
OLD

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Teaching & Learning in the 21st Century

Multiple Generations
One of the differences you will notice when comparing the classroom of the 20th Century with your current classroom is that the students are more diverse in ethnicity, culture and age. Your students may be *Boomers, Gen-Xers,* or the *NetGen*.
Let's explore some of the differences.

- Boomers
  Cold war, Space race, Vietnam, Watergate
- Gen-Xers 1965 – 1981
  Berlin wall, AIDS, World Wide Web
- The Net Generation, Milennials or the Digital Natives
  After 1982

(Oblinger, 2003)

The Gen X and Net Gen students are often called the "Digital Natives" because of their affinity for and skill with technology. Baby boomers, who often avoid technology or certainly do not use technology the same way as Gen X and Net Gen students, are referred to as "Digital Immigrants." The table below shows some of the common differences between the two groups.

Digital Immigrants vs. Digital Natives
(Prensky, 2001)

Digital Immigrants	Digital Natives

Comparison of Silent & Boomer Generations vs. Gen X & Net Gen Learning Styles	
Characteristic Learning Style of Silent/Boomers	**Characteristic Learning Style of Gen X/Net Gen**
Linear Acquisition of Information	Nonlinear (hyperlinked) logic of learning
Focused mainly on facts and knowledge acquisition	Focused more on deutero-learning (learning how to learn)
Guided Learning	Autonomous learning

Teaching multiple generations requires speci

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Active Learning and Effective Teaching Strategies[1]

ld Dominion University is committed to the development of active student-centered learning which has been discussed extensively in the literature from the instructor and student perspective (Diamond, 1998; McKeachie, 1994; Pregent, 1994; Angelo, 1993). Although the basic principles of active student-centered learning are familiar to most, many faculty members struggle with the application of these principles into various aspects of course construction. A student-centered course sets a framework for knowledge, and encourages student responsibility for learning (Diamond, 1998; Pregent, 1994; Grunert, 1997). From the planning stages through the implementation stages, the student-centered course facilitates the creation of a purposeful environment promoting active engagement in the learning process (Grunert, 1997).

Comparison of Teacher-centered and Student-centered Paradigms (*Learner-Centered Assessment on College Campuses* by Huba and Freed 2000)	
Knowledge is transmitted from professor to students	Students construct knowledge through gathering and synthesizing information and integrating it with the general skills of inquiry, communication, critical thinking, problem solving and so on

Assessment is used to monitor learning	Assessment is used to promote and diagnose learning
Emphasis is on right answers	Emphasis is on generating better questions and learning from errors
Desired learning is assessed indirectly through the use of objectively scored tests	Desired learning is assessed directly through papers, projects, performances, portfolios, etc.
Focus is on a single discipline	Approach is compatible with interdisciplinary investigation
Culture is competitive and individualistic	Culture is cooperative, collaborative, and supportive
Only students are viewed as learners	Professor and students learn together

Whether we teach courses in mathematics, science, English, or biology, one of our goals as instructors is to provide students with opportunities to become active, critical thinkers who move beyond a view0.4086.674 0 Tq5.72 44* 74.762(h(t)-i)6(n m)70.4th opp sy ovn 7(at)2te(

- Encouraging faculty/students contact
- Developing reciprocity and cooperation
- Engaging in active learning
- Providing quick feedback
- Emphasizing the amount of time dedicated to a task
- Communicating high expectations
- Respecting diversity

Others have described interaction as being comprised of communication, collaboration and active learning (Kenny, 2002). Frequently interaction focuses on social process (Beard & Harper, 2002; Wagner, 1994). Here is the definition of interaction that we'll use as offered by Moore (1989), Hillman, Willis, and Gunawardena (1994), and Wagner (1994).

"…the learner's engagement with the course content, other learners, the instructor, and the technological medium used in the course. True interactions with other learners, the instructor, and the technology results in a reciprocal exchange of information. The exchange of information is intended to enhance knowledge development in the learning environment. Depending on the nature of the course content, the reciprocal exchange may be absent – such as in the case of paper printed content. Ultimately, the goal of interaction is to increase understanding of the course content or mastery of the defined goals."

Interacting Successfully with Students

Effective teachers interact with students in a skillful manner by establishing a rapport with the class by:

1. Creating a comfortable atmosphere in which learning is enjoyable and where individuality and creativity are encouraged

2. Remaining approachable, keeping office hours, and encouraging students to see you during those hours.

3. Being open to student questions by observing students' responses and sensing their confusions

4. Responding to their questions with respect and being courteous in dealing with questions that are irrelevant

Establishing Rapport
Create Comfortable Atmosphere
Remain approachable
Be open to questions
Respond with respect
Stimulate participation and discussion
Convey enthusiasm

5. Stimulating class participation and discussion (see section on "Active Learning")

6. Conveying your enthusiasm for the subject by being attentive to students, moving away from the chalkboard or podium, having eye contact with students to observe students' expressions, using humor appropriate to the subject, and indicating a genuine interest in their contributions and concern for their learning.

Tension Points in Teaching

The following is a list of frequently encountered situations in teaching which can become

quite uncomfortable. Listed are several possible solutions to each situation, and clearly, some of the consequences may be more desirable than others. (listed in order of what would be the most productive solutions). Inappropriate responses should under no circumstances be used. It would be valuable to consider the consequences of each response (how would you react if you were the student) and perhaps brainstorm additional alternative solutions.

1. What if you are unable to answer a student's question?
    a. Offer to look it up and get back to the student.
    b. Tell the student how to look it up.

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7. What if students are talking loudly and being disruptive?
    a. Ask if they have questions.
    b. Tell them that others are trying to learn, so they must be quiet or leave.
    c. Call on one of them to answer a question.

Inappropriate Response: Ignore them and let them c

Demonstrating Problem Solving

A major instructional goal in most courses is to develop students' ability to work with problems in the discipline. As a teacher, you are responsible for transmitting two levels of knowledge to your students. First, you need to explain how a member of your discipline

goals and very inappropriate for others.

