

Aligning Assessment



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Designing Outcome Authentic Assessments

Effective assessment is inseparable from good teaching and learning. Just as a good facilitator would use more than one method of teaching, a program or a course would normally employ more than one method of assessment. An assessment plan lays out a well thought out selection of assessment methods that are aligned to the elements of performance and outcomes of the course or program.

DESIGNING OUTCOME AUTHENTIC ASSESSMENTS

SELECTING APPROPRIATE ASSESSMENT METHODS FOR INTENDED LEARNING OUTCOMES

Not every assessment method is universally valid for every type of learning outcome. For example, if an intended outcome for a Computer Programming course is to 'be able to design and develop web-enabled software components using Java,' you cannot measure this outcome by asking the student to write an essay. Similarly most generic outcomes, with the exception of language competencies, cannot be assessed by objective tests. In order to align assessment with a particular type of learning outcome, you need to select an appropriate

method of assessment. In the following I will introduce a range of different assessment methods and discuss their appropriateness for different types of outcomes.

A college education goes beyond mastering factual knowledge into higher order thinking skills and real world competencies. We want to develop a student's ability to think critically and creatively and to solve problems. Thus, assessment methods that focus on lower-cognitive skills like memory are far less justifiable here. Instead, we need to design tests, exams, or assignments that can engage our students in thinking and doing things that will be valuable beyond their academic lives.

Recommended check question:
What outcomes (in terms of level of understanding) are assessed?

ASSESSING PROFESSIONAL COMPETENCE WITH AUTHENTIC ASSESSMENT

Professional competence involves functioning abilities that are founded on a high level of understanding of academic knowledge and relevant procedural knowledge. Therefore, when selecting the assessment methods, we have to ensure they are able to assess the functioning abilities so as to develop students with competence in the professional context. The real professional context, which is highly performance-based, is a complicated mixture of ill-defined problems, uncertainties and unexpected outcomes that demand teamwork efforts, leadership and diverse solutions, etc. It is difficult to create a real professional context in the classroom. Yet, teachers

can bring in authentic assessments to ask students to demonstrate functioning Attitudes, Skills and Knowledge (ASK) by performing real world or near real-world tasks, using real-world tools, in a real-world context, and judged by real-world standards. This may sound rather unrealistic. However, when we design our assessment plan, we should keep these in mind to make our assessment as authentic as possible. When students are doing the authentic assessment tasks, such as projects and placements, students virtually gain real-world experience through the integration of different kinds of classroom knowledge to solve the real problems in the near real-world situation.

Recommended check question:
How authentic is the task

USING ASSESSMENT FOR BOTH GRADING AND SUPPORT LEARNING

Take a minute to consider: 'What is the function of assessment?' Many colleagues may immediately respond that it is for giving grades to students. Indeed, this is an important function of assessment and educators call this 'summative' assessment. Summative assessment is usually carried out at the end of a subject or after the conclusion of a major topic.

Therefore both the final examination and quizzes given during the term are summative assessments – as long as they are administered mainly for grading purposes.

Besides its grading function, assessment is a powerful instrument for learning. Recent research in edu-

cation focuses a lot on using assessment creatively to enhance learning. The design of the questions asked in the assessment will send messages to the students about what kinds of learning are encouraged. For example, open-ended questions encourage students to move beyond book knowledge into the broader subject context. On the other hand, an over-dependence on objective tests promotes a culture of rote learning and memorization.

Hence when designing your overall assessment plan, you should view it not only as building in check points to give grades to students, but to consider it integrally as part of the learning process for the students. It is important to see the assessment as an instrument for promoting desirable learning.

**Recommended check question:
What kind of learning is promoted?**

THREE ASSESSMENT CHECK QUESTIONS

In summary, keep asking the following questions about your assessment plan:

- **What outcomes (level of understanding/ performance) are assessed?**
- **How authentic is the task?**
- **What kind of learning is promoted?**

ASSESSMENT METHODS

This section explores different methods of assessment and uses the check questions to discuss conditions justifying their use. Each assessment method has three elements: (1) A description of what this method looks like in practice and its major variations; (2) Examples of how this method can be used; and (3) Review alignment using the 3 check questions.

- Objective Tests
- Case Studies
- Essay Questions
- Projects
- End-of-Chapter Type Problems
- Reflective Journals and Critical Incidents
- Seminar Presentation
- Practicum and Clinical
- Portfolio
- Examinations
- Peer and Self-Assessment

OBJECTIVE TESTS

Description - Objective tests measure the learners' ability to remember facts and figures as well as their comprehension of course materials. Common variations include *multiple-choice (MCQ)*, *true-false*, *short answer and matching items*. A typical MCQ test (Example 1) measures only the acquisition of factual or declarative knowledge. It is possible, but very difficult, to write objective questions (example 2) to measure higher order thinking.

Example 1 Typical MCQ

Which e-Business model best describes an online auction company like eBay?

