What is Compare and Contrast?
When applied to instruction compare means to find similarities and contrast means to find differences between or among different objects, ideas, or phenomena.

Using Compare & Contrast in a Learner Centered Environment

Purpose
♦ The purpose is to help students clarify ideas and sharpen their analytical skills. Compare and contrast are verbs often associated with the Analysis Level of Bloom’s Taxonomy.

How it is utilized
♦ Often charts and diagrams can help students engage in the process after receiving direct instruction on a topic by lecture, reading, or observation.

REFERENCES
Example 1

*Compare and Contrast Four Modes of Research*

In our readings this week we have explored the different modes of research outlined by Schon (1995) and White (1986). As you develop your own research topics, it is important to understand how they are similar and how they differ. The following table illustrates how they differ. How are they similar? Which might fit your research topic?

<table>
<thead>
<tr>
<th>Mode</th>
<th>Philosophical Tradition</th>
<th>Purpose</th>
<th>Logic</th>
<th>Type of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivist</td>
<td>Positivism</td>
<td>Build Theory</td>
<td>Inductive and Deductive</td>
<td>Facts</td>
</tr>
<tr>
<td>Interpretive</td>
<td>Phenomenology</td>
<td>Find Meaning</td>
<td>Recognition of patterns</td>
<td>Perceptions</td>
</tr>
<tr>
<td>Critical</td>
<td>Critical Social Theory</td>
<td>Change Beliefs</td>
<td>Self reflection</td>
<td>Values</td>
</tr>
<tr>
<td>Action</td>
<td>Pragmatism</td>
<td>Solve Problems</td>
<td>Intelligent Action</td>
<td>Consequences</td>
</tr>
</tbody>
</table>

Example 2

*Compare and Contrast Four Data Measurement Levels*

Understanding data measurement levels is critical for one to select appropriate charts and statistical methods to present and analyze data. The following table may help you to identify the four data measurement levels (summarized from Chapter 1 of the textbook and Kaplan 1964). Can you give an example measurement on each level?

<table>
<thead>
<tr>
<th>Type of Data</th>
<th>Defining difference among the categories</th>
<th>Indicating the relative positions of the categories</th>
<th>Placing the categories on an equally spaced continuum</th>
<th>Having an absolute zero point &amp; making all arithmetic operations possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordinal</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interval</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Ratio</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Learner Centered Instruction** means that students are active participants in their learning and the instructor is responsible for creating and facilitating quality learning experiences that maximize student learning.
Didactic Questions tend to require lower level thinking skills, but are excellent in recall of factual information.

Using Didactic Questioning in a Learner Centered Environment

**Purpose**
- Questions are utilized to bring out or draw out a response from students that allow them to express their own ideas.

**How it is utilized**
- Didactic Questions serve to assist students to access and connect existing knowledge, to promote critical thinking and enlist students as participants in the discussion.

**REFERENCES**
- [http://public.callutheran.edu/~mccamb/didacticquestioning.htm](http://public.callutheran.edu/~mccamb/didacticquestioning.htm)
- [http://olc.spsd.sk.ca/de/pd/instr/strats/didactic/index.html](http://olc.spsd.sk.ca/de/pd/instr/strats/didactic/index.html)
EXAMPLES OF Didactic Questions

Use of What, Where, When, and How...

♦ Where is the best place to locate drug interactions?

♦ What are the major differences between elastic and inelastic demand?

♦ How does congestive heart failure affect pulmonary function?

♦ When should financial books be audited?

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Explicit teaching falls under the “direct instruction” concept. Different from discovery learning, explicit teaching is directed to the teaching of a skill set specifically as described by an example. The information is delivered in a procedural manner identifying a checklist of actions. Characteristically the skill set is broken into fragments and then reassembled incrementally in hope of simplifying the process. The skill set is explained from the “ground-up” giving students the foundation necessary to understand the new learning objective.

Using Explicit Teaching in a Learner Centered Environment

Purpose
♦ The purpose of this strategy is to introduce a new topic or skill to the student. This approach gives instruction for understanding the concepts and parameters of the new information. In giving specific instructions, learners are able to visualize and practice the new topic.