Strengths of the Lecture Approach

1. Lectures can communicate the intrinsic interest of the subject matter. The speaker can convey personal enthusiasm in a way that no book or other media can. Enthusiasm stimulates interest, and interested, stimulated people tend to learn more.
2. Lectures in university settings can provide students with role models of scholars in action. The professor's way of approaching knowledge can be demonstrated for students to emulate.
3. Lectures can convey material otherwise unavailable, including original research or recent developments that have not yet made it to publication.
4. Lectures can organize material in a special way. They may provide a faster, simpler method of presenting information to an audience with its own special needs. Lectures are particularly useful for students who read poorly or who are unable to organize print material.
5. Lectures can convey large amounts of factual material.
6. Lectures can speak to many listeners at the same time.
7. Lectures permit maximum teacher control. The instructor chooses what material to cover, whether to answer questions, and other courses of action.
8. Lectures present minimum threat to students. They are not required to do anything, which they may prefer.
9. Lectures emphasize learning by listening, an advantage for students who learn well this way.
10. As Eble (1976) noted, lecturing beats textbooks or video in that it offers "face-to face confrontations with other talking, gesturing, thinking, feeling humans."

Weaknesses of the Lecture Approach

1. The lecture puts students in a passive rather than an active role. Passivity can hinder learning.
2. Lectures inhibit feedback to both the instructor and the student about the students' learning, encouraging one-way communication.
3. Lectures require an effective speaker who can vary tone, pitch, and pace of delivery. Lecturers must be verbally fluent; a skill that is neither stressed nor learned in many Ph. D. programs and is, in general, distributed unevenly among people.
4. Lectures place the burden of organizing and synthesizing content solely on the lecturer. They are not well suited to higher levels of learning such as application, analysis, and synthesis.
5. Lectures are not well suited to complex, detailed, or abstract material.
6. Lectures assume that all students are learning at the same pace and at the same level of understanding, which is hardly ever true.
7. Lectures do not sustain student attention, which wanes very quickly in l to 25 minutes.
8. Lectures tend to be forgotten quickly.

How to Plan an Effective Lecture

Instructors might remember that learners' minds are not blank slates, and the organization of the lecture must take into account students' existing knowledge and expectations as well as

the structure of the subject matter. L. Dee Fink (1984) has pointed out that the most intellectually alive and exciting lecturers tend to be those who view knowledge as a dynamic process rather than a static product.

Phil Martin, coordinator of Ohio State's public speaking team, has suggested that a good way to approach the preparation of a lecture is to follow this progression of steps, answering a variety of questions along the way:

1. **Select a topic**. The lecturer's first decision should be on the overall subject matter of the lecture. This will probably be drawn from whatever is on the syllabus for that day's class.

2. **Decide on the purpose**. Once the topic is chosen, the next stage is to decide why it is being taught (this is not as obvious as it may first appear). Possible questions might be: Is my aim to make students understand this difficult concept? What are the essential facts I want my students to remember? Do I want to advocate a particular idea or behavior? Is one of my purposes to entertain? Is preparation for an examination the main point of the lecture?

Preparing the Lecture
SELECT A TOPIC
Decide on the purpose
Analyze the class
Analyze the occasion
Gather materials
Prepare the lecture
Practice the lecture

3. **Analyze the class**. Just as performers need to know their audience, so lecturers need to analyze their class. It is useful to determine the level of students in this class. How mature they are as learners, and their prior relationship (if any) with this subject matter. By exploring the demographics of the class, it may also be possible to predict what learning styles this group of students will prefer.

4. **Analyze the occasion**. In addition to studying the composition of the class, it is also helpful to analyze the occasion before preparing each lecture. A class early in the morning, for example, might require the lecturer to be more extroverted in order to wake students up. Long class periods may be especially suited to an interactive lecture. Students at the beginning of the semester may be more enthusiastic than during the last week of classes. These issues can be predicted in advance, and such awareness will usually improve the effectiveness of the lecture.

5. **Gather materials**. After this analysis, the next step is to gather the materials to be used in the preparation of the lecture. It is a good idea to bring everything together before sitting down to write, so that the instructor has all the necessary sources immediately at hand.

6. **Prepare the lecture**. After the materials are together, the next step is to write the lecture itself. Some discussion of what form of lecture notes is most appropriate follows, but it is certainly desirable for lecturers to have prepared with sufficient detail to be entirely comfortable with the content of the lecture.

7. **Practice the lecture**. Finally, it is a good idea to practice the lecture, whether to a living audience or an inanimate object (e.g., cassette tape), especially if the lecturer is inexperienced. This will help phrasing and delivery and will perhaps provide some advance

Instructors should no

future. Other possibilities include:

1. Restating the main points by using a new example, asking for the main points, and showing where the class is now.

2. Asking a student to summarize the lecture's key ideas.

3. Restating what students are expected to have gained from the lectures.

Instructors can stimulate discussion and increase interaction after presenting a lecture or large amount of content by pairing up students and giving them two to three minutes to react, respond and raise questions or issues about the material just presented. They can ask volunteers to report on issues or questions raised in their discussions.

Another option for broadening the circle of discussions is to call on pairs that include individual members of social groups (e.g. women students, students of color, etc.) who may not be getting much "air-time."

A final point: Lecturers should not let students pressure them (by packing bags, talking, or moving around) into cutting the lecture short! Herr (1984) suggests that instructors make "a remark designed to refocus student attention: (With a smile) "You have four more minutes

Peer Learning

Classes can be divided into groups of about five students with a mixture of more and less knowledgeable students in each group. The groups are given learning tasks that will require them to share knowledge and experiences. The task may be to answer some review questions, to pose some critical issues about a topic, to solve a problem, apply some

Class Debate

Using a central aisle or a real or imaginary boundary to divide the class space in half, the instructor poses a debatable proposition and asks those who agree to sit in one section and those who disagree to sit in the other. (The instructor may also want to create a third section for those who are undecided.) The instructor then moderates, asking students from one section, then the other, to support their position. At set intervals of perhaps fifteen minutes, students are given the opportunity to move to another section, based on whether they have changed their positions through listening and participating in the debate. A variant on this theme is to have students argue for the opposite of their original positions by changing the section designations after the students have already chosen positions. The instructor is responsible for setting up the proposition, enforcing the rules of the debate, and summarizing the discussion and results of the debate.

