Promoting Active Teaching and Learning

A Guide for Staff

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Introduction

Many educators today agree that students learn more in an active learning environment than they do in a passive learning environment (Biggs & Tang, 2011; Cavanagh, 2011; Prince, 2004). In addition, linking approaches to curriculum design that foster students' active engagement through pedagogical models such as inquiry-based learning have been shown to support deep learning. Inquiry-based models support learners to:

- Become inquirers (Justice et al.,2009);

- Engage with process & enabling skills necessary for establishing concepts and facts (Justice et al., 2009);

- Prepare for research (Spronken-Smith et al., 2014) and lifelong learning (Justice et al., 2009); and,

- Inspire learning (Spronken-Smith et al., 2014).

Active engagement with content provides opportunities for students to gain a deeper understanding, greater integration and internalisation of new knowledge (Justice et al., 2009) when compared with transmissive, didactic memory-approaches to learning (Abdul-Haqq, 1998).

What is active learning?

In order for students to be engaged with active learning they must "read, write, discuss, or be engaged in solving problems" (Bonwell & Eison, 1991, p.5). An important feature of active learning is that students should engage with higher-order thinking leading to analysis, synthesis or evaluation of the topic under discussion (Bonwell & Eison, 1991). The authors suggested that in this context, active learning is defined as "instructional activities involving students in doing things and thinking about what they are doing" (p.5).

Please note that the following resource is not an exhaustive list of teaching strategies. This is a collection of high yield strategies that have a strong evidence base. In order to make the document efficient, each strategy is explained only once, though it may be listed in multiple sections. The purpose of the strategy will determine how you use the teaching technique so instructors can make professional judgements on how to modify the strategy to suit their aims.

5 'E's Inquiry Framework

This framework emanated from the science disciplines and was developed to promote inquiry and more student- centred learning (Lederman, 2009). The 5 'E's model is derived from the concept that students learn and retain knowledge when they have had the opportunity for discovery through a variety of experiences that are designed by the person who is facilitating learning. Students use their prior knowledge to make connections between new information/experiences and prior knowledge. To help students make these connections learning facilitators structure experiences that are organised into five phases: Engage; Explore; Explain; Elaborate and Evaluate.

The following figure outlines the specific focus of each section of the framework and suggests some active learning approaches that could be adopted to support student learning. Many of the strategies can be used in one or more of the sections of the framework. This is not intended to be an exhaustive list.

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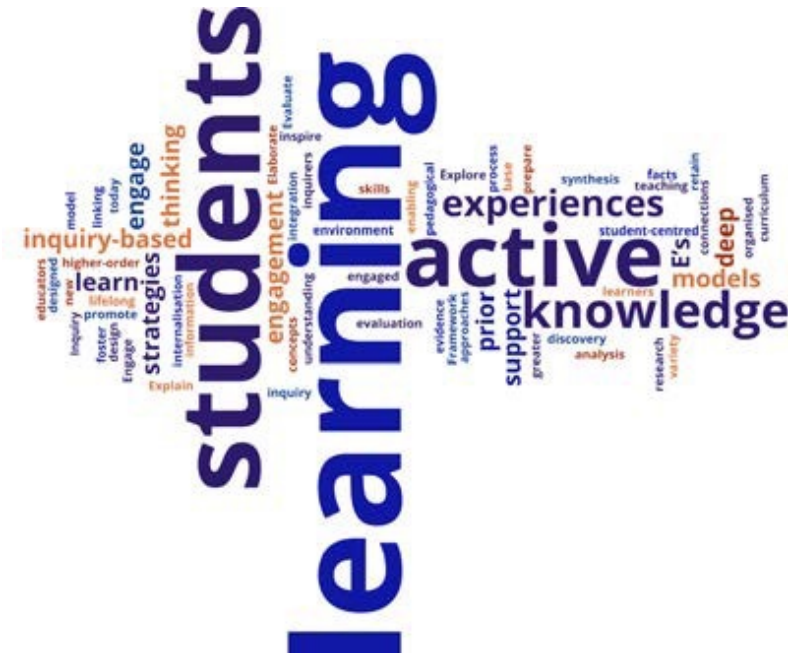
Engage

	Active learning approaches
• Focus is to mentally engage student by capturing their interest and giving them an opportunity to demonstrate their prior knowledge. • Helps them make connections between prior knowledge and new ideas.	Background knowledge probes; topical/controversial video and associated focus question(s); focussed listing; pre-quiz; dialogue journal/work log book; mind mapping; questions, establishing learning goals/ rubrics; blank slides; question slides, Graphic organiser; KWL chart.

Explore

	Active learning approaches
• Focus is to facilitate activities that give students the opportunity to explore the concept/skill. This should allow them to engage with problems and describe them in their own words. • Helps them acquire a common set of experiences to share with their peers.	Brainstorming; buzz groups; corner strategy; jigsaw; muddiest point; problems; questions; information search; directed questioning; test-taking teams; think-pair-share; simulations; 3-step interviews; creating academic notes; summary templates; non-linguistic representations; direct vocab instruction; discussion forum; blog; wiki; workstations; problem of the day.

Explain

	Active learning approaches
• Focus is for facilitator to provide the concepts and terms already used by the students to develop explanations for the phenomenon they have already experienced. • Explanation follows experience.	Brainstorming; buzz groups; debate; academic note taking; jeopardy; who wants to be a millionaire; questions; ten-two strategy; round table; think-pair-share; 3-step interviews; discussion forum; online quiz; blog; wiki; blackboard work; problem of the day; text reading; step-by-step.

Elaborate

	Active learning approaches
• Focus is for students to apply knowledge/skills to develop a deeper understanding or better demonstration of skill. • Students need to discuss and compare ideas.	Identifying similarities and differences; identifying patterns; perspective analysis; analysing errors; academic portfolio; question and answer pairs; brainstorming; cases; critical debate; jigsaw; presentations; breakout rooms; collaborative projects; problems; questions; roundtable; simulations; 3-step interviews; problem posing; critiques; concepts to pictures; pictures to algebra; multiple representations; application problems; student generated quiz/test questions; problem of the day.

Evaluate

	Active learning approaches
• Focus is to review and reflect on their learning, new understandings/skills. • Students provide evidence of learning.	Self evaluation rubric; analysing errors; problem solving; closing summary; dialogue journal/ work log book; focussed listing; mind mapping; muddiest point; one-minute paper/free write; post-quiz; questions; directed questioning; reflection templates

ENGAGE

The purpose of **engage** strategies is to:

- Capture student interest;
- Make explicit links with their background knowledge.

The purpose of 'Engage' is to focus students' attention on the lesson/topic, create an organising framework for the ideas, principles, or information that is to follow (teaching strategy called "advanced organisers"), to extend the understanding and the application of abstract ideas through the use of example or analogy. The "hook" can be used any time a different activity or new concept is to be introduced.

