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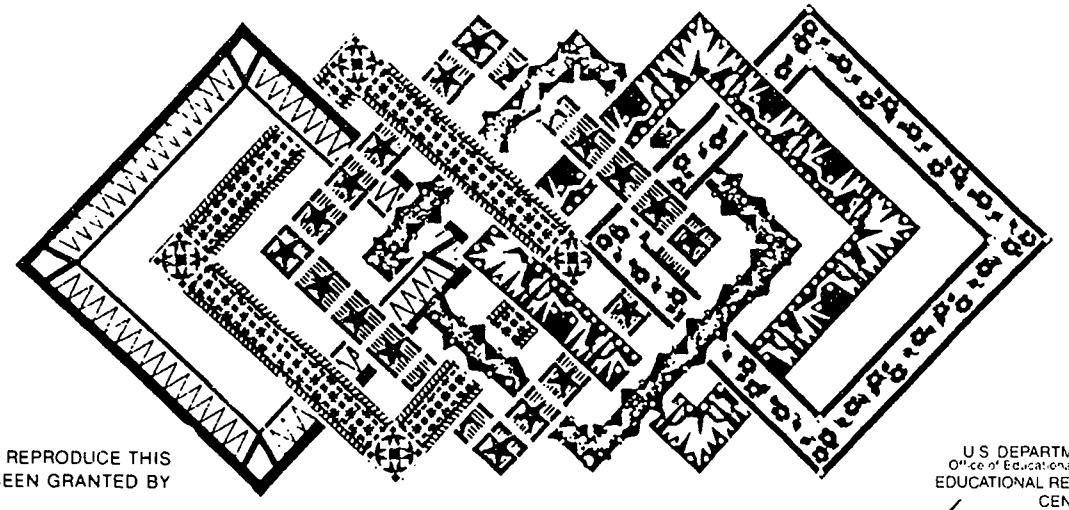
ABSTRACT

Prepared in an effort to more clearly define and measure general education outcomes at Columbus State Community College, in Ohio, this handbook describes outcomes and associated student behaviors and provides suggestions for assessing the outcomes. Following introductory materials, a list is provided of the college's six general education outcomes, with subtopics provided for each. Next, student behaviors and sample assessment techniques are provided for each outcome subtopic. The following outcomes are presented: (1) think critically, including identifying personal assumptions, examining issues by challenging assumptions, obtaining information from a variety of sources, analyzing information, evaluating issues from a variety of perspectives, drawing inferences, comparing and contrasting information, synthesizing and integrating information, and drawing conclusions; (2) solve problems, which includes recognizing, defining, and analyzing problems; considering alternative solutions; utilizing appropriate methodology; using resources effectively; formulating implementation plans; establishing success criteria; (3) communicate effectively, including writing and speaking clearly and effectively, listening actively, and reading at the two-year college level; (4) demonstrate interpersonal skills, including working collaboratively, engaging in group decision-making, recognizing individual rights and responsibilities, and utilizing conflict resolution strategies; (5) recognize the value of human diversity, including recognizing the contributions of different cultures, clarifying one's own value system, recognizing the value of diverse creative/aesthetic expression and experience, and recognizing an interdisciplinary approach to knowledge; and (6) demonstrate life management skills through valuing lifelong learning, recognizing the responsibility to balance individual and societal needs, recognizing human dependence on the environment, evaluating career paths, and understanding the role of ethics in life and work. Sample evaluation forms are appended. (KP)

Measuring The General Education Outcomes: Practical Strategies



Prepared by

The Arts and Sciences Division
Columbus State Community College

September 1994

MEMORANDUM

TO: Potential Users of this Booklet

FROM: Anne Peterson, Chairperson, Arts and Sciences Assessment Committee

SUBJECT: How to Use this Booklet

DATE: September 18, 1994

The following document represents the efforts of many members of the Arts and Sciences Division to more clearly define and measure the colleges General Education outcomes.

The booklet begins with all the outcomes listed. These are then divided into sections which provide the following: (1) a description of the student behaviors that are associated with each outcomes and (2) suggestions for assessing these outcomes taken from actual classroom experiences.

It has been the belief of the Arts and Sciences Assessment Committee that assessment statements are often unrealistic and do not represent real world efforts to monitor and measure student progress. Happily, this document demonstrates that the general education outcomes of Columbus State are both very real and very measurable.

The Committee decided, furthermore, that this was not to be a definitive document on measuring general education outcomes, but a suggestive one. Strategies for measuring each outcome are included from a variety of different subject matter perspectives. Review what is included and work from there! If you have other ideas and suggestions, please feel free to add those. Send them to members of the Committee. That way, this document will grow and change as our ideas about general education within the college change as well.

COLUMBUS STATE COMMUNITY COLLEGE

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COLUMBUS STATE COMMUNITY COLLEGE

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Columbus State Community College General Education Outcomes

01/10/94

1.0 Think Critically

1.1 Identify personal assumptions
1.2 Examine issues by identifying and challenging assumptions
1.3 Obtain information from a variety of sources
1.4 Analyze information
1.5 Evaluate issues from a variety of perspectives
1.6 Draw inferences
1.7 Compare and contrast information
1.8 Synthesize, integrate and connect information
1.9 Draw conclusions

2.0 Solve Problems

2.1 Recognize a problem
2.2 Define a problem
2.3 Analyze the problem
2.4 Consider alternative solutions or strategies
2.5 Utilize the appropriate methodology
2.6 Use human and technological resources effectively
2.7 Evaluate practical and ethical implications of the various solutions
2.8 Formulate an implementation plan
2.9 Establish criteria for determining degree of success

3.0 Communicate Effectively

3.1 Write clearly and effectively in standard English appropriate to the audience/ technology/purpose
3.2 Speak clearly and effectively in standard English appropriate to the audience/ technology/purpose
3.3 Listen actively with understanding
3.4 Read with comprehension at the two-year college level

4.0 Demonstrate Interpersonal Skills

4.1 Work collaboratively
4.2 Engage in group decision making
4.3 Recognize individual rights and responsibilities of group membership
4.4 Utilize conflict resolution strategies

5.0 Recognize the Value of Human Diversity

5.1 Recognize that humanity, by its nature, is diverse
5.2 Recognize that a basic component of human existence is that other traditions, cultures, lifestyles, and value systems exist apart from one's own
5.3 Recognize contributions of different cultures as well as one's own
5.4 Clarify one's own value system
5.5 Recognize the value of diverse creative/aesthetic expression and experiences
5.6 Recognize an interdisciplinary approach to knowledge

6.0 Demonstrate Life Management Skills

6.1 Value lifelong learning
6.2 Recognize the responsibility to balance individual needs with societal needs
6.3 Recognize human dependence upon the world environment
6.4 Evaluate career paths and opportunities
6.5 Understand the role of ethics in life and work

CRITICAL THINKING TASK FORCE REPORT

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1.0 THINK CRITICALLY

Critical Thinking is a logical process that begins with an educational stimuli and results in informed interpretations and conclusions reached by using different cognitive skills and techniques such as introspection, comparing and contrasting, information searches, evaluating from several perspectives, analysis, synthesis, and integration. When a person completes the process of critical thinking, he or she acquires knowledge, displays the ability to perform a task, and/or demonstrates an aesthetic or affective response.

1.1 IDENTIFY PERSONAL ASSUMPTIONS

Student Behaviors

1. By using introspective techniques, the student will explore, identify, express and/or explain the initial limits of their informed opinion on a given topic.