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points made by others.

However, perhaps the most important ways to build rapport on the first day are subtler. In order to set up a supportive environment, some instructors start the first day with activities designed to break the ice and get students used to speaking in front of the group. In a smaller class, they might ask students to share their names, hometowns, academic majors, and/or a question they would like the course to answer. Some instructors have students break up into pairs and share this information with each other. In larger courses, instructors might ask the same questions, only using a show of hands, e.g., "How many of you are from central Virginia? How many from the South?" Instructors get the best results when they offer personal information about themselves to get the discussion rolling. They might, for example, talk about their personal and professional backgrounds or their initial experiences with the discipline.

Verbal Cues

During a course, the instructor can promote an atmosphere of trust and rapport by offering some of the following questions or comments:

1. Can you think of a situation in which this notion might apply? Might not apply?
2. That is an interesting idea, tell me more.
3. I do not know either, but t is aW2g?aog?g?
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Getting Discussions Started

There are many different techniques for leading discussions, from the most non-directive to the most programmed. Here are some ways to get discussions moving:

Start with a common experience. One of the best ways to start a discussion is to provide a concrete, common experience through the presentation of a demonstration, film, or role-playing. Following such a presentation, it is often easy to ask a relatively open question such as, "What are your immediate reactions?" or "Does anything in this film disturb you?"

Start with a question. The range of questions is listed in the section above on setting objectives. Questions that speak well to students' puzzles can be obtained by asking students to submit written questions in advance of the session. Once the first question has been asked and responded to, further questions come easily. The trick is to phrase the first question as well as possible. In general, instructors may:

1. Use open questions to begin long discussions.
2. Wait at least 10 seconds before rephrasing the question. Instructors rarely wait long enough for student responses.
3. Offer an example if the problem you have posed appears too abstract.

When referring back to ground rules on sharing "air-time" doesn't work, instructors can share their own observations of the discussion patterns (e.g., men dominating or interrupting women) with the class and pose the analysis of the pattern as a class project. Another option is to assign students as process observers (on a rotating basis) and then save time at the end of class for them to report their observations.

Start with a controversy. One of the best ways to create a hot discussion is to pose a controversial issue and ask by a show of hands how many students take one side or the other (e.g., "how many of you believe that . . . is true? How many think it is false?"). Controversy can either be structured or unstructured. In this segment, we will discuss unstructured controversies. See page 29 for ways to design a structured controversy. In an unstructured controversy, it is still necessary for the instructor to maintain control. To control the discussion, ask for five statements of evidence or argument from each side, then statements of rebuttal. Write these statements on the board. One of the easiest ways to create controversy is to play devil's advocate when a class comes too quickly to agreement on a complex issue. Students should be later informed that the position was taken for purposes of discussion.

Place students in buzz groups. In this procedure, classes are split into subgroups for a brief discussion of a problem. Groups can be asked to come up with one hypothesis that they see as relevant, with one application of a principle, or an example of a point. In

instructors will usually lose if they take the bait. This situation often occurs when instructors are going over exams or assignments. Students who attack usually want attention, so simply giving them some recognition while firmly moving on often takes care of the problem. If students are simply trying to embarrass the instructor, they may seek to make him or her defensive with such comments as, "How do you really know that . . .?" or "You're not really saying that . . .?" Such questions can be handled by playing boomerang. The instructor might say, "What I'm saying is . . . but now I'd like you to share your perspective." Turning the question back to the questioner forces him or her to take responsibility for his or her opinion. Other ways to handle these situations include:

1. **Confrontation**. Instructors can confront the questioner with their reactions to his or her behavior. "I'm uncomfortable with the imprecision of your questions. What I really hear you saying is..."

the levels of language and experience of my students?

7. When a student addresses me, do I listen fully and courteously to both thought and feeling?
8. When misunderstandings occur, do I explore them further and check out both my and my students' assumptions?
9. Do I respond fully to the student, with clear comments, using words, voice, gestures, and the like?
10. Could some of the failures in the listening of my students be due to weaknesses in my speaking and/or listening habits?

Conducting Office Hours

Office hours can be a powerful vehicle for learning if you strive to get a feel for your students' mindset. Particularly in a time of perceived conflict, students may approach your office

and provide them with one of the topics or concepts that you will be dealing with in the coming weeks. Each group's job is to provide the rest of the class with an overview of that topic or concept in whatever form they would like. The conditions which must be met are the following: first, each group member must participate; second, the presentation or product must reveal the contribution of each group member; third, grading will consist of a group grade, as well as individual grades, the latter being based on a written product each group member turns in and which reflects their own contribution to the final presentation or

Papers

section to ensure that all equipment is working properly. Here, other teachers in prior sections may be very helpful in pointing out difficulties and things to watch for.

Finally, of course, helping the students to learn critical thinking and problem-solving skills as well as to learn to communicate their knowledge through exams and lab reports (written or oral) are all activities that are often part of the laboratory instructor's assignment.

Nyquist and Wulff (1996) point out an important difference between laboratories and other forms of teaching such as lecture and leading discussions: labs are active learning experiences. A good laboratory instructor will work toward achieving a balance between telling students everything about an experiment or field location and letting students discover information for themselves. It may take a little longer to encourage students to learn for themselves, but the lesson is apt to stick with them longer and be more exciting and stimulating, even if the experiment doesn't work correctly every time.