How it is utilized:
♦ The approach begins teacher centered, ends student centered
♦ An explanation of the purpose. Explain in detail what to do
♦ Provide examples through demonstration.
♦ Give students the opportunity to demonstrate

REFERENCES
◊ http://olc.spsd.sk.ca/de/pd/instrstrats/explicitteaching/index.html
◊ http://languagelinks2006.wikispaces.com/Implicit+vs.+Explicit+Teaching
◊ http://aim.cast.org/learn/historyarchive/backgroundpapers/explicit_instruction
An example of applying this strategy:

To begin we would explain the topic and forecast what will be learned. Definition will afford relevance, assisting the learner in their understanding of why the new information is important. For example, if we were speaking about the need for secure computer passwords, we would discuss the ramifications of a password breech. All stakeholders would be identified and compromised if a password were no longer secure. What are the threats of this condition? What are the best types of passwords to use and are there different types?

A procedural process would be given on how to secure a password. One example is that of a script that reviews passwords to ensure they meet conditions as outlined in the script. How would we go about creating that script and what should the conditions be to provide adequate protection?

The learner would be assigned exercises for practicing the new skills in order that they might demonstrate proficiency.

Learner Centered Instruction means that students are active participants in their learning and the instructor is responsible for creating and facilitating quality learning experiences that maximize student learning.
Lecture is a valuable part of a teacher's instructional repertoire if it is not used when other methods would be more effective. If the presenter is knowledgeable, perceptive, engaging, and motivating, then lecture can stimulate reflection, challenge the imagination, and develop curiosity and a sense of inquiry. Criteria for the selection of the lecture method should include the types of experiences students will be afforded and the kinds of learning outcomes expected. Because lecture is teacher-centered and student activity is mainly passive, the attention span of students may be limited. Many students, because of learning style preferences, may not readily assimilate lecture content. In addition, lectured content is often rapidly forgotten.

Using Lecture in a Learner Centered Environment

**Purpose**
- Definition: A lecture is when the instructor is pushing content by presenting the course concepts to the students.
- The advantage of a lecture is to cover content and reach a lot of students.
- The disadvantage of a lecture is that the student is not active and might not get a lot out of the lecture.
- The purpose of the lecture: To give the students information and push content.

**How it is utilized**
- The students already have the textbook, so the lecture should not repeat the textbook, but should provide examples.
- During a lecture, an instructor has the opportunity to apply the concepts from the book and course to the real world.
- A lecture is also an opportunity for an instructor to discuss frequent issues with the class.

**REFERENCES**
Examples of Lecture

How the lecture is utilized: In the online setting, it can be utilized in different areas:
◊ Under seminars where the lecture is provided to the instructor
◊ In the discussion board as a transition to a new seminar or new topic
◊ A YouTube link or a podcast.
◊ Audio program files, where the instructor can speak the lecture to his or her class instead of just writing it.
◊ The advantage to the audio files is that the instructor is offering delivery options that might help different learning styles.

Examples of lecture within the discussion board as it relates to the best practice of pushing content:
◊ The lecture method is appropriate when new information is being introduced.
   ♦ The beginning of a seminar might be a good place for a lecture.

◊ It is also a method to get the information to the student.
  ♦ However, because we are focusing on having a learner centered environment, in an online class, the instructor is not the only one to be heard.
  ♦ After the initial lecture, there should be opportunities for students to ask questions and provide insights to their learning.
  ♦ The instructor can then continue discussing the topics with the students by providing examples and redirecting the conversation.

In settings where there is one instructor and a hundred students, a lecture is a good method to share information. But, in a small setting like one of our online courses, a straight lecture might not always be appropriate. But, it does allow for information to be provided and it does allow for the instructor to provide examples and show application, but if this is the only method, then the instructor is not allowing the students to be active in the learning process. The lecture can introduce the information and then a discussion in the discussion board can continue to support the concepts covered in the lecture.