- (A) B2B
- (B) B2C
- (C) C2C
- (D) Portal
- (E) Infrastructure

Example 2 High Order Thinking MCQ

After installing Windows 2000 Server on a new computer, you try to boot the computer but it fails. You receive an error message stating that the Boot.ini file is missing. The computer's system partition has been formatted with NTFS. Which of the following describes the simplest solution to the problem in this scenario? You should

- (A) Use the latest System State backup to restore the missing file.
- (B) Boot the computer using Safe mode and then copy the missing file from a Windows 2000 CD.
- (C) Use the ERD to boot the computer and then restore the missing file to the Windows 2000 Server computer.
- (D) Use the Recovery Console to copy the missing file from the Windows 2000 CD.

What Outcomes are Assessed?

- *Example 1* type questions can be used to assess students' ability to recall, relate, or explain some factual knowledge which, are lower-level learning outcomes.
 - *Example 2* type questions can be used to assess simple knowledge application, which means being able to use factual knowledge and information to interpret data, diagnose and solve well-defined problems.
- Only lower end problem-solving skills can be assessed by MCQs. Real world problems are often too complex to describe in a MCQ. Often, they have no

one right answer, whereas the fundamental design of MCQs aims at soliciting a definite right answer.

How Authentic is the Task?

- Although some professionals are required to recall facts and data, MCQs cannot simulate this kind of recall situation adequately. For example, an operating theatre nurse will have to memorize the names of hundreds of surgical instruments and to be able to retrieve the correct item in a split-second with dead accuracy. However, the response is not prompted by a question of choice. The nurse has to observe the operation, anticipate what is needed, and respond to the surgeon's command instantly. Furthermore, getting the right instrument into the surgeon's hand involves correct eye-hand-brain coordination. A MCQ assesses only the correct recall of terms.
- Example 2 is obviously more authentic than Example 1. Customer support engineers, and even computer users, face this kind of question on a regular basis. However, constructing this kind of MCQ requires an in-depth understanding of performance measurement theories – something best left to professional test makers.

What Kind of Learning is Promoted?

- When we over-use MCQs in quizzes and examinations for grading purposes, we send a message to students that learning is always about getting the right answers, rather than raising the right questions. Hence, we inadvertently perpetuate a culture of memorization and rote learning.
- Typical MCQs assess knowledge bit by bit, item by item, with little or no reference to any real world application. Such knowledge is quickly and easily forgotten after the exam.
- External licensing and certification exams often involve a high proportion of objective questions. If one of your intended outcomes is successful professional entry, students will need drills in writing this type of exam. However, you cannot let these exams dictate or control your curriculum. In other words, your curriculum is concerned with something much more than performing well in any MCQs, it is about becoming an excellent person on the job and in life. Hence, academics should influence the professional bodies to change their assessment practices instead.
- Even when MCQs are written to assess higher order learning, as in Example 2, they still encourage rote learning. Since these questions are very expen-

sive to create, they are banked and reused many times in professional exams. The constant leakage reduces their overall reliability. The typical preparation for this type of exam is memorizing answers from hundreds upon hundreds of past exam questions.

- Objective questions, like those in the examples, are best used as a tool to diagnose learning problems rather than a grading instrument. You can store banks of objective questions on the computer where students can check their mastery of basic subject knowledge on a regular basis. A well-prepared learning management system can pinpoint concepts that a

student has difficulty grasping and can provide remedial instruction on the spot. For example, a BB9.1 diagnostic quiz after a lecture on 'Internet Security' may reveal that a number of students are still confusing the use of 'Public Key' with 'Private Key' in data encryption. Based on this information, the learning management system can launch an e-learning module on 'Public Key Infrastructure' as many times as it takes for the student to grasp the basics. On the other hand, the instructor can take this information and revise his or her lesson plan for the next class.

CASE STUDIES

Description - Students are given a factual description of a problem or situation. They are asked to *analyze* some information, *diagnose* the problem and *prescribe* a solution.

Example - This is an example of a case study question used in a timed, opened-book examination (summative) mode.

You are an analyst for the Old World Bond Fund (see Fund Overview). You just received the attached set of economic forecast data from the European Central Bank. Formulate 3 actionable options for the portfolio manager, supporting your recommendation with sound analysis. You have 90 minutes to write this email of no more than 500 words.

What Outcomes are Assessed?

This case assesses students' ability to *analyze* economic data, and apply and *synthesize* economic and finance knowledge in order to explain and *hypothesize* causes, as well as to *prescribe* solutions. The given example can also assess generic skills such as communication, global outlook, critical thinking, and so on.

How Authentic is the Task?

- The type of task given in this example is performed by professionals on a regular basis. In the real world, analysts are given only minutes after the release of interest rate, GDP, or employment news to formulate detailed and sensible recommendations to clients.
- Case studies can often be unauthentic when they are simply taken from a repository of cases without due consideration of the cultural and professional context as well as the relevancy to the outcomes of the course or program.

What Kind of Learning is Promoted?

- Case study questions are generally open-ended. There is no one right answer but several options; this type of question encourages active and deep learning. To do well in the example case, a student needs to be an avid consumer of financial and investment information from the real world. S/he needs to reflect on the information consumed and, probably, to discuss the information with others who share the same interest.
- Case studies, in general, encourage students to explore knowledge and to focus on applying the knowledge to solve the problem at hand.

ESSAY QUESTIONS

Description - This is the most commonly used assessment method in colleges. There are two main varieties:

1. **Unstructured** questions, also known as **free-response** questions. Students have maximum freedom for discussion.
2. **Structured** or **restricted-response** questions. The student is given far less freedom to determine the nature and scope of the response. Often, the questions guide both the structure and the content of the expected response.

