around the Problem Statement
- V. Have the resource group generate ideas until the class time has nearly expired

- VI. The student who presented me with the competition idea had the desire to use the student as a resource group to generate ideas. That student wanted to converge on the ideas at a later date along with anyone else in the class who was interested in the competition

Extending the Learning

- I. Tell the students to prepare to discuss their Implicit Theories during the next class

Sources Used to Prepare Class

1. Parnes text
2. Firestien, Miller, Vehar

Supplies for Class

1. Flip Chart Paper
2. Lesson Plans
3. Facilitation Toolbox

Design: 22 April 2003: Class 27 of 28

At the end of the last class one of my students approached me with an advertisement for a contest sponsored by VISA. VISA was asking for people to submit their most innovative ideas with relation to the problem statement "How would you use 25,000 dollars?" Whom ever submitted the most innovative and creative idea would be given the 25,000 dollars in order to implement the idea. This student asked if for this class we could use CPS to generate ideas for the contest. I decided to restructure this class because I thought this would be a good excuse for the students to have the opportunity to see their instructor facilitate a CPS Session. I decided to make the student who approached me with the contest advertisement the client of the problem since they had a sincere interest in entering the contest. I also felt that this would be a good way for the students to synthesize all the knowledge that they had gained about CPS as the semester was coming to a close. I invited two of the main faculty members of the University that are in charge of setting up the Institute for Applied Creativity. They were also the faculty who asked me to teach this course.

Delivery

For this class I used an old warm-up, the "What if..." game because I had figured out a way to design this activity so that it would segue perfectly into the content of the problem statement that the class was going to generated ideas about. During the facilitation of the problem I was very excited about the connection that I felt with the students. This facilitation was almost a review for the students to show how well they had grasped the CPS concepts that I had taught them. Throughout the facilitation I would even find myself naturally prompting the students to tell me the next step or define a concept that I was about to use for the facilitation. It was almost as if the students, because of their new gained knowledge about the CPS Process, not only knew what I was doing with relation to the tools and stages that I was facilitating, but they also knew, because of their recent experiences, what I was going to do next. I was glad that the faculty members of the Institute had come to this particular class so that they could see how well the students had grasped these particular concepts of creativity theory and application.

Evaluation

I was very excited about the outcome of this class. It was a very good way to synthesize all the information that the students had learned about CPS and creativity in general throughout the course of the semester. I was especially pleased at the fact that the students were able to finally see me facilitate a CPS Session for a real problem statement. I did think is was a good thing however that I waited until after the students had completed their Facilitation Projects before having them see me facilitate so that they were not discouraged about having to Facilitate the CPS Process for the first time. For the future I will remember this factor when designing a similar type of class. For the future I will also make sure to use a similar type of activity to gauge how well the students comprehended the knowledge that they received throughout the course of a semester so that I can continually see were I need to be more effective in my instruction. This for me was the perfect instructor evaluation of the effectiveness of my methods of teaching.

22 April 2002: Class 27 of 28

I. Design

- Designed this class to give the students the opportunity to see me facilitate a CPS Session. I also designed this course in order to give the students the opportunity to synthesize all the knowledge that they had gained about the Creative Problem Solving Process.

II. Delivery

- Used a warm-up that I felt would best transition into the problem statement that the students were going to be generating ideas for.

III. Evaluation

- This class proved to be a good way to synthesize all the information that the students had learned throughout the semester about the CPS Process and creativity in general;
- I believe it was a positive that I waited to facilitate a CPS session until after the students had completed their Facilitation Projects so that they were not discouraged as a result of seeing a more experienced facilitator in action; and
- For the future I will use a similar type of class activity to evaluate how well the students have comprehended the information that they received throughout the course so that I can more effectively guide my instruction as needed.

Lesson Plan: 24 April 2003: Class 28 of 28

Goals:

- Debrief the key learning that the students and myself had as a result of the entire semester-long course
- Discuss the student's Implicit Theory Papers

Objectives:

The students will be able to...

