Teaching Tips for Critical Appraisal Skills

The ability to think critically is a skill that is necessary to make good personal, professional and academic judgements. For many students the word ‘critical’ carries negative connotations, so they tend to focus on weaknesses or deficits. As lecturers we can broaden their understanding of this process, emphasising that appraisal involves the recognition of positive as well as negative aspects of the subject of appraisal, be that a product, a process, a performance or a proposed solution.

The elements of critical appraisal are:

* Clarifying the goal of the thinking/appraisal (this may require analysing a problem);
* Ensuring adequate information is available (locating and organising information);
* Determining the validity of information;
* Determining the relevance (applicability) of information;
* Formulating inferences from information; and
* Making decisions in relation to the goal.

Critical thinking is not just cognitive. This is discussed further in the section on Research Skills.

Below are some ways to embed development of critical appraisal skills in your unit:

* Create in-class opportunities for students to be reflective, to stop and think, to be aware of the assumptions they make, so think about evidence to support positions, to not automatically accept whatever is presented in the media.
* In class discussions, and on students’ written work, gently ask such questions as “Why do you think that might be?”, “How do you know”, "What are the reasons?" and “Is that a good source of information?” thus prodding them to have good reasons for their views and to seek reasons for others' views.
* Emphasise alertness to alternative hypotheses, conclusions, explanations, sources of evidence and points of view.
* Use Problem-Based Learning (PBL) to engage students in working on authentic (work-based) problems. This approach works best when adopted in a systematic way across an entire course or programme, rather than just in one unit.
* When setting problem-solving challenges, encourage students to evaluate their range of possible solutions and to identify the criteria they used to select their ultimate solution.
* Teach students problem solving and identification strategies so that they are able to spot opportunities or potential problems before they occur (and are able to solve problems if they arise).
* Teach students how to support their conclusions with reasoned arguments and evidence, in both written and verbal communication.
* Encourage the development of students’ critical reasoning skills by requiring them to argue different sides of an issue at the same time in written work or class discussion.
* Deliberately give students conflicting or ambiguous information or perspectives to think through (but let students know that this is a deliberate strategy to encourage their critical thinking).
* Challenge students to analyse their own, or a peer’s, writing. Have them highlight examples of critical thinking attributes such as bias, validity, applicability, evidence (or lack thereof), inference and errors in reasoning.

# Teaching sub-skills of critical appraisal

There are many aspects to critical appraisal. You may wish to select one or two sub-skills to focus on at specific times, perhaps aligned with the stages of an extended project or group task. Below are some steps to assist you with this,

## Planning and organising

The following questions are useful in a lecture or tutorial situation that, for example, is designed to assist students with understanding the importance of planning:

1. What are goals and what sort of goals can we set?
2. Do we need to set goals? Why? Why not?
3. Are all goals equally realistic?
4. What are some of the reasons people don’t set goals?
5. What are the outcomes for those who don’t set goals?
6. How do you define whether a goal was successfully met?
7. What happens if a goal is not met?
8. Have you ever failed in an attempt to achieve a goal? How did this feel? What did you do next? How do overcome a failed attempt at meeting a goal?
9. How can we set a goal that is achievable and meaningful? What is required?

Some further suggestions for guiding students follow below:

### Establishing clear goals and plans of action

* Teach students how to set SMART goals – Specific, Measurable, Attainable, Relevant, Time-framed.
* Explain the need to set goals and the success rate of students who set clear goals.
* Have students reflect on short term and long term career and academic goals by completing a self reflection task. This exercise can help them align personal goals with the learning goals of the unit.
* Show students in class how to deconstruct an assignment into smaller and more manageable tasks. Students can then decide how to organise their time to complete all smaller tasks.
* Demonstrate to students how to deconstruct an assignment question to be able to create a plan of completion.
* Include assignments where students are given a series of problems and are then asked to work in groups to create an action plan. Scaffold their efforts with pre-prepared resources such as templates to guide their efforts.