Example 1 Unstructured Essay Question

Discuss the suitability of deploying a distributed high-volume financial transaction system on Microsoft's net architecture in under 500 words.

Example 2 Structured Essay Question

Read the information about Smith College. Describe
a) how work is organized amongst the different departments
b) how these departments are coordinated
c) the advantages and disadvantages of the functional structure
d) what kinds of problems this type of organization solves/ creates?
e) Is this the most effective kind of organization for Smith College?

What Outcomes are Assessed?

- Unstructured questions (Example 1) are excellent measures for assessing a student's broad *grasp* of a topic, *knowledge* of related areas, powers of *synthe-*

sis, *analysis* and *evaluation*, written *communication skills*, etc. They also give students the opportunity to *organize their ideas* and demonstrate their power in *creative* and *divergent thinking*.

- Structured questions (Example 2) have to be used with more discretion. Quite often they work the same way as MCQs do – assessing knowledge of textbook information, rather than critical thinking. For example, questions 2a, 2b, 2c, and 2d are basically assessing a very low-level comprehension of textbook information.

How Authentic is the Task?

By their very nature, essay questions are not meant to be a direct representation of real-life knowledge application. They are useful, however, to stimulate critical thinking and reflection on authentic situations.

What Kind of Learning is Promoted?

Well-designed unstructured questions foster *breadth* in learning. Students can move beyond the topics in a textbook or a syllabus and branch out to discover related knowledge. For instance, the answer to the first example cannot be found in any one textbook. Students will have to research multiple cases and different ROI models to support their views. Breadth can be further enhanced particularly when peer feedback is incorporated into the process.

PROJECTS

Description - Projects are popular methods of assessment. Projects can be based on literature and/or empirical research on a relevant problem. They can also be applied projects – solving real-life or simulated problems, producing technical prototypes, or preparing a business plan.

Example 1 Engineering Background Research Paper

Working in teams of 4, perform an engineering background research study for the proposed 408 Highway project. What are the important issues in terms of the goals of the project and the effects on the community? Consider users, cost, safety, environment, technology, legal issues, design methods, functionality, alternatives, etc. Submit the final project as a website.

Example 2 Multimedia Programming Project

Working in pairs, make a 5-minute interactive instructional video demonstrating one business application of Radio Frequency ID (RFID) technology. Your video must include at least an opening splash page, a menu page, and a credit information page. It must employ the following multimedia functions – transitions and fades, animation, sound control, hand-coded rollovers, and custom handlers. Submit the project as a streaming video website.

What Outcomes are Assessed?

Both examples can assess higher-order learning outcomes. Example 1 provides more opportunities to *analyze, synthesize, theorize, generalize, and evaluate* Engineering knowledge in an academic context. The programming project, on the other hand, promotes the *application* of theoretical IT knowledge, *problem solving, synthesis of aesthetics* (web design), *technical skills* (web deployment) with business knowledge, and so on.

How Authentic is the Task?

Example 1: uses a local civil engineering project as the theme for investigation. This level of real-world problem study makes the assignment very authentic. Another measure of authenticity is in the usefulness of the project, not to the teacher, but to the learners themselves.

Example 2: demonstrates the creation of a very useful and assessable piece of learning object. The instructional videos created by the class will be useful for learning about the different application possibilities of RFID technology. These videos can also be used by subsequent classes as learning tools.

What Kind of Learning is Promoted?

- Both methods encourage active learning where students are not mere receivers of knowledge. Instead, they are involved in the construction of knowledge. In the Multimedia project (Example 2) students contextualize what might be just book knowledge, and make it into something useful and functional. The artifact constructed (the video) becomes a tool for lifelong learning.
- Example 1 is the kind of *ill-defined* problem that drives *problem-based* learning. This kind of research trains students not to find answers, but to raise deeper questions about issues – issues of safety, of the environment, of goals and objectives, and so on.
- Group projects develop teamwork and leadership abilities. The power of *collaborative learning* is magnified by the power of the web. The projects not only give students opportunity to learn to work as a team; but, given the ubiquitous reach of the Internet, such knowledge can be shared widely beyond the walls of the classroom.

END-OF-CHAPTER TYPE PROBLEMS

Description - End-of-chapter problems are used to reinforce and apply some concepts and skills learned in the classroom. As in Example 1, when a mathematical procedure is presented in the classroom, students are given

numerical practice problems to solve, in order to comprehend the formulae. After class these numerical problems, usually over-simplified real-life problems require students to substitute values into formulae.

Example 1 Nursing Math

Complete the 10 problems at the end of the Critical Care Math chapter. Problem 1 – Your patient is ordered Dobutamine at 10mcg/kg/min. The drug is supplied as 500mg in 1000ml. Your patient weighs 180 pounds. How many cc/hr should the patient receive?

Example 2 Prepare a nursing care plan for a specific patient in your care, using as your guide one of the models discussed in class. The care plan should include the following elements...

What Outcomes are Assessed?

