



# Teaching Handbook

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OLD DOMINION UNIVERSITY

# Teaching Handbook

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## Forward & Acknowledgements

This Handbook grew out of our desire to give current and future ODU teaching assistants and instructors the knowledge and tools to successfully meet the challenges of preparing our students to be productive and skilled members of our global 21<sup>st</sup> Century society. We have drawn from both theoretical and applied research studies and from the best practices used at other major universities. With permission of Dr. Karen Klomparens, we have incorporated with minor modifications entire sections of the 5<sup>th</sup> Edition of Michigan State University's Teaching Assistant manual. We have also drawn upon and incorporated materials developed by the ODU Center for Learning Technologies. As much as possible, we have provided practical examples and scenarios to help in the understanding and application of the theoretical principles and practical recommendations for creating effective active learning and effective teaching strategies. This Handbook will require constant revisions to ensure that the pedagogical skills and effectiveness of ODU teaching assistants and instructors are at the highest level possible.

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# Teaching & Learning in the 21<sup>st</sup> Century

## *Introduction*

**O**ld Dominion University promotes the advancement of knowledge and the pursuit of truth locally, nationally, and internationally. It develops in students a respect for the dignity and worth of the individual, a capacity for critical reasoning, and a genuine desire for learning. It fosters the extension of the boundaries of knowledge through research and scholarship and is committed to the preservation and dissemination of a rich cultural heritage. Old Dominion University is old enough to value tradition yet young enough to facilitate change. In a spirit of creative experimentation, innovation, research, and technology, the University is ready to meet the challenges of the twenty-first century.

Teaching and learning has changed significantly in the 20<sup>th</sup> Century. The classroom environment has become more student-centered, the professor more of a facilitator of learning. There is a greater use of technology to encourage learning and motivate student collaboration. There are different 'delivery modes' for teaching and there are students of all ages in your classrooms. Textbooks are no longer the only source of information. Students use multiple sources. Curriculum is multi-disciplinary and no longer focused upon memorization of information, but rather on learning how to learn and think critically and creatively.

In this chapter, we will review some characteristics of today's students.

## Students of the 21<sup>st</sup> Century

The semester is only weeks away and professors are busy preparing their course materials. Some are working on traditional face-to-face courses, while some are working on Teletechnet, hybrid or online courses. Some are seasoned veterans of large auditorium-style courses, some are delivering small graduate level seminars, and some are relatively new instructors. What all instructors have in common is a sense that something is changing in today's student population with respect to learning. Occasionally professors will gather together and share observations such as "These kids just can't pay attention!" or "Students are expecting to be spoon-fed the material!!" Some are frustrated and some are blasting ahead. What all of these professors have in common is the experience of teaching students of the 21<sup>st</sup> Century.

## Multiple Generations

One of the differences you will notice when comparing the classroom of the 20<sup>th</sup> 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, Millennials 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
Non-native speakers	Native speakers (digital language of computers, video games, the Internet)
Traditional learners	Trial and error learners (by college graduation less than 5,000 hours spent reading, 10,000 playing video games)
Legacy content (reading, writing, arithmetic, logical thinking)	Future content (digital and technological content)

The table on the following page compares the differences in learning styles of the Boomer generation vs. the Gen X and Net Generations. How we create and present content should be based on our target population.

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
Learning in specified time periods	Learning 24/7
Face-to-face learning	Interactive virtual learning
Learning as duty	Learning as fun, challenge, worthwhile/meaningful
Rote learning	Analogical learning (comparisons between relevant and familiar things that are similar)

Common characterizations of students' interest in and ability to use technology in teaching and learning were described in the EDUCAUSE Center for Applied Research (ECAR) 2005 Study of Students and Information Technology (ECAR 2005) and included:

- Students are demanding a greater use of technology in teaching and learning.
- Faculty must use technology at an increasing rate to hold the attention of students.
- Students already possess good IT skills and need no further training

While these are typical characterizations, they are not necessarily bad news. Students are demanding a moderate use of technology in their courses (ECAR, 2005; ECAR, 2007) for convenience and connection. This use and reliance on technology does not take away from the valuable face-to-face interaction with professors. ECAR (2007) examined 400 studies about factors of retention and found that degree completion is dependent on students' face-to-face time with instructors and their integration into the academic environment. The idea that faculty must use technology for the sake of technology, in order to hold the attention of students, is not supported by research on this topic. ECAR (2007) found that students in engineering and business prefer more IT in courses. However, this same study found that student abilities in technology are not consistent and some courses that use specific technologies would benefit from training students in the use of technology (ECAR 2007). An example of such a technology is the iPod. Student ownership of electronic music/video devices has risen from 53% in 2005 to 76 % in 2007.

Teaching multiple generations requires special attention in order to keep all students satisfied with the use of technology in the classroom. Some recommendations for instructing diverse populations include:

- Training for faculty and students
  - Faculty must be completely proficient with the technology chosen, and must obtain training to become proficient
  - Once the faculty is trained, they can instruct students on the use of technology in the course by creating an overview or an orientation on the technology
  - Create a “test” scenario that is not graded to ensure that all students are able to use the technology before requiring the use of the technology in a graded assignment.
    - An example of this would be to create an assignment in Blackboard to submit a word document with the student’s name, reason why they chose to take the class, and expectations for the course.
    - Technophobic students will rest easy once the test assignment has been successfully submitted to the instructor
    - Create a test designed as a scavenger hunt on the syllabus to familiarize the students both with the syllabus and the process for submitting a test.

## Summary

Old Dominion University is comprised of a diverse population of students. In your classroom you will find traditional students who have recently graduated from high school, as well as non-traditional students who have spent years in the workforce, military, or managed a family and home. Your students may have traveled from another country, or continent making English their second language. Some of your students may use cell phones, iPhones, or laptops to communicate with each other. You may be teaching in a Teletechnet classroom, a technology classroom or a traditional lecture hall. For all of this, the focus is on teaching and learning; understanding your material and methods for presenting content in a clear and concise way so that students understand, remember and apply what they have learned. Research tells us that while our students may use technology to communicate, listen to music or play games, they may not be proficient in the use of technology as a learning tool. Old Dominion University provides faculty support and training to help you become comfortable with technology and more knowledgeable about the characteristics of our student population. The University is interested in preparing you for teaching and learning in the 21<sup>st</sup> Century.



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# Active Learning and Effective Teaching Strategies<sup>1</sup>

## *Introduction*

Old 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).

<b>Comparison of Teacher-centered and Student-centered Paradigms</b> <i>(Learner-Centered Assessment on College Campuses by Huba and Freed 2000)</i>	
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
Students passively receive information	Students are actively involved
Emphasis is on acquisition of knowledge outside the context in which it will be used	Emphasis is on using and communicating knowledge effectively to address enduring and emerging issues and problems in real-life contexts
Professor's role is to be primary information giver and primary evaluator	Professor's role is to coach and facilitate - Professor and students evaluate learning together
Teaching and assessing are separate	Teaching and assessing are intertwined

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 view of learning as information-gathering to a view of learning as knowledge-building. Real learning is transformative. It changes the nature of what is learned because it involves the learner's ability to synthesize, evaluate, and accommodate new information into old systems of knowledge.

We provide here a selection of strategies that encourage students' critical thinking, foster a sense of learning community, and empower students as learners.

## Instructor Knowledge

Effective teachers exhibit a breadth of knowledge, bring information together from a variety of sources, analyze concepts effectively, and stay up to date in their specialty.

Many new teachers assume that they can teach Math 10I because they took one course in statistics and two in quantitative analysis. However, an in-depth understanding of the subject is often necessary for dealing with the bright, inquisitive student who asks a relevant question that is not covered in the text: "Why didn't you use that same formula to solve the last problem?" Ideally, you will be assigned to a course in the area of your particular expertise, but you should still review material to refresh your memory, and you might try explaining it to someone else as a way of anticipating student questions and problems.

<p><b>Tips</b></p> <ul style="list-style-type: none"> <li><b>Reveal your thought processes</b></li> <li><b>Discuss current developments</b></li> <li><b>Don't oversimplify/But be Clear &amp; Concise</b></li> <li><b>Stay a week ahead</b></li> <li><b>Look up unanswered questions</b></li> <li><b>Evaluate what students have learned</b></li> </ul>
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Just how you present your knowledge will depend on your approach to teaching in general, but you can take advantage of the expertise you have over mere textbook presentations by:

1. Revealing your thought processes and demonstrating and sharing your thinking so that students get a sense of what it means to think like a psychologist or a chemist or an art historian and tackle problems in the discipline
2. Discussing current developments and their effect on present theory
3. Being careful not to oversimplify; there is sometimes a tendency for teachers to summarize what students *need to know* from a course rather than invite them into the discipline and into academic inquiry as a process
4. Staying at least a week ahead of the students if you are teaching outside your specialty, but remembering that you are not responsible for knowing all the answers or that you need not apologize for your lack of knowledge
5. Helping your students find out answers to questions they have by agreeing to look it up later—and following through with this offer—or by helping them find out the answers for themselves
6. Determining through evaluation procedures that are consistent with course goals and teaching strategies whether students have learned what you intended. (See the section on "Active Learning" in this chapter)

Remember that you are not responsible for knowing all the answers; so do not feel compelled to apologize for your "lack of knowledge." If you cannot answer a question or you have made an error, admit it, but tell your students where they may find the answer or offer to look it up—and then do it.

### **Interaction**

Interaction is a critical component of any learning environment, whether in a university classroom, a corporate training room, or an educational web site. While students may respond differently to particular learning environments, research shows that effective learning involves the active participation of the student. Therefore, when designing learning experiences, use a variety of methods and techniques so as to involve or engage each student in the learning process. Several studies have shown that effective interaction can foster cooperative and collaborative learning, in-depth communication, stimulate higher level thinking and problem solving, and it improves students' learning processes and outcomes. Research also confirms that engaging students with interactive content increases retention and transfer. In this chapter, we will describe and provide ways to create four types of interactivity: learner-content; learner-learner; learner-instructor; and, learner-technological medium.

Interaction is a core element of the seven principles of good practice in education (Chickering & Gamson, 1987). These practices include:

- 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
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.

<p style="text-align: center;"><b>Establishing Rapport</b>  <b>Create Comfortable Atmosphere</b>  <b>Remain approachable</b>  <b>Be open to questions</b>  <b>Respond with respect</b>  <b>Stimulate participation and discussion</b>  <b>Convey enthusiasm</b></p>
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## 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.
- c. Admit that you are not sure.

*Inappropriate Response: Tell the student that his or her question is stupid.*

2. What if a student complains to you about the course, exam, professor, college, or subject matter?

- a. Direct him or her to the course instructor.
- b. Defend the system by saying, "There are good reasons why things are done this way."
- c. Ignore his or her concern by saying, "I really can't do anything about it."

*Inappropriate Response: Join in, commenting on your bad feelings about this course.*

3. What if students are not paying attention?

- a. Employ novelty by asking a provocative question like, "Can anyone give me an example of how this relates to your world of experience?"
- b. Admonish them to pay attention by saying, "You'd better pay attention because this might be on the next exam."
- c. Ignore them and continue teaching.

*Inappropriate Response: Tell them that if they won't pay attention then you won't teach, and leave the room.*

4. What if you ask a question and there are no volunteered answers?

- a. Ask a simpler question.
- b. Ask, "What part of this question is confusing you?"
- c. Pick on a student to answer.

*Inappropriate Response: Answer the question for them.*

5. What if nobody has tried the homework before coming to recitation?

- a. Have the students work on similar problems in small groups during class.
- b. Work similar problems at the board or discuss other questions.
- c. Dismiss the class

*Inappropriate Response: Do the homework for them.*

6. What if a student comes in late?

- a. Keep the door closed so he or she has to open it.
- b. Acknowledge that some students may have to come late or leave early.
- c. Complain or scold him or her.

*Inappropriate Response: Lock him or her out and refuse to let him or her in.*

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 continue to disrupt the class.*

8. What is the first thing you do in any class?

- a. Check for questions on previous material.
- b. Launch into a problem that is similar to the one that you thought was difficult.
- c. Tell a joke.

*Inappropriate Response: Apologize for being late – every week.*

9. What if you ask, “Any questions?” and there is no response?

- a. Ask your own questions, such as, “Which homework problem was the most difficult?” or “What part of yesterday’s lecture was most confusing?”
- b. Invite your students to bring individual questions to your office hours or the help room.
- c. Dismiss the class.

*Inappropriate Response: “I know that Joe didn’t do well on the last exam so Joe, you must have a question.”*

10. What if a student crosses the barrier between the student/TA professional relationships?

- a. Tell the student that his or her behavior is inappropriate and will not be tolerated.
- b. Ask him or her to leave the classroom.
- c. Take the situation to the course instructor.

*Inappropriate Response: Give the student your phone number.*

11. What if you suspect that a student is cheating on an exam?

- a. Make a note of the situation and inform the course instructor. Note names of students sitting nearby.
- b. Discreetly ask him or her to move.
- c. Stand nearby and let him or her see you watching.

*Inappropriate Response: Accuse him or her publicly (loudly in front of others) of cheating and take away the paper.*

12. What if a student asks for the answer to a homework problem?

- a. Ask him or her questions to lead him or her to the answer.
- b. Explain the problem solving process without using numbers.
- c. Have the student explain his or her thought process and the part that is understood so that you can identify the specific concept that he or she does not understand.

*Inappropriate Response: Solve the problem for him or her.*

## **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 perceives the situation and brings order to a maze of raw data. Second, you need to explain how these general principles apply to the specific case covered by a particular problem. It is important to keep in mind that your students are just beginning to learn the material and might have a naive, non-disciplinary view of the problem. Therefore, your job is to explain and demonstrate how you as a representative of your discipline approach the problem, from general conceptualization to specific procedures.