Nyquist and Wulff recommend using the technique of asking questions in order to elicit student interest and discovery: What is happening here? What do you observe about this experiment, or this field site? Have you seen this before? What else have you learned about in lecture or past labs that might help explain your observations? What other experiments might you design to gather further information?

If you are leading a field trip, do you know where to go or call for help, if needed? Do you know first aid? Excellent laboratory safety information is available from the Office of Radiation, Chemical, and Biological Safety.

Instructor Preparation

The best way to prepare for labs is to conduct the experiment yourself with the students' lab manual in hand. You will discover whether the directions are clear and whether students have the skills necessary to complete the experiment. Jot down notes as you proceed so that you can tell students how long the experiment will take, clarify confusing passages, and demonstrate new or difficult procedures. If you know in advance what to expect, what problems students are likely to encounter and what questions they will ask, you will be able to make much better use of your time in the lab. It is important to make sure that you have enough beakers, stations, chemicals, etc., ready before the lab begins.

Safety

In most laboratories, it will be important to provide careful instructions for the operation of equipment (including safety features) and for setting up and conducting experiments. You may have done the same operation a dozen times, but most the students in your section will find this a new experience. It will also be important to circulate through the lab to check on the progress of each student and/or group of students. Ask about their progress. Ask if they have any questions or want to know more. Check the equipment or experiment yourself. Laboratory sections are active; you should be, too.

A final word about safety: If your department or faculty member in charge of the course does

not talk about safety, ASK! Check with your department about university and national safety guidelines. Make sure students are aware of appropriate safety considerations and steps. Check to see that appropriate signage is posted in the lab. It is important that you know the procedures for chemical and biological hazards, as well as for radioactive compounds, if these are part of the assignment. Know where the Material Safety Data Sheets are stored in the lab, or be able to access them via the web. Insist that students know and use the equipment that is provided for their safety (and yours). The best way is for you to be a good example. Yes, safety glasses may look goofy, and gloves may be time consuming to put on and take off, but both are important to protect the students. Uninterested and/or cavalier students may present the greatest risk to themselves and to other students. It is vitally important that you use your position of responsibility and authority to make sure that the lab is a safe environment where everyone can learn. Students who refuse to cooperate with safety instructions should be reported promptly to the faculty member in charge or the department chair.

Student Preparation

In conjunction with the professor, devise some means to ensure that students are familiar with the lab before they come to class. Some instructors feel that grades on lab reports are incentive enough, while other require students to submit a statement of purposes and procedures or an explanation of what and how the experiment is relevant to the course.

Supervising the Experiment

At the beginning of the lab, review the purposes and procedures of the experiment. You might deliver a brief lecture on how the experiment relates to current developments in the discipline, or you might discuss the students' statements of objectives. Ask for questions, clarify any ambiguities in the lab manual, and demonstrate special procedures now rather than interrupt the experiment later.

If both you and your students are well prepared, you will be free to perform your most important role, that of guiding the students' development. Try to talk with each student at least once during the experiment. Technical and procedural matters can be handled quickly in a few words of advice or a very brief demonstration, but your primary role is to help students master the steps of scientific inquiry—recognizing and stating a problem so that it can be explored, data collected, a hypothesis formed and tested, and a conclusion drawn.

Attempt to allow students to solve problems for themselves, perhaps by rephrasing the question and reminding them of a concept they have forgotten. However, you approach problem solving, refrain from giving outright answers or advice. If lab partners ask, "Why can't we get this to come out right?" try asking a series of questions that leads them to discover the reasons for themselves rather than simply explaining why the experiment failed. Sometimes the reason will be relatively simple, but just as often the reason will be more substantial—a matter of timing, sequence, proportion or interpretation. Perhaps the student has the necessary data but has overlooked an important step in analyzing the results or is unable to synthesize a solution. It is very tempting to help students by saying, "Aha, I see where you went wrong," but unless you resist the temptation, they are likely to falter at the same stage in the next experiment. Students may become frustrated if they cannot get an

This will indicate what you need to focus on in sections, if the professor does not already map out your section goals. If you find that students are having difficulty with the lecture materials and they are unable to complete the professor's section goals, you should inform the professor and see how he or she would like to proceed. The professor may choose to adjust the level of examinations and the pace of the course as necessary.

It is essential that you identify what needs to be covered and then choose an appropriate approach. Is the material suitable for a section lecture? A question and answer session? A discussion? Rather than repeating the professor's lecture, consider a new approach to the topic. Perhaps you need to break a large topic into smaller units, or design a problem-solving session that encourages students to both conceptualize the approach and use it.

If your chief responsibility is review, it is especially important to get comments on whether you are covering what students think they really need. It is impossible to review all the material from the lecture or the textbook in detail. You will have to choose between covering most of the material somewhat superficially or only representing parts in depth. Briefly reviewing all the important topics usually stimulates student questions. However, concentrating on particularly difficult aspects of the course that may not have received much time in the lecture will open up areas on which students would otherwise not have been able to formulate questions.

Reading and Studying to Construct Meaning

Many entering students, as well as faculty of these students, have identified *reading and studying to construct meaning* as activities requiring skills that are often under-developed or non-existent. In fact, many students have never really learned how to approach demanding reading and studying tasks at all. While it is clearly not the identified task of the instructor to include these strategies as part of a class, there are many ways an instructor can help entering students learn to cope with the sheer volume of academic reading and studying that college work demands. Most inexperienced students do not really know how to read text, no matter what form this text mighademihohos nt q falTw 0 -pnrghadea(w)16ed a18 -1.16 T(i)2(er)7-s

quick overview of the organization of various kinds of texts: how to use a table of contents, an index, a glossary, references, and how to identify the main points. No matter what choice you make, knowledge of these strategies can serve as a resource for both you and your students.

The following suggestions are simply that - suggestions. There are many theories about reading and studying. The following collection of strategies is based on brain-based teaching and represents a combination of some effective ways to approach complex text. It is included here in a form that could serve as a handout to be used by students as a guide for reading and constructing meaning.