- Example 1 is an objective word problem. It assesses the student's ability to perform IV (intravenous) calculation and metric conversions based on known algorithms. Since all the information needed to solve the problem is given in three lines, and there is only one correct answer, it is a well-defined problem. This task assesses only *computational competency*. It does not assess problem-solving or critical thinking skills; neither does it assess functional IV-administration skill.
- Example 2, on the other hand, can assess higher-order thinking skills. To begin with, the problem is always unique since no two patients are exactly alike. The student will have to *differentiate* between various nursing models to choose the one most suitable for this situation. S/he will have to *analyze* pa-

tient data, *interpret* subjective messages from the patient, and *diagnose* the problem. Then s/he will have to *design* a care plan that includes setting goals and *prescribing* nursing interventions that are backed by *scientific reasoning*.

How Authentic is the Task?

- The nature of the problem in Example 1 is authentic. However, in practice, the nurse will have to make calculations under multiple constraints. In the workplace, this kind of task certainly won't be something you can take home to work on at your own pace.
- Example 2 deals with an actual nursing problem and is very authentic in that respect. It is also an appropriate take-home task as the time it takes to prepare a care plan varies from patient to patient, and from hospital to hospital. However, some nursing schools require students to present nursing care plans in an academic format (e.g., APA), rather than in a professional format. This practice would compromise the authenticity of the task and make it unnecessarily burdensome for students.

What Kind of Learning is Promoted?

- Example 1 type assessment questions are commonly found in nursing professional exams and, hence, nursing students must be able to answer this type of questions. Whether this type of assessment task promotes rote learning or not depends a lot on whether students learn the computational skill out of the context of practice. If this knowledge is learned out of context, it will be forgotten soon after the test.
- Example 2 type assessment promotes an *integrative* approach to learning that is *active*, *investigative*, and *problem-based*. The student will have to integrate learning from different subjects such as anatomy, physiology, and psychology with nursing knowledge. This type of task will promote *problem-solving* as well as *critical thinking* skills.

REFLECTIVE JOURNALS AND CRITICAL INCIDENTS

Description - Reflective Journal is a piece of writing that allows students to record thoughts and insights about their own learning experience. This can be writing about what and how they have learned and understood a topic. It can also be a review of their learning process, self-evaluation of their performance and planning for future learning based on past learning experience.

Critical Incidents Students report on critical incidents that seem, to them, powerful examples of the topic studied, or move them to think deeply about the topic. By explaining what makes these incidences critical and how they relate to concepts learned in the classroom, we can gain insight about how students (1) interpret what they have been taught, and (2) make use of the information.

Example 1 Reflective Journals in Earth System Science

a. **Post Your Questions.** As a rule of thumb, plan to post your initial thoughts, theories, or questions; enter information and insights as you locate them; and then reflect on how far you've come. This process will not only capture the story of your knowledge building, but it will also clearly show your growth over the time of the course. For example, your initial thoughts could be 'I have a theory about how the hydrosphere is affected by a volcano....' and what you want to know, 'How is the fallout affected by the heat released in a volcano?' Write about the reasons for your questions and theories, as well as how strongly you feel about them.

b. **Post What You Know.** In the beginning of each week your entries will focus on what you know, 'I know that the atmosphere is affected by a volcano....' And what you want to know: 'How is the fallout affected by the heat released in a volcano?' At the end of each week, your entries might read, 'What I didn't realize....' And 'I figured out....when James made that entry about the remote sensing data that...'

Example 2 Critical Incidents in Communication

a. Provide a 1-page account of an occasion when you are not sure how to respond. Perhaps, you feel that if you speak your mind you will hurt someone's feelings, or drive them away, or get them angry, etc. On the other hand, you may want to inform them of how you feel. What do you do in such a situation?

b. I will select particular challenging and relevant critical incidents from the ones you all hand in and I will distribute selected ones for you to work with. You will work as a group to discuss your analysis of these critical incidents (Group Exercises), to discuss the communication issues you see in the incidents, and to discuss how communication theory relates to these incidents. Then you will be asked to write your own, individual analysis of the incident to be handed in a week later (Analysis of the Critical Incident). The ultimate goal of this exercise is to apply theory to the critical incidents – just what are the communication issues that the incident highlights? What are the central concepts that attach to the incident? How does theory apply, what analysis of the event can we draw out with the help of the theory?

What Outcomes are Assessed?

Both types of journaling are appropriate assessment for deep learning, in which, the learner needs to reflect in order to *relate* theory with experience; to *synthesize* knowledge from multiple domains; to *critique* knowledge encountered; and to *evaluate* the effectiveness of the learning processes itself. Besides forcing students to think about the relevancy of the class topic, these writings will give instructors clue as to how students (a) have *interpreted* what they have been taught, and (b) can make *use* of the information.

How Authentic is the Task?

Critical incidents (Example 2) are drawn from multiple authentic experiences of the class members themselves. Furthermore, it is learning by examining 'What didn't work for me?' rather than 'What does the book say?' From there, one is led to examine theories to see how they could, or could not, address real-world problems.

What Kind of Learning is Promoted?

- Journaling is not only for assessment; it is intrinsically valuable for deep learning. It captures the students' judgment on the relevance of the content taught, and their ability to reflect upon experience using that knowledge.
- In fact, journaling is an excellent means to attain and to assess Essential Employability Skills (EES). What about keeping a Communications Journal? Or an Effective Team Work Journal? Or perhaps a Learning Journal in Cultural Appreciation?