A little practice will help you decide which of the following techniques works best with your students the material to be covered in your class:

1. Demonstrate a problem's solution by systematically explaining the rationale for every step in a solution
2. Ask members of the class to take the lead and explain how they perceive the problem
3. Divide the class into small groups (3 or 4) and have group members take turns in leading a discussion on solving the problem, after which you can check their solutions as you lead a whole-class discussion

## **Lecturing and Other Learning Activities**

Research clearly indicates that when students construct knowledge from their active participation in a course, real learning and critical thinking occur. The traditional format for the transmission of knowledge in the college classroom has been the lecture, but there are numerous alternatives to the lecture for providing opportunities for students to engage actively in the construction of knowledge and to develop a perspective on the kinds of critical thought that are central to understanding that discipline.

The following section presents strengths and weaknesses of the traditional lecture format, along with several alternative approaches that encourage active student participation in course content. Instructors need to determine their purposes and goals for presentation of course material and then decide which of the approaches discussed in this section are most appropriate for the course content, course goals, and classroom environment.

### Lecturing

The survival of the basic lecture—a method of teaching by discourse rather than conversation or seminar—in this age of technology and electronic media is, in many ways, remarkable. Lecturing is probably the oldest teaching method and remains the most common form of instruction to be found in United States colleges and universities, despite the fact that some research has shown that lecturing is ineffective, especially if not combined with some alternative style of teaching. As well as working to improve skills at lecturing, the instructor might also determine if the lecture approach is the best method of teaching for the achievement of the instructional goals of the class. Lecturing is very appropriate for some



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 1 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?

<p style="text-align: center;"><b>Preparing the Lecture</b></p> <p><b>SELECT A TOPIC</b></p> <p><b>Decide on the purpose</b></p> <p><b>Analyze the class</b></p> <p><b>Analyze the occasion</b></p> <p><b>Gather materials</b></p> <p><b>Prepare the lecture</b></p> <p><b>Practice the lecture</b></p>
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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

feedback. Here are some further suggestions for the contents of an effective lecture.

### The Introduction

It is advisable to plan an introduction that might point to a gap in the students' knowledge or challenge or raise a question about something in the students' minds in order to arouse curiosity. Good introductions may also help students to discriminate between more and less important features of lectures, may help them create realistic expectations about what they are supposed to learn from the lecture, and may enable them to allocate their information-processing capability much more effectively. The aim, in short, is to capture the interest of the listener. As with good drama, effective lectures "hook" their listeners' attention from the start.

Suggestion: Raising a question to be answered by the end of the hour.

*Example: By the end of the hour, you should be able to answer the question "Are lectures better than discussions"*

Suggestion: Explaining the relationship of the lecture content to professional career interests, the real world, etc.

*Example: Today's lecture is about the cost of living indices, a topic in macroeconomics that should help you understand the recent discussions in Congress related to inflation.*

Suggestion: Relating lecture content to previous class material.

*Example: For the past week, we have been occupied with the history of the live theater. Today, we will be looking at film history, and we will spend the rest of the week comparing the two forms.*

Suggestion: Telling students how they are expected to use the lecture material.

*Example: Today, I will offer a specific model of evaluation and illustrate its application in several different kinds of settings. When you meet in your discussion groups later this week, you will be asked to apply the model as you discuss the Brown vs. the Board of Education decision.*

Some other ways to start a lecture include telling a personal anecdote or telling a relevant funny story or joke, providing an overview of the lecture, and giving the lecture an intriguing title.

### The Body of the Lecture

In the body, instructors can allow for some flexibility in the amount of content to be presented in order to respond to students' questions and comments. It is imperative for the lecturer to determine the key points to be developed during the class session, and not to present nuances and minute details to the extent that students lose sight of the main idea.

Instructors should not feel pressed to cover everything, as an effective lecture uses varied pacing to help students make some critical distinctions between important concepts and trivia. Many researchers suggest that the individual lecture should cover only four or five main points that are made explicit to the students. The body of the lecture must, of course, be well organized. Organizing the lecture can be done in a number of different ways; the most appropriate will depend on the subject itself as well as the lecturer's personal approach. Here are some examples:

Cause and effect: Events are cited and explained by reference to their origins.

*Example: One can demonstrate how the continual revolutionary movements of the late 1700s affected British politics at the turn of the century.*

Time sequential: Lecture ideas are arranged chronologically.

*Example: If lecturing about the steps in a clinical suspension model, talk about the initial step to be taken, the second step, and so forth.*

Using an organizational idea to structure the lecture.

*Example: Today we will view all these methods from a perspective of validity.*

There are many other organizational possibilities. One can state a problem and then offer alternative solutions; arrange lecture topics according to their importance, familiarity, or complexity; or offer a two-sided "compare and contrast" presentation.

Examples should be included in the lecture. Almost all writers agree that illustrations help people to understand things. Lecturers might try to provide a break in the information output every 10 minutes or so to maintain attention. These are good times for anecdotes, visuals, humor, questions, and the like.

The body of the lecture can help the students understand the way that the points are organized. After stating major points verbally, it is a good idea to put them on a handout or write them on a board or overhead projector. Complex points are easier to explain if the instructor uses an appropriate vocabulary level, uses a variety of illustrations, includes essential content before "nice to know" content, and restates points after illustrations. Illustrations or examples will work best if they include some of the following qualities: precision (fit the idea well), relevance (fit the context well), ingenuity, interest, novelty, humor, and scholarship.

#### The Conclusion of the Lecture

McKeachie (1994) says that in the conclusion of the lecture one has the opportunity to make up for any lapses in the body of the lecture. He also notes that encouraging students to formulate questions by asking questions can facilitate memory and understanding. The prospect of unanswered questions to be treated in future lectures creates anticipation of the

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 for which you have paid, and I shall end promptly, so just wait to grab your back packs." Another trick for the end of class is the creation of suspense, which can be accomplished in a variety of ways such as posing a question. One should make sure that there is no consistent verbal or nonverbal cue signaling the end of class, which will cause students to lose attention. Such a cue might be the return to the podium, the gathering of papers, etc.

## Instructional Strategies for Actively Involving Students<sup>2</sup>

### Case Studies

Very broadly defined, a case study is a teaching instrument that portrays a real life situation for student analysis. Case studies are used frequently in professional schools to enable students to develop their skills in analyzing situations and making sound decisions. Often, a prepared case can be used, but when new cases are developed, the instructor should focus on an important dilemma or issue, create enough detail for the students to comprehend the case, and choose a situation about which there is room for debate and several possible courses of action. Students are asked to read the case before class. During the class session, the instructor first makes sure that the students understand the details of the case, then leads them through an analysis of the problem and discussion of possible alternative courses of action. The instructor serves as discussion facilitator, probing for detail, support for arguments, evidence, etc.

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<sup>2</sup>This section of the handbook has been modified and reprinted with permission from *Teaching at The Ohio State University: A Handbook*. Center for Teaching Excellence, Faculty and TA Development, The Ohio State University, Revised 2002, pp.60-61.

### 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 principles, or create a product. If the groups are balanced well, the task is clearly outlined, and the allocated time is appropriate for the task, the group will engage in peer learning and increase their abilities to function in an interpersonal setting through the process. The instructor's role is to serve as designer by carefully structuring the groups and tasks and to serve as facilitator while the groups are working, helping with interpersonal or task-related problems as they arise.

### Learning Cells

Learning cells are a variety of peer-learning that can be used when it is important to have students verbalize what they have read. Reading assignments are given before class and part of class time is spent with students in pairs telling each other what they read. The students may have read the same material beforehand, in which case they are demonstrating their comprehension and recall and getting an opportunity to clarify their understanding with one another, or they may have been assigned different readings, in which case they can complement each others' knowledge with some different information or perspectives.

### Discovery Format

In a discovery or inquiry format, the instructor sets up a novel situation, an interesting puzzle, or an open-ended question that students are asked to explore using their own creativity and resources. They may be asked to hypothesize, based on only partial information, on what building materials were used to construct an ancient building; they may be asked to construct a device for measuring something or making certain musical tones; or they may be asked to interview each other about what triggers depression in their lives. The instructor once again serves as designer of the activity, choosing activities that are likely to lead students to accomplish a learning goal, and as facilitator during the process, helping students to stay on course and to locate the resources they need. In the discovery format it is important for the instructor to stay as non-directive as possible so that students develop independence and personal excitement.

### Role Playing

In many courses, role playing can be used to develop empathy, to enliven a historical, philosophical, or literary topic, or to provide a concrete enactment of an abstract topic. Volunteers are asked to portray certain roles and given sufficient information on the context to enable them to improvise dialogue and actions. In some classes, the instructors have attended class in the role of a character and have enlisted colleagues to join them in enacting a situation for the students. The class is asked to play the role of those in the situation as well, asking questions or engaging in dialogue in ways that would be appropriate for the setting.

## 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.

## Simulations

Simulations allow students to engage in learning activities that may otherwise be too time consuming, too expensive, or ethically questionable (requiring animals or intervention into human behavior). Using an established game or computer software or creating a scenario, the instructor develops a simulated environment within which students will engage in activity directed toward a learning goal. They may be asked to set up companies and create mergers; they may be asked to develop marketing packages that they will present to a real or simulated client; they may be blind folded to experience sightlessness; or they may be required to recreate a military battle or other historical event using a new strategy. The role of the instructor is to identify and preview established simulations for use in the course or to create scenarios that are likely to engage students in experiential learning directed toward a course goal. During the simulation, the instructor serves as a facilitator.

## Choosing Strategies

The particular learning strategies and activities that are selected for engaging students actively will depend on the context of the specific course and student preparation with which the strategies are employed. Given the variety of strategies available, however, there are ways to pervade every course with opportunities for students to become actively involved in learning during class time. In addition to increasing motivation and providing feedback at crucial points, strategies that engage students help to develop the competencies of reading, speaking, writing, critical thinking, and problem solving that are marks of the well-educated person.

## Active Learning: Discussion, Writing, and Collaborative Learning<sup>3</sup>

Active learning is an approach that views the student as an active participant in the learning process. It is in many instances a viable alternative to and complement of the lecture approach. This section will talk about ways instructors can engage students actively through integrating instructional strategies into a lecture or using them as stand-alone methods. The focus will be on speaking, writing, laboratory and clinical instruction, and other strategies for active engagement.

## Leading Effective Discussions

A highly effective way of promoting active engagement in learning is to provide opportunities for students to verbalize what they are learning in the classroom. Instructors are thus able to provide the feedback that is such an important part of the learning process at the time when it is most needed.

Discussion techniques are one way to get students to verbalize what they are learning. In addition, discussions can provide a socializing mechanism, examine and clarify confusing concepts, and raise value questions. Discussions can be invaluable for any of the following goals of instruction:

1. To help students learn to think in ways that are particular to the discipline
2. To help students learn to identify and evaluate the logic and evidence that forms the basis of their own and others' positions
3. To give students opportunities to formulate applications of principles
4. To help students identify, formulate, and solve problems using information gained from readings, lectures, and or life experiences
5. To use the resources of members of the group
6. To gain acceptance for information or theories counter to previous beliefs of students
7. To develop motivation for further learning
8. To get prompt feedback on how well objectives are being attained

## Setting Discussion Objectives

Well-defined objectives are an important prerequisite to a good discussion. They also help determine the kind of discussion appropriate for the situation. It helps to view discussions along a continuum from targeted discussions, where the instructor carefully controls the discussion and asks questions requiring specific responses, to open ended discussions, where the instructor allows the students to formulate the questions and control the discussion. If the objective is to assess students' comprehension of course material or review or summarize content, targeted discussions will serve best. If the objective is to promote critical thinking, curiosity about the topic, or tolerance for opposing viewpoints, open-ended discussions are most appropriate.

An essential difference between a targeted and open-ended discussion is the kind of question asked. Questions asked in a targeted-discussion are often structured to produce short, convergent responses. Questions in an open-ended discussion provide more latitude for response. Some examples follow:

*Targeted questions:*       What is the definition of an adjective?  
                                      What are the stages of cell division?

*Open Ended Questions:*   What are some ways we might solve the energy crisis?  
                                      Given the medical data before you, how would you go about diagnosing this patient's problem?



In targeted discussions, the instructor wants to keep a tight rein on the direction. In addition to using convergent questions, other ways in which the instructor can focus the discussion include intervening after each response to comment upon it, summarize it, or redirect the question; mapping the direction of the discussion on the blackboard or overhead transparency; limiting the duration and number of responses, and moving quickly from one question to another. In contrast, the instructor in an open-ended discussion would act differently, using broader questions, allowing ample time to respond, encouraging a lateral rather than teacher directed response pattern, e.g., "Does anyone have a comment on X's response?" or "Feel free to jump in and respond to each other"; and reducing his or her role as authority by sitting down or remaining quiet.

Although the type of discussion questions must be tied to the purpose of the discussion, there are findings to indicate that questions that are middle-range in their openness elicit the highest quality of frequency of response. John Andrews writes, "Perhaps the most important quality to grasp is a subtle blend of structure and freedom which gives a discussion momentum and yet does not let it wander indiscriminately" (1980, p. 147). In a study of questioning behaviors, he found that when instructors used what he called "playground" questions, questions that designate the intellectual sphere for discussion and then give students latitude for answering, they got better results than when they asked very open-ended "brainstorming" questions, convergent "quiz show" questions, or highly unfocused "general invitation" questions, such as "So what do you think about Plato?"

### Building Rapport

Perhaps nothing is more important to a good discussion than good rapport between instructor and students. Some behaviors that promote the establishment of good rapport include:

- Willingness to share personal experiences
- Willingness to admit uncertainties
- Openness to new ideas
- Ability to suspend one's judgment of others
- Ability to listen carefully to others' statements
- Tolerance of opposite points of view

Many students test the waters to see how their ideas will be accepted; if the instructor lacks sensitivity, students may become unwilling to contribute. This section will explore some ways to build rapport and to avoid damaging it.