- understand the Implicit Theories of Creativity that their fellow students hold

Vocabulary:

1. N/A

Heightening Anticipation

Warmup: "leap" skill – "Get Glimpses of the Future"

- Ask the students to name one way in which they can see themselves using the methods and tools that they learned in this class sometime in the near future
- Have them simply say it, don't have them elaborate too much with details

Digging Deeper

- I. Class discussion on the student's key learning that they gained as a result of doing the Facilitation Projects
- II. Class discussion on the content of the student's implicit theory papers
- III. Return the Creativity Learning Journals to the students
- IV. Collect a list of the student's current and most commonly used email addresses
- V. Close Down Class

Extending the Learning

- I. Go forth and conquer

Sources Used to Prepare Class

1. The students' Implicit Theory Papers

Supplies for Class

1. Text books
2. Lesson Plans
3. White Board Markers

Design: 24 April 2003: Class 28 of 28

Because this was the final class of the semester and as a result the last time that I would have the students as students in my class, I wanted the warm-up to portray the desire that I had for the students with relation to what I wanted them to do with the knowledge that I had given them over the entire course of the semester. Because of this the Leap skill of "Get Glimpses of the Future" inspired the warm-up activity for this class. At the beginning of the class I will merely ask the students to talk about how they see themselves using the concepts and methods that they had learned in this class down the road in their future. I will make this activity as well as the rest of this class very informal and discussion oriented. The other main purpose for this class will be to have the students discuss their key learning that they gained from the course so that they could walk away realizing that they had in fact gained new knowledge that they did not have before taking this class. Before closing down the course I will also allow time for the students to discuss with the rest of the class their Implicit Theories that they had formulated for their Implicit Theory Papers. I will do this so that each

Delivery

The content and process of this course was quite suitable for the close down of such a course. I asked the students as they came into class to answer two questions on the board that would relate to what would be discussed in the class. I did this to save time and to allow the students a chance to succinctly articulate the answers to these specific questions. I decided this method for gaining the answers to these questions at the last minute before the class had begun. The first question I asked related to the key learning that the students had gained from the course and the second question related to how the students felt about the effectiveness and uniqueness of the class structure. This activity ended up being a good mode for discussing the student's key learning about the course content. The students were also very engaged in the discussion of their Implicit Theories and I could tell that many of them had come to learn that when they express a belief I am the type of instructor that will expect a reasoning for or data to backup that belief. It was obvious that the students were prepared for that.

Evaluation

All in all I do believe that this close down class was a effective and meaningful way to close down the semester. The process of having the students write down their key learning, with relation to the course, on the board proved to be a very effective way to get direct answers to that type of question. I will remember this process for future courses. However, for the future I think I would like to have the last class of a semester be more engaging and energetic. I would like the students to come away from the course excited about the content they had learned over the course of the entire semester. I also want the last day of a course to be fun and have a sense of playfulness and fantasy. Especially with a course that focused on creative thinking. This would also be good for student's morale since with relation to most of their other courses they are probably going to be feeling a high amount of stress as a result of final exams approaching. This class should be a class that helps students release some stress and pressure in their academic lives.

Design

student will have the opportunity to expound on any information or concept that they felt they could not get across in their writing. I also want to do this activity so that the students are forced to explain their beliefs in an environment where they will be asked why they believe a certain way but also be asked such questions in an environment that is not threatening to their personality or intelligence.

Delivery

Evaluation

24 February 2002: Class 28 of 28

I. Design

- Designed the warm-up based on the “leap” skill “Get Glimpses of the Future” as a way to show the students what they can do with the knowledge that they had gained from this course;
- Designed part of this class in order to give the students the chance to discuss the key learning that they have gained from this course so they walk away realizing that they have gained new knowledge; and
- Designed part of this class to allow the students to discuss their Implicit Theories so that each student will have the chance to expand on any information or concepts that they feel are not well presented in their writing. I also want to spend time discussing the Implicit Theories in class so the students are forced to explain why they believe a certain way but not in such a manner that will threaten their personality or intelligence.