- Journaling develops lifelong learning skill. Many successful people maintain a learning journal or diary throughout their lives. Others share their journals within a community of practice by leveraging the power of the Internet.

- When journals are shared and critiqued amongst peers, as in both examples above, they promote collaborative learning. Students learn from other peo-

pie's encounters with knowledge and experience through active discussion and feedback

- Students can gain valuable insight about their learning progress and strengths and weaknesses as learners, as well as the effectiveness of their own learning strategies. As a result, they will become more capable in planning for overcoming learning difficulties.

SEMINAR PRESENTATION

Description - Students work individually, or in teams, to investigate a topic relevant to the course and present their findings in the form of a seminar. There are other variations of the seminar presentation. Although seminars are very similar in format, there can be many alternatives in grading methods. For instance,

- Who grades - Teacher only? Peer? External assessor involved? Self?
- Performance aspects – Content only? Generic skills like communication, teamwork, artwork, etc.?
- What kind of grade – Team only? Team plus individual?

Example 1 Oral Presentation Grading Criteria

Present a 45-minute oral seminar on a subject pertaining to this course. You will be assessed on the following criteria – organization, style, use of communication aids, depth of content, accuracy of content, use of language (grammar, word choice, freedom from biases, etc.), personal appearance, and responsiveness to audience.

Example 2 Poster Presentation Grading Criteria

Present your research on a 6' x 3' poster board. You will be graded on the following criteria – overall appearance, white space, text/ graphics balance, text size, organization and flow, author identification, research objective, main points, and summary.

What Outcomes are Assessed?

- Broaden the scope of your assessment in terms of intended learning outcomes. Typically, we assess only declarative knowledge construction in seminars and presentations; however, presentation is also an excellent method to assess other essential employability skills like communication, language skills, teamwork, functioning knowledge (how-to), and so on. For instance, the assessment criteria of Example 1 encompass many essential employability skills, including language skills, interpersonal communication, as well as quality of visual aids and handouts.
- The assessment criteria of Example 2 focus on communicating research findings and effective poster design techniques.

How Authentic is the Task?

- The topic of the study may or may not be authentic.
- Presentations are often used in the professional context. Business people make customer presentations, management presentations and training presentations on a regular basis.

What Kind of Learning is Promoted?

- Presentations foster deep thinking. When one has to communicate a complex idea to others with limited time and space, there is always a challenge to present the idea in a lucid and succinct way.
- Most presentation assignments are team-based and promote collaborative learning.

PRACTICUM AND CLINICAL

Description - In professional skill courses involving lab or clinical work, use and control of equipment, or the development of physical dexterity and psychomotor skills, it is obviously necessary to assess this work through practical tests of some sort. There are two general approaches to assessing practical skills:

1. **Ongoing observation** is best for courses with practical or psychomotor skills making up most of the intended learning outcomes, e.g., Culinary Arts, Skills Trades, Studio Arts, Clinical Skills courses, and so on. By assessing each performance or product, you can get a better overall view of the student's performance and ability. Furthermore, timely feedback can be given on the spot for improvement purposes. Whenever possible, this type of continuous formative-to-summative assessment is the best for practical skills courses.

2. **Summative demonstration** is a demonstration of practical skills to an examiner. In many ways this is similar to the closed book written exam, except for the fact that it is of a practical nature. This form of assessment can be unfair to students who may have a 'bad day', or to those who react badly to exam pressures but are otherwise competent performers. However, many vocational qualifications require this type of competency testing and students will need to be prepared.

Example 1 Clinical Procedures Demonstration To complete your clinical requirements you will demonstrate at least 3 successful experiences in a hospital setting with 5 procedures: (1) venipuncture; (2) arterial puncture; (3) bladder cath of male and female; (4) suturing/ wound care; and (5) intravenous lines. Submit completed log forms with signature and comments of the supervising nurse or doctor.

Example 2 Physical Assessment Demonstration Your final practical exam is a 30-minute physical assessment demonstration. Bring your own patient for this demonstration and arrive 10 minutes before your scheduled exam time. You will be required to perform abdominal, thorax/lung, and cardiovascular exam. In addition you will perform a fourth exam chosen randomly by the examiner. Possible choices include musculoskeletal exam, neurological exam, eye exam, or head/ ear/ nose/ throat/ neck exam. The

criteria for performance are attached. Please use them to study and practice before the exam. You are not permitted to refer to them during the exam.

Example 3 Clinical Skills Demonstration with Explanation (this is a variation of Examples 1 and 2.) Perform the Clinical Procedure/Physical Assessment Demonstration. As you are performing each step in the procedure, explain to the supervisor/examiner (1) what you are about to do (2) why you are doing what you will be doing (3) answer any question from your supervisor/ examiner.

What Outcomes are Assessed?

- Both Examples 1 and 2 are designed to measure mostly *procedural* knowledge – it is primarily a matter of getting the sequences and actions right based on the given criteria. The assessments themselves do not measure *functioning* knowledge of patient care, which is primarily *performance with understanding*.
- Example 3 includes an explanation component to the demonstration. This 'running commentary' will expose the thinking behind the action and will allow the examiner to assess the *reasoning* ability of the student

How Authentic is the Task?