### Opening Session

Students look for clues to an instructor's temperament and orientation in a number of ways on the first day. Instructors who emphasize that discussion will be an important part of the course influence students' expectations. Some instructors go on to define the criteria for receiving full credit for class participation, including such items as integration of class experiences and materials, the development of pertinent ideas, insights, or points of view, the sharing of exemplary experiences, asking of crucial questions, or building on provocative

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 that is a very interesting question. Can anyone help us unravel ourselves here?
4. I am not sure I understand. Were you saying that the survey questions were too personal? Can you give me an example?
5. Feels to me like we have rather strayed from the point. Have we?
6. Let us not forget the basic problem we are trying to solve.
7. What is the first step?

### Nonverbal Cues

Nonverbal ways in which an instructor can create rapport during a discussion include:

1. Showing enthusiasm when listening to student responses by smiling expectantly and nodding as the student talks.
2. Keeping eye contact with the student talking.
3. Walking toward the person who is talking, even if there is only space to take a few steps in any direction.
4. Walking around the room throughout a discussion so students will view people in different parts of the room.
5. Looking relaxed by leaning against the wall, sitting on a desk, or pulling up a desk or chair and joining the class.
6. Arranging students' chairs in a circle or in a configuration in which they can see each other talking.

## 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 order to make this method effective, students must be

### **Discussion Starters**

**Start with a common experience**  
**Start with a question**  
**Start with a controversy**  
**Place students in buzz groups**  
**Ask for responses in writing**

given a clear task and a definite amount of time in which to do it and asked to use their responses in a follow-up discussion with the class as a whole.

**Ask for responses in writing.** One excellent way to get discussions going is to ask students to respond to the question you wish answered in writing. Usually five minutes is enough time for students to prepare their answers. Encourage them to be creative by using the writing as a chance to brainstorm. Then invite oral responses. Often quiet students will speak up if they have the words before them. Also, written responses often lead to more reflective discussions.

### Ground Rules

Ground rules can be ways of having students take ownership of the concept of co-creating a classroom environment conducive to learning. By gaining class consensus on ground rules from the outset, teachers can be assured of student support and participation in their enforcement. Four suggested ground rules are:

1. **Participation.** Rather than generalize and say "those people" or "don't you think," instructors can encourage students to use "I" statements and speak their own experience. Personalizing discussion invites diverse perspectives from students who often find themselves on the fringe of university life, such as gay, lesbian, and bisexual students; nontraditional-age students; and students of color. Instructors can ask students who know they tend to monopolize discussions to self-monitor and make room for quieter students. At the same time, instructors can encourage students who tend to be quieter to contribute to enhancing the learning by sharing their perspectives and experiences.

2. **Confidentiality.** Instructors can encourage students to take concepts and ideas from class and discuss them freely; however, they should suggest that personal stories or issues raised by individuals are to be kept confidential and the property of the class.

<p style="text-align: center;"><b><u>Ground Rules</u></b> <b>Participation</b> <b>Confidentiality</b> <b>Respectful listening</b> <b>No Put-downs</b></p>
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3. **Respectful listening.** If instructors demonstrate that they are good listeners, they can encourage students to raise questions. Instructors can point out that if someone raises a point that others disagree with or find offensive, it is important to remember that the human being behind that question or comment deserves respect.

4. **No Put-downs.** Tied to the notion of respect is the ground rule of no put-downs in class, not even the humorous variety called "zaps." To "zap" one person often serves to discourage open and honest exchange of ideas among the whole group.

### Maintaining Discussions

Maintaining discussions often means dealing as smoothly as possible with the problems that arise. Here are some common problems with suggestions for how to deal with them:

**The student who talks too much.** One way to approach the avid talker and pull in non-participants is to avoid looking in the direction of the persister or to structure the discussion in a way that precludes that person's participation, e.g., "Let's hear from someone who has not yet contributed." Instructors might also ask one or more members of the class to act as observers for a few class periods, reporting back their observations to the class. Perhaps assigning the avid talker to the observer role would help sensitivity. Another technique is to talk to the student individually outside of class.

**The student who will not talk.** Instructors need to set clear expectations for participation. It is also important to reinforce participation. A way to approach non-participants is to provide opportunities for small group discussions. Smaller groups may help put some students more at ease. A second strategy is to occasionally ask opinion questions (e.g., "How do you feel about this?"). This may encourage participation by reducing students' fear of answering incorrectly. Another strategy is to have students write out their answers to a question. Having the words written out may make it easier for a shy or fearful person to speak up.

**The discussion that turns into an argument.** In good discussions, conflicts will often arise. If such conflicts are left ambiguous, they may cause continuing trouble. Here are some ways to resolve them:

1. If the solution depends on certain facts, the instructor can ask students to refer to the text or another authority.
2. If there is an experimentally verified answer, the instructor can use the opportunity to review the method by which the answer could be determined.
3. If the question is one of values, the instructor may use the occasion to help students become aware of the values involved.
4. The instructor can list both sides of the argument on the board.
5. The instructor can take a strong position as moderator, preventing students from interrupting each other or speaking simultaneously. She or he can lay ground rules for discussion, such as asking students to focus conflict on ideas rather than people and to resist being judgmental.

<p style="text-align: center;"><b><u>Common Problems</u></b> <b>Student who talks too much</b> <b>Student who won't talk</b> <b>Discussion turns to argument</b> <b>Unclear or hesitant comments</b> <b>Discussion goes off-track</b> <b>Student who attacks instructor</b></p>
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**Unclear or hesitant comments.** The instructor can encourage students making unclear contributions to give examples or restate points for verification or rejection by that student, encourage hesitant comments by enthusiastic nonverbal cues and patience, or asking for elaboration and examples at appropriate points.

**The discussion that goes off track.** Some instructors keep discussions on track by listing the questions or issues they want to cover on the board or summarizing the discussion on the board as it proceeds. Stopping and asking a student to summarize where the discussion is at the point it appears to go off track may also help.

**The student who attacks the instructor.** When students argue for the sake of argument,

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..."
2. **Active listening**. Instructors can paraphrase the message they heard and check out the accuracy of their assumptions before responding.
3. **Locating**. Instructors can ask the questioner to explain the context behind the question.
4. **Reframing**. The focus can be on clarifying the assumptions behind the person's argument and then inviting her or him to see alternative possibilities. "Your argument is premised on the idea that people cannot be trusted. How would you restructure your position to reflect the assumption that people can be trusted?"
5. **Deferring**. Often, the best strategy is to invite students to come up after class and arrange for a time to talk about the disagreement further.

### Creating Closure

Good discussions end with a summary so that students know what important points were covered. The advantage of active learning techniques such as the discussion is that students have the opportunity to verbalize course materials for themselves and receive responses in class from the instructor on how well they understand that material. In addition to showing students why the discussion was important to their learning, a summary provides the opportunity to fill in points that were not covered and praise the class for the quality of their responses.

### Structured Controversy

Using structured controversy in the classroom can take many forms. In its most typical form, you select a specific problem (the closer the problem is to multiple issues central to the course the better); it involves providing students with a limited amount of background information and asking them to construct an argument based on this information. This they do by working in groups (and so, it is not unlike the cooperative learning strategy described below).

Let us imagine that you are teaching an undergraduate course in medical ethics. You are about to deal with issues surrounding the problem of organ donation. You introduce the topic briefly, perhaps providing students with essential background concerning, for example, the cost of different types of organ transplants, the availability of donor organs, the probability of success for transplantation of different organs, institutional constraints, etc. Then you set up the following situation: four individuals are on the list of potential recipients of a donor liver. One of these is a white male, 55 years old and a recovering alcoholic; another is a former teacher, 42 years old, married with two young children; the third is a 25-year old prostitute with a history of drug abuse; and the fourth is a 17-year old high school honors student who has just been offered a scholarship at an ivy-league university. A viable liver has now become available. Each of your students is assigned to a group, each of which represents a member of the hospital medical ethics review board. The job of the board is to decide which of the potential recipients should receive the donor organ. These groups include:

- 1) Clergy
- 2) Surgeon
- 3) Insurance company representative
- 4) Family member
- 5) Past recipient of donor liver
- 6) Chair of the hospital's Board of Directors

Each of these groups will receive a fact sheet providing them with information that they may choose to use in the development of their argument.

After the students have the opportunity (both in and out of class) to develop and present these arguments, it would be useful to have them all write about what factors they feel are important to weigh in making decisions such as these and what they learned from engaging in the process.

#### Getting Students to Ask the Questions

Instructors traditionally ask the majority of questions as a way of getting students to think about course content or demonstrate their knowledge of the material. The typical pattern is:

- I - Initiation of the question by the instructor
- R - Response of student
- E - Evaluation of response by the instructor

In this questioning pattern, the instructor does most of the cognitive work. To turn this around, you will want to get students to ask the questions, to make the cognitive connections, to evaluate ideas and responses—their own as well as those of their peers and the instructor.

#### In-Class Communication Tips

Open communication is necessary to have a classroom conducive to learning. Good communication with your students will allow you to better assess and serve their needs. Misunderstanding, however, can occur. The following lists contain suggestions and

questions for self-evaluation.

#### Tips for International Teachers

1. Try to become aware of common idioms and slang used by students on this campus; expressions can vary from place to place.
2. When not sure how to interpret student comments, ask for a fuller explanation; when a remark seems strange or out-of-place, ask if the student is joking. Check with someone familiar with such language expressions to help you better understand what the student may have meant.
3. Use some humor when having problems with language and ask students to help correct your word "bloopers."
4. Remember that listening carefully to someone who speaks a little differently than one is used to can be tiring, especially when material is difficult.
5. Take your time and speak a bit more slowly than you usually do.
6. If unsure of the pronunciation of a word, write it on the board or overhead projector to help avoid confusion about the word.

#### Tips for All Teachers

1. When students ask a question, start by stating the question back to them in the form of a question, "Are you asking whether the etiology of \_\_\_\_\_, is affected by \_\_\_\_\_?" Ask students to stop you, or correct your interpretation of the question if that is not what they indeed asked.
2. Allow students to stop you when they fail to understand something in your lecture.
3. Be careful of critical, negative comments. Offer specific suggestions for change, tactfully and constructively.
4. Keep a comfortable amount of distance between your personal life and those of your students. This makes issues of respect, grading propriety, and equitable treatment simpler.
5. To generate student interest, use personal stories, cartoons, popular culture, news, etc. to make the material more relevant to their lives and to show your own excitement about the subject.

After you have had some classroom instructional experience, you can better address the following questions. It would be a good idea to read them over before the term begins and then again as you have interacted with your students.

1. Are my speech habits conducive to good communication and maximum student learning?
2. Do I make every effort to speak in an orderly, direct manner?
3. Do I avoid the attitudes of prejudice and emotional bias in my classroom planning and speaking?
4. Do I speak at a rate that makes for effective comprehension?
5. Do I speak with the appropriate volume for the size of the room and the number of students?  
Do I use variety in vocal expression—pitch, rate, loudness, and quality?
6. As part of my regular presentations, do I include examples and explanations suitable to



- 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 feeling powerless, angry, and frustrated. You need to address their feelings first. The following guidelines will help you successfully negotiate with students during office hours:

**Be prepared for student frustrations and allow students to vent.** Do not let a student's anger, frustration, tone, etc. put you on the defensive. Student-instructor communication is not a competition. Avoid temptation to "show who is boss." Agree with students that they have a right to their feelings and strive to work for a solution. Although you may not understand the intensity of the emotion expressed, do not let this gap inhibit your role as a teacher and problem solver. Simply accept where the student is coming from and attempt to separate the problem from the emotion expressed.

**Become an active listener.** Repeat and summarize a student's comments. Paraphrasing allows the student to gauge whether or not you have understood the complaint, and it helps both student and instructor to frame the problem to be addressed. This also allows you to filter out some of the emotion and guide the discussion.

**Practice the art of asking questions.** Use open-ended, leading questions with students. If the student says, "You graded my paper unfairly. I didn't even know what you wanted, anyway," resist the temptation to reply "Why didn't you ask me before you started writing?" Nothing is gained when you launch into a lecture on sliding academic standards and your personal obligation to reestablish integrity in the university. Instead, ask the student how he or she arrived at this conclusion. Should you have given more feedback? Were your comments clear? What did the student think was unfair about your evaluation? The student's answers to your questions will both give you information about the immediate problem, and help you establish a picture of the student's mindset. Questions also help to separate issues. You could ask, for example, "Are you angry about the grade you received or about my comments on your paper?" The answer will help you work with the student toward specific solutions. Finally, in many cases asking questions diffuses student anger, because it shows the student that you are taking the concerns seriously.

**Take student perceptions seriously.** Try to eliminate statements like these from your conferences with students: "You are wrong," or "That is unreasonable," or "That is not

rational," or "You are too emotional." Instead, accept students' perceptions and try to discover why they see things as they do. You might discover, for example, that students view education as a commodity: they pay their tuition, and they deserve a grade for it. Or they might believe that the time they spend preparing for a test or doing an assignment should ensure a particular grade. You may see things very differently, but if these are the student's perceptions, you must discover and address them before you can hope to resolve any differences with the student.

**Propose multiple options to address student concerns.** Demonstrate your willingness to help the student address the conflict. Aim for a win-win solution. For example, if a student has done well on homework but has failed a test, you might suggest having that student pair up with another to study for tests, or come to your office for help before the test. Perhaps you need to advise the student on test-taking skills—the student might experience test anxiety, which interferes with performance. Do not stress students' obligations to fix their own problem or accept the consequences.

**End the session with a plan of action.** After discussing options, reinforce the problem-solving nature of the meeting by creating specific agreements with specific actions expected on both sides. Students who leave with a plan in hand will feel validated and more open to future learning.

Office hours can also present an opportunity for teaching. In the office, it is possible to go beyond the students' questions. You can help the student's construction of knowledge, taking the student through the steps of the inquiry process of your discipline. You can share study and test-taking tips, or mentor the student providing resources and materials to help them to the next level. Of course, students more often view 'office hours' as a time to ask questions about grades and assignments. That places the focus on errors, when you can possibly take the student in a more positive direction.