A Reading-Studying Process

Overview (Pre-read) the Content

Why the Overview?

- To gain a "big picture" of the material to be studied (how much? how difficult?)
- To discover the basic structure of the material and identify major concepts
- To increase understanding when the material is read in depth
- To identify the author's purpose for writing the material
- How do you overview the content?
- Identify the Chapter heads and Sub-Heads
- Create an "advanced organizer" (empty outline) of the structure, based on the Chapter heads and sub-heads
- Skim the pictures, graphs, and charts
- Skoup6 Tw 0.29 0 Td [33.10(t)2(he m ew the contentads
- eread in dept

    - is the author biased?
    - how do the ideas presented fit with the ideas of others?
- How do you find organizational patterns?
- Look for Closed (numbered) Lists - these lists usually identify important steps or characteristics. [For example, "there are *six* characteristics of …."]
- Look for Organizational Patterns

Below are some common organizational patterns and the signal words used in those patterns. Review your content with these patterns in mind. Assist your students in identifying patterns to help with their reading comprehension and study.

Some Common Organization Patterns	Signal Words
Cause - Effect	All, none, clearly, conclusively, it appears, it seems, contributing to, seems to be a link
Problem - Solution	Problem, question, issue, solution, answer, findings, explanation, plan, proposal
Comparison - Contrast	*Comparison* - And, also, like, similar, resembling, much the same, comparable *Contrast* - But, however, yet, on the one hand, different from, opposite, conversely
Sequence of Events	Events in *chronological order* (dates) or a Process (*sequence of steps*) First, second, third, now, later, after, often, 1945, 1978, Steps 1, 2, and 3
Spatial - Geographic	Visualize *parts of an organism or location of places external, upper, lower, anterior, posterior* above, below, next to, between, inward…
Thesis - Support	Thesis (Point of View) Support (Facts/Details) Thesis, hypothesis, my belief that, it is theorized that, the idea is supported by…
Definition	Definition, term, general category, examples, characteristics, features
Descriptive	Recreates experiences through use of details and sensory language

Reorganize the Content *n*

Summary

There are many helpful tips presented in this chapter starting with ways to focus on keeping your teaching “student-centered.” We’ve provided methods for presenting your subject matter expertise and ways to engage your students in interactive learning. To help you in the classroom, we have listed some questions you may have and provided suggestions for how to deal with “tension points.” Lecturing and active learning is discussed along with effective strategies for organizing your lectures and getting students to interact with each other. You may want to bookmark some of what is presented in this chapter for easy access after you have spent some time in the classroom.

Developing Results Statements: A statement of measurable performance

You must first determine what you want to accomplish before you can develop a plan of action for getting there. This means you must first create statements, written in behavioral

[redacted]

earning outcomes are statements that define what
lt of going through your interactive activity. Using
develop both learning outcomes and test
statements are shown below. (Nilson, 2003)

re the learner to **do a specific thing** when
use action verbs in your objectives. Examples of

rds.

metamorphic.
el when the temperature is 240 °
stening.

rases such as know about, understand and other
are much too general in nature and should not be
ents. They do not pinpoint the content to be
test items.

erformance verbs in accordance with the skill levels
presented for you in the table below and continued

y Level of Cognitive Operation schedul--9(eT Q q 291.24 261.9621 **om's Taxonomy**		
	Comprehension	
	classify	locate

Synthesis		Evaluation	
arrange	integrate	appraise	evaluate
assemble	manage	argues	judge
collect	organize	assess	rate
compose	plan	challenge	score

Developing Rubrics

When developing rubrics, we are faced with two choices: holistic or analytical. A holistic rubric gives a single score or rating for an entire product or response whereas an analytical trait rubric divides the product or response into specific traits or dimensions to be judged separately.

Another consideration when developing rubrics is deciding upon a generic or task specific rubric. A generic rubric is used across similar performances, i.e. all oral presentations or all critical thinking. A task-specific rubric is developed to be used for a single, specific task.

Additionally, you will need to decide how many points you will have in the grading scale of your rubric. Some things to consider when deciding:

- The more open-

These samples help the scorers be consistent and provide the students with a better understanding of what is expected. It is best to have more than one example of each or your students will be likely to copy it.

Step 6: Continuously refine

Your rubric will evolve as you use it. Add and modify descriptions based on student feedback and common mistakes. Change out your samples as better examples are submitted. (Arter, 2001)

There are some rubrics and templates provided in the Appendix A of this handbook.

Using Templates

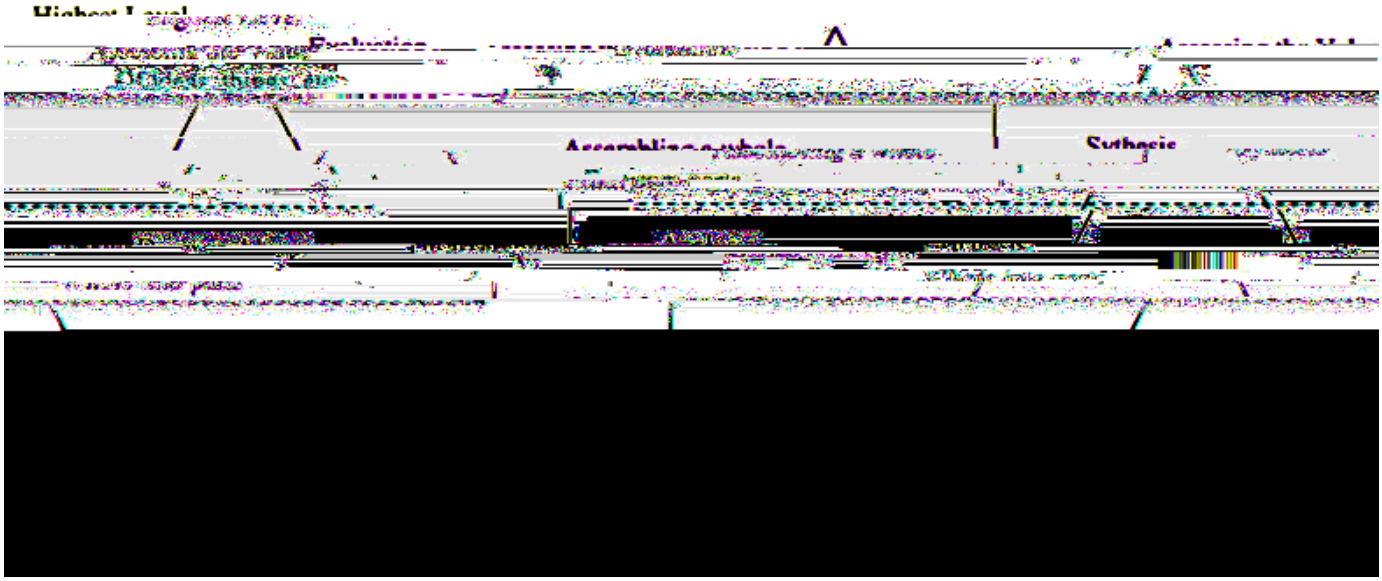
As previously mentioned, you can provide your students with a template. Templates should always be used in conjunction with a rubric so the students know the expectations of the content within each element.