2. By using introspective techniques, the student will identify, state and/or explain, when appropriate, the various cultural, social and political biases they may carry when addressing an issue.

3. By using introspective techniques, students will predict relationships and express what they know about a concept.

4. Students are able to state their personal assumptions concerning issues that can be modeled mathematically.

Assessment Examples

1. Students will provide oral examples of their assumptions.

2. Students will provide information regarding their assumptions in written form.

3. Students will keep a journal throughout the quarter that includes their assumptions about a subject, a topic or an issue.

4. Students will answer questions on an exam that requires them to include their assumptions.

5. Students will state and reasonably justify their assertions in any of a numbers of ways e.g., mathematical proofs, written or oral expressions of personal perceptions, and reasoning, statements of what authorities think about an issue.

6. Students will review their initial assumptions or ideas about an issue or topic at the end of the quarter in written or oral form.

1.2 EXAMINE ISSUES BY IDENTIFYING AND CHALLENGING ASSUMPTIONS

Student Behaviors

1. Students will identify the fact, value, or policy issue contained in an assigned reading and explain to what extent the issue reflects their own assumptions.

2. Students are able to identify and explain specific values within an historical problem and point out their relative validity.

3. Students are able to analyze scientific information and assess the validity of assumptions presented.

4. Students are able to identify the specific assumptions within a science problem or issue, and point out the strengths and weaknesses of those assumptions.

5. Students are able to identify the specific assumptions within a mathematical or statistical problem and point out the weaknesses of those assumptions.

6. Students are able to speculate about and to account for observations that have been made.

Assessment Examples

1. Students will question information reviewed.

2. Students will participate in an oral discussion of the relative validity of various assumptions presented.

3. Students will provide information about the assumptions of a problem or issue in oral form.

4. Students will compare their ideas with one another about assumptions in an article or problem solution in written form.

5. Students are able to identify the specific assumptions within a mathematical or statistical problem and point out the weaknesses of those assumptions in oral or written form.

6. Students will read and describe the assumptions present in articles from current scientific journals.

7. Students provide a written analysis of the validity of assumptions presented -- whether in written, oral, or mathematical form.

8. Students will test stated assumptions in a laboratory setting.

9. Students will identify and describe the biases of a scientific article in a final examination.

1.3 OBTAIN INFORMATION FROM A VARIETY OF SOURCES

Student Behaviors

1. Students are able to obtain oral, written, pictorial or graphical representation from which enough information can be obtained to understand a concept.

2. Students are able to perform a search of scientific literature and locate key sources.

3. Students are able to read and understand newspaper articles, science summaries, and science journals.

4. Students are able to read and understand articles discussing mathematical modeling or statistical analysis of a "real life" situation.

5. Students will examine and present credible and authoritative sources on a given issue and/or provide valid experimental evidence.

6. Students will be able to read and understand primary source material in history, philosophy, art, music, and literature.

Assessment Examples

1. Students will provide documentation for research projects and/or experimental procedures through written, visual, musical, or oral presentations.

2. Students can provide information about a topic in oral form.

3. Students can provide information about a topic in written form.

4. Students will integrate into their research papers a minimum of five sources.

5. Students will complete a research paper about a topic that includes a bibliography.

6. Students will state and, in certain instances, justify their choice of sources through written, visual, musical, or oral presentations.

7. Students can present their findings about a topic to the class and conduct a discussion about it.

1.4 ANALYZE INFORMATION

Student Behaviors

1. Students are able to determine the elements of a problem or piece of scientific research.

2. Students are able to determine the elements of a problem, formulate a plan, and evaluate conclusions.

3. Students are able to differentiate relevant from nonrelevant information in a science problem or research article.

4. Students will analyze a short story to identify and explain the elements of setting: i.e., time, place, and artifacts.

5. Students are able to determine and explain elements in a value paradigm.

6. Students will demonstrate analytical skills by recognizing literary and rhetorical devices and structure, musical and artistic organization, mathematical reasoning, and/or scientific description.

7. Students will be able to classify and control variables to make sense of observations.

Assessment Examples

1. Students present a critique of the information they have obtained about a problem or issue in oral form.

2. Students present a critique of the information they have obtained about a problem or issue in written form.

3. Students discuss the adequacy of available information about a problem or issue in a class discussion, an essay, a term paper, or a final exam.

4. Students demonstrate their ability to analyze information by writing a well developed and documented lab report, term paper, or research project.

5. Students will weigh different information to solve a problem.

6. Students will evaluate the results of a laboratory experiment.

7. Students will evaluate different information as part of an examination.

1.5 EVALUATE ISSUES FROM A VARIETY OF PERSPECTIVES

Student Behaviors

1. Students are able to discuss science issues from an economic, ethical, environmental, and social perspective.

2. Students will discuss the "coming of age" in a short story, novel, or play from the perspectives of race, gender, setting, and economics.

3. Students are able to discuss value paradigms from an historical, artistic, philosophical, and musical perspective.

4. Students will be able to relate their knowledge to "real life" situations.

Assessment Examples

1. Students participate in a class discussion that considers a topic or an issue from a variety of perspectives.

2. Students write a paper that discusses a topic or an issue from a variety of perspectives.

3. Students write a final exam that includes the consideration of a topic or an issue from a variety of perspectives.

4. Students will evaluate the results of a laboratory experiment with respect to possible influences on results.

1.6 DRAW INFERENCES

Student Behaviors

1. Students are able to draw conclusions by reasoning from observations or evidences.

2. Students are able to locate information which may be used to develop an answer to a specific question.

3. Students will interpret the content, general bias, mode of reasoning, method of data analysis, accuracy of information, and artistic intent of a document in literature, music, art, history, science, or mathematics.

4. Students will seek clues in poetry and other literature to determine what the person writing it is/was like as an individual.

5. Students are able to determine the value paradigm surrounding a particular point of view, piece of literature, work of music, or artistic production.

Assessment Examples

1. Students will be able to solve a word problem by showing each step.

2. Students will be able to explain, in oral or written form, the point of view of the author of a science article.

3. Students will be able to explain, in oral or written form, the probable lifestyle and outlooks of an author of poetry or literature.

4. Students will be able to explain, in oral or written form, why a work of art belongs to a particular historic period.

5. Students will be able to summarize what they have learned from a product in literature, music, art, history, science or mathematics and explain that learning in oral, written, or visual form.

6. Students will be able to speculate on the probable reason for obtaining certain results in a laboratory experiment.

1.7 COMPARE AND CONTRAST INFORMATION

Student Behaviors

1. Students are able to state what is similar and what is different concerning two or more topics.

2. Students will be able to evaluate information and discern relationships between different sources.

3. Students will be able to compare and contrast various documents with respect to their content and means of expression.

4. Students will be able to compare and contrast the commercials aired during the Super Bowl with those aired during a typical afternoon of soap operas.

5. Students will be able to refine their understanding and skills and evaluate what they know and can do.

6. Students will be able to state and explain the similarities and differences between the products of two different value systems, whether culturally or historically different.

Assessment Examples

1. Students will be able to state what is similar and/or different about two or more topics in oral or written form in a class discussion, an essay, a research paper, or an examination.

2. In a written examination, students will be able to explain why they have chosen one source of information rather than another.

3. In written or oral form, students will be able to argue why they prefer one literary, artistic, or visual expression to another.

4. In written or oral form, students will be able to explain why different commercials are aired at different times on television.

5. In written or oral form, students will be able to compare and contrast their understandings and skills with those of another person or with respect to an objective standard of some kind.

6. Students will be able to write an essay that compares and contrasts the different works of art produced in Medieval Europe with those produced in the Renaissance.