II. Delivery

- Asked each student, as they came into the classroom, to write on the board their responses to two questions that were related to their key learning for the course. I did this in order to save time as well as to allow each student the chance to fully articulate his or her responses to the questions.

III. Evaluation

- The process of having the students write their key learning for the course on the board, proved to be a very effective way to get direct answers to these questions; and
 - For the future I would like to design the last course of the semester in away that is more engaging, fun, playful and energetic.
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SECTION V: **CONCLUSION**

Introduction

Section V contains the Key Learning Points that resulted from a Cross-Site Analysis performed across all the Within-Site Summaries (found in Section IV). For the Cross-Site Analysis I looked at all three sections (Design, Delivery and Evaluation) of each Within-Site Summary; noting common threads that happened across all the class days. From this analysis, overall insights were developed into Key Learning Points that have the potential of impacting the future design and delivery of related courses on Creative Problem Solving. The Key Learning Points are, as suggested by Miles and Huberman (1994), presented in a less narrative format; and, are listed in no particular order.

Key Learning Points

Warm-Up Exercises:

Warm-up exercises were used in 20 of the class days analyzed and summarized using Within-Site Analysis (see Section IV). Failing to use a warm-up exercise at the beginning of a class period seemed to have a negative effect on the students. The warm-up exercise seems to help focus the attention of the students. Student focus and engagement is further amplified when the warm-up activity is directly related to the content of the class lesson. Concurrently, all but 1 of the 20 warm-up activities were inspired by one of Torrance and Safter's (1999) "leap" skills. By designing the warm-up activities around a "leap" skill, the students are continually reminded, that the focus of the course is to deliberately enhance their capacity for creativity.

Class Timing:

Each class period was scheduled (based on University guidelines) for 75 minutes and occurred two times per week. There were 14 cases where class time came to an end before I was able to complete the lesson as it had been designed for those class periods.

Many times this meant that only part of a creativity or Creative Problem Solving tool or technique could be explained or taught, forcing the students to wait until the next class period to learn the rest of the tool or technique. Teaching the course one day per week for 150 minutes per class period would help prevent this time-management issue. This type of class schedule would better ensure that the teaching of a particular tool or technique did not awkwardly overlap two class periods.

Hands-On Activities:

In 13 of the class days analyzed and summarized using Within-Site Analysis, the students were expected to engage in a deliberately hands-on activity at some point during the lesson that encouraged the use of their own creativity. These hands-on activities served as pedagogical tools, helping the students to master specific creativity or Creative Problem Solving tools or techniques; while at the same time helping to show the students, first hand, how training in the use of these tools or techniques can enhance personal creativity. This hands-on practice helped students with course mastery—they were expected to produce something through the application of creativity or Creative Problem Solving tools or techniques, rather than merely listening to and retaining an explanation of how such tools are designed to work.

Discussion Questions:

For class days where discussion was expected, I prepared specific thought-provoking questions in advance. In all cases I would assign the discussion questions on a class day preceding the class where I intended to facilitate the directed discussion. By giving the students enough lead time to think about their responses individually, it helped give each student a chance to formulate their own response without the unintended influence from another student or myself. This technique seemed to especially help the students who normally don't actively engage in more spontaneous classroom discussions. I would also assign discussion questions in concert with a reading assignment. This helped to focus the future discussion of the reading material.

Group Work:

When the students were asked to work in groups while performing hands-on activities, deeper interpersonal relationships seemed to evolve more effectively. The constant use of in-class group activities (including warm-up activities) also seemed to help further the positive development of student-to-student and student-to-instructor trust.

Torrance Incubation Model of Teaching:

Of all the class days that were analyzed and summarized using Within-Site Analysis, each one was designed using the Torrance Incubation Model of Teaching (Torrance & Safter, 1999). As evidenced by the Lesson Plans (see Section IV), the class sessions were organized into 3 distinct segments that epitomize the Incubation Model: Heightening Anticipation, Digging Deeper and Extending the Learning. The diligence in using the Torrance Model in the design of the course helped to ensure that a course of creativity and Creative Problem Solving be taught in a creative way.