Discussion Board Best Practices

Learner Centered Instruction means that students are active participants in their learning and the instructor is responsible for creating and facilitating quality learning experiences that maximize student learning.
Cases come in many shapes and sizes from a simple "What would you do in this situation?" question to an elaborate role-playing scenario in which students must resolve a complex questions based on real-world data and documents. How simple or elaborate a case is depends on what you want your students to be able to do in the course. Whatever the form the case may take, it usually has these common elements.

**Real-World Scenario** - Cases are generally based on real world situations, although some facts may be changed to simplify the scenario or "protect the innocent."

**Supporting Data and Documents** - Effective cases assignments typically provide real world artifacts for students to analyze. These can be simple data tables, links to real URL’s, quoted statements or testimony, supporting documents, images, video, audio, or any appropriate material.

**Open-Ended Problem** - Most case assignments require students to answer an open-ended question or develop a solution to an open-ended problem with multiple potential solutions. Requirements can range from a one-paragraph answer to a fully developed group action plan, proposal or decision.

### Using Case Studies in a Learner Centered Environment

**Purpose**
- Students develop skills in analytical thinking and reflective judgment by reading and discussing complex, real-life scenarios
- Cases move "much of the responsibility for learning from the teacher on to the student, whose role shifts away from passive absorption toward active construction"
- Students learn to identify delineate between critical and extraneous factors and develop realistic solutions to complex problems. They have the opportunity to learn from one another.

**How it is utilized**
- Case studies bridge the gap between the very teacher centered lecture method and pure problem based learning. Room is left with cases for teachers to provide direct guidance and the scenarios themselves provide hints and parameters within which the students must operate.

### REFERENCES

- [http://tl.tlt.its.psu.edu/suggestions/cases/casewhat.html](http://tl.tlt.its.psu.edu/suggestions/cases/casewhat.html)
- [http://olc.spsd.sk.ca/DE/PD/instr/credits.html](http://olc.spsd.sk.ca/DE/PD/instr/credits.html)
Examples of Case Studies

Example 1
You are a police call taker and receive a call about a traffic accident on the freeway. The caller tells you four vehicles were involved, someone is pinned inside one of the vehicles, some yucky green stuff is oozing out of a container that fell off one of the trucks involved in the incident, one of the vehicles has smoke pouring out of it, two of the drivers are having a fist fight, and vehicles driving by are having to swerve around the crashed vehicles to avoid colliding into them. Your agency does not dispatch rescue, extrication, HAZMAT, or firefighting equipment. What do you do? Explain your actions.

Example 2
You are a call taker when multiple 911 calls come into the agency concerning a large traffic collision on a nearby highway. While other call takers enter information and dispatchers begin sending response personnel, you realize that your caller is involved in the collision and calling on her cellular phone. She is a 36-year old named Sally, and she is apparently trapped under an overturned truck in her crushed car. She smells gasoline, and says that she is hurt. She cannot see anything except the side of the truck. The cellular signal is weak and has some static in it. What is your role in Sally’s rescue, explain? What responder resources are most important to Sally and why?

Example 3
• Your instructor will provide you with 911 call scenarios to use for this assignment. In a written paper, answer the following questions for each scenario from the perspective of the call taker and the dispatcher. Write to purpose, there is no word count or page length requirement:
  • What type of call is it – Police, Fire, Medical, or man-made or natural disaster or a combination?
  • What is the appropriate classification?
  • What information would you gather?
  • What protocols would you follow?
  • What documentation would you create and why?

• Seminar 3
Hi, I have included a central web page that has a good number of call centers for free, and you can choose anywhere in the country to listen. Take a few minutes, listen to the calls and how they play out, then we can discuss using a call you decipher as one of your assignments.

• Seminar Four
Please use the same scanner process for your Monday assignment. Listen to a call from beginning to end, and then report out. Try listening to three scanners at once, this would be like most call centers that have multiple stations
Concept formation is the process by which a person learns to sort specific experiences into general rules or classes. Concept formation can also be referenced as category learning, concept containment, and concept formation. Concept formation provides students with an opportunity to explore ideas by making connections and seeing relationships between items of information. This is a method of instruction. This method can help students develop and refine their ability to recall and discriminate among keys ideas, to see commonalities and identify relationships.