1.8 SYNTHESIZE, INTEGRATE AND CONNECT INFORMATION

Student Behaviors

1. Students are able to take several separate facts or sources or articles and connect the information into an integrated whole.

2. Students will be able to obtain information from a variety of sources and organize this information around a clear result.

3. Students will be able to explain how specific instances of data underlie larger scientific or mathematical generalizations.

4. Students will be able to tell how evidence from specific documents or artistic products relate to larger historical, social, political, or scientific issues.

5. Students will be able to bring together separate elements of knowledge into new or unique patterns.

Assessment Examples

1. In written or oral form, students will be able to show how different observations form a pattern.

2. Students will be able to bring together the results of several laboratory experiments into a summary set of observations.

3. Students will be able to complete a research project or term paper that brings a variety of sources together around a particular topic or issue.

4. Students will be able to write an essay that tells how a piece of art they examined relates to the historical period that it represents.

5. In a research paper, students will bring together five or more sources of information, compare and contrast the similarities and differences of the different sources, and discuss how these different sources reflect or fail to reflect their own observations.

6. Students will observe and evaluate a debate about a particular issue.

7. Students will create and enact a dramatic figure in a role playing exercise after obtaining various pieces of information about that figure.

8. Students will be able to create something new or suggest a new way of doing something, based on information and ideas they have researched.

1.9 DRAW CONCLUSIONS

Student Behaviors

1. Students will make general judgments as to the validity, truth, meaning, and/or significance of a given document, artistic product, or set of data.

2. Students will be able to examine problems, issues, and science articles and develop a defensible conclusion.

3. Students will use evidence from assigned readings to develop a position with respect to a contemporary public policy issue.

4. Students make a decision about a particular topic or issue.

5. Students will take and defend a particular value position.

6. Students will be able to utilize information from a variety of sources to formulate a course of action.

Assessment Examples

1. In a laboratory report, students will state what their laboratory experiment has demonstrated.

2. In written or oral form, students will choose a course of action and state why they have done so.

3. Students will state and defend their preference for a particular artistic product.

4. Students will take and actively defend a side during a formal debate.

5. In a research project or term paper, students will be able to list what they have learned from their inquiry.

6. In written or oral form, students will be able to tell why they have adopted a particular value position or outlook.

PROBLEM SOLVING TASK FORCE REPORT

Task Force Members

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2.0 SOLVE PROBLEMS

A problem is a question raised for inquiry, consideration, or solution. Whenever there is a gap between where you are and where you want to be, and there is no obvious way to cross the gap, you have a problem.

2.1 RECOGNIZE A PROBLEM

Definition

To recognize a problem is to see in a set of facts or observations, or in a situation, a missing, determinable element, a logical inconsistency, or an element which can be improved.

Student Behaviors

Given a question raised for inquiry, consideration, or solution, the student will identify if there is a missing element, a logical inconsistency, or an element which can be improved.

Assessment Examples

1. For a language course, give an anonymous copy of another student's composition, the student will circle morphological errors, draw a rectangle around lexical errors, and underline syntactical errors.

2. For a language course, students will be video taped doing simple dialogs, and later they will view the video and write a list of pronunciation and grammatical mistakes.

3. For any course, students will recognize superfluous or irrelevant information that may be given in the statement of a problem.

4. For a physics or chemistry course, when assigned a problem using data that lead to a nonphysical result, the instructor will observe whether the students notice the discrepancy.

2.2 DEFINE A PROBLEM

Definition

To define a problem is to clearly state the problem, identifying its type, stating the parameters, and specifying constraints.

Student Behavior

Given a problem, the student will state the nature of the problem, the elements involved, and the boundaries within which the solution will be obtained.

Assessment Examples

1. For any course, the student will restate problems using different words.

2. For any course, the student will state any assumptions that must be made in order to solve a problem.

3. For any course involving computations, the student will list all variables (names and units) that are given and the variable which is to be found.

4. For a laboratory course, the student will write a clear, concise statement of the purpose of an experiment.

5. For a physics course, the student will draw a labeled figure applicable to the problem

2.3 ANALYZE THE PROBLEM

Definition

To analyze the problem involves examining the problem by all means necessary to completely understand its elements and reducing the problem to its critical components.

Student Behavior

Given a problem the student will identify the original situation and desired outcome.

Assessment Examples

1. For a language course, given a list of words all of which bear a written accent mark, the student will explain in writing the reason for which the accent mark must be used on each word.

2. For a language course, given a text, the student will underline each verb, circle the ending of the verb as well as the subject, draw a rectangle around each noun, draw arrows to the noun from any modifiers, and draw a rectangle around the ending of the modifier which indicates agreement with the noun.

3. For a language course, given a text, the student will circle each verb, state the tense, and give the rule which explains why that tense is used.

4. For any course, given data for a problem, the student will determine whether or not sufficient information is at hand to carry out a solution.

2.4 CONSIDER ALTERNATIVE SOLUTIONS OR STRATEGIES

Definition

To consider alternative solutions or strategies involves analyzing critically various strategies that may address the problem.

Student Behavior

Given a problem,the student will list possible solution strategies which may include the scientific method, the use of an algorithm, the trial-and-error method, and/or the use of an heuristic approach.

Assessment Examples

1. For a physics course, given a system of mirrors and lenses, the student will determine different methods of finding the location and nature of the image formed from an object presented to the system. The student will discuss advantages and disadvantages of the different methods.

2. For a laboratory course, given an experiment without a stated procedure, the student will develop two or more experimental approaches to the lab.

2.5 UTILIZE THE APPROPRIATE METHODOLOGY

Definition

To utilize the appropriate methodology is to establish a tentative approach to the solution of a problem, consistent with accepted standards and practices.

Student Behavior

Given a problem, the student will apply means that are suitable, acceptable, and potentially viable for attaining a solution.

Assessment Examples

1. For any course, the student will solve a problem using correct logic and/or mathematical approaches.

2. For a laboratory course, given an experiment without a stated theory and/or procedure,the student will develop an acceptable theoretical and/or procedural approach to the lab.

2.6 USE HUMAN AND TECHNOLOGICAL RESOURCES EFFECTIVELY

Definition

To use resources effectively involves determining what resources are available, which are the most appropriate, and what is the best way of applying them to achieve a solution to a problem.

Student Behavior

Given a problem, the student will select and evaluation resources necessary for attempting a solution.

Assessment Examples

1. For a language course, given a list of English words, each of which has several distinct meanings or usages in English, and, thus, is represented by several completely different words in the foreign language, the student will find the foreign language word which correctly define the sense of the English word in a translation dictionary.

2. For a science course, the student will use standard reference sources to find data which are needed to solve a problem or to perform an experiment. (Example: find densities, vapor pressures,or solubilities using the CRC Handbook of Chemistry and Physics.)

3. For a course involving computations, the student will use a graphical calculator in lieu of more traditional methods. (Example: use a graphical calculator instead of a quadratic formula.)

4. For any course, the student will use computer technology when and where applicable.

2.7 EVALUATE PRACTICAL AND ETHICAL IMPLICATION OF THE VARIOUS SOLUTIONS

Definition

To evaluate practical and ethical implications of various solutions involves considering social,fiscal, and ethical factors which may be impacted or which may have an impact on the solution.

Student Behavior

Given a problem, the student will identify relationships between potential solutions and various social, fiscal, and/or ethical factors.