Student-Centered Course Design:

The design of each class lesson was done so in such a way as to allow for some flexibility in the delivery. This helped to keep the course student-centered. Specifically, when a student posed an inquiry-based question or wished to dig more deeply into a particular discussion question, this flexibility in timing allowed the delivery of the lesson to shift more fluidly. As a result, the students felt more confident that the course as a whole was student-centered rather than designed in such a way that was most comfortable for the instructor.

Unorthodox Course Content/Expectations:

The increased student-to-student and student-to-instructor trust, which in part came from the utilization of group work during class lessons, was especially important given the nature of such an unorthodox college course. Early in the semester, students expressed concerns about the expectations outlined by the course syllabus. As expressed by the students, they were accustomed to attending courses designed with more traditional pedagogical practices (i.e. students are expected to read a single text book, listen to

lectures from the instructor, take notes while in class and be assessed through test-taking). As a result, the design and delivery of this course seemed quite foreign. Continually clarifying the specific and practical expectations of this course (especially early in the semester) seemed to help alleviate such apprehension.

Leveraging Student Questions as Segues:

As creativity, Creative Problems Solving tools and other techniques were taught, students would raise many questions that I was able to anticipate during the design of particular lessons. For example after teaching the students about Traditional Brainstorming, an on-the-spot assessment question from me (i.e. How did that feel?) rendered a response from a number of students that I had anticipated: “We couldn’t write fast enough to record all the ideas generated by our group” (see Within-Site Analysis for Class 4 of 28). These questions created the perfect segue into the next lesson where I taught the students how to use “Brainstorming with Post-its”. Student clarity and content mastery seem to be positively impacted when situations like this are anticipated and leveraged in the design and transition between lessons.

Course Content Mastery:

Continually checking in with each student to ensure that they understand the concepts, tools and techniques being taught, was key to evaluating the design and delivery of each lesson. Constant and immediate feedback also helped to prevent confusion, on the part of the student, from becoming an incorrect practice in the use and application of a particular creativity or Creative Problem Solving tool or technique.

Process (not Content) Focus:

When delivering a lesson on any Creative Problem Solving tool, or having any student actively apply his or her knowledge about a particular tool, it worked best when the problem statements used in the exercise were kept simple. This helped prevent the content of the problem statement from being the focus of the learning experience rather than the procedural knowledge that needed to be gained in order to master the use of the Creative Problem Solving tool.

Using Images to Teach:

Diagrams, visualizations, animations and other types of imagery were used as much as possible, in particular, to help students learn how to use individual Creative Problem Solving tools. This was especially helpful when teaching a convergent thinking CPS tool. In these cases, the students were able to literally see how the ideas generated in divergent thinking evolved as they were evaluated using a convergent tool. Additionally, utilizing imagery in the pedagogical processes helped engage students in more hands-on activities related to the class lessons.

Facilitation Training:

Beginning with Class 20 of 28, the focus of the lessons shifted from a personal understanding of creativity and Creative Problem Solving to training the students in how to facilitate Creative Problem Solving tools and techniques. The evaluation of the delivery of these specific classes confirmed that it was unwise to expect students in an introductory, undergraduate course in creativity and Creative Problem Solving, to master the facilitation of Creative Problem Solving tools and technique (see Within-Site Analyses for Classes 20-28). Such a tactic meant that the personal mastery of each creativity or Creative Problem Solving tool or technique was sacrificed in order to delivery lessons on facilitation. This helps to solidify the Key Learning Insight that this type of course should only focus on students' personal mastery of the course concepts and not mastery of facilitation.

Closing Remarks

It is clear that the Within-Site and Cross-Site Analysis from this study, produced a number of Key Learning Insights that could potentially impact the design and delivery of future undergraduate college courses focused on creativity and Creative Problem Solving. As mentioned earlier—care must be taken when generalizing these outcomes. Further action research will help to verify the generalizability of the Cross-Site Key Learning

Insight. Additionally, this study supports the continued need for the empirical design and delivery of undergraduate courses on creativity and Creative Problem Solving.

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