The list below is by no means an exhaustive list but provides some examples of strategies you can use to engage students with your content.

Strategies

Topical / controversial video and associated focus question(s)

Purpose: Students focus their attention on important material.

Description: Topical/ controversial video engages students in watching a multimedia clip that will 'start them thinking' or 'shock their thinking' regarding a topic to create academic interest around this and front end the further learning.

Examples: Instructor poses 1-3 focus question, and shows a short video clip to address these. Such as

- TED talk
- Khan Academy
- YouTube
- Vimeo

Or, try any of the links associated with this site: http://edtechreview.in/e-learning/170-free-online-educational-videos-resources.

Ideas:

- Clickers could be used if questions are multiple choice.
- If questions require an opinion statement, students could place themselves on a continuum and share responses.
- Students could write and display their answers on mobile whiteboards (white paper in a plastic sleeve) to promote engagement.
- Think, pair, share: students share responses with a partner and then larger group.
- Students write answers on 'post – its', these are handed around and students report back on the post its they have received (non- threatening) or post them on the walls of the teaching space.

Background knowledge probes

Purpose: Instructor determines effective starting points/appropriate levels of instruction for a given topic or class. Students focus their attention on important material.

Description: A background knowledge probe (BKP) asks for basic, simple responses (short answers, circling/showing of hands, multiple choice questions) from students who are about to begin a session or study a new concept.

Examples: (1) Start the lecture with a probing question. (2) During an introductory music theory course, ask how a minor third is formed. (3) In a philosophy course, ask students to summarise the historical context for Plato's *The Republic*.

Ideas:

- For carrying out BKPs in large classes, clickers (Student Response Systems) can be a very quick and thorough method of tabulating student responses to multiple choice questions.
- Students may brainstorm together and work to arrive at a common answer prior to reporting out on their response.
- For a variation on the BKP, a different question could be given to each table

or smaller group to arrive at consensus regarding the correct answer. Following this decision, use the jigsaw strategy (either as a whole class or in sub-groups) to communicate the question, the group's solution, and rationale.

- This strategy can be augmented by following up with other strategies as well (e.g. think-pair-share, or returning to this at the end of the session with the "muddiest point" concept).

Focused listing; pre-quiz

Purpose: Instructor identifies students' prior knowledge or attitudes. Students recall what they have learned about a topic.

Description: Students recall what they know about a subject by creating a list of terms or ideas related to it. To begin, the instructor asks students to take out a sheet of paper and generate a list based on a given or chosen topic. Instructors ask students to share their lists. Focused listing need not take more than a few minutes. Note: Can be used before or after instruction.

Examples:
(1) In an educational psychology course, students provide examples of defining characteristics of Piaget's stages of cognitive development.

(2) In a political science course, students identify the pros and cons of a government's proposed course of action currently in the news.

Ideas:

- Impose a time limit and inform students.
- Students share their lists in small groups.
- Students make a focused list prior to the discussion and then add to the list (correcting any prior misconceptions) at the end of the class period.
- May be used in conjunction with the "Round-table" strategy.
- Students share their lists in small groups and identify the two to three most important points, which they then share with the class.
- Students brainstorm in small groups, typing their lists.
- Can also be combined with "write around the room" strategy.
- Students can project their list using the screen sharing facilities.

Dialogue journal / work log book

Purpose: Students develop their communication skills and reflect upon the application of prior knowledge or personal experience to course material or work situations. Students increase their collaboration and a sense of classroom community as students respond to one another's journals. Students clarify and extend their explanations and rationales in response to classmates' written comments.

Description: Students draw a line down their journal page 1/3 of the way in from the right margin. The responder will write to the right of the line. The writer reflects upon an assignment, work experience, lecture, class task / activity or discussion, including his or her comments and questions The respondent reads the journal entry and provides comments, clarifying questions, answers to the writer's questions, etc. The instructor reads the journal entries and responses.

Example:
(1a) In a Shakespeare course, have students compare and contrast the written play and movie versions.

(1b) Ask them to identify elements of the play that were either emphasised or left out in the screenplay, and the impact they think this had upon the representation and the audience's response.

(1c) In a course on work practice, students reflect upon their stage or other experiences with patient care – decisions made are explained with a rationale, and outstanding questions are posed for feedback.

Ideas:

- Clarify parameters and expectations for journal entries. As students may take variable amounts of time for journaling, the writing and response can take place outside of class time as an opportunity for follow-up and reflection upon in-class experiences.
- Have students submit their journals regularly.
- Keep a community dialogue journal for all students to record questions or ask for clarification; students respond to one another's questions within the journal. Questions may also be addressed in-class.
- Have students write their journal entries in letter format.

Mind mapping

Purpose: Instructor gains an sense of students understanding so far. Students can organise and make links between knowledge.

Description: Mind mapping is a simple technique for drawing information in diagrams, instead of writing it in sentences. The diagrams always take the same basic format of a tree, with a single starting point in the middle that branches out, and divides again and again. The tree is made up of words or short sentences connected by lines. The lines that connect the words are part of the meaning.

Example:
(1a) Students explore the concept of human rights. (1b) Students place this concept in the centre of the map. (1c) Students then identify the related content within this concept i.e., Social and civil rights, the UN and draw branches to these. (1d) These are expanded upon in the next lecture.

Ideas:

- Students could construct these using software such as Mindomo: https://www.mindomo.com.
- Students compare mind maps and thinking behind them in a group discussion or one a discussion forum.
- Students electronically display their mind maps and these are used as a teaching resource.
- These mind maps are added to progressively over the semester to accommodate new learnings and to form a more complete picture of the concept.

Establishing learning goals and success criteria

Purpose: Learning targets convey to students the destination for the lesson—what to learn, how deeply to learn it, and exactly how to demonstrate their new learning.

Description: A learning goal identifies what students will learn or be able to do as a result of instruction, separate from what they do to demonstrate the learning. Learning activities and assessment help students reach learning goals.

Example: At the start of the lecture, the lecture shows a slide with the learning goals for the lesson. By the end of this lesson you will be able to:

a. Evaluate derivatives for complexly constructed elementary functions.

b. Evaluate limits using algebraic, geometric, analytic techniques.

Ideas:

- For the learning goal, provide students with the success criteria - i.e., How will they know they have achieved the learning goal.
- Have students reflect on their progress towards the learning goal at the end of the lecture and check in using response system using a numbered scale.
- Have students use the intended learning outcomes to set their own learning goals for the subject that they can reflect on periodically.

Blank slides

Purpose: Provides structured opportunities for question taking. Gains student attention. Chunks new knowledge.

Description: One way to gain students' attention and to remind yourself to stop for questions is to insert a blank slide into your presentation. Imagine a lecture hall. The instructor is discussing material, moving through slides, and then the screen goes dark. Students are immediately transfixed. Did the machine break? What is the instructor going to do? At this point you have your students' full attention. You can ask for questions and move on to the next part of your lecture.