Assessment Examples

1. For a biology course, the student will discuss the ethical implications of the human genome project.
2. For a biology course, the student will discuss the ethical implications of removing plants from the rain forest for medical research.
3. For a variety of courses, the student will discuss the social, fiscal, and/or ethical implications of making public the names of AIDS patients.

2.8 FORMULATE AN IMPLEMENTATION PLAN

Definition

To formulate an implementation plan is to gather information, weigh and consider all data, and choose an approach from the various options.

Student Behavior

Given a problem, the student will select and state a potentially viable solution method.

Assessment Examples

1. For a laboratory course,given an experiment without instructions, the student will develop and write a workable solution.

2.9 ESTABLISH CRITERIA FOR DETERMINING DEGREE OF SUCCESS

Definition

To establish criteria for determining degree of success is to identify the standard or measure against which the solution will be considered.

Student Behavior

Given a solution to a problem, the student will decide to what extent a missing element has been determined,a logical inconsistency has been removed, or an element has been improved.

Assessment Examples

1. For a laboratory course, having completed an experiment in which certain quantities are measured, the student will list sources of error and estimate their quantitative effects.

2. For a laboratory course, having completed an experiment in which certain quantities are measured, the student will compare measured values with accepted values by computing a percentage error.

COMMUNICATE EFFECTIVELY TASK FORCE REPORT

Task Force Members

Co-Chairs: Melissa Cordle, Mathematics
Luis Latoja, Humanities

Members: Beth Brauer, Biological and Physical Sciences
Greg Goodhart, Mathematics
Nancy Laughbaum, Developmental Education
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Barb Thompson, Communication Skills

3.0 COMMUNICATE EFFECTIVELY

A person communicates effectively when he or she is able to convey and receive coherent and clear information, ideas, and states of mind in oral or in written form.

3.1 WRITE CLEARLY AND EFFECTIVELY

Definition

To write clearly and effectively in standard English appropriate to the audience/technology/purpose implies the following: clear writing is accessible to the reader, fairly easy to read, and free of grammatical errors; effective writing conveys a coherent thought with a controlling idea present throughout that is connected and flows; standard English refers to language considered acceptable and/or adequate to the audience/technology/purpose; and appropriate refers to the choice of words and to the level of language used whether technical or nontechnical, formal or informal

Student Behaviors

The student will produce a variety of writings, each of which contains one controlling idea and is coherent, cohesive, and logical. [This Task Force recommends that the various rubrics developed by the Communication Skills Department which define the characteristics of an excellent, good, fair and poor paper be used when evaluating written work. Copies of these appear in the Appendix.]

Assessment Examples

1. In a laboratory course, a student will write a pre-lab report that states the purpose of the lab and any special precautions that must be taken, and at the completion of the lab will turn in a data sheet and answers to the lab questions.

2. In a biology course, students will research a topic of interest to them and then write a research proposal that contains an introduction, statements of hypotheses, methods and materials needed, the results obtained, a discussion of conclusions reached from the experiment, and a carefully constructed bibliography of resources used in the project.

3. In a humanities course, students will write an essay that names and defines the artistic movements during and after World War I. For each artistic movement, they will give one example, one artist, and tell why it is an example of that movement.

4. In a mathematics course, students will write a brief examination question that explains, in a couple of sentences, how the Intermediate Values Theorem can help find roots.

5. In an essay for a social and behavioral sciences course, students will identify three types of change and explain each: the most important change currently taking place in American society, the change most advantageous and beneficial to them, and the change they feel most unprepared for and threatened by.

3.2 SPEAK CLEARLY AND EFFECTIVELY

Definition

To speak clearly and effectively in standard English appropriate to the audience/technology/purpose implies the following: clear speech is accessible to the listener and does not take a great deal of effort to absorb; effective speech conveys coherent thoughts with a controlling idea present throughout and also provides a connected flow of thoughts; standard English refers to language considered acceptable and/or adequate to the audience/technology/purpose; and appropriate refers to the choice of words and to the level of language used whether technical or nontechnical, formal or informal

Student Behaviors

The student will speak in a variety of settings using logic, coherence, and clear enunciation.

Assessment Examples

1. In a foreign language class, students will get to know four people in the class by greeting them appropriately in the foreign language, identifying themselves, asking the other person his or her name, inquiring as to the well being of the person, and concluding the discussion and taking leave.

2. In a mathematics class, after engaging in a group problem solving exercise, students will present their problem solutions to the class.

3. In a biology class, students will present a brief summary of their research proposal. The presentation will include visual aids such as slides or overhead transparencies.

4. In a speech class, students will present a five minute speech delivered extemporaneously using no more than one 5 x 8 inch index card. [A speech evaluation form for this assignment is included in the Appendix.]

5. In a speech class, students will present a five minute speech that commemorates a person, place, event, thing, or concept. They will speak using creative and vivid language. [A speech evaluation form for this assignment is included in the Appendix.]

3.3 LISTEN ACTIVELY WITH UNDERSTANDING

Definition

To listen actively with understanding implies the following: listening attentively to what another person says or to an audio stimuli of some kind in such a way as to be able to summarize, apply, or discuss what is being said or being heard and responding either verbally or non-verbally to what is heard.

Student Behaviors

The student will listen to and be able to summarize or apply a variety of audio forms and styles of speech pertinent to personal, social, and professional needs.

Assessment Examples

1. In any class, students listen to a lecture prepared by the instructor and later answer questions about what was said, in written or oral form.

2. In a biology class, after listening to a lecture on laboratory safety, students will answer questions on a brief objective-type exam related to the lecture topics.

3. In a business communications class, students listen to a variety of writing selections read by the Instructor and then write down the main idea and thesis statement for each.

4. In a communication skills class, students are asked to engage in a discussion around a controversial issue. Before responding themselves, they must summarize what the person who spoke before said. This process is continued for several minutes.

5. In a humanities course, students attend a live theatrical performance, musical play, opera, or concert and then write an essay that describes the event attended and answers a series of questions provided.

6. In a foreign language class, students will listen to a dialogue in a foreign language and then circle one statement, from among several, that best summarizes the main idea contained in the dialogue.

3.4 READ WITH COMPREHENSION AT THE TWO-YEAR COLLEGE LEVEL

Definition

A person who reads with comprehension at the two-year college level is able to summarize what he or she reads and use it in the following ways: to apply information, to compare and contrast, to determine cause and effect, and to state what he or she has read in his or her own words.The two-year college reading level can determined by various commercially prepared texts and/or by the level of reading difficulty assigned to a college textbook.

Student Behaviors

The student will read and be able to summarize or apply a variety of written forms and styles of writing pertinent to personal, social, and professional needs.

Assessment Examples

1. The student will read an assigned reading passage written for the two-year college level and be able to summarize it in written or oral form.

2. The student will be able to read a laboratory experiment and be able to complete the lab assignment as a result of understanding the directions given.

3. In a communication skills course, a student will read a short story and then write an essay that discusses the information contained in the story and compares it with experiences from the student's own life.

4. In any course, a student will complete a research project that requires reading and summarizing several sources and using these to support an argument or point of view.

5. In a foreign language course, a student will read a sample restaurant menu written in the foreign language and then will list the name of the restaurant, the type of foods served, the hours of the restaurant, the phone number, and the attractions that the restaurant offers to its patrons.

6. In any course, the student will demonstrate reading comprehension by successfully completing a multiple choice type exam.

7. In any course, a student will demonstrate reading comprehension by providing short identifications of key subject matter concepts on an examination.

8. In any course, a student will demonstrate reading comprehension by responding to an essay type question on an examination.