### Collaborative Learning

Collaborative learning can be described as learning that occurs because of interactions between members of a collective (meaning two or more individuals). In classrooms, learning-related tasks we are most familiar with are laboratory groups in science classes where pairs of students work together to carry out an experiment. Although in many cases, this does not represent true collaboration, but rather compartmentalization of work. The result is that individuals do not have a complete understanding of all concepts involved, or inequitable distribution of effort, in which one student does most of the work but also understands more. A critical component of cooperative learning is division of labor by consent, within-group explanations, and sharing of information in equitable ways. Another critical prerequisite for success is the setting up of rewards for both the group and for individuals within the group; that is, each student must feel as though his or her contribution to the group and their individual contributions will be rewarded.

What might this look like when enacted in your classroom? Let us say, for example, that you are teaching a large lecture course in biology. You might divide the class into groups of 4-5

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 product. What does this do for you? It allows you to structure the way a topic is introduced to the class and to link topics or concepts across the semester. Second, it provides students with additional investment in the course. Third, particularly in large classes, it allows students to get to know well at least some other students taking the course. You can choose to alter the groups as the semester progresses, but it is critical to allow students the opportunity periodically to let you know privately how they perceive things in their group are going. Cooperative learning strategies can be extended to homework assignments and other performance assessments (e.g., tests) in which you allow students to work in these groups on particular questions. Again, it is probably wise to include questions that must be answered individually on a test as well. Cooperative learning also can be used in the writing process, where students meet regularly in groups to develop a research proposal. Here they can develop ideas and shape their writing via peer editing and several other group-based strategies.

#### Incorporating Writing in Instruction<sup>4</sup>

Recently, writing has been recognized as an important vehicle through which people not only communicate ideas but also generate them. Writing, then, can be used as an inherent part of learning, creating occasions for students to fit new information into their existing knowledge structure and to expand their ways of thinking. The importance of writing in the thinking process implies that writing should occur in courses throughout the curriculum, a belief that is implicit in the curriculum at ODU and elsewhere. The development of writing skills has been recognized as an essential accomplishment of a college graduate for which all instructors, not only those in English departments, have responsibility.

Many instructors, believing that they have not had specialized training in the teaching of writing, are uneasy about the role they are being asked to play. They are also reluctant to add the grading of great amounts of written work to their existing workload. Fortunately, experts in the field are able to provide reassurance on both counts. The emphasis on writing as process stresses the role of the instructor as a facilitator of the thinking process rather than as "guardian of the semicolon," the technical expert on points of grammar. Suggestions for setting and responding to writing assignments in ways that engage students without creating excessive burdens on the instructor are also available. They revolve around two main thoughts:

- I. Writing assignments need not be formal or lengthy. Writing as a medium for actively engaging students in learning can be used as a tool for discovery and understanding in an ongoing way that is integral to course activities; for example, an instructor might ask students to take a minute to write down their ideas before they respond to a question posed

in class. The instructor might ask the students to write a short summary of what they learned in class or any questions that they still have about the material after class. Good writing assignments are meaningful, related to the goals of the course, clearly defined, and practical for both student and instructor.

2. Not all written work needs to be graded. In fact, instructors who set only formal written assignments to be graded perpetuate the notion that writing is only an end product of learning, rather than a tool to be used in the process. Writing can be incorporated into the class to serve several different functions, including a feedback and class management tool for the instructor; a way of having students reflect back on their learning, themselves, and their audience; and a means of sharpening students' written skills.

As a feedback device, the instructor can employ an anonymous one-minute reaction paper at the end of class or after a particularly intense discussion to solicit input and to test for understanding. The results can be reported back to the class at the next session and/or incorporated into the course design.

Journals can help students reflect back on unresolved questions and conflicts raised for them in class, and they can assist students to see how they have grown during the life of the course. These journals can also serve to personalize the classroom learning if they are turned in periodically or midterm for instructor comment or response.

Finally, writing can help students see issues from diverse perspectives by stretching them to write with the perspective of the "other" in mind.

To incorporate writing as an integral part of the learning process, instructors can suggest a variety of ways in which students can write as the course progresses. Ways that have been used effectively across courses include:

### **Reading Journals**

Instructors can suggest that students keep journals to chronicle their understanding of texts that they are reading for class. Students can be encouraged to write entries that reflect the main idea of the reading, major points that are covered, and the questions that they have after reading the text. To increase the level of cognitive activity involved in the reading assignments, instructors can suggest that students write about possible applications of the ideas, ways in which the material fits with other course readings and information, and their critical evaluations of the merit of the ideas or readings. Instructors may elect to review these journals periodically, reacting to points that they find particularly interesting, or they may view the journals as personal aids to scholarship for the use of the students alone.

### **Learning Logs**

Learning logs are a specific kind of reading journal in which students are asked to structure their reading responses in dual columns in their notebooks. Students are asked to divide a paper in half, to list key concepts in the left half as they read the text, and to write their responses to the concepts in the right half, continuing the process through the text. Learning logs help students become more aware of text organization, more ready to participate in

class discussion, and more capable of formulating ideas for their own writing.

### **The Précis**

Instructors can ask students to write a very brief summary of the major points of a reading assignment or class session. Often, they may wish to specify a certain word limit, such as 25 words, in order to stretch students' language skills and cause further reflection on the material. Once again, these may be collected—they may serve as an attendance check or to motivate students to keep up with their reading—or they may be used only to help focus a discussion or for the students' personal use. When collected, they may be graded very quickly. Elaborate comments do not have to be given if the précis paragraphs are viewed as formative documents.

### **Brainstorming/Freewriting**

Instructors can ask students to jot down ideas very quickly in response to a given problem or stimulus. They should be encouraged to focus on generating ideas rather than worrying about the format that their writing takes. Brainstorming can be used before the introduction of new material to enhance discovery and curiosity. Instructors can ask students to guess the causes of a historical phenomenon before these are discussed in class; they may ask students to predict the results of a scientific experiment before it is demonstrated. The lists that result can be shared in groups or in class before the material is formally discussed. Brainstorming and freewriting can also be used as effective summarizing techniques. Students may be asked to compose "laundry lists" of things to remember when diagnosing a certain virus or characteristics of abstract art. They can compare lists.

### **Inkshedding**

Students are asked to spend a few minutes writing in response to a particular question related to a reading assignment in the course. Then, students exchange papers and read the other person's comment, continuing this exchange for several papers. The instructor then asks students to report on what they found out or on what patterns they saw in the papers they read as the basis for a discussion. This strategy allows students to participate in a class discussion by building on the accumulating knowledge from reading other people's responses. It helps students share information and knowledge in a non-threatening way and to discover in the process similar and different interpretations of the material that will increase their own understanding of the issue being discussed.

### **Written Conversation**

The instructor asks students to list at the top of a blank sheet of paper one question they would like to have discussed related to the reading assignment for the day. Students read each other's questions and write responses to them, passing them on for further comment from other class members. Students are encouraged to respond not only to the original question but also to other class members' responses to that question so that a written conversation begins to emerge. This strategy is useful in helping students understand the nature of the questions that other students have, and it provides a means of responding in a non-threatening way to a wide range of questions and issues that increase opportunities for critical thought.

## Papers

Although the formal term paper can be a valuable learning activity for many courses, some instructors who once gave their students long research papers are discovering that assigning one or more five-page papers, usually requiring some sort of analysis of ideas or readings, is easier to evaluate and more useful for their students' learning. To focus students' work, it is helpful to pose direct question—e.g., "What problems do sociologists encounter in defining 'deviance'?"—and convey as clearly as possible the instructor's expectations concerning the appropriate style and tone of the writing, the desired length, and the kind of documentation required. Exemplary papers from past offerings of the course can be made available for students to refer to. If the assignment calls for prescribed format, such as a laboratory report, an outline of the format or examples of good lab reports will help the students. Students may also be encouraged to look in scholarly journals in the discipline for examples of writing to use as models. When longer papers are assigned, instructors have found that requiring drafts in advance of the final paper helps students to pace themselves better and gives the instructor a chance to provide direction while the ideas are still in process so at the resulting final papers are of higher quality. Drafts also give instructors the opportunity to note stylistic and grammatical problems for students to correct so that they learn about writing while they are engaged in a specific revision task, rather than in the abstract.

## Instructing and Lab Sections<sup>5</sup>

(for more information see, "Teaching Laboratories, by Anna Monfils, PhD.")<sup>6</sup>

### Link to Presentation

Though some of you will have considerable responsibility for your own course, many of you will be instructing one or more sections offered in conjunction with a large lecture course. In this section of the handbook, we attempt to anticipate your specific concerns and give you suggestions for conducting effective sections.

If you are assigned to teaching a laboratory, you will likely have multiple roles as a teacher. Therefore, most of the other material in this Handbook is applicable! You need only be creative in applying it. In fact, your assignment may be more challenging, but with more opportunities, than a single discussion session or recitation, or even a lecture only course, because you will likely be combining the skills of lecture, leading a discussion, demonstrating techniques, as well as helping students learn how to conduct experiments, interpret results and prepare lab reports. Others of you will have the additional challenges of organizing and leading field trips. And all of this with the additional responsibility of maintaining safety in the lab for all students (and the teacher!).

No matter what the specific lab assignment, you will be responsible for helping students to acquire basic knowledge in the discipline and, often, to augment the knowledge learned in the lecture part of the course. Students will also learn methods of scientific investigation that may include any or all of the following: planning, executing, analyzing, and interpreting experiments. Lab techniques, operation of equipment, and/or field methods may all be a part of your assignment. In addition, you may need to conduct a "dry run" before your lab

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<sup>5</sup>This section of the handbook was modified and reprinted with permission from *Mentor: A Handbook for New Teaching Assistants* (Fifth Edition). Maren Halvorsen, ed. Center for Instructional Development, U of Washington, 1992, pp. 30-31.

<sup>6</sup>Dr. Monfils is now Faculty at Central Michigan University

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 others 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



easy answer out of you, but they will also learn more.

### Working with the Instructor of Record

The professor of record may have very definite expectations about how you should instruct your session. This professor might even give you an instructor syllabus, which you are expected to follow, which includes problems to solve, instructional goals, etc. On the other hand, the professor may expect you to develop the agenda/materials to complement the class. In order to plan your semester, it is important that you meet with the professor to ask specific questions about the course, grading procedures, and your responsibility in lecture and in sections. The following is a list of questions you may want to approach the instructor of record with before the class starts:

- Will you be expected to solve problems and answer questions about the lecture in sections?
- Should you develop a section syllabus?
- Will you be expected to supplement the lectures with entirely new material?
- Will you have any lecture responsibilities in addition to leading your section?
- Will you design your own tests or read and grade tests written by the professor?
- Will you read term papers?
- Will you tutor students who need help beyond what you would normally offer during office hours?
- How does the professor want issues of conflict handled?

Some professors hold weekly meetings with their TAs during the semester to discuss problems and plan strategies and assignments for the coming week. Others wait for you to approach them with questions or problems.

### Lectures and Textbooks

It is generally expected that you will attend the professor's lecture unless informed otherwise. This allows you to know what it is you are supplementing and clarifying for the students. Even when you know the subject thoroughly, you will be unprepared for sections unless you know which problems were covered in class, the professor's approach, etc.

Listening from a student's perspective will help you understand why students feel overwhelmed, bored, or confused during lectures. Similarly, reading textbooks from a student's perspective will help you decide which topics need the most review. Some "introductory" texts were written for a tenth grade audience, while others will baffle even you. Read everything your students are expected to read; it is better to be baffled in your office than embarrassed in class. If, however, you are asked questions in section, which you are unable to answer be honest with students. Tell them you will check with the professor or you will consult a text and address the question in the next section.

### Day-to-day Section Instruction

There are many ways to approach section instruction, depending on the information you gather from the professor of record. If you are given an open-ended assignment, you may want to consider the suggestions about problem solving given in the preceding section. Of general concern, however, is how well the students are interacting with the lecture material.

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 might take. Undergraduates tend to approach text in a linear fashion: sentence by sentence, straight through from beginning to end. Many students are completely unaware of alternative strategies and therefore stand to benefit enormously by being exposed to a more effective model.

### The Mini-Lecture on a Reading and Studying Model

Giving a mini-lecture on reading and studying for meaning is one way to ensure that all the students in your class have strategies for learning content, irrespective of their educational background. Using text from assigned reading, it is possible to model the reading and studying process with students; reading material out loud is an effective way to learn a great deal about how the members of a class think. There are as many ways to present strategies as there are instructors. One choice might be to model the process in its entirety, preferably at the beginning of the term. Another might be to present parts of the process and apply these strategies to different types of text, revisiting the process several times during the term. Still another might include presenting parts of the process as often as student performance indicates there is a need. At the very least, it should be possible to present a

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
- Look over the essential terms and vocabulary
- Read the end-of-chapter Summaries
- Read the end-of-chapter Questions

<p><b><u>A Reading-Studying Process</u></b> <b>Overview (Pre-read) the Content</b> <b>Chunk the Content</b> <b>Look for Patterns</b> <b>Reorganize the Content</b> <b>Summarize the Content</b></p>
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## Chunk the Content

#### *Why Chunk the Content?*

- To put large quantities or complex text information into manageable groups
- To increase the ability to store and retrieve information
- To learn well the *first time* and thereby minimize forgetting
- To develop a process for classifying material
- How do you chunk content?
  - Divide text into smaller related sections (or paragraphs)
  - Stop after each chunk and take notes—write the important concepts, list supporting ideas, and mark vocabulary for later study (in pencil)

## Look for Organizational Patterns

#### *Why Organizational Patterns?*

- To provide a structure for sorting out information
- To put information into categories to make relationships between information stand out
- To help clarify the author's purpose for writing the text:
  - is the author stating facts?