Using Concept Formation in a Learner Centered Environment

Purpose
♦ Students form their own understanding of the concept
♦ Students participate in their own learning
♦ Students are able to find expanded meanings as they organize and manipulate information

How it is utilized
♦ Concept formation involves the recognition that some objects or events belong together while others do not. Students are provided with data about a particular concept and are encouraged to classify or group this data.

REFERENCES
◊ http://www.britannica.com/EBchecked/topic/130954/concept-formation
◊ http://www.saskschools.ca/curr_content/hutt/faqs/teachfaq.htm
◊ http://olc.spsd.sk.ca/de/pd/instr/strats/formation/index.html
EXAMPLES OF Concept Formation

• Cars have motors
• Planes have passengers
• Cars have tires
• Small cars, small tires
• Planes have freight
• Cars travel over roads
• Planes fly

Programming Example
To write code that requires buttons, we associate an interface that requires human interaction.
A concept map is a graphical tool used to organize and represent knowledge. Concept maps can be used to:

- Develop an understanding of a body of knowledge.
- Explore new information and relationships.
- Access prior knowledge.
- Gather new knowledge and information.
- Share knowledge and information generated.
- Design structures or processes such as written documents, constructions, web sites, web search, multimedia presentations.

Using Concept Mapping in a Learner Centered Environment

**Purpose**
- Concept maps show a visual picture of the connections
- What is the central word, concept, research question or problem around which to build the map?
- What are the concepts, items, descriptive words or telling questions that you can associate with the concept, topic, research question or problem?

**How it is utilized**
- Showing relationships
- Cause and effect
- Comparing
- Sequencing, chain of events (college reading)
- Collecting Data
- Tree chart (like org chart)
- Cycles

**REFERENCES**

- http://www.spicynodes.org/
Examples of concept map within the discussion board as it relates to the best practice of pushing content:

- Example templates that can be used.
- Instructor can brainstorm with class and then create concept map.
- Time management plan discussion.

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Inquiry is “The Art of Questioning”

“Inquiry requires that we dig beneath the surface to explore a topic, dwell on it, wonder about it, and find out information. This deeper understanding is forged with long-term memory.” (Harvey, 1998)

Using Inquiry in a Learner Centered Environment

Purpose
♦ Formulate Questions
♦ Organize and gather ideas
♦ Evaluate and explore information/facts
♦ Synthesize data
♦ Develop findings
♦ Draw inferences and conclusions

How it is utilized
♦ Requires a high level of collaboration
♦ Allows students to construct their own versions of reality
♦ Engages student curiosity and interests
♦ Assists learners in clarifying and testing hypotheses
♦ Provides opportunities for learners to draw inferences and create solutions

REFERENCES
◊ http://www.designbasedresearch.org/reppubs/baum-AERA.pdf
◊ http://www.sabine.k12.la.us/vrschool/brainPBlinquir.htm
◊ http://www.thirteen.org/edonline/concept2class/inquiry/index.html
◊ http://olc.spsd.sk.ca/de/pd/instr/strats/inquiry/index.html
EXAMPLES OF Inquiry

**Deductive Inquiry**
- Allows learner to move from generalizations to specific instances
- Allows learner to base their conclusions on logic and process
- Teacher coordinated (Themes and Principles)
- Learner testing generalizations

Examples
- Tom must be in the cafeteria or the bookstore? Tom is not in the bookstore. Therefore, Tom must be in the Cafeteria.
- The truth of the premise guarantees the truth of the conclusion

- We have an axiom that "two distinct lines in a plane are either parallel or intersecting" (general).
- Based on this axiom, the corresponding theorem is: "Two distinct lines in a plane cannot have more than one point in common." (Specific).

**Inductive Inquiry**
- Learners establish facts, ask relevant questions
- Develop questioning method to expand on fact finding
- Generate explanations based on support of their own hypotheses
- Learners move from specific observations to inferences

Examples
- Previous accidents of this sort were caused by instrument failure, and therefore, this accident was caused by instrument failure.
- The truth of the premise lends support to the conclusion without giving absolute assurance.