Example: (1a) Integrate a blank slide into your lecture. (1b) When the slide appears, explain to students that this is an opportunity for them to actively process the learning material through: asking a question, adding to notes, discussing key learning with neighbour.

Ideas:

- Use this time to ask directed questions of students.
- Have students return to learning objectives to reflect on how content is related.
- Have students complete a muddiest point.
- Have students use a response system to check in how they are travelling with the material.

KWL (Know, Want-to-know, and Learned)

Purpose: Help students to organise information before, during or after a topic or module. Used to engage students with a new topic/module. Activate prior knowledge. Share intended learning outcomes. Monitor learning.

Description: Make a KWL Chart (three columns on an A4 sheet landscape).

Column 1: What do you already Know about the topic?
Column 2: What do you Want-to-know about this topic?
Column 3: What did you Learn?

What do you already **Know** about the topic?	What do you **Want-to-know** about this topic?	What did you **Learn**?

Columns 1 and 2 are completed before the learning session or as part of the Engage phase. Column three after the session.

Examples:
(1) Before commencing a new module as part of the initial introduction use a KWL chart and ask students to reflect on their prior knowledge and interest in relation to the intended learning outcomes for the module.

(2) Before commencing a new topic pose questions related to content: For example: What do you already know about active learning strategies? How do you use them in your teaching? What do you want to know about active learning strategies?

Ideas: Google images have some ideas about how to design a KWL Chart.

EXPLORE

The purpose of **explore** strategies to have students deepen their understanding of key content and skills presented in your module.

The focus is to:

- Facilitate activities that give students the opportunity to explore the concept/skill. This should allow them to engage with problems and describe them in their own words.
- Help them acquire a common set of experiences to share with their peers.

Strategies

Brainstorming

Purpose: Students generate a large number of ideas for potential solutions to a problem. Students develop team learning skills.

Description: State the issue and generate ideas regarding the issue having agreed upon a time limit. Categorise, combine, refine and condense ideas. Assess potential solutions.

Example: Ask students to suggest potential courses of action for a world leader in regards to a current issue. Given constraints are established by the instructor.

Ideas:

- Ask students to not only brainstorm, but also to verbalise the relationships between the ideas.
- May be used in conjunction with strategies such as:
- Mind mapping, round table, think pair share, etc.

Buzz groups

Purpose: Students develop teamwork and cooperative learning skills.

Description: The instructor divides the class into subgroups to discuss an assigned topic or to solve a problem. Participants can briefly present their findings to the whole group so that the instructor can respond to comments and stimulate discussion.

Example: In a communications course for engineers, students are presented with a technical manual and asked to re-write different sections in small teams to make them more accessible to a non-expert audience.

Ideas:

- Enforce a time frame to avoid side conversations and keep students focused.
- When students report out, challenge groups to contribute only ideas that have not yet been mentioned.
- Buzz groups can present findings to the class as a whole using the screen-sharing capabilities or on the main projectors. Alternately, small buzz groups or pairs can present their findings to their table only, giving more time for their presentation.

Wearing two hats

Purpose: Students build their communication skills and view an image from multiple perspectives

Description: Whenever students need to understand a concept from two different points of view students are directed to wear the hat of one of the stakeholders and explain their view. Students are then asked to swap hats to gain a greater insight of concept.

Examples:
(1) Students are introduced to the concept of accounts receivable. Students are given a role, buyer or seller.

(2) Students collect their ideas about this concept based on their role. They are then paired with someone of the opposite role to share responses.

Ideas:

- Multiple hats can be worn if required.
- Could be used to structure a debate.

Corner strategy

Purpose: Students build upon one another's knowledge Instructor becomes aware of which concepts are clearly understood, and which concepts were not incorporated into students' knowledge base.

Description: Form groups. Each group moves to a corner and brainstorms a list in response to a question posed to the entire class. Move to the next corner— expand on the previous group's examples. Review the contents of each list as a large group.

Example: In an English literature course: What are recurring features of Lord Byron's poetry? How do these stylistic elements hint at his intended audience? What are the key traits of the Byronic hero?

Ideas:

- Students can put a check mark next to previously listed responses that are consistent with their lists.

- Set and keep a time limit for this activity, to ensure that students have sufficient time at each of the corners.

- Once students have completed this activity, they might organise the results using concept mapping, to further crystallise their understanding of the concepts' relation to one another.

- Don't limit yourself to the corners! Take advantage of the writable walls around the classroom for students to record their thoughts and build on classmates' ideas.

Think. Pair. Share.

Purpose: Students organise prior knowledge. Students, summarise, apply, or integrate new information. Students build individual accountability and contribution: each student reports to a partner, and partners summarise in a short report to the class.

Description: Individuals reflect on (and perhaps jot down notes) in response to a question. Participants pair up with someone sitting near them and share responses / thoughts verbally, or they may choose to work together to create a synthesis of ideas or come to a consensus. The discussion leader randomly chooses a few pairs to give summaries of ideas

Examples:
(1) In a medical course, students offer potential diagnoses and treatments based on photographs of conditions and case histories.

(2) In a classroom management course, ask students how they would respond to an off-task student's interruptive behaviour.

(3) Have students come up with a solution individually, then pair with a classmate, justify it and come to a consensus on an appropriate approach to this scenario.

Ideas:

- Intentionally choose different pairs to give summaries of their ideas each time this activity is carried out.

- After the pairs have discussed their responses, have two pairs discuss together, in lieu of randomly choosing pairs to report out to the entire class.

- Use visual stimuli (e.g. photographs) as a prompt for discussion

- Wheeled chairs facilitate quick pairing.

- Pairs can give summaries to their larger table groups, thereby giving all students more time to present.

- Instructor can circulate through the classroom to hear students' thoughts due to the sufficient space surrounding the tables.

- Whole group sharing (depending on goal) can use the screen sharing facilities.

Jigsaw

Purpose: Students develop teamwork and cooperative learning skills. Students integrate knowledge and understanding from various sources and experts. Students engage in their own learning. Students learn a lot of material in a limited amount of time. Students are individually accountable for their learning

Description: Groups are formed to discuss different portions of a larger scenario or problem; group members then report out. Divide a topic into related portions. Divide students into "expert groups"; each group will study and address a portion of the topic. After researching/ investigating their specific focus, the expert groups are split up so that the resulting groups have one member from each of the expert groups. Upon gathering the new groups together, each topic expert

presents, integrating the knowledge of his or her specific topic into the new group's collective understanding.

Examples: In a plant science course, students review the characteristics of various types of trees (conifer, deciduous, etc.) and corresponding climate zones in expert groups and then report out to their new groups.