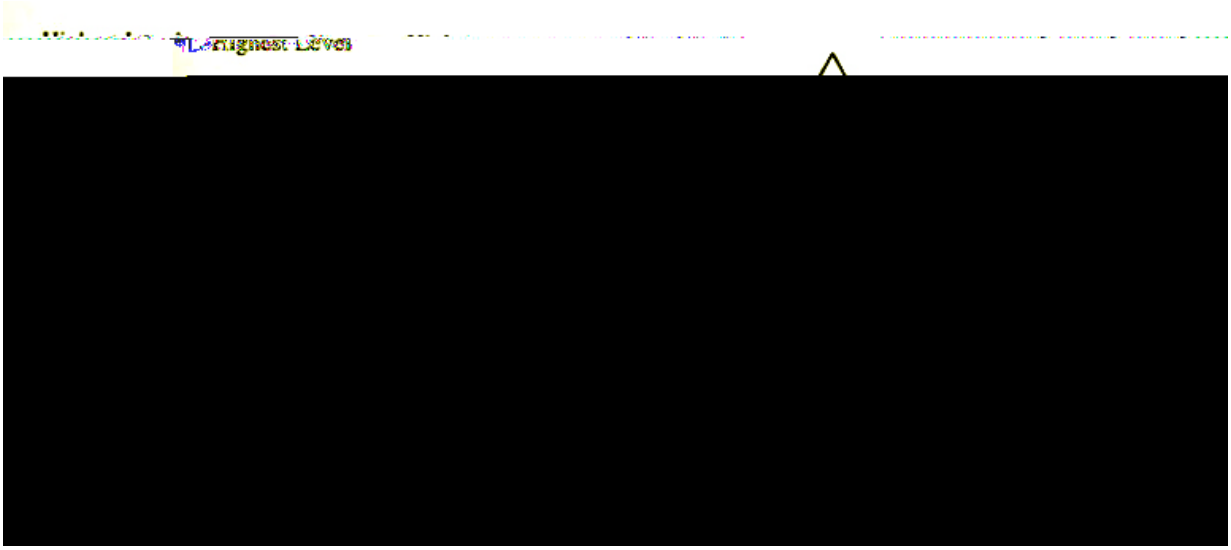
You will have to spend time determining the type of rubric, the score range, and the criteria for each score and possibly each trait, as well. The goals are to engage students in critical thinking and to get them interested in the subject by allowing them to practically apply their knowledge. Once you've experienced this heightened level of involvement, you will know it was worth the hard work and can continue to refine your assessments and criteria based on your observations and students' feedback.

Types of Learning Outcomes

Learning Objectives can be created for any one of the three learning domains: Cognitive Domain, Psychomotor Domain and Affective Domain. Each domain has levels of proficiency. For the various levels of proficiency see the following:

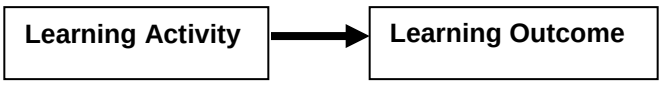
Cognitive Domain





Developing Interactions Aligned with Learning Outcomes

At this point, you have done most of the work. You will now simply design activities that integrate your instructional efforts into a unified whole. In the traditional approach, the learning activity will include the presentation of information used by a learner and may consist of any combination of text, graphics, diagrams, pictures, video, sounds, voice, or musical recordings and the directions that may go along with them. In some instances, the learning activity may be just a detailed list of steps or a complex set of instructions, as in discovery learning.



As a rule of thumb, your learning activity should not contain too many learning outcomes. If you have a large number of outcomes, you should consider developing two or more activities. Keep in mind that interactive learning activities tend to compress both information and learning. Be careful not to overload your learners with more information than they can comfortably handle at any one session.

Sequencing Learning Activities

It is a good idea to design your learning activities with the associated learning outcome. In other words, the learning outcome should drive the learning activity. An effective learning activity prepares the learner to demonstrate the competency and thereby achieve the stated goal or outcome. You may want to ask yourself, "What does the student need to know or be able to do to demonstrate the competency correctly?" A good rule of thumb is to present only one concept or major idea at a time.

Providing Feedback

When the student completes a learning activity, they should be given immediate feedback. The simplest and most commonly used form of remediation is to re-route the learner back through the learning activity, guiding and focusing the learner on the outcome.

Another common form of remediation is to create a remedial "mini-lesson" which presents the required information in a different way. This approach accounts for those situations where the student encounters a learning concept in which they have trouble learning something in a traditional way. It explains the concept in a different way so the student is able to learn and understand.