- Obviously, Example 1 is far more authentic than Example 2. The student works on real patients in an actual hospital or clinic. S/he is assessed by a practicing professional.
- Example 2, on the other hand, takes place in a simulated situation that does not take into consideration all the complexities of a real patient in a real clinic. However, sometimes it is justifiable to assess under this condition because of the sheer logistical problems with a more authentic approach.

What Kind of Learning is Promoted?

- Practicum and clinical assessments encourage the development of practical hands-on skills.
- However, when the learning of declarative knowledge is separated from the learning of procedural knowledge, there is a danger of doing things 'mindlessly.' In such cases, the person functions like a technician rather than a professional. Thus, the use of demonstration with explanation should be encouraged whenever feasible

PORTFOLIO

Description - A portfolio is a collection of course-related work performed by the student. Written reflections in which students evaluate their own learning are central components when portfolios are used to assess course outcomes. Traditionally, portfolios are used to assess learning in the arts and humanities. However, they can be equally useful in just about any discipline. Broadly speaking, there are two types of portfolios – the all-inclusive portfolio and the selection portfolio. When portfolios are stored and presented electronically they are called ‘e-portfolios’.

1. The **all-inclusive portfolio** is a complete record of all the work a student has produced in a course or program. It can include various assignments like papers, projects, homework, DVDs of presentations or performances, etc. Students should include a written explanation of the significance of each entry in the portfolio. Doing so will help them think about and critique their own work, leading to deep learning.

2. The **selection portfolio** is purpose-specific. When the purpose of a portfolio is to evaluate the achievement of intended learning outcomes, only the best work exemplifying outcomes will be selected for inclusion. If the purpose is to demonstrate all-roundedness, then work representing a broad range of accomplishments will be included. If the purpose is to illustrate the process associated with attaining a learning outcome, then multiple drafts or versions that represent a chronology of progress will be selected. Again, some form of written reflection is essential for the development of higher order learning. There should be a limit to the number of items in the portfolio, otherwise it may go overboard and become a marking nightmare.

Example English Writing Selection Portfolio The Writing Portfolio is a well-organized, neatly bound collection of written work that both you and I can use to gauge your performance and effort in this course, and to gauge the progress you have made as a writer. Assembling this Writing Portfolio will give you the chance to re-examine some of the assign-

ments you did in this course, and to reflect on what you learned from them. Your in-depth, reflective comments placed in the transmittal and in section introductions throughout your portfolio, will help me to understand precisely what you feel you have learned. Revisions of assignments will offer proof. The portfolio is accompanied by a 2-3 page memo where you (1) reflect in detail on what you have learned about writing and about yourself as a writer during this semester. (2) Identify the pieces you have chosen to include in the portfolio and describe why you chose them: explain in detail how they represent your progress as a writer and your best work as a writer. (3) Explain your arrangement of writing assignments: how they are arranged, why they are arranged in this way and not another and what effect on the evaluation process you hope the arrangement will achieve.

What Outcomes are Assessed?

Portfolios can be designed to assess almost any intended learning outcomes. Because reflection is always built into the framework, they allow assessment of students’ skills in critical thinking, judging, learning, interpreting and analyzing information as well as their attitudes and value systems.

How Authentic is the Task?

- Portfolios are frequently kept and displayed by professionals in the art and design field. In fact, they are useful evidence of attainment for any discipline.
- By building a professional portfolio during college years, a student has a ready and powerful employment search tool upon graduation.

What Kind of Learning is Promoted?

- More than anything else, portfolios help students to take individual responsibility for, and ownership of, their own learning.
- It is also one of the best methods in developing lifelong learning skills. Lifelong learning is at its best when a professional can habitually reflect on his or her work performance in order to make continuous improvement.

EXAMINATIONS

Description - Examination is not an assessment method, but denotes an assessment *purpose*. Exams are used primarily for grading or selection purpose. We call this activity, in educational terms, *summative* assessment. It can use many of the methods we discussed above. Since examinations can take on many variations, it is important to understand the range of possibilities in order to design examinations that are compatible both with outcome-based and student-centered education. Which form should your exam take – open-book, closed-book, or take-home? When should exams take place – end of term only, or throughout the term? These are primary questions, that we shall consider here.

Examples:

- **Terminal exams** happen at the end of a subject or program. Some courses have one major terminal exam that contributes most of the grade for the course. The outcome of terminal exams usually determines whether the student can proceed to the next stage of learning, entrance to profession, or the degree classification, etc.

- **Continuous assessment** is an alternative to terminal exams. In continuous assessment student grades are determined by aggregating the performance on exams, tests, and other assessment activities undertaken throughout the semester or program. *Open-Book, Closed-Book, Take-Home Exams* In planning exams, you often have to make a choice of how much time and reference material should be made available to students.

- **Closed-book exam** is the traditional mode of assessment. Students are not allowed to bring any reference material into the exam. They usually have a choice of exam questions and rely on their memory to answer them within a time limit. External professional and selection exams are usually closed-book and of an objective nature (MCQs and short answers).

- **Open-book exam** is becoming increasingly popular at the tertiary level. Memory plays a less prominent role in this form of assessment as students can bring a choice of reference material into the exam.