Ideas:

- Encourage students to take notes of key points generated during step 3, which will help them to prepare for step 4.
- Review previously discussed concepts.
- A chosen group from step 3 reports out to the entire class; facilitate a brief discussion in response to their key points.
- Table layout and rolling chairs allow for quick grouping and re-grouping.
- The "expert groups" can collaborate using the writable wall surfaces or the computers for brainstorming, researching, or concept- mapping regarding their topic.

Muddiest point

Purpose: Students reflect upon which aspects of the course material are the least clear to them.

Description: Ask students to write down what seemed most confusing to them. Feedback from students can be used to create new ways to discuss those points that multiple students found to be unclear.

Examples:
(1) What was the "muddiest point" of the material discussed today?

(2) Write one thing that was not clear to you from to- day's course material.

(3) Why do you think this was confusing?

Ideas:

- Encourage students to be very specific in identifying the source of confusion.
- The instructor can begin the next class by reviewing selected "muddiest points".

- Students attempt to answer one another's "muddiest point" questions.
- Students indicate what information they would need to better grasp the course material discussed.
- Use the writable wall spaces for students to write down questions that they still have. Then, in an adaptation of the 4- corner exercise, have students circulate and provide responses clarifying one another's questions.

Problems

Purpose: Students develop communication, problem solving, and self-directed learning skills.

Description: Students individually or collaboratively solve problems, apply what they have learned in the course and reflect on their experiences. Teachers take on the role as "facilitators" of learning.

Examples:
(1) In a plant science course: Numerous farmers in the Eastern Townships report that their tomato plants are stunted and withered. What would you propose as the cause of this unhealthy appearance? What would you suggest that the farmers do to approach this problem?

(2) Using the resources, find background context, discuss in your team, and justify your response.

Ideas:

- For collaborative problem solving, groups should be chosen carefully, to facilitate students' interactions and promote a productive group dynamic.
- Have students create their own problem-based learning prompts, vet them then re-distribute amongst their classmates.
- Students reflect upon how different conditions might affect their response, or approach the same problem from a different point of view. (For instance, in the example given at the right, they might propose solutions from the perspective of an organic farmer, a pesticides company, and a community- supported agriculture organisation.)
- Students can use the table computers to create their prompts and submit to a common resource's page (Google Drive) where other students can download and work on.

- Different tables can work on different aspects of the problem. If they work on the same problem, you can use the dual-source projection to show different approaches.

Information search

Purpose: Develop research skills and team collaboration.

Description: Create questions that can be answered by searching information from several sources. Have students search for information in small teams Review answers as a large class Reconvene as a whole class, and ask a representative from each group to indicate the agreed-upon response at the same time. Discuss any variability in responses, responding to questions that arise. Explain that these concepts will provide the framework for the day's session.

Example: In a case Law module provide student groups with a question like: "Provide examples of 2 decisions that support your position and explain your reasoning."

Ideas:

- Access to computers facilitates searching for relevant information.
- Groups can share information using the screen sharing capabilities.

Simulations

Purpose: Students apply their knowledge of structures, concepts, and best practices to virtual or other situations that simulate real-life occurrences Instructors and students reflect upon the students' response.

Description: A person, system or computer program demonstrates an action, symptom or scenario to which students are expected to respond. Given the information presented, students take the appropriate action or give a detailed verbal explanation of what they would do to solve the problem or address the situation. Students and instructor debrief, discussing the simulation and students' responses.

Examples:
(1) Students in a health and safety course practice using a defibrillator with a lifelike mannequin.

(2) Students in an investment course buy and sell stocks in a trading room simulation, evaluating the success of their portfolio and explaining their rationale for various decisions mad.

Ideas:

- As a variation, students may take turns simulating (through role play) the appropriate action, symptom or scenario, to which classmates then respond.

Test taking teams

Purpose: Students become actively engaged with the course content through collaboration with peers. Students are responsible and accountable for their own learning and for contributing to a team.

Description: Prior to the session, assign a reading that addresses key concepts related to the material students will encounter in that session. Create an assessment with multiple- choice questions addressing key concepts from the reading. When students arrive, have them fill out the assessment individually. Form small groups of students and have students arrive at consensus regarding the answer most suited to each question, explaining their rationale.

Examples:
(1) Example question that encourages discussion and draws students' attention to key points of the reading in a curriculum instruction course:

(2) Which of the following best describes the meaning of the author's phrase "novice culture" in characterising aspects of many universities' approaches to improving learning?

   a. The university promotes mentoring between "novices" (students) and "experts" (instructors);

   b. Students establish their own communities of practice, assimilating knowledge from peers.

   c. Reform and improvement efforts are more often mechanical and particularistic, rather than based in systematic research and the wisdom of practice.

   d. A culture that emphasises the role of the student as a beginner, who requires the guidance of more qualified leaders to learn.

Ideas:

- Create multiple-choice questions carefully so that the answers require discussion and are not all immediately obvious. Have students choose the best answer and be able to justify their response.
- Encourage students to be able to rationalise their responses to their teammates. This is a process that encourages discussion resulting in consensus, not simply a matter of the majority vote.
- The instructor may give students the decision (within reason) of what percentage of their grade associated with test-taking teams is derived from their individual score versus the group score.
- Have students work at thier tables to come to consensus, prior to reconvening as a whole class to vote. Have students vole electronically using clickers or gather thier responses on the computer screen.

3 step interviews

Purpose: Instructor determines students' comprehension of course content Students improve communication, paraphrasing and small- group presentation skills. Students learn from and about their classmates.

Description: Form groups of 4 students; each group is further divided into two pairs (A-B and C-D).

- Student A interviews student B, while student C interviews student D. The student asking questions listens and asks for further details.
- Student B interviews student A, while student D interviews student C.
- Students A and B summarise one another's responses to the other two students, then vice versa.

Example: In a music appreciation course: "What musician recording today do you think people will still be listening to in fifty years, and why?"

Ideas:
- Use this strategy to help students explore opinions or experiences related to course content, thereby activating their prior knowledge.
- Create interview questions that will not all generate the same responses, but rather will result in a diverse offering of comments and interpretations

- Students develop interview questions around a central theme.
- Students report results of the interview in a written format that is related to the course (e.g. business case, essay).

Directed questioning

Purpose: To actively involve students in the lesson. To increase motivation or interest. To evaluate students' preparation. To check on completion of work. To develop critical thinking skills. To review previous lessons. To nurture insights. To assess achievement or mastery of goals and objectives. To stimulate independent learning.

Description: Educators have traditionally classified questions according to Bloom's Taxonomy, a hierarchy of increasingly complex intellectual skills.

Bloom's Revised Taxonomy includes six categories:

- Remember – recall facts and basic concepts;
- Understand - explain ideas or concepts;
- Apply - Use information in new situations;
- Analyse - Draw connections among ideas;
- Evaluate - Justify a stand or decision.