DEMONSTRATE INTERPERSONAL SKILLS TASK FORCE REPORT

Task Force Members

Co-Chairs: Bruce Ardinger, Communication Skills
Judy Roobian-Mohr, Social and Behavioral Sciences

Elizabeth Betzel, Mathematics
Beth Brauer, Biological and Physical Sciences
Pam Ely, Social and Behavioral Sciences
Christiana Hopkins, Communication Skills
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4.0 DEMONSTRATE INTERPERSONAL SKILLS

The nature of a problem or situation may require an individual to interact with others in a constructive, purposeful fashion. An individual demonstrates interpersonal skills by dealing well with others, working cooperatively to accomplish group projects, using socially acceptable forms of discussion and behavior to put forward a point of view, and accepting responsibility for his/her share of the group's workload in leadership or supporting roles.

[Note: The members of this task force recommend that assessment of interpersonal skills occur in three ways: (1) self-evaluation; (2) peer evaluation; and (3) Instructor evaluation based upon observation of student behavior in class. Some instruments and check lists for accomplishing these appear in the Appendix.]

4.1 WORK COLLABORATIVELY

Definition

Given a task to accomplish, the members of a group will pool their energies, resources, and ideas to work purposefully and harmoniously toward the completion of that assignment.

Student Behaviors

Students will:

1. Listen respectfully to each other.
2. Ask questions of one another.
3. Feel free to speak up.
4. Support the efforts of others.
5. Attend group meetings on time.
6. Meet deadlines.
7. Help collect and analyze information.
8. Be involved in bringing the group's assignment to completion.

Assessment Examples

1. A group of students will prepare a presentation that "teaches" a relevant concept/principle to the rest of the class.
2. Students will read an assigned passage or article and, working with a group, answer a set of questions related to the reading.
3. Each student in a group will keep a journal which reflects the group dynamics experienced as the group worked together.

4. A group of students will select a topic, design a presentation, choose tasks, meet to coordinate materials, and practice the presentation, and present the material at the assigned time.

5. A group of students will evaluate articles based on the critical thinking process.

4.2 ENGAGE IN GROUP DECISION MAKING

Definition

Engaging in group decision making implies participating with others in a problem solving process which results in a group conclusion.

Student Behaviors

Given a problem, a student will:

1. Assist in the collection of valid, relevant information.
2. Contribute to a list of possible courses of action.
3. Help develop mutually acceptable evaluation criteria.
4. Promote the presentation and understanding of divergent points of view.
5. Utilize conflict resolution strategies.
6. Accept and conscientiously perform a functional role (collecting data, recoding, summarizing, presenting, etc.) in the decision making process.
7. Help bring the group to agreement.
8. Contribute to the design of a plan to implement the group decision.
9. Abide by the group decision.

Assessment Examples

1. In a lab course, given an experiment without a stated procedure, a group of students will develop two or more experimental approaches to the lab.
2. In a conference or group discussion course, students will apply the general problem solving model.

3. During a group assignment, a student will act as a group recorder and maintain a log of the decision making process.

4. Students will work together to identify logical fallacies found in the media.

5. Students will select an issue and discuss it, observing the principles of negotiation.

6. Students will appoint an observer to watch the group's process and provide feedback and assessment of it.

4.3 RECOGNIZE INDIVIDUAL RIGHTS AND RESPONSIBILITIES OF GROUP MEMBERSHIP

Definition

To recognize individual rights and responsibilities of group membership is to recognize that group membership is accompanied by the right to be heard without prejudice, supported in one's efforts, and valued for one's contributions; to expect that one's colleagues will contribute fairly and constructively to the group's work; and to acknowledge that group membership carries with it the responsibility to listen without prejudice, support one's colleagues, value their contributions, and contribute fairly and constructively to the work of the group. The dynamics of effective groups depend on individuals taking responsibility for their own ideas, actions, and contributions.

Student Behaviors

Students will be able to:

1. Communicate points of view clearly and respectfully, and afford others the same opportunity, even when the views expressed are not welcomed by the group as a whole.

2. Receive the cooperation and encouragement of colleagues, and provide them with the same support.

3. Acknowledge the contributions of other group members, and realize the value of one's own contributions.

4. Attend meetings, meet deadlines, and complete assigned tasks conscientiously and in a manner that contributes to the desired outcomes; clearly express the expectation that one's colleagues will do the same.

Assessment Examples

1. Students in a group will select a controversial event, figure, or policy and debate its merits in an open forum.

2. In a lab course, students will work in a team and take a turn in the process of collecting and analyzing the data.

3. After engaging in a group project, students will rank peer group members according to their desire to work with them again under similar circumstances.

4. As part of a group project, students will set guidelines for acceptable group behavior and design reasonable standards for continued group membership.

5. Students will work together to prepare a panel discussion around a controversial issue.

6. Students will brainstorm and list unacceptable group member behaviors as part of a process of establishing group performance guidelines.

7. Students will keep journals describing their feelings, coping strategies, and other group behaviors while engaged in a group project organized around a controversial issue.

4.4 UTILIZE CONFLICT RESOLUTION STRATEGIES

Definition

To utilize conflict resolution strategies is to recognize that others will frequently make statements and adopt positions not in agreement with one's own, and be able to constructively move beyond the differences to a workable common ground.

Student Behaviors

Students will:

1. Communicate points of view clearly and respectfully, and afford others the same opportunity.
2. Demonstrate the ability to break the tension in a conflict situation.
3. Identify those points where disagreement is an acceptable outcome.
4. Where agreement is necessary, help establish clear group goals and the criteria by which options will be evaluated.
5. Apply the group's criteria for acceptable performance in an evenhanded manner.
6. In a group discussion, summarize opposing points of view and point out any potential common ground.
7. Help frame an acceptable position.

Assessment Examples

1. In a lab course, during group work, when a conflict arises, some members of the group will redirect conflict by posing task-related questions to others to help all refocus their efforts.

2. Students will apply the principles of negotiation to an identified problem.

3. Students will appoint an observer to watch the group's process, note when members are off-task, and provide periodic assessment about the group's process.

4. Students will practice techniques of active listening by summarizing remarks and concentrating on main-point note taking by maintaining minutes of meetings and compiling reports.

5. Students will establish guidelines in the class for expressing disagreement and appoint a gatekeeper to control the discussion.

RECOGNIZE THE VALUE OF HUMAN DIVERSITY TASK FORCE REPORT

Task Force Members

Co-Chairs: Karen Muir, Social and Behavioral Sciences
Viola Newton, Developmental Education

Members: David Adams, Humanities
Holly Finnegan, Developmental Education
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Nur Hussen, Humanities
Amine Kidane, Basic Sciences
Dianna Rhyan, Humanities
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5.0 RECOGNIZE THE VALUE OF HUMAN DIVERSITY

Recognizing the value of human diversity implies taking the opportunity to examine, clarify, and discuss the characteristic backgrounds, attitudes, and behaviors of people with a different identity. It means wrestling with preconceived ideas of racial and cultural differences so that social interactions are free of negative attitudes and behaviors. Students who recognize the value of human diversity will come to experience empathy with those from different backgrounds. Such individuals will engage in discussions about culturally and racially potent issues and begin to forge solutions to existing problems. The result will be increased awareness and knowledge.

5.1 RECOGNIZE THAT HUMANITY IS DIVERSE

Definition

To recognize that humanity, by its nature is diverse, is to appreciate the difficulty with which universal consensus is reached in any discipline and to make the effort to approach assignments from a universal, rather than a regional or ethnic, point of view.

Student Behaviors

Students are able to discuss the diversity of human biology and culture and identify the diversity within their classroom as learning resource.