However, students are still required to work within a time limit.

- **Take-home exam** substantially reduces both the memory and time factors in assessment. Students have access to references, but not assistance from others. They are expected to complete the exam within a given time limit (usually overnight or a weekend). The nature of questions in a take-home exam should not be of a factual recall nature (e.g. MCQ), since you will only encourage copying.

What Outcomes are Assessed?

- Terminal exams, because of their one-time nature, only take a ‘snapshot’ of student achievement at a particular moment. If, for any reason, the student is not performing optimally during those particular hours on that particular day, the measurement will not be an accurate reflection of his/her learning.
- Closed-book exams of an objective nature (e.g., MCQ) primarily measure factual recall and low-level comprehension of facts and procedures. Open-ended questions, however, can assess students’ application and interpretation of knowledge as well as their analytical and evaluative skills.

How Authentic is the Task?

Exams, by their artificial nature, are not authentic assessment activities.

What Kind of Learning is Promoted?

- It is undeniable that the exam carries a very negative connotation. With this baggage, even the best designed exam will invoke undesirable behavior on the part of some learners. Because of the inevitability of exams in the current assessment environment, it is important to take all of these into consideration when planning assessment.
- An exam also promotes an unhealthy power relationship between teacher and students. Instead of perceiving teachers as guides and coaches into a life of learning, a teacher can be perceived as someone who holds the power of one’s academic ‘life and death’.

PEER AND SELF-ASSESSMENTS

Description - In designing your assessment plan, you can also choose *who* should be doing the assessing. Thus far, we have assumed that the teacher is the person responsible for assessment. However, for all the assessment methods we discussed above, you also have the options of peer assessment and self-assessment.

- **Peer assessment** is assessment of students by other students. As more and more teamwork or group work is used in colleges, peer assessment is becoming increasingly popular. Peer assessment can be formative or summative. Formative peer assessment involves students giving feedback to each other to improve learning. Provision is made in class or online for students to give feedback on each other's performance based on a given set of criteria. Summative peer assessment involves students grading each other's work. There are many ways to do this. In a written assignment each student can grade another student's paper based on a scoring rubric you provide for the class. In a presentation you can use a peer assessment scoring form. In a team project, you can ask the students within a team to negotiate and distribute a number of marks amongst themselves based on contribution to the team. Peer assessment grades usually complement the instructor's grades in summative assessment.

- **Self-assessment** is the assessment of learners by themselves. In order to perform meaningful self-assessment, you need to give students clear criteria by which they can assess themselves. This could be in the form of a scoring rubric. Once the students possess clear and written performance criteria, they can continuously assess their own performance and make improvement. Almost all self-assessment is formative in purpose.

What Outcomes are Assessed?

Peer and self-assessment can be built into any of assessment methods described earlier. Again, the emphasis is on making explicit the outcomes assessed and their performance criteria by using a scoring rubric.

How Authentic is the Task?

Peer and self-assessments are very much a part of modern human resource management practice. Students entering the work world will have to get used to assessing others and being assessed by others.

What Kind of Learning is Promoted?

- Self-assessment encourages learners to take ownership of and responsibility for their own learning – qualities of a lifelong learner.
- Peer assessment encourages collaborative learning. Educational psychology tells us that knowledge is first *socialized* before it is *internalized*. Peer assessment activities help bind learners together into a learning community. Through these formal and informal communities that generate knowledge, students will grow into life-long learner.

Taxonomy	Outcome Language		Good	Better	Best
Remember (Knowledge) <i>shallow processing: drawing out factual answers, testing recall and recognition</i>	<ul style="list-style-type: none"> • choose • describe • define • identify • label • list • locate • match 	<ul style="list-style-type: none"> • name • omit • recite • recognize • select • state 	Objective Tests <ul style="list-style-type: none"> • multiple-choice • true-false • short answer • matching items 	Essay Questions <i>Structured or restricted-response questions. The student is given far less freedom to determine the nature and scope of the response. Often, the questions guide both the structure and the content of the expected response.</i>	Seminar Presentation <i>A presentation is also an excellent method to assess other essential employability skills like communication, language skills, teamwork, functioning knowledge (how-to)</i>
Understand (Comprehension) <i>translating, interpreting and extrapolating</i>	<ul style="list-style-type: none"> • classify • defend • demonstrate • distinguish • explain • express • extend • give example • illustrate • indicate • interrelate • interpret • infer 	<ul style="list-style-type: none"> • judge • match • paraphrase • represent • restate • rewrite • select • show • summarize • tell • translate 	Essay Questions <i>Unstructured questions, also known as free-response questions. Students have maximum freedom for discussion.</i> End of Chapter Type Problems <i>End-of-chapter problems are used to reinforce and apply some concepts and skills learned in the classroom.</i>	Projects <i>Projects can be based on literature and/or empirical research on a relevant problem. They can also be applied projects – solving real-life or simulated problems, producing technical prototypes, or preparing a business plan.</i> Seminar Presentations <i>Students work individually, or in teams, to investigate a topic relevant to the course and present their findings in the form of a seminar.</i>	Reflective Journals <i>This piece of writing allows students to record thoughts and insights about their own learning experience. This can be writing about what and how they have learned and understood a topic.</i> Portfolio <i>A portfolio is a collection of course-related work performed by the student. Written reflections in which students evaluate their own learning are central components when portfolios are used to assess course outcomes.</i>
Apply <i>Knowing when to apply; why to apply; and recognizing patterns of transfer to situations that are new, unfamiliar or have a new slant for students</i>	<ul style="list-style-type: none"> • apply • choose • dramatize • explain • generalize • judge • organize • prepare 	<ul style="list-style-type: none"> • produce • select • show • sketch • solve • use 	Case Studies <i>Students are given a factual description of a problem or situation. They are asked to analyze some information, diagnose the problem and prescribe a solution.</i>	Projects <i>Applied projects – solving real-life or simulated problems, producing technical prototypes, or preparing a business plan.</i> Essay Questions <i>Unstructured questions, also known as free-response questions. Students have maximum freedom for discussion.</i>	Critical Incidents Journal <i>Students report on critical incidents that seem, to them, powerful examples of the topic studied, or move them to think deeply about the topic. By explaining what make these incidences critical and how they relate to concepts learned in the classroom</i> Practicum and Clinical <i>In professional skill courses involving lab or clinical work, use and control of equipment, or the development of physical dexterity and psychomotor skills, it is obviously necessary to assess this work through practical tests of some sort.</i>