Review - https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy

Examples:
(1) Plan and write out the questions to be used in a lesson. How many are lower cognitive questions? Higher cognitive questions? Is the percentage appropriate for the ability level of your students?

(2) Anticipate possible student responses, especially partially correct or incorrect ones. How will you probe for further information or redirect?

(3) Wait-time is another crucial factor in questioning techniques. Wait-time can be defined as the amount of time an instructor allows to elapse after he or she has posed a question. (A less frequently used and researched definition is the amount of time that an instructor allows to elapse before responding after a student stops speaking.) While traditional wisdom advocates a brisk pace of instruction to maintain interest and cover more material, research shows that slowing slightly to include more wait-time promotes achievement.

Ideas:

- Ask a colleague to observe a lesson, paying particular attention to the types of questions and student responses. Meet to discuss the observations and plan for improvement.
- Videotape yourself teaching a lesson. When you watch, record your wait-time for each question. Also note if you provide longer wait- times to certain students. Or examine your feedback. Are you specific and focused on the students' responses?

Creating academic notes

Purpose: These skills promote greater comprehension by asking students to analyse a subject to expose what's essential and then put it in their own words. According to research, this requires substituting, deleting, and keeping some things and having an awareness of the basic structure of the information presented.

Description: Provide a set of rules for creating a summary. When summarising, ask students to question what is unclear, clarify those questions, and then predict what will happen next in the text.

Research shows that taking more notes is better than fewer notes, though verbatim note taking is ineffective because it does not allow time to process the information. Instructors should encourage and give time for review and revision of notes; notes can be the best study guides for tests.

Examples:
(1) Stop at key points in the lecture.

(2) Explain to students that academic note taking requires them to actively process the information rather than copy verbatim.

(3) Explain to students that they should create a set of academic notes to enhance their understanding of the work covered. This could include tables, drawings, notes etc.

(4) Provide students time to create these. Students should add to and revisit them over time.

Ideas:

- Have students use note taking programs, such as OneNote, Evernote.
- Students could share their notes in discussion forums or collaborative documents.

Summary templates

Purpose: Students have to analyse information at a deep level in order to decide what information to delete, what to substitute, and what to keep when they are asked to give a summary.

Description: Reading comprehension increases when students learn how to incorporate summary frames as a tool for summarising. Summary frames are a series of questions created by the teacher and designed to highlight critical passages of text. When students use this strategy, they are better able to understand what they are reading, identify key information, and provide a summary that helps them retain the information.

Example: Teach a formal process. Teach students the delete-substitute-keep (https://literacy.kent.edu/eureka/strategies/summarizing09.pdf) process for summarising e.g., A "rule- based strategy" for summarising includes a specific set of steps.

The steps are:

1. Delete unnecessary words or sentences
2. Delete redundant words or sentences
3. Substitute super-ordinate terms (for example, "trees" for pines, oaks, and maples)
4. Select or create a topic sentence.

Ideas:

- Have students publish their summaries online for feedback.
- Students complete summaries in groups and have to reach censuses on key information within word limit.

Non-linguistic representations

Purpose: When students then explain their models, they are putting their thinking into words. This may lead to new questions and discussions, which will in turn promote deeper thinking and better understanding.

Description: Teachers who wish to take advantage of all modes of learning will encourage students to make nonlinguistic representations of their thinking. These can take many forms. When students make concept maps, idea webs, dramatisations, and other types of nonlinguistic representation, they are actively creating a model of their thinking.

Examples: Have students create a diagram, sketch, chart, poster, metaphor, simulation, role play (etc) to demonstrate understanding of concept.

Ideas:

- Computer simulations also encourage exploration and experimentation by allowing learners to manipulate their learning experience and visualise results.
- Teach interpretation of nonlinguistic forms also. Finding patterns helps students organise their ideas so that they can later recall and apply what they have learned. Teach students to represent and interpret information in graphs, charts, maps, and other formats that will help them see patterns and make connections.
- Stimulate body-mind connections. Kinaesthetic learning is not just for primary grades. Older students continue to learn through physical activities. Incorporate dramatisations, dance, music, simulations, and other active learning experiences.
- Integrate nonlinguistic forms into note-taking. Encourage students to take notes that are meaningful to them. Model use of sketches, graphs, and symbols.

Direct vocab instruction

Purpose: Vocabulary instruction and comprehension strategy instruction can combine to create depth and breadth in understanding words, concepts, topics, and themes.

Description: Instructional strategies that bring new vocabulary into a student's

existing conceptual framework are effective in teaching vocabulary meaning and conceptual understanding

Examples:
(1) Provide a description, explanation, or example of the new term.

(2) Ask students to restate the description, explanation, or example in their own words.

(3) Ask students to construct a picture, symbol, or graphic representing the word.

Ideas:

- Students create a glossary of terms for modules.
- Students create definitions and representions in groups.

Blog

Purpose: Students are required to actively process on new information and reflect on their own learning so far.

Description: A blog allows staff and students to create rich media journals within a subject site that can be site blogs (available to everyone in the subject), group blog (available only to members of a group within the subject), or private blogs (only visible between individual students and the lecturer).

Examples:
(1) Engaging students in reflective writing.

(2) When used as a private blog students can consider and explore topic readings, class discussions, or field experiences. Through the blogs, lecturers can gain ready insight into students' experiences in the subject, and can efficiently provide individualised feedback.

Ideas:

- Encouraging creativity and group work – A group or site blog can be used to encourage lively discussion of topics and concepts in the subject. Engaging in written debate can motivate students to sharpen their critical thinking and rhetorical skills. Students can also exercise creativity by selecting and adding relevant images, external links, and uploaded files to their posts.

- Learning by peer review and feedback – When used as a group blog, students learn through peer review by viewing each other's posts and providing constructively critical feedback, suggestions, and comments.

Wiki

Purpose: Tasks involving wikis can enhance participation, encourage organisation, and promote critical and analytical thinking. As students will be writing for the web they will also need to think carefully about structuring their content and providing intuitive ways for readers to navigate between pages.

Description: Wikis provide a common work- space similar to a Microsoft Word document where members can author content, assemble research, and present their work in the form of a group web site. Having a common online work- space with version control eliminates the need to distribute and revise information via countless group emails and allows any previous changes to be viewed and rolled back if needed.

Examples:
(1) Engage students in working together on a problem which culminates in the development of a collective task.

(2) Producing collaborative resources; Reflecting on learning, work experience etc., in an online journal.

Idea: Creating a collection of their work to be used as an ePortfolio.

Workstations

Purpose: This approach is very helpful in familiarising students with new phenomena or various aspects of a particular phenomenon.

Description: Work stations are typically a form of discovery learning where the instructor provides a worksheet and assignments associated with each station. Work stations are also helpful when there are only limited quantities of materials required for experimentation or materials unsuitable for whole class demonstration due to their small size.

Example: Students work in small groups moving from station to station to gain hands-on, minds-on experiences so often necessary when introducing a new topic or phenomenon.