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

## Reorganize the Content

### *Why Reorganize Content?*

- To rephrase and order the content in the reader's own words
- To recognize larger meaning and patterns of relationship
- To "map" or create a "picture" to increase retention
- To link new information with information you already have
- How do you reorganize content?
  - Use the Organization Patterns to create relevant categories for the text. (For example, if the primary organizational pattern is *Problem - Solution*, the main category might *present* the problem, and the subcategories might be various *possibilities for solutions*. Or, if the primary organizational pattern is *Definition (of an organism's behaviors)*, subcategories might be *reproduction, group behavior, defense mechanisms, etc.*)
  - Represent the larger categories and supporting ideas with a graphic organizer (For example: charts, outlines, trees, diagrams, pictures, maps, grids, etc.)

## Summarize the Content

### *Why Summarize Content?*

- To enhance concentration on the content
- To integrate information into a coherent piece of writing making appropriate use of key words, phrases, and topic sentences.
- To lead to deeper comprehension - it is the *process* of separating important ideas from less important ones that promotes deep meaning
- How do you construct a summary?
  - If you have constructed a graphic organizer (in Step Four above), use the main ideas and major details to form a written summary. State these ideas clearly and do *not* include unnecessary detail.
  - Integrate the information using keywords, phrases, and topic sentences you create.
  - Write another draft if needed.

## Beyond Summarizing - Incorporate Several Texts into a Longer Argument

### *Why a Longer Argument?*

- To use information as part of a developed argument
- To synthesize various sources
- To integrate information with other material
- To challenge and revise information in relation to other sources, including personal experiences and knowledge

See page 34 in this Handbook's section entitled "Incorporating Writing in Instruction" for specific suggestions for the development of writing skills.

## 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.

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# Teaching and Learning Outcomes

## *Introduction*

**T**eaching goals represent your intentions for the course you teach. They are what *you* want to accomplish. Your teaching goal may be to teach your students to “appreciate” something about your discipline and “understand” the significance of something substantive in your field. Meeting the teaching goals will be your accomplishment as the instructor. Choosing your goals involves considering elements about you, your students, the environment, and the content. Teaching goals are a commitment to teach and assess specific objectives. Changing teaching goals into student learning objectives is the most important step in designing your course and developing your teaching methods and strategies. It is considered to be a critical step in the scholarly design process (Richlin, 2006).

Learning Outcomes (LOs) belong to the students because they are the ones who will achieve them. Because we cannot “see” learning otherwise, learning outcomes must be observable and measurable; they need to state exactly what the students will be able to do after participating in your course. Learning needs to be concise and teachable; result in an observable product (the learning outcome), and set at a single, appropriate level for the students and content. The Learning Outcomes are the centerpiece of course design and are the basis for testing and for assessment rubrics; they determine whether or not you are successful as a teacher. They also help determine your teaching strategies and learning activities. They should be clearly presented to your students in your syllabus.

In this chapter, we will discuss developing student learning outcomes, assessments and rubrics.

## Developing Student Learning Outcomes

Learning outcomes are the products that students create which demonstrate their skill, knowledge, or ability level after completing your course. They are very specific and should be integrated with the learning objectives. Learning outcomes allow you to determine to what extent students have achieved the course learning objectives and to assess student performance and the learning activities that you design for your students contribute to them.

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 terms (verb - noun), for your interaction. Learning outcomes are statements that define what people will know or be able to do as a result of going through your interactive activity. Using behavioral statements, you will be able to develop both learning outcomes and test questions. Several examples of behavioral statements are shown below. (Nilson, 2003)

Measurable performance statements require the learner to **do a specific thing** when presented with a learning task or event, so use action verbs in your objectives. Examples of behavioral statements include:

- **List** two major types of safety hazards.
- **Identify** the rocker-bearing joint.
- **Classify** given rocks as igneous or metamorphic.
- **Calculate** the curing time for FG1 gel when the temperature is 240 °
- **Name** the three steps for effective listening.

Be careful to avoid statements that use phrases such as know about, understand and other vague statements. These types of phrases are much too general in nature and should not be used to develop precise behavioral statements. They do not pinpoint the content to be written and are difficult from which to write test items.

In her book, Linda Nilson (2003) provides performance verbs in accordance with the skill levels identified in Bloom's Taxonomy. These are presented for you in the table below and continued on the next page.

Student Performance Verbs by Level of Cognitive Operation Based on Bloom's Taxonomy			
<b>Knowledge</b>		<b>Comprehension</b>	
arrange	order	classify	locate
define	recall	describe	recognize
duplicate	recite	discuss	report
label	recognize	explain	restate
list	relate	express	review
memorize	repeat	identify	select
name	reproduce	indicate	translate
<b>Application</b>		<b>Analysis</b>	
apply	interpret	analyze	differentiate
choose	operate	appraise	discriminate
Compose examples	practice	calculate	distinguish
demonstrate	schedule	categorize	examine
dramatize	sketch	compare	experiment
employ	solve	contrast	question
illustrate	use	criticize	test

Synthesis		Evaluation	
arrange	integrate	appraise	evaluate
assemble	manage	argues	judge
collect	organize	assess	rate
compose	plan	challenge	score
construct	predict	choose	select
create	prepare	defend	support
design	propose	dispute	value
formulate	set up		

Taken from: Linda B. Nilson's *Teaching At Its Best: A Research-Based Resource for College Instructors*, 2<sup>nd</sup> Edition, page 20.

### Criteria/Standards for Assessing Performance

Which criteria or standards will you use to evaluate student performance? What constitutes the lowest acceptable behavior (C )? And what constitutes an exemplar performance (A)? How will you identify those performances that fall in-between? What will you use as performance criteria? Performance criteria are "guidelines, rules, or principles by which student responses, products, or performances are judged." (Arter, 2001)

There are two primary benefits of developing performance criteria for assessments:

- Consistency in scoring
  - Performance criteria should define specific elements of quality required for each possible score-- whether it's a letter scale, percentage, complete/incomplete, or another way to indicate performance. This provides consistency in scoring which is especially important when you have multiple graders (teaching assistants), multiple sections with different instructors, and across semesters whether with one or multiple instructors.
  - These criteria can also help protect you in cases where students question their grade.
- Improved instruction
  - Well defined performance criteria help you, as an instructor, to better identify your instructional goals and can serve as teaching targets (Arter, 2001).

Providing these criteria will also give students clear objectives to achieve for success. Students are better able to focus and feel in control of their learning. Performance criteria are usually developed in the form of rubrics and templates.

- A **rubric** is a format for presenting criteria and the related scoring system.
- When a specific organization of elements is required, it can be helpful to provide students with a **template**.

While not all rubrics will lend themselves to providing templates, all templates should have an accompanying rubric to define the criteria for the information expected within each required element.

## 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-ended the question or complex the performance the wider the score range
- Enough points to distinguish quality, but not so many that it's difficult to distinguish between levels
- When trying to certify competence according to a standard, a 4-point scale is often used. 1= Greatly below standard, 2= below standard, 3= meets standard, 4= exceeds standard
- 5 point scales can be easily compared to the traditional A-F grading scale
- Odd numbered scales may have a tendency to "gravitate to the mean."

### Developing Criteria

Step 1: Gather samples of student performance

When developing a rubric, gather samples of students' work that exemplify the skill or behavior for which you are developing the rubric.

Step 2: Sort student work into groups

Put the student samples into three piles: strong, middle, weak. As you place the work into a specific pile, write down your reasoning and include specific details. Continue doing this until you are no longer adding to your list of reasoning

Step 3: Group the reasons into "traits"

Identify comments on your reasoning list that seem to go together and create an overarching trait, once again grouping them into high, middle, low

Step 4: Write a definition of each trait

These definitions should not describe what a good example looks like, but simply describe what the trait is about

Step 5: Find samples of student work to illustrate each point on the scale for each trait

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

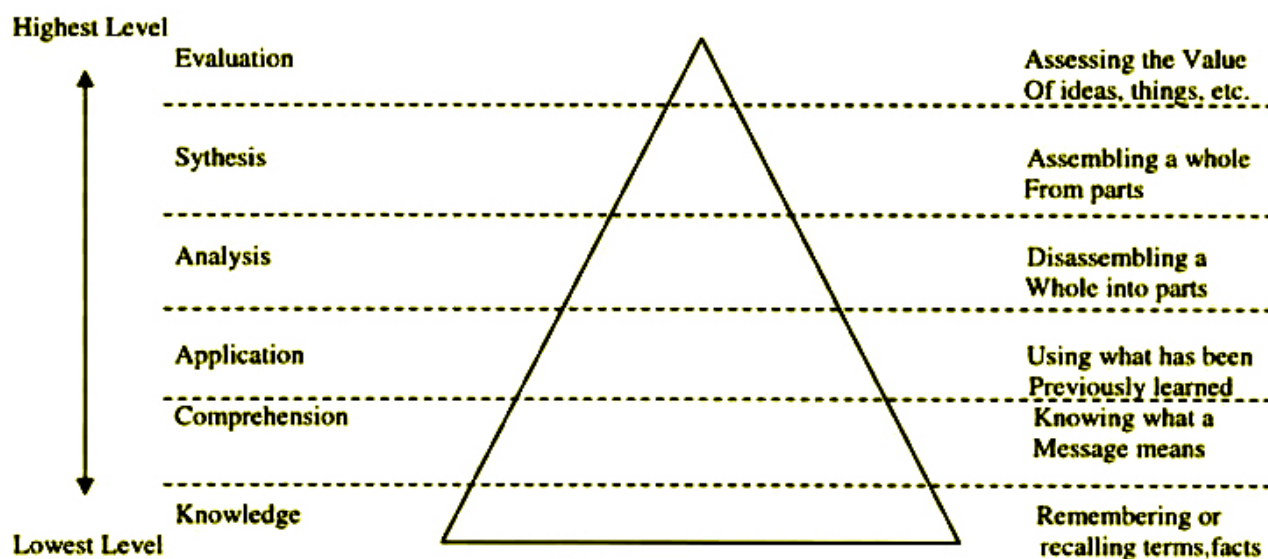
As previously mentioned, you can provide your students with a template. Templates should always be used in conjunction with a rubric so the students know the expectations of the content within each element.

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:

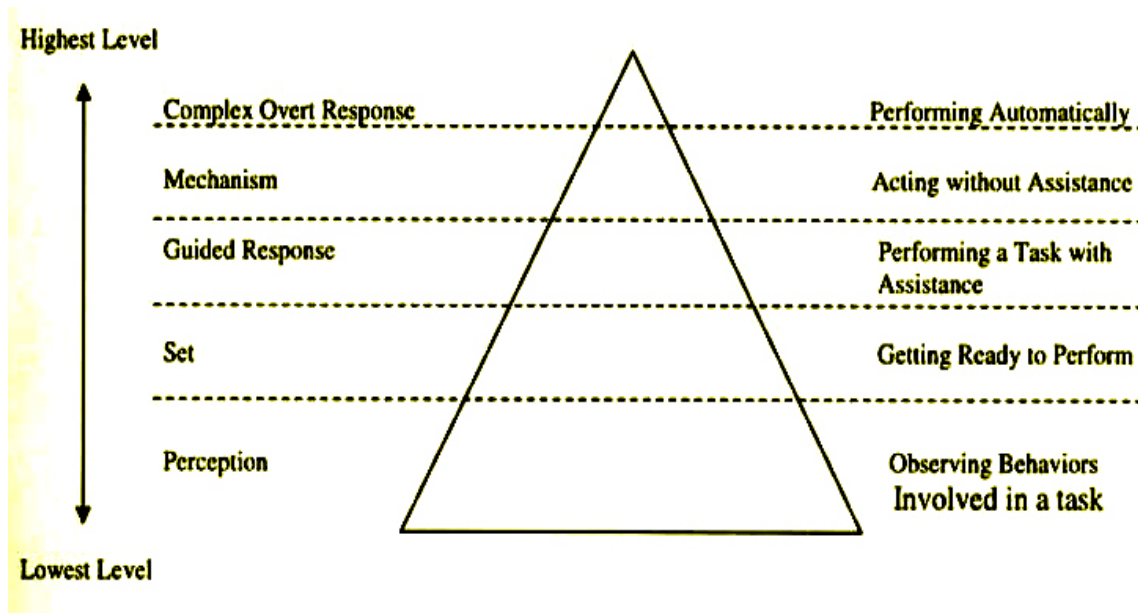
### Cognitive Domain



The Cognitive Domain refers to intellectual learning and problem solving. An example objective may be: The student will construct a treatment plan for a teenager newly diagnosed with ADHD. The treatment plan must contain the following:.... For more information concerning the construction and use of performance objectives, use the key words [Bloom's Taxonomy](#) to search the web. (Rothwell & Kazanas, 1998)

### Psychomotor Domain

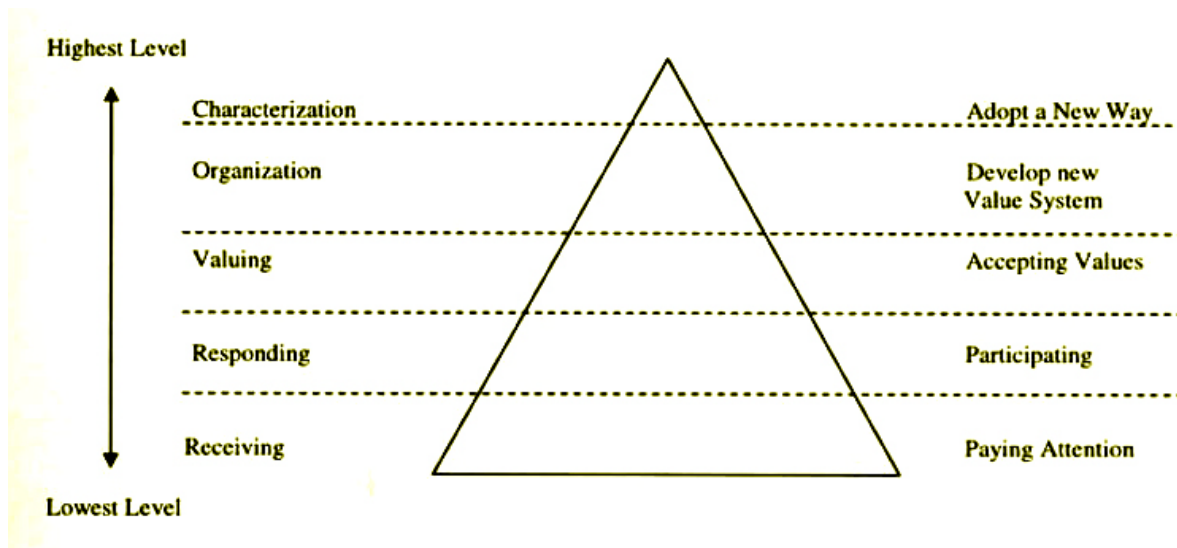
The Psychomotor Domain refers to physical movement characteristics and motor skill capabilities that involve behaviors requiring certain levels of physical dexterity and coordination. These skills are developed through repetitive practice and measured in terms of speed, precision, distance, procedures, or execution techniques. An example outcome may be: The student calibrates instrument X before performing procedure Y. (Rothwell & Kazanas, 1998)



### Affective Domain

The Affective Domain refers to the emotions and value system of a person. An example outcome may be: The student demonstrates a commitment to improving presentations skills by designing, developing and delivering a 4 minutes presentation on a topic of their choice. (Rothwell & Kazanas, 1998)

On the next page you will find the levels of learning in the Affective 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

Initially, you may be given your learning outcomes for the course you are assigned to teach. But eventually, you will be responsible for creating some learning outcomes. Since learning is most effective when the learning activity is aligned to the learning outcome, this chapter provides ways for you to design activities. We've provided you with action verbs that can help with the development of appropriate learning objectives along with some ideas for activities. We've also introduced you to rubrics and templates for use when grading. Samples of rubrics and templates are provided in the Appendix.