<p>Analyze</p> <p>breaking down into parts, forms</p>	<ul style="list-style-type: none"> • analyze • categorize • classify • compare • differentiate • distinguish • identify <ul style="list-style-type: none"> • infer • point out • select • subdivide • survey 	<p>Projects</p> <p><i>Applied projects – solving real-life or simulated problems, producing technical prototypes, or preparing a business plan.</i></p>	<p>Portfolio</p> <p><i>A portfolio is a collection of course-related work performed by the student. Written reflections in which students evaluate their own learning are central components when portfolios are used to assess course outcomes.</i></p> <p>Seminar Presentations</p> <p><i>Students work individually, or in teams, to investigate a topic relevant to the course and present their findings in the form of a seminar.</i></p>	<p>Practicum and Clinical</p> <p><i>In professional skill courses involving diagnostic, troubleshooting, analytical ability, or the use and control of equipment, it is obviously necessary to assess this work through practical tests of some sort.</i></p> <p>Peer and Self Assessment</p> <p><i>This form of assessments is very much a part of modern human resource management practice. Students entering the work world will have to get used to assessing others and being assessed by others.</i></p>
<p>Evaluate</p> <p><i>according to some set of criteria, and state why</i></p>	<ul style="list-style-type: none"> • appraise • judge • criticize • defend • compare 	<p>Essay Question <i>Unstructured questions, also known as free-response questions. Students have maximum freedom for discussion.</i></p>	<p>Case Studies</p> <p><i>Students are given a factual description of a problem or situation. They are asked to analyze some information, diagnose the problem and prescribe a solution.</i></p>	<p>Projects</p> <p><i>Applied projects – solving real-life or simulated problems, producing technical prototypes, or preparing a business plan.</i></p> <p>Peer and Self Assessment</p> <p><i>This form of assessments is very much a part of modern human resource management practice. Students entering the work world will have to get used to assessing others and being assessed by others</i></p>
<p>Create (Synthesis)</p> <p><i>combining elements into a pattern not clearly there before</i></p>	<ul style="list-style-type: none"> • choose • combine • compose • construct • create • design • develop • formulate • hypothesize <ul style="list-style-type: none"> • invent • make • originate • organize • plan • produce • role play • tell 	<p>Seminar Presentations</p> <p><i>Students work individually, or in teams, to investigate a topic relevant to the course and present their findings in the form of a seminar.</i></p>	<p>Portfolio</p> <p><i>A portfolio is a collection of course-related work performed by the student. Written reflections in which students evaluate their own learning are central components when portfolios are used to assess course outcomes.</i></p> <p>Reflective Journals</p> <p><i>This piece of writing allows students to record thoughts and insights about their own learning experience. This can be writing about what and how they have learned and understood a topic.</i></p>	<p>Projects</p> <p><i>Applied projects – solving real-life or simulated problems, producing technical prototypes, or preparing a business plan.</i></p>



To align outcomes and assessment first you need to choose a starting point. Some professors like to start with the creation of the outcome – always consult the Program Standards and prerequisites to insure you are identifying the correct level of taxonomy. Others will choose to start at the evaluation; it may be easier for us to envision the “final act”. What Attitudes, Knowledge and Skills do I expect my students to demonstrate at the completion of this course? Then work backwards until an outcome is created that reflects the assessment and intended learning.

Course Outcomes – always consider the three components, 1 – the action (identify, defend, create). 2 – the context (under what conditions will this action occur). 3 – the standard (what criteria will be used to evaluate the action)

Assessment Methodology – this refers to the “style” of assessment – Objective Test, Case Study, Essay Question etc.

Evaluation Tool – every assessment requires a tool to aid with its evaluation. Think of this as your answer sheet. Always consider the “standard” for the outcome when selecting your tool. Rubrics, check-lists, peer and self-evaluation, formative vs. summative should be considered in this step.

Create the Assessment – at this stage you are ready to outline details of the activity that will serve as the assessment.