Assessment Examples

1. Students are introduced to different learning styles; determine their own learning styles; and discuss their differences of approach.

2. Students contribute to class discussions, using their own experiences, and summarize the discussions each week in journals, integrating their own contributions with those of others, listing the advantages and disadvantages of opposing viewpoints raised.

3. Students read the writings of authors from different cultures and discuss,in oral or written form,the different perspectives and perceptions contained in each.

5.2 RECOGNIZE THAT A BASIC COMPONENT OF HUMAN EXISTENCE IS THAT OTHER TRADITIONS, CULTURES, LIFESTYLES, AND VALUE SYSTEMS EXIST APART FROM ONE'S OWN

Definition

To recognize that a basic component of human existence is that other traditions, cultures, lifestyles, and value systems exist apart from one's own summarizes the movement away from the Eurocentric male perspective to a holistic, global one.

Student Behaviors

Students are able to do the following:

1. Discuss an issue from a variety of cultural and social perspectives.
2. Discuss the variety of institutions that exist within diverse cultural traditions.
3. Discuss how various institutions interact within a society and how diversity affects interaction between cultures.
4. Discuss how diversity in culture, lifestyles, and values affect interpersonal interaction.
5. Recognize the origins of Eurocentric male perspectives and present alternative viewpoints.

Assessment Examples

1. Students research the development of a non-Eurocentric theory, art form, or cultural value through history and complete a term paper on this topic.

2. Students identify a universal human need and then compare the way American culture responds to that need vs. the way another culture responds and speculate how and why the differences in response have occurred. Their findings can be presented orally or in written form.

3. Students examine a discipline like psychology or anthropology and outline the historical and cultural factors that have caused it to develop as it has.

4. Students contribute to class discussions by sharing their own particular cultural experiences.

5. Students identify a component of American culture and show how it was derived from another cultural context in oral or written form.

6. In a sociology class, students observe a subculture other than their own and keep a record of their observations which they present in the form of a written or oral report.

7. In a sociology class, students interview individuals who live in the U.S. but came from another country, asking them about their experiences of learning American culture. They present their findings in the form of a written or oral report.

8. In a sociology class, students interview several individuals aged 60 and older to learn about the historical events they have experienced. They present their findings in the form of a written or oral report.

5.3 RECOGNIZE CONTRIBUTIONS OF DIFFERENT CULTURES AS WELL AS ONE'S OWN

[Note: The task force concluded that 5.2 and 5.3 could be combined. They did not provide separate definitions for this outcome.]

5.4 CLARIFY ONE'S OWN VALUE SYSTEM

Definition

To clarify one's own value system implies honestly and objectively examining one's own values and contrasting them with other value sets in order to establish an understanding of why one believes as he/she does.

Student Behaviors

1. Students are able to state their personal assumptions and to discuss the effects of those on the way they interact with others.

2. Students are able to contrast their own views with those of others.

3. Students are able to reexamine their own assumptions, preconceptions, and attitudes about others and, therefore, to open themselves to new learning and understanding.

Assessment Examples

1. Students take a description given by Europeans of Native Americans, research elements of Native American culture, and then write their own description of Europeans from the Native American perspective.

2. Students are required to visit the changing art exhibits in the Educational Resource Center, the outdoor sculptures on the Columbus State campus, or the CSCC Readers' Theater. They then write their responses to these experiences in a journal which they will later share with their class.

3. Students observe a debate about a current topic of popular interest/curiosity, casting anonymous ballots stating their opinions about the topic before and after the debate and why they hold the outlooks they do.

4. Students clarify their own value system by choosing something of value or importance to them, telling why they value it, and then speculating on how this same item or idea would be viewed in another cultural context. This can be done in written or oral form.

5. Students are assigned a series of articles to read about a particular controversial issue.They then identify the biases of the authors assigned, identify their own biases around the controversy, and attempt to resolve the issue with these insights in mind. This can be done in written or oral form.

6. In a written essay assignment, students are asked to imagine themselves as the principal of a school and then identify two values that they feel should be taught. They must then justify their value choice and outline the way that the values they have identified would be developed in students attending their school.

5.5 RECOGNIZE THE VALUE OF DIVERSE CREATIVE/AESTHETIC EXPRESSION AND EXPERIENCES

Definition

To recognize the value of diverse creative/aesthetic expression and experiences is to identify different cultural expressions and experiences -- either within American culture or outside of it -- respond to these, and appreciate why and how they represent different cultural values and outlooks.This outcome also implies that students learn the language and outlooks of the "culture" of contemporary cultural analysis.

Student Behaviors

Students are able to:

1. Provide their personal reactions to various cultural expressions.
2. State the meaning of various cultural expressions within their context.
3. Discuss the value of various cultural expressions and experiences within the cultural context that they occur.
4. Engage in discussions with individuals from cultures other than their own about the meaning, value, and context of various cultural expressions and experiences.

Assessment Examples

1. Students will participate in an "international table" (i.e., a lunch or dinner discussion with individuals from other cultures) and write or tell of their experiences.
2. Students will bring to class an example of art, music, literature, or another cultural expression and will make an oral presentation about it in which they tell how it was derived and why it is pleasing to them.

3. Students will be given a list of currently used terms in the academic fields of contemporary cultural analysis. They will write an essay or deliver a speech that uses these terms to describe an example of art, music, literature or another cultural expression of their choice.

5.6 RECOGNIZE AN INTERDISCIPLINARY APPROACH TO KNOWLEDGE

Definition

To recognize an interdisciplinary approach to knowledge means that various academic disciplines are no longer perceived as isolated, but connected by common ideas, concerns, and resources.

Student Behaviors

1. Students are able to relate skills, concepts, and theories to their social context.

2. Students are able to discuss the interaction of different disciplines on public policy issues and programs.

Assessment Examples

1. Students are assigned to a group and given a particular issue to consider. Each person is required to respond to that issue by taking the perspective of one of the social sciences: psychology, sociology, anthropology, political science, or economics. Their responses to this assignment can be in oral or written form.

2. Students are assigned a theoretical or other problem specific to a discipline. They brainstorm how this problem could be solved using the methods and outlooks of other disciplines, share their ideas with the larger class, and conclude the activity in the class as a whole by formulating an interdisciplinary approach to the problem presented.

3. Students write a paper that includes the consideration of a particular topic from the perspectives of at least two disciplines.

DEMONSTRATE LIFE MANAGEMENT SKILLS TASK FORCE REPORT

Task Force Members

Co-Chairs: Lisa Schneider, Communication Skills
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Members: Judy Carpenter, Biological and Physical Sciences
Scott Hunt, Social and Behavioral Sciences
Vicki Minor, Mathematics
Jim Paull, Developmental Education
Patrice Ross, Humanities
Trina Steward, Communication Skills

6.0 DEMONSTRATE LIFE MANAGEMENT SKILLS

The outcomes in this category focus on the larger, long-term goals of higher education which include helping individuals become productive members of society as family members, citizens, and workers. An individual who manages his/her life utilizes the skills and outlooks implied in the other outcome groupings addressed in this booklet to continue to learn, adapt and grow across his/her lifespan.

[Note: This task force concluded that many of the outcomes in this section cannot be assessed in a summative or final way. A college can only partially determine its success in promoting life management skills. Over time, a college can obtain some of this information from graduate questionnaires, surveys of employers, and general surveys of community perception of the college's impacts whether these outcomes have been achieved, but these are likely to be incomplete and inconclusive. Nevertheless, the task force believes that these outcomes need to be addressed in college courses and can be formatively assessed in a variety of ways.]