Problem of the day

Purpose: Well-formulated conceptual problems form the basis of periodic class discussions. These discussions foster critical thinking on the part of the student.

Description: A key problem focusing on the key concept/concepts that are central to subject content are posed.

Examples: For instance, two bullets of the same mass and speed, one aluminum and the other rubber, strike a block of wood. The aluminum bullet penetrates the bock whereas the rubber bullet bounces off. Which of the two bullets is most likely to shatter the block? Which is most likely to move the block?

Discussion forum / breakout rooms

Purpose: Students work to articulate their thoughts and solidify their understanding of numerous aspects of the task/situation through discussing them with other students.

Description: A discussion forum is a tool hosted in LearnJCU where the lecturer can pose a topic/ question for debate and students do so online. Breakout rooms are virtual sub rooms within a main virtual room.

Examples:
(1) In an ethics course, pose students a values dilemma. Students are to explain their action and why they have acted this way.

(2) Collaborate provides you the functionality to split students into groups to have them discuss.

EXPLAIN

The purpose of **explain** strategies is for students to make explicit links between content and experience

The focus is:

- For the facilitator to provide the concepts and terms already used by the students to develop explanations for the phenomenon they have already experienced.
- The premise is that explanation follows experience.

Strategies

Account classification

Purpose: Instructor determines students' comprehension of course content. Students improve communication, paraphrasing and small-group presentation skills. Students learn from and about their classmates.

Description: Students are provided with a number of examples/ cases that fit under a certain classification/ topic. Students classify the example under the correct heading.

Examples:
(1) Students are assigned a group: Asset, Liability and Owners Equity.

(2) Student given 30 cards with accounts on them. Students have to identify which of the accounts were a part of their category and justify this.

Ideas:

- Have students work at their tables to come to consensus, prior to reconvening as a whole class to vote.
- Have students vote electronically using clickers or gather their responses on the computer screen

Peer tutoring

Purpose: Instructor determines students' comprehension of course content Students improve communication, paraphrasing and small- group presentation skills. Students learn from and about their classmates.

Description: Students work in groups to solve problems, work through scenarios, deepen understandings.

Examples:
(1) Instructor divides students into peer groups based on diverse groupings (potentially using available data about the students).

(2) Instructor provides cases study, problem, scenario etc.

(3) Students work through answers in a collaborative setting.

Ideas:

- You may wish to establish group roles (timekeeper, facilitator, etc).
- Students could use a wiki or blog to support this.

Round table

Purpose: Students summarise key concepts. Students participate equally Students build on their peers' knowledge and respond to one another's conceptions.

Description: The instructor creates a prompt, which is written down in a highly visible location. Students are informed of the time limit that has been set for this activity. In groups of four, students pass around a sheet of paper clockwise responding to the prompt in short phrases or sen- tences. After each student writes his or her response, it is read aloud so the others can reflect upon it while the paper moves around the group. Ensure that all members have an opportunity to write their ideas down on the paper.

Example: In a course on scientific principles: "Identify important scientific discoveries of the 20th century in the field of medicine".

Ideas:

- Use for review or for brainstorming lists – fairly simple, straightforward prompts that keep the paper moving around the group.

- Encourage student to respond to the comments of those who have already written on the sheet.

- Follow-up with group or whole-class discussion using the round-table papers as a base or departure point.

- Use in conjunction with the "muddiest point" strategy: Students write down their muddiest point, check those muddiest points that have already been written by others and expand as appropriate. The instructor may follow up by facilitating a discussion of the muddiest points.

- Use students' screens to project the prompt for the activity.

- Room layout facilitates the use of small groups.

- For follow-up, project both the round-table papers and the prompt using the dual-source projectors.

- Students at the same table can be split into two groups, which can share their responses to different questions/topics.

- Students can use the computers to write down each person's answer, creating a file that can be saved and emailed to the whole class. Or they can use the writable walls to respond to the instructor' prompt.

Ten two / interactive lecture strategy

Purpose: Students process information presented. Instructor and students fill in any gaps or misunderstandings. Students clarify information for one another; build on peers' knowledge.

Description: Presenter shares information for ten minutes and then stops for two minutes to encourage listeners to pair up with a partner and share their ideas.

Example: In an U.S. History of the 20th Century course, the instructor asks students to summarise the economic impact of the Great Depression on the North American labour market in the 1930s and 1940s.

Ideas:

- Encourage students to pair up with different classmates each time this activity is carried out.

- At the end of the information-sharing time, pairs can pair up (making groups of 4 students) to summarise the 3-5 key points or "take-aways" from the session.

- This activity may be used when students are watching classmates' presentations.

- This can be effective in maintaining audience focus and provides helpful feedback to the presenter in determining whether he or she successfully communicated the points intended.

Quick writes

Purpose: Students activate their existing cognitive structures or construct new ones to subsume the new input.

Description: Quick writes ask for an instant response to a concept that has just been presented. Typically, students would be asked to do a quick write in the middle of a lecture, video, or demonstration of a mathematical procedure. The instructor chooses a suitable spot for a quick write by considering where students in previous classes have often gone wrong.

Example:
(1a) During a tax lecture, a professor might pause after the initial description of the difference between a standard deduction and a personal exemption and ask students to explain the difference in their own words. Used well, the quick write provokes discussion.

(1b) When two or three students read their responses aloud, it often becomes apparent that there has been no meeting of the minds on this topic and the instructor has the opportunity to probe for further misunderstanding and to help students reach a clear conception of the content.

Idea: Have students share their responses electronically in the collaborative teaching spaces.

Terminology sorts

Purpose: Useful learning involves understanding how concepts interrelate.

Description: Students create or are provided note cards with key terms and concepts for the topic. Instructor asks students to sort the cards based on nominated criteria.

Example: To sum up a key point at the end of class, students in introductory accounting might be asked to make four note cards, one each for the terms equity, asset, liability and net income. The task is to sort the cards, determining which three go together. After students put aside the net income card, they can be asked to give a title to the little list that remains.

Idea: Students could complete this in groups or as a pre-learning exercise before a lecture.

ELABORATE

The purpose of **elaborate** strategies is for students to apply knowledge/skills to develop a deeper understanding or better demonstration of skill.

Students need to discuss and compare ideas in order to engage with higher order thinking skills and develop a depth understanding of skills and content.
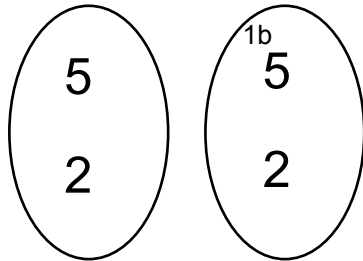
Strategies

Concepts to pictures

Purpose: Students clarify and represent their understanding visually.

Description: Have students draw pictures to illustrate a mathematical concept.