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## THE SYLLABUS AS A LEARNING TOOL<sup>7</sup>

### *Introduction*

Creating a learner-centered course is a highly intricate process. It is easily hindered, especially when the teacher fails to make clear what it is that one is expected to learn and how it will be determined that the learning outcome has been achieved. The more complicated the material to be learned, the more important it is to organize it and present it in a way that both enhances the process of learning and clarifies the teacher's expectations. The syllabus is the tool used to achieve this.

There is a growing body of literature that establishes that student learning is enhanced when placed in situations where students share learning in a connected and positive environment and through active participation in the learning process. The establishment of this positive environment begins with the course syllabus. The tone one sets with the presentation and structure of the course is directly reflected in the syllabus.

Using the course syllabus to communicate the essence of the course rather than simply logistical information takes careful reflection. Planning and preparing the syllabus takes time, energy, and critical analysis of one's current practices and expected learning outcomes. This time consuming and sometimes challenging procedure is often overlooked and rushed as faculty members prepare the syllabus immediately preceding the beginning of each semester.

The Center for Learning Technologies at Old Dominion University has created a tool which takes you through the process of creating a learner-centered syllabus. You can access the tool at <http://clt.odu.edu/sgen/>.

You might want to consider the syllabus as a contract between you and your students. The syllabus will make clear to your students:

- a) which textbooks and other reading materials they must acquire,
- b) what your teaching objectives will be and how you will go about finding out whether they have been met,
- c) what kind of testing you will use,
- d) what the grading scale will look like,
- e) whether you will assign homework and at what intervals,
- f) whether class participation and/or attendance will influence grades,

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 adequately for the job of creating your own syllabus. This chapter will provide additional measures to meet this goal.

### The Importance of the Syllabus

It will help students know what is expected from the start of the course and will allow them to plan their semester efficiently. The opportunity for inconsistent grading changes will be diminished, and a positive image will be presented to the students (a well-prepared syllabus is evidence that the instructor takes teaching seriously). A syllabus also provides the departmental office, supervisor, and/or colleagues with pertinent information about the course.

A large number of complaints frequently have, at their root, a lack of understanding of the requirements and expectations for performance in a course. A syllabus can consolidate into a single document all of the routine matters that surround teaching a course: reading schedules, grading, due dates, class topics, etc.

Simply put, the syllabus is a formal statement of what the course is about, what students will be asked to do, and how student performance will be evaluated. Unlike the comments an instructor makes in class, it is a lasting statement to which students can refer again and again throughout the course. Careful construction of the syllabus reduces ambiguity and is the first step toward producing an environment in which students can flourish.

The syllabus is an agreement that you should follow as much as possible. If you make any changes to it during the semester, be certain that all your students are aware of them. You do not want to have to deal with an irate student at the end of the semester who would say to you something like, "Hey, I didn't know that you changed the course grading system, and I'm going to the departmental chair to get this straightened out!"

### Preparing an Effective Course Syllabus

Having a well-developed syllabus will require the instructor to organize his or her teaching early. You can begin by studying syllabi from other instructors or those that have been used previously in the course being taught. You might also check with your department for specific guidelines about a syllabus format. However, the following should be included in every syllabus:

1. **Relevant information about the course and instructor.** A syllabus should include the current year and semester, the name and number of the course and the meeting time (with days of the week and meeting times), and location. It should also include the instructor's name, phone number, the location of the instructor's office, and the times of his or her office hours. These facts are normally placed at the beginning of the syllabus.

2. **A list of the resources to be obtained by the students.**

Most important here are the required text(s) and reading assignments. Their role in the class and where they are available for purchase or loan should be included. (It is important to check that the bookstore or library will have the materials on the shelves before students are sent to find them!) It might also explain what, if any, materials other than text(s) are required of students. Any supplemental materials (such as lecture tapes, sample projects, or past tests) that are available can appropriately be mentioned.

*Traits of an Acceptable Syllabus*

**Name of Instructor**

**Where Instructor can be reached/office hours**

**Course Number; Section Number; Days, times, and Classroom where the class meets**

**Required Text(s) and other class materials**

**Course Objectives**

**Grading Procedure, including Attendance Policy, Class Participation, and the like**

**Course Outline, by weeks at least**

3. **A clear statement of course outcomes.** The course learning outcomes should be as clear as possible and should describe what the students will be expected to know—and at what level of competency—at the end of the semester, rather than what the instructor plans to do. Refer to Chapter 3 for a detailed description and discussion of learning outcomes. Note that the use of vague terminology (such as "students will develop a clear understanding") can result in arguments over degrees of understanding. It is generally better to use specific, measurable behaviors as objectives.

4. **A description of the means (or activities) by which the course objectives will be met.** Possible items include field trips, guest lecturers, discussions with active participation, problem-solving groups, assignments, use of multimedia, etc. The amount of student time required for each activity may be estimated.

5. **A statement of grading criteria.** This will explain the grading criteria, the components of the final grade, the weighing of various components, the impact of class participation and attendance to the final grade, and other relevant information. The number of tests each semester should be included, along with a brief description of what each test will cover. The numerical equivalent of letter grades or the "range" for each grade can be provided.

6. **A statement of course policies.** This is best expressed in a clear, non-threatening form. Policies should be set for such events as missing an exam, turning in a late assignment, missing class, requesting an extension for an assignment, and reporting illness. It is a good idea to go on record with a fairly stringent policy that can be informally softened at a later date if, and where, circumstances so warrant. Avoid absolutes on the grounds that they are always more trouble than they are worth.

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.

#### The Syllabus and Organizing the Course

In order to prepare a meaningful syllabus, one that you will be able to follow throughout the entire semester, you must first examine closely the entire course with a goal of organizing it in a way that will enable you to accomplish the outcomes you will state.

Good organization is important to all phases of instruction, from curriculum development to determining presentation format. From the syllabus to the final examination, every aspect of the course should be focused on defined educational goals, the most important of which is the level of learning you expect students to achieve.

Your first step in organizing a course should be to establish the level of performance you expect from your students. This may necessitate your administering a simple questionnaire or using an in-class essay to determine what students already know and what they need to learn. If you are teaching a lab, quiz section, or studio that is an extension of a larger class, it is important to coordinate your expectations with the professor of the larger class and with other instructors who are teaching similar sections, labs or studios.

Your next step is to choose the means of instruction that will enable students to perform at the level you expect. If you need to cover 50 years of research in 15 weeks, you will probably lecture. If students must be capable of applying course material, you will not only have to present factual information through texts and lectures but also show them how to

develop generalizations from the background knowledge (discussion, study problems, assignments), and provide them with opportunities to apply newly learned principles in novel situations (laboratory experiments, papers, examinations, projects, speeches).

Your third step will be to determine through evaluation procedures whether students have learned what you intended. Ideally, procedures for evaluation should be consistent with course goals and teaching strategies. The mode of instruction, the course content, assignments, and examinations should all focus students' attention in a single direction.

### Defining the Role of the Student

The syllabus should clearly define the student's role in the course. The purpose of defining the responsibilities of the student clearly is to promote lifelong learning and self-responsibility for the acquisition of the course content. Learner-centered educational environments must focus on the individual learner in combination with pedagogical strategies that incorporate the knowledge about how students learn. Research indicates that the passive lecture-discussion format where the student role is to primarily listen is contrary to principles relative to student learning. (Guskin, 1994). Therefore, setting the stage for student learning can have a profound impact only if the student understands the roles and responsibilities for the learner-centered course.

### Providing A Clear Statement of Goals and Student Outcomes

Diamond encourages that clear statements of goals and student learning outcomes be provided in the syllabus (1998). These goals and outcomes must strive to create a learner-centered atmosphere in which positive personal relationships are created, student ideas and opinions are honored, higher-order thinking is facilitated, and student individual needs and beliefs are addressed. It is critical to promote self-regulated learning as a significant portion of the course expectations and goals as this will provide the framework for the entire course.

### Evaluation Strategies

Evaluation is another key area that must be clearly defined and explained in the course syllabus. Students are keenly aware that the grade one receives in a class reflects positively or negatively on their overall academic performance. However, it is the role of the instructor to transform these thought processes by formulating evaluation schema that reflects overall performance, not simply test-specific knowledge.

Educational learning theorists encourage the incorporation of all levels of Bloom's taxonomy of educational objectives:

- Remembering
- Understanding
- Applying
- Analyzing
- Evaluating
- Creating

Students should be provided multiple opportunities to demonstrate understanding of

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. Choices in activities can help capitalize on student interests and provide student autonomy. Activities and tools can serve as viable options to the more traditional evaluation strategies (Nordvall & Braxton, 1996). These activities and tools include:

- Group work
- Projects
- Research
- Learning contracts
- Self-evaluation
- Portfolios
- Presentations
- Journals
- Essays

By reviewing and understanding the evaluation criteria specified in the syllabus, students will be able to recognize the balance of power, the function of the content, the role of the teacher, the responsibility for learning, and the purpose and processes of evaluation as the key elements of instructional practices (Weimer, 2002).

### **Establishing Communication Between Student and Instructor**

One of the most important functions of the learner-centered syllabus is that it establishes the first line of communication between the student and the instructor. This document sets the tone for the remainder of the course and can either encourage or discourage open communication as it is the first point of contact with most students.

Central to the learner-centered syllabus is consistency in what is presented and how it is presented. If the syllabus reflects an open classroom environment yet the instructor discourages interaction, the document and its contents will be disregarded. Fritschner (2000) studied communication in introductory courses and suggested that students perceived questions and discussion as unwelcome despite claims to the contrary as a reason for non-participation in learning activities.

### **Providing Learning Resources and Tools**

Last, the goal of the learner-centered syllabus is to provide access to educational materials and resources. Additional learning tools such as library, interactive, and technological resources can be listed as well as tips for studying, note-taking strategies, study questions, sample test questions, pre-class tasks, learning style inventories, and learning activities to provide a comprehensive resource guide for learners (Grunert, 1997).

## Summary

The classroom environment has become more student-centered. Textbooks are no longer the major source of information. Curriculum is multi-disciplinary and no longer focused upon memorization of information, but rather on learning how to learn and think critically.

One can start developing a learner-centered course by starting with the syllabus. Some of the challenges to a learner-centered course are large classes, students of multiple generations, and a lack of following through with assignments. Literature indicates that students learn best during active participation in the classroom. The next chapter will discuss the use of technology in teaching and the technical support that is available, and delivery modes used here at Old Dominion University.



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# Student-Centered Assignments & Teaching with Technology

## *Introduction*

**W**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

### Assignments and Self-regulated Learning

Self-regulated learners strategically monitor, evaluate and adapt learning strategies and processes. Developing a personalized interpretation of the assignment is an important phase in self-regulated learning (Winne & Hadwin, 1998). Students who develop accurate and complete understandings of the assignment are more likely to successfully self-regulate their learning, and perform well on the task. This is because they have accurate standards against which they can check progress, generate feedback for themselves, and intervene when something goes awry. Without these accurate standards, they may have incomplete, inaccurate or biased perceptions of the task, and little awareness that they have misunderstood or misrepresented the task.

When do students realize they are having problems?

(1) During completion - indicators that understanding may be incomplete or inaccurate include: (a) not knowing what to do, (b) not knowing how well you are doing, or (c) not being sure if this is what you are supposed to be doing. The following is an example from data collected from a first year student (Hadwin,2000):

The philosophy assignment is not just a straight forward right or wrong question, it requires thinking. As a result, I am totally lost in my first assignment. I don't know what to do actually, even though I did answer all the questions, I am very uncertain with my answers.

(2) After receiving the following types of feedback from the instructor : (a) a poor grade, (b) an oral or written comment indicating that the student was off track, (c) comparison with other assignments that indicate other students did something completely different. Examples, from student reflections after having received feedback on an assignment:

The whole time....I thought an analytical approach was using my own words. I did not know the professor really wanted me to write about the stand I was taking on the topic and [articulate] arguments I was [bringing] forth.

Now I feel I can use the feedback that I received (bad score) on my test to help me....also, I am now aware that different professors add and expect different things from these tests.

So the next time I pick up my Economics 103 text or any other course book, I must keep in mind that the purpose is not only to complete the assignment, but also to recognize what the assigned task is here for.

(3) Never. - Unfortunately, many students do not realize that they had inaccurate or incomplete understanding even after receiving feedback. Research shows that students often attribute the problem to something else such as: poor time management, not having a repertoire of strategies to complete the assignment, having a bad teacher, or applying insufficient effort.