6.1 VALUE LIFELONG LEARNING

Definition

A lifelong learner recognizes that the development of self is an evolving process in which learning plays a fundamental role in the dynamic world we live in. The learner must continually adapt to economic, political, and social changes in order to remain a productive member of society.

Student Behaviors

The student:

1. Acknowledges that his/her education is not a finite process and seeks to continually upgrade his/her skills.
2. Views education as a means of improvement.
3. Values learning for its own sake.
4. Forecasts his future educational needs.
5. Is actively curious about education.
6. Teaches others.

Assessment Examples

1. The student begins a course by completing a questionnaire identifying his/her major, technology, and transfer plans. At the end of the course, his/her responses are compared with those from the beginning. Changes noted are commented upon orally or in writing.
2. In communication skills, students keep a journal that identifies past, present, and future experiences with education, reading, and writing and other learning topics.

3. Students volunteer to participate in the CSCC Tutoring program or a community tutoring program, and tutor students with poor learning skills.

4. Students are given a survey about their attitudes regarding learning and education when they enter college. They complete the same survey as they graduate.

5. The college conducts a post-graduate survey of students to determine their attitudes towards learning and continuing education.

6. The college conducts an employer survey to determine if its graduates are viewed as individuals committed to lifelong learning.

6.2 RECOGNIZE THE RESPONSIBILITY TO BALANCE INDIVIDUAL NEEDS WITH SOCIETAL NEEDS

Definition

This outcome implies that an individual must be aware that his/her actions (positive and negative) have an effect not only on his/her life, but on the individuals around him/her and the society as a whole. While a person is an individual and must serve his/her own needs; that same individual must limit individual action to meet society's needs as well.

Student Behaviors

The student:

1. Identifies his/her personal needs.
2. Is able to work independently.
3. Understands the consequences of his/her actions.
4. Is courteous.
5. Values diversity.
6. Behaves responsibly in the classroom.
7. Recognizes the need for laws.
8. Serves the community and fulfills his/her community obligations.

Assessment Examples

1. In a classroom setting, students demonstrate their respect for the outlooks and behaviors of other students.
2. In any class, students work together, reading and critiquing one another's oral presentations or written assignments, in a helpful, responsible, and tactful manner.

3. In a communication skills class, students write an essay that identifies a social problem (like homelessness, the need for low cost medical care, or problems of poverty), research the problem, and determine a reasonable solution which they present in the form of a well-written term paper.

4. Students identify and discuss (orally or in writing) their community service activities.

6.3 RECOGNIZE HUMAN DEPENDENCE UPON THE WORLD ENVIRONMENT

Definition

The individual recognizes human dependence upon the world environment by understanding that the world environment has limited resources while human beings have unlimited wants. Therefore, everyone cannot have everything. Wise choices are necessary, since every choice implies a cost to the survival of the world's environment as a whole.

Student Behaviors

1. The student recognizes the limits of the environment and makes attempts to preserve it.

2. The student exhibits habits of conservation.

Assessment Examples

1. In a world economics course, students solve problems that weigh supply and demand.

2. In a social science course, students document their participation in ecological or recycling projects.

3. In a communication skills course, students research and present a term paper or speech on one of the following topics: the disappearing rain forests, the need for population control, the problem of toxic landfills, the problem of disposing of toxic waste, or the problem of acid rain.

6.4 EVALUATE CAREER PATHS AND OPPORTUNITIES

Definition

An individual who evaluates carer paths and opportunities is knowledgeable of the changing employment opportunities in his/her chosen field and the different resources available to him/her for accomplishing career goals. If need be, the individual is able to choose a successful strategy for improving or changing his/her career path.

Student Behaviors

The student:

1. Recognizes the rapidly changing technology and his/her need to maintain/upgrade job skills.
2. Matches his/her skills witn his/her strengths.
3. Knows how to use the necessary career resources.

Assessment Examples

1. The student seeks out career experiences like internships.
2. The student interviews prospective employers.
3. The student locates and uses employment resources and occupational handbooks.
4. In a business and technical writing course, the student prepares a resume, cover letter, and answers to potential job interview questions.

6.5 UNDERSTAND THE ROLE OF ETHICS IN LIFE AND WORK

Definition

The individual understands the role of ethics in life and work when he/she recognizes that there are appropriate codes of conduct in daily and professional life.

Student Behaviors

The student:

1. Is honest.
2. Respects others.
3. Keeps confidences.
4. Does not intentionally harm others.
5. Takes pride in his/her actions.
6. Abides by various professional codes of conduct.

Assessment Examples

1. In a research and writing course, students write accurately documented research papers with no evidence of plagiarism.
2. In a social and behavioral sciences course, students are asked to identify and discuss one of their values and defend it in oral or written form.
3. In an ethics or communication skills class, students are asked to take a stand on a moral issue of current concern (such as capital punishment, abortion, euthanasia, or the legalization of drugs) and defend the stand they take.

4. In a literature or ethics course, students are provided with real or fictional dilemmas and are asked to solve the dilemma and explain the reasons for their choices.

APPENDIX

2.0 SOLVE PROBLEMS

Judy Gentry (Social and Behavioral Sciences) uses the following check list in two ways: (1) to help herself determine whether an assignment she has written contains problem-solving activities and (2) to help students recognize the steps of problem solving in assignments that they complete.

Assignment for: _____

Type of Assignment: _____

For the Attached Assignment, please check all outcomes that are addressed :

_____ 1. Recognize a problem

_____ 2. Define a problem

_____ 3. Analyze a problem

_____ 4. Consider alternative solutions or strategies

_____ 5. Utilize the appropriate methodology

_____ 6. Use human and technological resources effectively

_____ 7. Evaluate practical implications of the various solutions

_____ Evaluate ethical implications of the various solutions

_____ 8. Formulate an implementation plan

_____ 9. Establish criteria for determining degree of success

2.0 SOLVE PROBLEMS - a

Ed Laughbaum (Mathematics) creates assignments that alert students to the steps of problem solving that they are completing. Note that the process of problem solving is not necessarily linear.

CLASS _____ NAME_____

LABORATORY PROJECT-CHAPTER SIX

GREENHOUSE GAS MODEL

Below is a numeric representation of the amount of carbon dioxide in the atmosphere from 1725 to 1975. Carbon dioxide is one of several of the greenhouse gasses. The goal of this project is to develop a symbolic representation of the function that describes the amount of carbon dioxide in the atmosphere from 1725 to 1975. You may use any arithmetic combination of functions studied in this chapter or previous chapters to develop your symbolic representation of the function. You should take advantage of your knowledge of the relationship between the behavior of a function and the numbers in the symbolic representation of the function. You may also use the following transformations on your function: stretch, shrink, reflection, horizontal translation, and/or vertical translation. There are many different correct responses to several of the questions and there are many different acceptable mathematical models.

1. Recognize a problem: (Classroom discussions indicate a problem - global warming.)

t (years)	1725	1775	1825	1875	1925	1975
C (Carbon Dioxide)	275	278	283	293	300	335

Carbon Dioxide is in parts per million. Source: World Resources Institute.

3. Analyze the problem: (Students cannot continue without understanding the problem.)

6. Utilize the appropriate methodology: (Question one can best be answered using technology.)

8. Formulate an implimentation plan: (The next eight questions lead students through the implementation.)

1. What type function can be used as a general behavior model? That is, as you study the numeric representation, what does it most behave like.