Summary

THE SYLLABUS AS A LEARNING TOOL[7]

reating a learner-centered course is a highly intricate process. It is easily hindered,

g) and even what material you intend to cover during each class meeting.

Some departments ask new teachers to use existing syllabi (approved by the department) for the courses they are assigned to teach. However, once you become more experienced in teaching, you will be expected to prepare your own syllabi. This is why it is important to learn the characteristics of a good syllabus.

This section will point out some important aspects of a well-written syllabus and you will find a template for a good syllabus in the Appendix. However, this alone might not prepare you

1. **Relevant information about the course and instructor**. A syllabus should include the

7. **A schedule**. If each class hour is mapped out in detail, this will become the longest and most time-consuming segment of the syllabus to prepare, although it will be a good investment in a well-organized class. The syllabus should, at a minimum, contain dates and corresponding lecture or lab topics, the preparations that are required or suggested, and due dates for projects, papers, and major assignments.

Using the Syllabus in Class

First, check over the final typed copy for mistakes and typos. If the instructor does not spot them, it is certain that the students will. Good policy is posting the syllabus on Blackboard ahead of the first class meeting and lets the students know that their teacher is well prepared. The syllabus also provides an easy way to begin the interaction with students and to reduce some of the uncertainty and anxiety of the first class meeting. Sending out an email to your students before your first class meeting can welcome your students, alert them to your expectations and let them know how to access your electronic syllabus.

The instructor will need to review and discuss the syllabus with the students, to answer any questions that they may have and to provide appropriate amplification where necessary. The instructor will probably find that most student feedback will be generated by the section on grading.

If changes are made in the syllabus subsequently, it is a good idea to give them to students in writing. Much ambiguity and confusion can result from half-remembered, spoken promises.

cognitive, psychomotor, and affective content through carefully constructed activities.

Often, providing for student choice in the evaluation of student performance can motivate students to perform well in the course.

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[8] For McKeachie, Lambert, and Nilson, look for syllabi construction in the appropriate chapters.

Student-Centered Assignments & Teaching with Technology

hy is it that some students completely "miss the mark" on assignments? Didn't they read the instructions? What needs to be done for students to complete assignments and turn them in on-time? It seems like such a waste of time and energy, for both you and your students, when they complete an assignment in a way that does not fulfill your expectations or advance their understanding, in the way you had hoped.

Understanding assignments involve:

- Figuring out what you are being asked to do and why you are being asked to do it
- Activating relevant knowledge and experiences of the assignment, the content, and yourself as a learner
- Constructing a personal representation of a similar real-world assignment

- socio-cultural aspects of the task by considering: (a) disciplinary beliefs and genres for writing and thinking, and (b) instructor values for learning and (c) beliefs about knowledge and thinking in this course. Successful students incorporate the subtle distinctions between instructors, courses and disciplines in developing an understanding of assignments.

Helping Students Understand

Butler & Cartier (2004) make the following recommendations.

(a) When developing course assignments, ensure that you make explicit:

- The goals for student learning
- Specific tasks that are required
- The nature of academic work associated with this task

(b) When writing assignment instructions, include explicit directions for monitoring and evaluating their conceptions of the assignment and strategies for completion.

(c) In the design of evaluation practices:

- Match evaluation criteria carefully to the purpose of the assignment
- Engage students in self-evaluation of the assignment
- Require students to actively interpret the feedback that you give them to ensure that they understood the purpose of the assignment.

Rather than simplifying assignments, research about self-regulated learning suggests we should assign challenging but achievable tasks as well as tasks that require some deciphering, thinking and problem solving. When tasks are complex, three strategies that help students navigate the assignment are:

1. Make analysis a graded part of course assignments. For example, ask students to identify the purpose and criteria of assigned tasks in their own words. Research suggests asking students questions such as:
    - Why are you being assigned this task?
    - How does this task fit in with other course readings, lectures, and activities?
    - What does your teacher value in student work?
    - What kind of thinking are you being asked to do?
    - What are the criteria for this task?
    - How will you be graded for this task?

2. Support collaborative task analysis. For example, have four students individually analyze the task, share their understandings with one another and then collaboratively co-construct a description of the task that is submitted for grades.

3. Emphasize post task discussion and analysis. When course tasks are completed, graded, or given feedback, engage students in reflecting upon what went well and why, as well as what, did not go well and why. Students can interview one another, or engage in a reflective assignment. The advantage of this approach is

that it: (a) engages students in serious reflection about the grade and feedback,

3. **Be neat.** Print if at all possible—medium size. If you write too large, you will not have

Electronic Information at ODU

Email Interactions with Students

The increased availability of email at ODU enables the students to have greater access to TAs. Email is an excellent way to handle questions that might not normally merit office hour time, or to handle more detailed questions, if the TA so desires. Additionally, email is a way to foster out-of-class communication. Some courses require email interaction. But no matter how you use it, email can be a powerful tool for your classroom.

Instructional Software

Computers in all technology classrooms are loaded with a standard suite of software. If you need additional software in specific classrooms, please submit your request to the OCCS Technical Support Center. Request can be submitted on line at fp.odu.edu; login using your MIDAS ID and Password or by sending email to occshelp@odu.eduy sendinn7(b)]TJ [(y)172 Tm 60l2

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Holistic Rubric for Essay Questions		
Response	**Criteria**	**Rating**
Exemplary	Clarity of thought, complete. Shows understanding of all processes, reasonable hypothesis or thoughtful questions, conclusions supportable by data, shows creativity, some graphic representation of data or concepts.	11
Competent	Clarity of thought, shows understanding of major processes, includes good hypothesis or questions, draws acceptable inferences and conclusions, may have graphic representations.	10
Minor Flaws	Completes the assignment, but explanations may be slightly ambiguous or unclear, may contain some incompleteness, inappropriateness, or unclearness in representation, hypothesis, understanding of processes, or conclusions.	8