- Ask students to construct a few triangles.
- Let them measure and sum up the interior angles in each case. The sum will be same (= 180°) in each case.
- Thus they can conclude that "the sum of the interior angles of a triangle = 180°). This is a case where equality of sum of interior angles of a triangle (=180°) in certain number of triangles leads us to generalize the conclusion.

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Problem Solving is the process or method of working through a problem to find a solution. It focuses on knowing the issues, considering all possible factors and finding a solution.

There are two types of problem solving: Reflective & Creative

Using Problem Solving in a Learner Centered Environment

Purpose
- The purpose of Reflective Problem Solving is to follow a series of tasks and develop a solution.
- The purpose of Creative Problem Solving is for group members to have experience with the process of brainstorming

How it is utilized
- Reflective follows a series of tasks to develop a solution: Define the problem, Analyze the problem, Establish Criteria, Propose solutions, Take action
- In Creative the process is the important part, not the solution. The goal is to create ideas and alternatives: Orientation: gets group ready to work together, Preparation and analysis: focus on the root cause of the problem, Brainstorm: develop potential solutions, Incubation: leave the problem before deciding the best solution, Synthesis and Verification: What is a good solution? Make sure it has a positive outcome

REFERENCES
Examples of Reflective Problem Solving:

- 911 Operator Call discussion
- Math problem

\[
4 = 7 + e \\
-7 \quad -7 \\
-3 = e
\]

Examples of Creative Problem Solving:

- Group project to problem solve getting off the island
- Real work business case
- Psychology case

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Thoreau’s Reading Style: Read on Your Tiptoes

“Most men have learned to read to serve a paltry convenience, as they have learned to cipher in order to keep accounts and not be cheated in trade; but of reading as a noble intellectual exercise they know little or nothing; yet this only is reading, in a high sense, not that which lulls us as a luxury and suffers the nobler faculties to sleep the while, but what we have to stand on tiptoe to read and devote our most alert and wakeful hours to.” Henry David Thoreau, Walden

Using Reading for Meaning in a Learner Centered Environment

Purpose
♦ Critical Reading: understanding a text for –
  – What it says (summarize content)
  – How it is structured (analyze argument)
  – What it means (interpret significance)
♦ Critical Thinking: evaluating a text’s content, structure & significance
♦ Interdependent processes

How it is Utilized
♦ 5 Critical Reading Strategies
  1. Ask questions
  2. Make connections
  3. Identify importance
  4. Assess validity
  5. Summarize critically

REFERENCES
◊ http://www.ncld.org/ld-basics/ld-aamp-language/reading/reading-comprehension-reading-for-meaning
◊ http://cygnus.baker.edu/p86441000/
◊ http://cygnus.baker.edu/nci2
EXAMPLES OF Reading for Meaning

There are 3 types of Questions:
Clarifying questions (probe meaning of text)
Wondering questions (raise issues beyond text)
Lingering questions (recur throughout reading)

An Example of Clarifying Questions:
Encourage students to ask questions on DB BUS678 Research and Statistics for Managers

Discussion Board Best Practices

Learner Centered Instruction means that students are active participants in their learning and the instructor is responsible for creating and facilitating quality learning experiences that maximize student learning.
Questions that reflect/interpret information

Using Reflective Discussion in a Learner Centered Environment

**Purpose**
- Questions to stimulate reflection and extend comprehension
- Challenge student thinking
- Share personal thoughts/feelings

**How it is utilized**
- Reflective Discussion allows students to gain knowledge through their experiences/imagination/analysis
- Faculty need to be careful not to allow their own values to dominate the discussion.

**REFERENCES**
- http://www.virtual.gmu.edu/edit611/BannanWB.pdf
- Book: Differentiated Instructional Strategies; One size doesn’t fit all by: Gayle H. Gregory and Carolyn Chapman 2007
Didactic reflection major concepts: Use Open – Ended Questions:
♦ Learners gain knowledge from experience
♦ How the learner views things is how she/he will interpret them
♦ To gain meaning, learning is developed on the basis of personal experience

Examples of Reflective Discussion: Use Open – Ended Questions:
♦ Encourages students to explore all sides of the topic
♦ Is there a future for ADN educated nurses?

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