_____

2. Should the domain be restricted to numbers from 1725 to 1975? _____

   Explain your thinking.

_____

_____

3. What is the symbolic representation of your first attempt at a model?

_____

2.0 SOLVE PROBLEMS - b

4. What adjustments to your first model can you make to develop a better model?

_____

5. What is the symbolic representation of your second attempt at a model?

_____

6. What adjustments to your second model can you make to develop a better model?

_____

_____

_____

7. As you continued to improve your model, approximately how many times did you make adjustments to get your final model? _____

8. What is your final mathematical model for the Carbon Dioxide level in the atmosphere?

_____

9. Establish criteria for determining the degree of success: (Questions 9 and 10 lead to implication that the solution may not be the 'ultimate' solution.)

9. Describe a situation under which your model of the carbon dioxide level would not apply.

_____

_____

_____

10. List any other limitations to your model.

_____

_____

11. What is another greenhouse gas?_____

12. Using your mathematical model, how much carbon dioxide will be in the atmosphere in 1995?_____

In 2050?_____

2.0 SOLVE PROBLEMS - c

13. Is the data increasing or decreasing?_____Is your mathematical model an increasing or decreasing function?_____

14. Does your model have a maximum?_____If yes, when and what?_____

15. What is the average rate of change from 1725 to 1825?_____

16. What is the average rate of change from 1925 to 1975?_____

17. What consumes carbon dioxide?_____

18. If your model had a zero, what would be your interpretation of the zero?_____

_____

7. Evaluate practical and ethical implications of the various solutions: (Normally, to a mathematics student, zeros are good things.)

19. Would a zero be good for you?_____

_____

20. If one point on the graph of your model is (1850, 288), explain what these numbers mean._____

_____

9. Establish criteria for determining the degree of success: (The ultimate measure - can anyone use the student solution.)

21. Do you think anyone working at a professional job would need or could use your mathematical model to help solve a problem? _____ If yes, what kind of professional? _____

How would they use it?

_____

_____

22. What page(s) of the text did you use as a reference for working this project?_____Did you use any other reference work or resource person?_____If yes, what and/or who?

_____

2.0 SOLVE PROBLEMS - d

8. Formulate an implimentation plan: (Question 23 forces the student to describe the implementation plan.)

23. Give a detailed description of the thought process you used to developed your mathematical model.

_____

_____

_____

24. If you worked in a group, list the contributing group members.

_____

_____

_____

4.0 DEMONSTRATE INTERPERSONAL SKILLS

Betsey O'Connor (Developmental Education) developed the following three checklists for rating participation in groups. The first is a self-evaluation form. The second is a peer evaluation form. The third is an Instructor evaluation form. The Interpersonal Skills Task Force recommends that each of these be observed when rating interpersonal behaviors.

SELF-ASSESSMENT OF GROUP PROJECT PARTICIPATION

We can only improve our abilities and skills if we recognize that improvement is needed. Think back through the process of completing this group project and focus on your contribution to that project. Honestly report your level of effort and contribution to each of the following criteria. This evaluation will only be seen by you and your instructor. It will let the instructor know areas where you need additional help in aspects of group dynamics - skills that you will need in this and later courses, and in the work place.

DIRECTIONS: Read each statement carefully and rate your effort in that skill using the following scale. If the skill was not employed in this project, mark NA for "not applicable".

SCALE: 5 = Very Good, 4 = Good, 3 = Moderate, 2 = Poor, 1 = Very Poor, NA = Not Applicable

4.0 DEMONSTRATE INTERPERSONAL SKILLS

Self Assessment Form

SELF-ASSESSMENT OF GROUP PROJECT PARTICIPATION

I listened respectfully to others.	5	4	3	2	1	NA
I asked questions of others.	5	4	3	2	1	NA
I felt free to express my ideas or to ask questions.	5	4	3	2	1	NA
I was motivated to work on this project.	5	4	3	2	1	NA
I was pleasant to work with.	5	4	3	2	1	NA
I attended all scheduled group meetings.	5	4	3	2	1	NA
I completed my work on time.	5	4	3	2	1	NA
I did my share of the work.	5	4	3	2	1	NA
I helped identify the problem.	5	4	3	2	1	NA
I helped design a plan of action.	5	4	3	2	1	NA
I helped collect information.	5	4	3	2	1	NA
I helped analyze the information.	5	4	3	2	1	NA
I helped conclude the project.	5	4	3	2	1	NA
I prepared oral materials.	5	4	3	2	1	NA
I prepared written materials.	5	4	3	2	1	NA
I helped resolve conflicts.	5	4	3	2	1	NA
I contributed to the design of the plan to implement the group decision.	5	4	3	2	1	NA
I supported the group decision.	5	4	3	2	1	NA
I clearly communicated my point of view.	5	4	3	2	1	NA
I respectfully listened to others points of view.	5	4	3	2	1	NA
I received cooperation and encouragement from group members.	5	4	3	2	1	NA
I gave cooperation and encouragement to group members.	5	4	3	2	1	NA

4.0 DEMONSTRATE INTERPERSONAL SKILLS

Peer Assessment Form - a

PEER-ASSESSMENT OF GROUP PROJECT PARTICIPATION

GROUP _____

MEMBERS:

A. _____

B. _____

C. _____

D. _____

E. _____

In the grid that follows, for each category and for each group member, write the number that most closely reports the student's effort and contribution to the project.

SCALE: 5 = Very Good, 4 = Good, 3 = Moderate, 2 = Poor, 1 = Very Poor, NA = Not Applicable

SKILL	A	B	C	D	E
Showed respect for others opinions					
Actively participated in discussions					
Completed assignments on time					
Completed assignments thoroughly					
Attended all scheduled group meetings					
Took a leadership role when needed					
Helped collect and analyze information					
Contributed to a list of possible courses of action					

4.0 DEMONSTRATE INTERPERSONAL SKILLS

Peer Assessment Form - b

SKILL	A	B	C	D	E
Utilized conflict resolution strategies					
Helped bring the group to agreement					
Supported the group decision					
Clearly communicated own views					
Listened respectfully while others expressed their views					
Showed cooperation and encouragement toward other group members					
Allowed others to express their views					
Helped establish clear group goals where agreement was necessary					
Summarized opposing views and analyzed them for common ground					
Helped form an acceptable position					

4.0 DEMONSTRATE INTERPERSONAL SKILLS

Instructor Assessment Form - a

INSTRUCTOR ASSESSMENT OF GROUP PROJECT PARTICIPATION

GROUP _____

MEMBERS:

A. _____

B. _____

C. _____

D. _____

E. _____

The following assessment is based on observation of group interaction, not on the final product of the assignment. In the grid that follows, for each category and for each group member, write the number that most closely reports the student's effort and contribution to the project.

SCALE: 5 = Very Good, 4 = Good, 3 = Moderate, 2 = Poor, 1 = Very Poor, NA = Not Applicable

SKILL	A	B	C	D	E
Showed respect for others opinions					
Actively participated in discussions					
Took a leadership role when needed					
Helped collect and analyze information					
Contributed to a list of possible courses of action					
Utilized conflict resolution strategies					
Helped bring the group to agreement					

4.0 DEMONSTRATE INTERPERSONAL SKILLS

Instructor Assessment Form - b

SKILL	A	B	C	D	E
Supported the group decision					
Clearly communicated own views					
Listened respectfully while others expressed their views					
Showed cooperation and encouragement toward other group members					
Allowed others to express their views					
Helped establish clear group goals where agreement was necessary					
Summarized opposing views and analyzed them for common ground					
Helped form an acceptable position					