#### Why Are Course Assignments So Difficult to Understand?

Course assignments and tasks constitute much more than a list of specific instructions and criteria in a course syllabus. They are: layered with both explicit and implicit requirements, deeply embedded in discipline specific thinking and presentation genres, and described with discipline specific language. Successful students may be more capable and strategic in deciphering three aspects of understanding the assignment because they develop understandings of the:

- explicit task by identifying and accurately interpreting: criteria, standards, grading, and language associated with the documented assignment. This is where instructors and students often invest a great deal of time and discussion.
- implicit task by considering: (a) the purpose of the assignment, (b) the timing of the tasks in relation to other activities and readings, (c) concepts and strategies necessary for completing the assignment, and (d) connections between this assignment and other course activities. Often this implicit information is embedded in course objectives and purpose statements but many students completely overlook these aspects of the 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, and (b) provides the instructor with an idea about how students interpret feedback.

### Teaching with Props, Visual Aids and Technology

Including technology in your classroom can be as simple as making overheads or preparing a film or voice recording. It can be as complex as interactive video and hypermedia. The level of sophistication depends on many factors: your familiarity with the technology, instructional needs, availability of equipment, etc., and your department. This section is designed not to explain how to use technical equipment in the classroom but instead to encourage you to access and assess the different mediums to your fullest instructional advantage.

### Delivery Modes

At Old Dominion University, students are able to register for courses offered in a variety of delivery modes: face-to-face, two-way video, satellite, video streaming, web-based, hybrid, portable media or on portable devices. For an overview of each mode go to <http://clt.odu.edu/dm/>

### Blackboard/Whiteboard Use

Think about your experiences as a student. How many times have you looked up in class after being distracted or after losing the main thread of the lesson only to be greeted by a meaningless, randomly distributed set of symbols or facts on the blackboard? How often, after getting home have you found your notes so meaningless that it is not even clear what subject was discussed? If the answer to either question is never, either you learned to take good notes or you have a fantastic memory. The fact is, many students' notes are an exact copy of what appeared on the blackboard, with few additional qualifiers, explanations, etc. If you are skeptical, ask to see your students' notes right after class. You will be amazed that many will not differ in even a single word. If you keep this in mind, you are part way to more effective blackboard use. When we do a problem at the board, students not only see the solution, but they see how we organize a solution. Effective board work highlights and emphasizes this organization and provides the students with a valuable model for writing, and often for doing, problems. The result of the board work accompanying a unit of the lesson should be an outline of what transpired. If you are solving a problem, an outline of the problem should remain at the end. The hypotheses, main points, and conclusion should be isolated, boxed off, or otherwise emphasized. Even the best students will occasionally lose the thread of a lesson or forget the original objective of a discussion. The blackboard is their major, and often their only, resource for reentering the lesson.

The following tips should help you structure your board work:

1. **Start with a clean board.** Board work from the previous class is distracting.
2. **Be organized.** Use headings. Before using the board, determine the major elements of your presentation. Consider how you could place them on the board for logical visual as well as verbal presentation. Keep diagrams near their written descriptions and label carefully. When solving equations, show each step in a logical sequence and mark major steps and answers.

3. **Be neat.** Print if at all possible—medium size. If you write too large, you will not have enough room. If you write too small, no one will be able to read it.
4. **Try not to work with eraser in hand.** Teachers who simplify expressions as they go along by erasing are anathema to students trying to take notes. Put a single line through expression you wish to simplify and write the new expressions above.
5. **Avoid talking to the board.** After you write on the board, turn to face your students before speaking. A good pattern to develop is to state the topic first, turn and write the topic name on the board, then turn back to the students and discuss the topic. When appropriate, add key points under the topic name.
6. **Avoid blocking the board.** Once you have finished writing, stand to one side while you discuss what you have written.

At the end of your class, take a moment to stand in the back of the classroom and examine the board. Can you reconstruct your lecture from what is written? Could students read your writing? Are diagrams labeled? If so, you are developing good board-work skills.

### Preparing Visual Aids<sup>9</sup>

The use of overheads, graphs, charts, can be a note-taking guide and a timesaving aid if they are used in the most effective way. However, putting an overhead on the screen accompanied by the following comments "I know you cannot see this, BUT. . ." is cause for anger and frustration. In order to serve your students well, keep in mind the following tips:

1. The "Rule of 7'2"—Overheads and slides should be limited to:
  - 7 words per line
  - 7 lines per visual aid
2. 18-24 point font size
3. Cartoons: Good idea, but do they illustrate a point?
4. Graphs, charts and tables from books? Blow them up!
5. Leave material you have placed on the overhead in view until students have had a chance to examine it.
6. Face students. The only time you should look at the screen is to check focusing, visibility and placement of materials. Move away from the overheads whenever possible and avoid blocking the light.
7. Get confirmation from students. Can they see everything? Did they have time to copy important steps?
8. When writing notes or highlighting overheads, use projector pens and write legibly, perhaps using different colors to illustrate different points.

On a final note, remember that visual aids, such as charts and graphs, should be used to illustrate or demonstrate a point in the lecture/discussion. The important concept being demonstrated by a visual aid may be readily apparent to you, but it is not always so for your students. On the other hand, do not simply read the chart to students. Instead, interact with it, reminding students what it demonstrates at different points.

## 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](http://fp.odu.edu); login using your MIDAS ID and Password or by sending email to [occs-help@odu.edu](mailto:occs-help@odu.edu).

Note that specialized software may be removed at the end of the semester: therefore software requests must be submitted at the beginning of each semester. Software is normally loaded within 2 weeks of request but it may take up to 30 days for installation and testing of software after the request is submitted.

Additional information is available by contacting the Technical Support Center at 757.683.3192.

### Classroom Central

Classroom Central provides equipment, services, and support to help faculty and students take full advantage of the technology available in the University's technology classrooms. There are two types of technology classrooms, Level 1 is equipped with a hotline phone and has a computer, DVD/VCR player, laptop connection, data projector (mounted in the ceiling) etc. Level 2 has a data projector (mounted in the ceiling) and laptop drop.

Assistance is available through the [Technical Support Center](#) at 757.683.3192. Level 1 technology classrooms are equipped with hotline phone that automatically dials the Technical Support Center. Level 2 technology classrooms do not have hotline phones. However, assistance is available by calling OCCS Technical Support Center at 757.683.3192. Questions and comments may be sent to [classroomcentral@odu.edu](mailto:classroomcentral@odu.edu). Please view the training calendar at [www.clt.odu.edu/facdev/calendar.php](http://www.clt.odu.edu/facdev/calendar.php) for classrooms training dates and times.

### Technology Classrooms

Technology Classrooms are in the following buildings. Click on the building name to see information about the classrooms.

- [Batten Arts and Letters \(BAL\)](#)
- [Constant Hall \(CONST\)](#)
- [Diehn Fine and Performing Arts Center \(DIEHN\)](#)
- [Education Building \(ED\)](#)

- [Student Recreation Center \(SRC\)](#)
- [Kaufman Engineering Hall \(KAUF\)](#)
- [Mills Godwin Life Sciences Building \(MGB\)](#)
- [Oceanography and Physics Building \(OCNPS\)](#)
- [Physical Sciences Building II \(PSII\)](#)
- [Spong Hall \(SPONG\)](#)
- [Health Sciences Building \(HLTH\)](#)

### The World Wide Web

As we all are well aware, the World Wide Web has taken our culture by storm. A very important part of the World Wide Web is educational. A variety of Web sites dedicated to education exist, some associated with organizations, some with centers, and others owned tools an instructor can use is a class Web page. A brief search of faculty Web pages will reveal plenty of examples. Things one should include on a course web page are a syllabus, list of texts, assignments, sample work, and links to useful resources. Avoid intense graphics, since many of your students may be dialing in from home. The Center for Learning Technologies located in the Gornto Building, provides workshops and assistance in developing your own website using ODUEdit. For a complete listing of workshops, go to <http://www.clt.odu.edu/facdev/calendar.php>

## Summary

Teaching and learning has changed significantly in the 21<sup>st</sup> Century. The way students study and prepare is very different from students in previous years. This chapter has discussed course assignments and student expectations. Suggestions are provided to assist in making assignments more easily understood. In today's classrooms there is a greater use of technology to encourage learning and to motivate student collaboration. There are different 'delivery modes' for teaching and there are students of all ages in your class. This chapter discusses tools and resources available for you and ways that Old Dominion University supports your use of them.



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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
Nearly Satisfactory	Begins successfully, but omits significant parts or fails to complete, may misuse scientific terms, representations may be incorrect or omitted, incorrect or incomplete in analysis, inferences and conclusions.	6
Fails to complete	Assignment and explanation is unclear, or major flaws in concept mastery, incorrect use of scientific terms, inappropriate or omitted hypothesis.	4
Unable to begin effectively	Product does not reflect the assignment, does not distinguish what information is needed, restates the question without making an attempt at a solution.	2
No attempt	Does not begin assignment.	0

Rubric 2

**Rubric for Discussion Board**

Criteria	Responses							
	1	2	3	4	5	6	7	8
<p><b>Fair Discussion, 1 Point:</b> Although you contributed to the discussion, you seemed reluctant to share your interpretation or indicating their relevance to the discussion. You may have seemed unsure and afraid to make a comment. Your writing was generally organized but had a number of grammatical or spelling errors and <i>READ LIKE A FIRST DRAFT</i>. Note: Outstanding or Good Discussion postings that have numerous grammatical or spelling errors will automatically receive a grade of FAIR for the discussion.</p> <p>Response made to instructor's original posting</p>								
<p><b>Unacceptable Discussion, 0 Points:</b> One or more of the following apply to the postings on this question: Postings are too general, do not address the question, or contain inaccuracies. You fail to support your opinions with data or examples when appropriate. Your explanations are unclear or inadequate with major flaws in reasoning or explanations. Your writing is very disorganized and/or awkward sentence structure makes it difficult to read. You have poor grammar and spelling.</p> <p>Response to another student's posting</p> <p>Response to second student's posting</p> <p>Response made by the due date and time for the question</p>								
Responses are tolerant of the views of others and the student has refrained from using inflammatory, derogatory, and insulting comments								
<b>One of the following describes the student's postings for this question</b> (See complete descriptions below)								
Outstanding Discussion (3 points)								
Good Discussion (2 points)								
Fair Discussion (1 point)								
Poor Discussion								
<b>Total points for individual discussion</b>								
	<b>TOTAL POINTS for assignment</b>							

**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 willing to take a chance by offering your ideas and opinions for the group to consider. Your writing was organized and had few grammatical or spelling errors. *IT GENERALLY DOES NOT READ LIKE A FIRST DRAFT.*



## Critical Thinking Rubric

### Critical Thinking:

Is a purposeful, reflective and goal directed activity that aims to make judgments based on evidence rather than conjecture. It is based on the principles of science and the scientific method. Critical thinking is a reasoned interactive process that requires the development of strategies that maximize human potential.

Steps	Goal	Exemplary	Acceptable	Needs Revision	Non-acceptable
1.	Identifies and summarizes the <b>problem/question</b> at issue (and/or the source's position).	<p>-Answers the question(s) posed with respect to the relevant course materials. In other words, demonstrates understanding of the assignment and course material.</p> <p>-Addresses not only the fundamental question posed, but also identifies complexities and nuances associated with the question, including sub-questions-- identifying them clearly, distinguishing them from one another, and stating their relationships to each other and to the main question. (That is, identifies 'gray' areas in the answer, rather than approaching the answer as being simply 'black or white.')</p> <p>-Has a clear, focused 'thesis statement' (sometimes referred to as 'Topic Sentence' or similar)</p>	Identifies only the basics of the issue, but recognizes nuances of the issue.	Does not identify and summarize the problem, is confused or identifies a different and inappropriate problem.	Does not identify or is confused by the issue, or represents the issue inaccurately.



		-Has a well-organized 'introduction' to the essay that clearly presents the point(s) to be made in the discussion			
2.	Provides specific supporting evidence (including citation) to back up the points presented.	<ul style="list-style-type: none"> <li>-Correctly and thoroughly includes all relevant information from the course material to substantiate all point(s) being made in the discussion. (Sufficient evidence is presented to support the point(s) being made.)</li> <li>-Pulls together material from multiple sources to arrive at a rich, yet coherent answer to the question(s) posed. (May include personal anecdotes and/or other outside material.)</li> <li>-Clearly shows how all supporting evidence ties into the question being addressed (makes relevance clear).</li> <li>-Supporting evidence is presented in a logical sequence that is easy to follow.</li> <li>-All supporting evidence is cited in the text (usually 'author, year') with full bibliographic listing at the end of the essay (for example, MLA format).</li> </ul>		Provides little or no supporting evidence for statements made, or evidence presented does not support the argument being made. Does not cite the supporting evidence that is presented.	
3.	Assesses the quality of the supporting evidence.	-Assesses the accuracy of and the current state of knowledge for the supporting materials presented.		Merely lists examples (for example: species, types of technology, etc.), without tying them in to the	

		<ul style="list-style-type: none"> <li>-Assesses the relative importance and relevance of difference pieces of evidence presented.</li> <li>-Recognizes, identifies, and addresses the possible multiple perspectives there may be on the issue. In other words, notes that there may be more than one point of view or side to the issue, and delineates what those points of view might be--including the evidence for (and arguments against) these other perspectives.</li> <li>-Recognizes and discusses the assumptions and/or biases that may be present in the sources cited, and in your own argument</li> </ul>		<p>point(s) being made or discussing their value in supporting argument(s) being made.</p>	
4.	Clearly distinguishes between accepted fact and student's own opinion.	<ul style="list-style-type: none"> <li>-Expresses own opinion/perspective--in other words, clearly demonstrates your own answer to the question posed</li> <li>-Distinguishes clearly between fact and opinion (whether your opinion or that of the author you are relying on). In other words, clearly identifies the source of all ideas presented.</li> </ul>		<p>It is unclear which ideas presented are the student's own and which are those presented by others from the course materials (or outside sources), or whether the student is presenting their own ideas or not. Merely states personal opinion without tying it into the discussion.</p>	
5.	Discusses the broader implications of the arguments made.	<ul style="list-style-type: none"> <li>-Identifies what the course materials (perhaps coupled with outside material) tell us overall with respect to the topic. (What can we conclude?)</li> </ul>	<p>Observes cause and effect and addresses existing or potential consequences.</p> <p>Clearly distinguishes</p>	<p>Merely repeats information provided, taking it as truth, or denies evidence without adequate justification. Confuses associations and correlations with</p>	

		<p>-Explains how this conclusion might apply to new or different situations (what insights were gained, can we use them elsewhere, etc.).</p> <p>-These ideas are encapsulated within a strong, well organized 'Conclusion' section that includes a brief summary of the question posed, the points made and their implications, plus brings a sense of closure.</p> <p>-Conclusion reflects the points laid out in the introduction and contained in the discussion--contains no new information!</p>	between fact, opinion, & acknowledges value judgments	cause and effect	
6.	Is well written.	<p>-The ideas and relevant supporting evidence are presented in a clear and easy to follow sequence.</p> <p>-There is no unnecessary duplication of ideas or information.</p> <p>-The presentation does not contain errors of punctuation, grammar, spelling, etc</p>	Discusses the problem only in egocentric or sociocentric terms.	Fails to present the discussion in an organized manner (argument cannot be followed); discussion branches off into topics that are not clearly related to the central question; errors of punctuation, grammar, spelling, etc. inhibit the reader's understanding.	
7.	Identifies and assesses conclusions, implications and consequences.	<p>Identifies and discusses conclusions, implications, and consequences considering context, assumptions, data, and evidence.</p> <p>Objectively reflects upon the their own assertions</p>		Fails to identify conclusions, implications, and consequences of the issue or the key relationships between the other elements of the problem, such as context, implications, assumptions, or data and evidence.	