### Allocating time and resources effectively

Students’ awareness of their time management skills can be raised by encouraging them to reflect on previous situations when they were required to manage their time but may not have done so well. Another useful starting point (and a fun discussion topic) is the [Time Management Survey](http://www.mindtools.com/pages/article/newHTE_88.htm) available on the Mind Tools website, and also the [Productivity Survey](http://www.mindtools.com/pages/article/productivity-quiz.htm). Here are further suggestions for how you can assist students:

* Guide students in constructing a timetable for completion of assignments. This should include resources required along the way, and is particularly important if many students need to access limited resources such as library items in closed reserve.
* Occasionally set group tasks in class, allocate limited resources and limited time to complete. At the end have students reflect on the pressure of completing work to a deadline and discuss how authentic this situation is.
* Complete role play activities. For example, students assume the role of leaders in an organisation and with limited budgets, resources and time need to maximise their output.
* Encourage students to reflect on how well they allocated time and resources to the completion of an assignment or task. This can be included as part of the assessment and appropriate marks allocated.
* Provide students with approximations of how long a task might take. (Be careful to not just tell them how long you think it should take! Base approximations on reports from previous year groups about how long tasks took them). This can give students an idea of about how long is necessary to spend on a given task- if a student takes much longer than this, there should be room for reflection on why this is the case.
* Upload links on your Blackboard site to resources that support time and resource allocation.

### Prioritising and managing tasks

* Initiate an online discussion about why students choose to go to university and what other activities they do that require time, energy and resource allocation. A good work-life balance underpins sustainable academic effort.
* Give students a list of tasks professionals might undertake in their discipline and ask students to prioritise them. Encourage discussion about the process of prioritising: how they would decide what to do in what order and why they would do it this way.
* Provide students with a Discussion Board thread dedicated to time management strategies and how to overcome common time management pitfalls such as:
  + procrastination,
  + failing to manage distractions,
  + taking on too much,
  + becoming addicted to the ‘deadline adrenaline rush’,
  + multi-tasking, and
  + not taking breaks.

# Problem solving

Students solve problems all the time, but they’re often not aware of what they’re doing. Awareness is essential for explicit development of any skill, so a quick survey such as [‘How good are you at solving problems?’](http://www.mindtools.com/pages/article/newTMC_72.htm) can provide a great springboard for further work. Further suggestions for developing your students’ problem solving skills follow below:

* Explicitly teach students the steps involved in problem solving:
  + Identification of the problem;
  + Sorting of relevant information;
  + Consideration of possible solutions;
  + Implementing best solution; and
  + Reflecting on action taken.
* Provide students with weekly mini-problems based around the topic of the week. Provide in-class time to discuss and develop potential solutions for the problems. Students can then vote on the best solution and justify their decision.
* In lectures, make links back to prior learning to help students recognise when similar problems they are currently faced with, have been previously solved.
* Provide authentic (simulating real-world) problems for students to solve when creating assessments. Real life problems are often ill-structured and students need the opportunity to work through these in a supported environment. Well defined and well structured problems provide less opportunity for students to actively engage in the real difficulties of problem solving.
* When providing feedback, use errors students make to highlight some of the common misconceptions held.
* Ask students to provide evidence of their thought processes when providing a solution to a problem.
* Engage students in ‘[constructive controversy’](http://www.mindtools.com/pages/article/newTMC_71.htm), where they form teams to adopt specific positions and each team argues for their position/solution. A twist on this is to allocate the task of arguing for a position to a team that does not support the position, forcing students to think from a different perspective.
* Create opportunities for students to link their declarative knowledge (what they know about a topic) with their procedural knowledge (what they know about the process involved in solving a problem).
* Teach students the process of appreciative inquiry: solving problems by looking at what is currently working well and building on that. While the ‘problem’ still needs to be defined, a positive approach might, for example, change a statement like ‘sort out team conflict’ to ‘ways to improve team productivity’.

# Decision making ability

* Provide students with opportunities to make decisions related to their careers in the discipline: Will they specialise? Where will they work? Will they work full or part time?
* Provide students with a common problem faced by those in the discipline and ask them to create possible solutions and then as a group decide which would be most appropriate and justify this. (Role play).
* Teach students to use [De Bono’s 6 Thinking Hats](http://www.debonothinkingsystems.com/tools/6hats.htm).
* Give students ethical dilemmas based on issues in the discipline and highlight the need to make a decision based on what is right rather than what is expedient or merely quickest.
* Help students recognise their own biases by encouraging them to reflect on evidence.