Example:

$$2 \times 7$$

Pictures to algebra

Purpose: Students represent a pictorial problem as a calculation.

Description: Students translate visual images to calculations.

Examples:
(1) High schools students Bob and John both work part-time on weekends at the local fast-food restaurant, and are paid at the end of the day on Sunday. When they receive their pay Bob gets $10 more than John.

(2) Together they have $130. How much money does each person have?

Multiple representations

Purpose: The use of multiple representations of data and phenomena in maths/ physics is a powerful strategy to help students develop a deeper understanding of concepts and effective problem-solving skills.
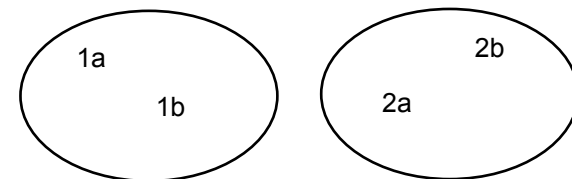
Description: Some of the most commonly used multiple representations in physics are verbal descriptions, mathematical interpretations, pictures, graphs, motion diagrams, free-body diagrams, circuit diagrams, and geometric optics ray tracing.

Examples:

Representation 1:

	Group 1	Group 2
	• 1a	• 2a
	• 1b	• 2b

Representation 2:

Application problems

Purpose: Students can apply their knowledge to life situations.

Description: Choose an application to engage/excite or connect them with the world of work that they are studying for.

Example:

https://www.mathsisfun.com/algebra/quadratic-equation-real-world.html

Student generated test/ quiz problems

Purpose: Students are asked to think up exam questions to encourage them to think more deeply about the subject material and to explore major themes, comparison of views presented, applications, and other higher-order thinking skills.

Description: Students are asked to become actively involved in creating quizzes and tests by constructing some (or all) of the questions for the exams. This exercise may be a piece of assessment or an extra task.

Example: Once suggested questions are collected, the instructor may use them as the basis of review sessions, and/or to model the most effective questions. Further, you may ask students to discuss the merits of a sample of questions submitted; in discussing questions, they will significantly increase their engagement of the material to supply answers. Students might be asked to discuss several aspects of two different questions on the same material including degree of difficulty, effectiveness in assessing their learning, proper scope of questions, etc.

Problem posing

Purpose: Students identify key problems to be solved in a unit of work or across the subject.

Description: Individual students construct a problem about a particular concept and then exchange that problem with a classmate for solving.

Critiques

Purpose: Students apply their knowledge to solve a problem posed by the Instructor.

Description: Students have a short pair- share or group discussion to find flaws in an argument presented by the instructor.

Case studies

Purpose: Students develop communication, problem solving, analytical thinking and self-directed learning skills.

Description: Students individually or collaboratively solve problems, apply what they have learned in the course and reflect on their experiences. Teachers take on the role as "facilitators" of learning.

Example: Author printed the financial statements from Louis Vuitton's Annual Report and distributed them to four groups in the class. Students were asked to analyse the financial health and performance of the company using ratio techniques.

Ideas:

- Use students' screens to project the prompt for the activity.
- Room layout facilitates the use of small groups.
- For follow-up, project both the round- table papers and the prompt using the dual-source projectors.
- Students at the same table can be split into two groups, which can share their responses to different questions/ topics.
- Students can use the computers to write down each person's answer, creating a file that can be saved and emailed to the whole class. Or they can use the writable walls to respond to the instructor's prompt.

Analysing errors

Purpose: Students develop communication, problem solving, analytical thinking and self-directed learning skills.

Description: Students individually or collaboratively identify errors in piece of work to clarify and deepen their understandings

Examples:
(1) Instructor provides a worked example on the board/online etc.

(2) Instructor provides criteria for success in example or states what the example is. Students work to identify the errors made and then rewrite to provide a correct exemplar.

Ideas:

- Use students' screens to project the prompt for the activity.
- Room layout facilitates the use of small groups.

- For follow-up, project both the round- table papers and the prompt using the dual-source projectors.
- Students at the same table can be split into two groups, which can share their responses to different questions/topics.
- Students can use the computers to write down each person's answer, creating a file that can be saved and emailed to the whole class. Or they can use the writable walls to respond to the instructor' prompt.

Fishbowl

Purpose: Students participate in structured, in-depth discussion. Students model, observe and critique group processes through the discussion format.

Description: Students form a small circle (group of 4-6 students). Remaining students form a larger circle around the 4-6 students. Present guidelines for the activity:

- Students in the inner circle speak, while those in the outside circle
- Observe (considering both the discussion and group process).
- Students in the outside circle will have an opportunity to speak to the issues that arose during the discussion in the follow-up time.
- Present the discussion prompt. Inner circle students debate.
- Students report out in a whole-class discussion, encompassing key issues and the group process.

Examples:
(1) In a biology class, students respond to the question "Why are we worried about changes in the ozone layer?"

(2) In a class on higher education administration, students debate whether higher education is (or is not) an industry.

Ideas:

- Do not try this the first day of class: first develop a level of trust, a non-judgmental environment and sense of collaboration.
- Have students facilitate the discussion; step in only if necessary.
- Conduct multiple, smaller fishbowls concurrently.

- Allow students to trade out between the outer and inner circles every few minutes, to expose different points of view and to see different group dynamics.
- Mobile chairs allow for easy placement of students in and outside of the circle, as well as for changing the participants in the inner group.
- One or two students can be assigned to writing on the walls the main points discussed.

Write around the room

Purpose: Students build upon one another's knowledge Instructor becomes aware of which concepts are clearly understood, and which concepts were not incorporated into students' knowledge base.

Description: Form groups. Each group moves to a corner and brainstorms. A list in response to a question posed to the entire class. Move to the next corner— expand on the previous group's examples. Review the contents of each list as a large group.

Example: In an English literature course: What are recurring features of Lord Byron's poetry? How do these stylistic elements hint at his intended audience? What are the key traits of the Byronic hero?

Ideas:

- Students can put a check mark next to previously listed responses that are consistent with their lists.
- Set and keep a time limit for this activity, to ensure that students have sufficient time at each of the corners.
- Once students have completed this activity, they might organise the results using concept mapping, to further crystallise their understanding of the concepts' relation to one another.
- Don't limit yourself to the corners! Take advantage of the writeable walls around the classroom for students to record their thoughts and build on classmates' ideas.

Presentations

Purpose: Students and instructor are able to gauge the following: Preparation, understanding, knowledge, capacity to structure information, and oral communication skills. Students and instructor can provide feedback. Students respond to questions and manage discussion.

Description: Students express their knowledge on an assigned topic to classmates and instructor. May range from informal to formal. Presentation length, size of presenting group, structure of presentation, criteria and technology used within the presentation may all vary.

Example: Presentations can be given on virtually any topic.

Ideas:

- Provide students with a rubric and discuss expectations for presentations.