## TEMPLATE AND RUBRIC FOR FORMAL LAB REPORTS

**Name:**  
**Lab Report:**  
**Partner's Name:**  
**Due Date:**

### TEMPLATE

**Title** (*quickly grabs the reader and convinces him/her to go on*)

**Author(s)**

**Date**

**Abstract**

*Brief, concise description of the paper investigation to convince the reader to continue reading.*

**Findings of Prior Investigators (Research and Personal Experience)**

*Discussion of author's personal experience related to the current investigation and some historical information (**research**) provided to get reader up to speed of the reasoning you selected for this work.*

**Hypothesis**

*A **prediction** of what you expect to occur **BEFORE** you conduct the test. Provide the reader with some reasoning as to why you predict the outcome to occur. Be specific in describing what your variables will be: control variable, independent variable and dependent variable. Note exactly what is being tested and measured and describe how the variables will be measured (operational definition).*

### RUBRIC

**Abstract**

5	3	1
Brief, concise summary of purpose, methods, outcomes, & impacts (potential or realized) of the experiment.	Summary of purpose, methods, and outcomes nears completion. The understanding of the impact is not clearly stated.	Summary of purpose, methods, outcomes and impacts is disorganized and incomplete.

**Findings of Prior Investigators (Research and Personal Experience)**

5	3	1
In researching, the student establishes & utilizes expert relationships and community resources (more than three diverse/credible); s/he uses others' ideas or findings to inform his/her own thinking. Others' work is correctly cited.	In researching, the student establishes & utilizes expert relationships and community resources (three diverse/credible); s/he uses others' ideas or findings to inform his/her own thinking. Others' work is correctly cited.	In researching, the student has no diversity of resources (less than three diverse/credible). The resources used are not correctly cited. There is little research.

**Hypothesis**

5	3	1
The student predicts, citing reasons/evidence. S/he describes variables: control, independent & dependent, and operational definitions of independent and dependent variables.	The student predicts, but reasoning and variables are incomplete.	The student makes a prediction.

**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 tables and graphs along with the text to fully inform the reader of the results of your efforts. **In the text** of this section refer to the Tables and Figures. **Tables need titles. Figures need captions** that provide some explanation to the reader, allowing the graphic to stand-alone.

“Table 1 below shows that the two different object types performed differently in buoyancy trials;” or “Table 2 illustrates the sorted data of wingspan of ABHS Sophomores and Juniors.” A Figure may be mentioned as “With a few outliers the data shows that the ratio of height to wingspan in teens is around one (Figure 1).”

**Table 1. Buoyancy Effects of Two Applied Object Types Into a “tin” 14 oz. Dog Food Can**

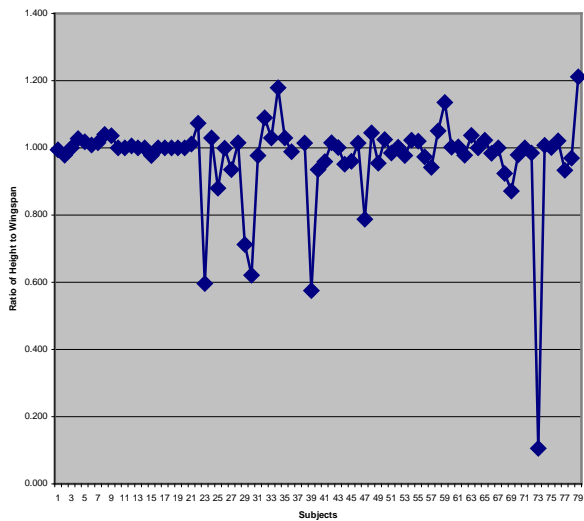
Material	Observed Result
Empty	Object floats, listing on one side to water’s surface
<b>Weights (Scientific)</b>	
1 500 g. weight	Object floats, listing on one side to water’s surface
2 500 g. Weights, or 1000 g.	Object floats, with reduced listing, low end approximately 3 cm. above water surface
1 1Kg. And 1 .5 Kg. Weight; total 1500 g.	Object sinks immediately, going straight down
<b>Marbles, small (each marble weighs approx. 5.1 g., diameter roughly 2 cm.)</b>	
10 marbles (approx. 51 g.)	Object floats, much less listing than with weights, approximately 4 cm. above water surface on dipping side
20 marbles (approx. 102 g.)	Object floats with very little list, buoyancy increases to approx. 5 cm. Evenly throughout surface
30 marbles (approx. 153 g.)	Object floats with even less list, can is now almost level, approx. 5.5 cm. above water surface.

**Materials and Methods**

5	3	1
List of necessary materials is complete and includes amounts.	List of necessary materials is incomplete.	List of necessary materials is missing or doesn't pertain to the experiment.
The written method is sequential, complete, resourceful, and has integrity (honest, unbiased approach). The methods clearly test the hypothesis.	The steps are present but confusing. The method is too simple to be followed precisely.	A reader has difficulty following the method because the steps are unclear or missing.

**Results**

5	3	1
The written text of what happened is complete and accurate. Student uses tables and graphs to explain the data described in the text. The tables have titles; figures/graphs have captions.	The written text is incomplete and/or inaccurate. The use of tables and graphs is misrepresented. The tables have titles; figures/graphs have captions.	Written text and/or tables, figures, graphs are absent. There are no titles or captions.



**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:  
Syllabus Title:  
Call Number:

### 1. Meet the Professor

#### 1.1. Instructor Contact Information:

Title  
Name  
Office Location  
Office Hours  
Email Address(es)  
Telephone Number(s)  
Fax Number  
Other

#### 1.2. Contact Policy

#### 1.3. About the Professor

Teaching and Education Background  
Research Interests  
Selected Papers and Publications  
Personal Website

#### 1.4. Teaching Philosophy

#### 1.5. Teaching Assistant/Secretary Contact Information:

Title  
Name  
Office Location  
Office hours  
Email address(es)  
Telephone number(s)

### 2. Student Help Resources

- 2.1. Online Student Orientation: [<http://www.clt.odu.edu/oso>]
- 2.2. Blackboard Support Website: [<http://www.clt.odu.edu/bb>]
- 2.3. Technical Support Center: [<http://occs.odu.edu/occs-help@odu.edu>, 757-683-3192]
- 2.4. Study Guides Strategies: [<http://www.studygs.net/>]

- 2.5. Papers Citation Styles: MLA, APA, Chicago & CBE  
[<http://www.dianahacker.com/resdoc/index.html>]

### **3. Course Readings**

- 3.1. Required Materials  
3.2. Optional Materials

### **4. Course Description**

- 4.1. ODU Catalog Description  
    Course Number  
    Section Number  
    Pre- or Co-requisites  
    Lecture Hours  
    Location  
    Credits  
    Official Description  
4.2. Instructor Course Description  
4.3. Entry Level Requirements  
4.4. Recommendations for Success

### **5. Course Objectives and Expectations**

- 5.1. Course Objectives  
5.2. Course Expectations

### **6. Teaching and Learning Methods**

- 6.1. Delivery Method  
6.2. Instructional Approach  
6.3. Course Interaction  
    Faculty-Student Communication System (FSCS)  
    Listserv (Mailman)  
    Discussion Board (Blackboard)  
    Chat (Blackboard Virtual Classroom)  
6.4. Feedback  
    Class Evaluation Form  
    [[http://www.clt.odu.edu/bb/tutorials/mid\\_course\\_fast\\_feedback/](http://www.clt.odu.edu/bb/tutorials/mid_course_fast_feedback/)]  
  
    Mid-semester Evaluation Form  
    [[http://www.clt.odu.edu/bb/tutorials/mid\\_course\\_fast\\_feedback/](http://www.clt.odu.edu/bb/tutorials/mid_course_fast_feedback/)]  
  
    Course Final Evaluation  
    [[http://www.odu.edu/oduhome/course\\_eval.shtml](http://www.odu.edu/oduhome/course_eval.shtml)]

### **7. Course Schedule**

- 7.1. Table/Chart showing week, class meeting days, date, topics, assignments and due dates.



### 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.

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<b>Week</b>	<b>Class Meetings Days</b>	<b>Date</b>	<b>Topics</b>	<b>Assignments</b>	<b>Due Date</b>
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## 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:

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98-100 =	<b>A+</b>	94-97 =	<b>A</b>	90-93 =	<b>A-</b>
88-89 =	<b>B+</b>	84-87 =	<b>B</b>	80-83 =	<b>B-</b>
78-79 =	<b>C+</b>	74-78 =	<b>C</b>	70-73 =	<b>C-</b>
68-69 =	<b>D+</b>	64-68 =	<b>D</b>	<59 =	<b>F</b>

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**Note:** A grade of "I" indicates assigned work yet to be completed in a given course or absence from the final examination. It is assigned only upon instructor approval of a student request. The "I" grade can be given only in exceptional circumstances beyond the student's control, such as illness. In these cases, the student is responsible for notifying the faculty member. The "I" grade becomes an "F" if not removed by the last day of classes of the following term (excluding the exam period) according to the following schedule: "I" grades from the fall semester become "F", if not removed by the last day of classes of the spring semester; "I" grades from the spring and summer sessions become "F" if not removed by the last day of classes of the fall semester. An "I" grade may not be changed to a "W" under any circumstances.

## 9. Student Responsibilities

- 9.1. Time Management
- 9.2. Understanding the Syllabus Requirements
- 9.3. Utilizing Online Components

## 10. Course Policies

### 10.1. Attendance

As per university policy, students are expected to attend classes. Students missing more than 15% of class meetings may fail. Therefore, students who miss more than two class meetings are subject to automatic failure.

### 10.2. Tests and Make-ups

### 10.3. Course Disclaimer

Every attempt is made to provide a complete syllabus that provides an accurate overview of the course. However, circumstances and events may make it necessary for the instructor to modify the syllabus during the semester. This may depend, in part, on the progress, needs and experiences of the students.

## 11. University Policies

### 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. Students will activate their Old Dominion email accounts and check them before each class. If the student chooses to have his/her messages forwarded to another account, it is the student's responsibility to take the necessary steps to have them forwarded.
7. Consumption of food and drink during class is prohibited, except when the professor has specifically approved it.
8. Offensive language, gestures and the like are disrespectful and disruptive to the teaching-learning process.

[\[http://studentservices.odu.edu/osja/ccp\\_pamphlet.pdf\]](http://studentservices.odu.edu/osja/ccp_pamphlet.pdf)

### 11.2. Cultural Diversity

### 11.3. Honor Pledge

*"I pledge to support the honor system of Old Dominion University. I will refrain from any form of academic dishonesty or deception, such as cheating or plagiarism. I am aware that as a member of the academic community, it is my responsibility to turn in all suspected violators of the honor system. I will report to Honor Council hearings if summoned."* By attending Old Dominion University you have accepted the responsibility to abide by this code. This is an institutional policy approved by the Board of Visitors. Refer to Student Honor Council.

[\[http://studentservices.odu.edu/hc/\]](http://studentservices.odu.edu/hc/)

### 11.4. Special Needs

In compliance with PL94-142 and more recent federal legislation affirming the rights of disabled individuals, provisions will be made for students with special needs on an individual basis. The student must be identified as "special needs" by the University and provide a letter from the Disability Services Office, located at 1525 Webb Center. Any accommodations will be based upon written guidelines from the Disability Services Office. All students are expected to fulfill all course requirements.

### 11.5. University Email Policy

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

A syllabus constitutes a contract between the student and the course instructor. Participation in this course indicates your acceptance of its content, requirements and policies. Please review the syllabus and the course requirements as soon as possible. If you believe that the nature of this course does not meet your interests, needs or expectations, if you are not prepared for the amount of work involved or if you anticipate that class meetings, assignment deadlines or abiding by the course policies will constitute an unacceptable hardship for you, you should drop the class by the drop/add deadline, given in the ODU Schedule of Classes.

[<http://www.odu.edu/ao/registrar/calendars/academic>]

11.7. Student Acknowledgement

"I, \_\_\_\_\_, have completely read this syllabus and understand and agree to the course requirements."