Outstanding Discussion, 3 Points: You have provided an outstanding discussion by combining your ideas with the information from your reading. In responding to the instructor, your response addressed the question and you presented your ideas very clearly, thoroughly and concisely. When appropriate, you supported your comments with information from your readings. When you responded to the postings of others, you appear to have read all of the posting about this discussion and have considered the views of your classmates. In most instances, your postings helped clarify the discussion and may have drawn upon the ideas of several other students to provide a synthesis of ideas or to add another dimension to the discussion. You appreciate diverse views and any criticism you provide is constructive. Your postings go beyond the minimum required for the assignment, not solely in number, but in the content as well. Your writing is well organized and contains few grammatical or spelling errors. *IT DOES NOT READ LIKE A FIRST DRAFT.*

Good Discussion, 2 Points: While your work could not be considered outstanding, you did exactly what the assignment asks and provided good explanations and supporting examples from your readings. In some cases you went beyond offering "facts" and included your opinions and reflections on the topic. In your responses to the postings of other students, you were generally confident yet

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udent has refrained from using inflammatory, derogatory, and ins

this question (See complete descriptions below)Outstanding Disc

		-Has a well-organized 'introduction' to the essay that clearly presents the point(s) to be made in the discussion	

Materials and Methods

The materials section is a list of "stuff" that you will use to conduct the experiment. Be very specific, if someone is so amazed with your results and wants to try it for themselves, then they will need the ***complete*** *list of supplies to do it.*

The methods section tells the reader ***exactly*** *what to do with the materials you mentioned above. Again, be very explicit and precise in these instructions for the same reasons provided above.*

Results

Just the facts, Ma'am. This section provides the reader with the detailed data collected; just what happened. Provide

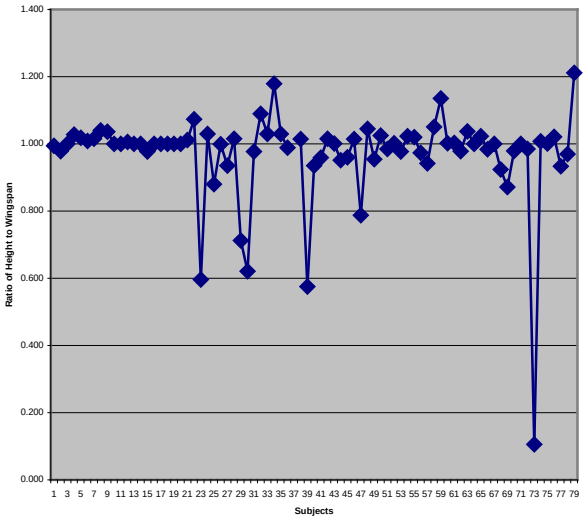

Fig.1. The ratio was calculated by dividing the height by the wingspan of each subject. There appeared to be some unexplained outliers. Perhaps the subjects misread their measurements or misrecorded them at the time of data collection. The majority of the ratios do tend to reside around 1.000.

Interpretations (include inferences)

*Now is the time for you to step up and tell us **WHY** you got the results you did. You are the expert regarding this investigation—convince people of that by demonstrating that you have put some thoughtful time into understanding what has happened in the experiment. Again, refer to tables and graphs as you prove to the reader that your reasoning is **credible**. Compare your results to the hypothesis, discuss any errors that you might have made during the course of the work, and provide directions you may be headed in the future as you proceed with this area of investigation.*

Bibliography

This section provides the reader with a list of all sources used.

Interpretations

5	3	1
Student analyzes results, explaining and describing why and how outcomes were achieved. Student refers to tables, graphs, and prior findings. Student uses research to recognize and state the connections between results, self, and society. Student identifies future questions.	Analysis is faulty. Insufficient use of tables, graphs, and prior findings used to explain the outcomes. Student identifies no future questions and makes no connections.	The analysis is minimal or not based on results.

Bibliography

5	3	1
Bibliography contains more than three credible, diverse sources accurately cited.	Bibliography does not contain more than three credible, diverse sources. Sources are accurately cited.	Bibliography is present but minimal. Sources are not accurately cited.

TOTAL SCORE:

Highly Proficient **Proficient** **Not Proficient**

Appendix B: Learner-Centered Syllabus

Old Dominion University
College:
Department:

Course Schedule Example

This schedule is tentative and might change during the semester according to how the course evolves. The content is subject to change as well, depending on students' interests and progress.

Week	Class Meetings Days	Date	Topics	Assignments	Due Date

8. Grading Criteria

There are 100 points possible for this course. The grade you earn for this course depends on the total number of points you earn throughout the semester. The final grade will be based on the following percentage scale:

98-100 =	**A+**	94-97 =	**A**	90-93 =	**A-**
88-89 =	**B+**	84 0 Td (A)Tj /CS0 cs 0 scn /TT2 1 Tf 0.783 0 Td ( )Tj t 622.68 5			

11.1. College Classroom Conduct

The following standards are intended to define acceptable classroom behavior that preserves academic integrity and ensures that students have optimum environmental conditions for effective learning.

1. Students must turn off cell phones and pagers during class or have them set to vibrate mode.
2. Classes are expected to begin on time, and students will respect the time boundaries established by the professor. If classroom doors are locked, students may not knock or seek entrance in other ways.
3. Students should notify instructors in advance when a class will be missed. In the event of an emergency that causes a class to be missed, instructors must be notified as soon as possible.
4. Instructors may require that cell phones and other electronic devices be left on their desks during tests or examinations.
5. Students must not engage in extraneous conversations during classes. Such acts are considered to be violations of the Code of Student Conduct.
6.

The Old Dominion University email system is the official electronic mail system for distributing course-related communications, policies, announcements and other information. In addition, the University email user ID and password are necessary for authentication and access to numerous electronic resources (online courses, faculty webpages, etc.) NOTE: Effective August 23, 2004, all student accounts will utilize MIDAS passwords. [https://midas.odu.edu]
[http://occs.odu.edu/accounts/studemail/index.shtml]

11.6. Withdrawal