- Discuss providing constructive feedback to peers.

- Encourage student feedback and involvement in the establishment of rubric criteria for evaluating presentations.

- To help students become familiar with presentations, they might begin by presenting to small groups of their peers, rather than to the entire class at once. The listening members of the small group can then summarise and report out to the larger class on the 3-5 key ideas of the presentation. Presentations can be significantly augmented within this space with the use of resources:

  - Microphones on the tables;

  - Dual-source projection option (e.g., keep a PowerPoint presentation up and concurrently display a short video clip);

  - Screen-sharing in real time: allows classmates to try out sample exercises, check out the same website, etc.;

  - Group configuration: students can give smaller presentations to their table, instead of to the entire class.

## Identifying similarities and differences

Purpose: Students deepen their understanding of a concept through identifying patterns etc.

Description: Students compare the similarities and differences between two or more concepts/ processes etc.

Example:
(1) Students can compare similarities and differences using tools, such as T Chart - https://www.worksheetworks.com/miscellanea/graphic-organizers/tchart.html

(2) Have students create a Venn Diagram.
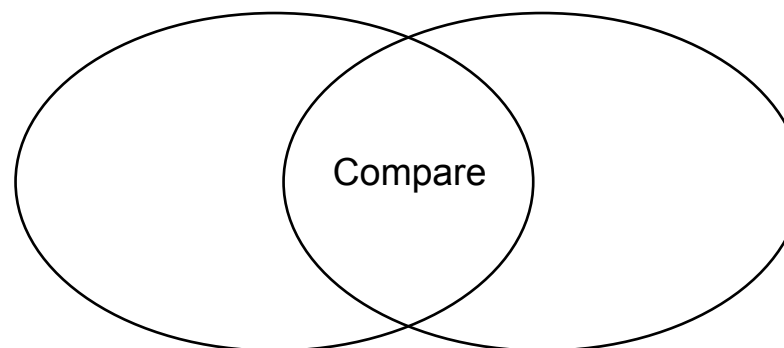
Identifying Patterns

Purpose: Students deepen their understanding through making evaluative decisions around links between knowledge.

Description: Students can use a graphic organiser to make links between content process the knowledge.

Example: Students are provided a task to research polymers and compile findings using a graphic organiser, concept diagram.

Perspective Analysis

Purpose: Students deepen their understanding of an issue by considering and documenting the views of a range of stakeholders.

Description: Students are provided a role and asked to argue a viewpoint from that role.

Example: Students can examine one role and document the views of many using a graphic organiser, such as a knowledge map.

Academic Portfolio

Purpose: Students demonstrate acquisition of a standard with evidence.

Description: Students compile a repository of evidence that demonstrates and evaluates how they have met a standard.

Example: Standards (i.e., Professional Standards) are explicitly unpacked by teaching staff with students. Over the course of a module/ programme, student gather evidence of their own work and measure their performance against the standard.

Collaborative Projects

Purpose: Students gain understanding of content and skills at a high level as well as generic employability skills.

Description: Students work in groups to complete a project such as:
Project, report, model, seminar, poster, position paper, web page, multimedia presentation.

Example: An assessment piece requires that students write a white paper in groups. This is supported by:

- Staff member determining groups;

- Teaching of skills of collaboration;

- Clear and explicit structures and timelines;

- Modelling of exemplars.

EVALUATE

The purpose of evaluation is to review and reflect on their learning, new understandings/skills.

Students provide evidence of their learning.

Strategies

Personalising the knowledge

Purpose: Students assess their comprehension and evaluate their learning over the course of the class period. Instructor gathers information about students' prior knowledge and assesses learning over the class period.

Description: Students take the knowledge and or skills that they have learned and apply them to their everyday life.

Example: Students apply financial concepts learned in class to create their own budget. Instructor gathers information about students' prior knowledge and assesses learning over the class period.

Pre / post quizzes

Purpose: Students assess their comprehension and evaluate their learning over the course of the class period. Instructor gathers information about students' prior knowledge and assesses learning over the class period.

Description: Create a 1-page quiz that covers the primary focuses of your session. Have students take the quiz at the beginning of the session, and then set it aside. When the students take the same quiz at the end of the lesson, they will see what they have learned instantly. Having the students pass in their quizzes provides timely feedback to the instructor on their learning over the course of the session.

Example: In an introductory biology course, students are asked to put the steps for meiosis in order and label the structures both prior to and following the lecture.

Ideas:

- Ensure that sufficient time is allotted to convey the correct answers at the end of the session, and to answer any questions that arise as a result.

- Student responses to the pre- quiz can be incorporated into review sessions later in the class.

- Students might follow the post- quiz with a one-minute paper summarising what they learned.

- When evaluating the quizzes, check to see whether students sitting in the same tables have demonstrated similar or divergent levels of comprehension. If a certain group is doing quite well, while another one is struggling, try to find out why: Are students getting along well? Are they on-task? Is there confusion over use of the technology? Are you consistently teaching with your back to this group?

One minute paper / quick writes / free writes

Purpose: Students activate their existing cognitive structures or construct new ones to subsume the new input.

Description: Quick writes ask for an instant response to a concept that has just been presented. Typically, students would be asked to do a quick write in the middle of a lecture, video, or demonstration of a mathematical procedure. The instructor chooses a suitable spot for a quick write by considering where students in previous classes have often gone wrong.

Example: During a tax lecture, the instructor might pause after explaining the difference between a standard deduction and a personal exemption. They could then ask students to describe the difference in their own words. When used effectively, this quick write exercise can stimulate meaningful discussion.

Idea: Have students share their responses electronically in a collaborative teaching spaces.

Self evaluation rubric

Purpose: Students increase ownership of learning through reflecting explicitly on their progress towards learning goals and standards.

Description: Throughout lecture, subject, staff ask students to reflect on their progress.

Example: Here is a scale that could be used.

Scale	Description
4—Expert Exceeds	I understand completely! I can do it without making mistakes!
3—Master Proficient	I understand the important ideas! I can do it by myself! Once in awhile, I make a little or careless mistakes.
2—Apprentice Developing	I am getting there. My mistakes show I understand most of the important ideas. Sometimes I need help.
1—Novice Beginning	I don't understand yet. I can't do it by myself. My mistakes show that I have trouble with the important ideas.

Closing summary

Purpose: Instructor ascertains if students have grasped key concepts. Students reflect on learning   .

Description: Students write a closing or exit summary individually or in pairs about the main ideas in the session. Students could compare answers to build on understanding.

Examples:

(1) What were three key points or 'take aways' from today's class?

(2) What did you find interesting?

(3) If you were to make two exam questions that consider the main points from today's material, what would they be and how would you answer them?

Ideas:

- Provide sufficient time at the end of the class for this.
- Ask students to summarise the previous session at the start of a lecture.
- Display answers electronically.