# Creativity/ Potential to innovate

Look at the following website for specific tools that can be used to support students’ creativity. <http://www.mindtools.com/pages/main/newMN_CT.htm>

* Explicitly teach the idea that innovation is the result of application and dedication. It is not a “special” trait possessed by some, but is a skill that can be learnt and applied. A process that can be applied is:
  + Identifying a current issue/ problem.
  + Gathering all current ideas/ solutions/ products.
  + Modifying what is currently available- make it bigger/smaller/ combining two ideas/ adding an additional element.
  + Testing the new idea.
  + Evaluating the new idea and looking for possible ways to improve it.
* Use brainstorming tools like [SCAMPER](http://litemind.com/scamper/) to help students begin to think through alternative ideas. Tutorials are available from [brainstorming.co.uk](http://www.brainstorming.co.uk/tutorials/).
* Give students an authentic (real-world, complex) problem to solve. Ask them to provide multiple solutions to a single problem.

# Research skills

The critical reading required for effective research is not purely cognitive, although it is often thought of as a purely intellectual process in which rationality is valued above all else. In guiding students to become critical readers and thinkers it is important to make them aware that thought and reasoning is infused with emotional currents and responses. We should encourage students to investigate their emotional responses to the material they read in order to try to understand why they become enthused or appalled, perplexed or engaged. As students read work that challenges some of their most deeply held assumptions, they are likely to experience strong feelings of anger and resentment against the writer or her ideas, feelings that are grounded in the sense of threat that the work holds for them (Brookfield, 2012). It is important that students know this in advance of their reading and understand that their emotional reactions are the inevitable accompaniment of undertaking any kind of intellectual inquiry that is really challenging.

Against that backdrop, what can we do to build students’ research skills?

* Build into each unit an assessment piece that requires independent research.
* Explicitly teach the rules of referencing and include in classes a discussion about the ethical implications of plagiarising.
* Have students write an annotated bibliography, dedicating some class time to how to review and critically analyse information.
* Explicitly teach the steps involved in conducting research:
  + defining the focus;
  + formulating a proposal;
  + gathering information;
  + evaluating information;
  + interpreting and discussing findings; and
  + formulating a recommendation.
* Build in smaller mini deadlines for students to help them avoid “endless” reading and resource collecting. Scaffold and allocate marks?
* Teach students how to read for a purpose and how to write short summaries and note take. Model these processes as part of your teaching and provide opportunity to practice these without allocating a grade.

# Developing thinking

* Ask students to explain fully how they arrived at answers to questions. Correct answers can occur even when faulty logic has been applied. Misconceptions can hinder later learning
* Explore alternative viewpoints to theories/ concepts in the discipline.
* Provide and encourage the use of ‘wait time’. This will allow students to think through a response without feeling the pressure to deliver straight away.
* Provide students with criteria they can use to determine whether an argument has been presented logically and has used orderly thinking.
* Ask students to develop criteria they can use to evaluate their thinking.
* Guide students through some strategies for developing critical thinking while reading:
  + Ask about purpose: why was the text written?
  + Ask about context: where was it written, when and by whom?
  + Ask about structure: Do the parts fit together logically? Is there a clear argument?
  + Ask about the arguments: Are they fair? Do they leave out perspectives of certain groups?
  + Ask about evidence: Does it support the point of view? Is it from an authority in this field? Is it evaluated from different perspectives?
  + Ask about language: Is it coloured to present some things as more positive than others?
  + Ask about attribution: Are claims attributed clearly to specific sources?
* Teach students how to write a critical review by following these steps:
  + summarise the ideas of the original text,
  + select sections of the text (e.g. thesis/methodology/conclusion)which are open to question,
  + comment (if possible from both a positive and negative perspective) on the section,
  + draw on other sources to back up your comments, then
  + come to a conclusion on the overall worth/validity etc of the original text.
* Engage students in as many activities as possible that involve:
  + Information processing: finding relevant information, organising it and representing it;
  + Reasoning: giving reasons, making inferences, arguing, explaining;
  + Inquiry: asking questions, finding out, planning research;
  + Creative thinking: generating ideas, imagining, hypothesising;
  + Evaluation: developing and applying evaluation criteria, making decisions; and
  + Meta-cognitive reflection on the outcomes of thinking.

# References

Brookfield, S. D. (2012). Teaching for Critical Thinking: Tools and Techniques to Help Students Question Their Assumptions. Jossey-Bass, San Francisco, CA .

Sadler, D. R. (2010). Beyond feedback: Developing student capability in complex appraisal. Assessment & Evaluation in Higher Education, 35 (5), 535-550. URL: <http://dx.doi.org/10.1080/02602930903541015>