

Incorporating Learning Skills into Post-Secondary Courses: An Instructor's Guide to Principles and Strategies

Prepared by the Learning Skills Association
of British Columbia

<http://www.mala.ca/teaching/lsabc.asp>

Foreword

This project developed from the intention of members of the Learning Specialists Association of British Columbia to connect with, and contribute to, the Scholarship of Teaching and Learning. We believe that we can provide a coherent and intelligent understanding of learning in higher education, based on our unique position as learning specialists. Our interests lie in learning, as such, rather than in the content of any specific discipline, where learning might be seen as a means to an end and not necessarily as a topic of interest in its own right. We have compiled this publication on the basis of our understanding of learning and as an expression and application of our vision of learning in higher education.

Typically, learning skills are directed towards students and taught by learning specialists and counsellors by way of courses, workshops, and one-on-one consultations. This approach is very successful—for the students who attend. The problem with this approach is that only a relatively small percentage of students take advantage of the services. Therefore, it makes sense to reach out to instructors in hopes that they will start to learn more about learning principles, processes, and strategies and incorporate this understanding into their teaching.

The broad range of strategies here are designed and presented to provide useful teaching suggestions based on an understanding of the underlying learning principles. Also included are suggestions for ways to apply the strategies within courses and some resources for further reading. These suggestions are intended to present an integrated and coherent vision of learning that may apply to all disciplines. We hope that they are congruent with an important goal of the Scholarship of Teaching and Learning: to foster, within all disciplines—and for all members of each discipline, novices and experts alike—a way of conceptualizing the learning processes themselves as worthy of deliberate study and strategic application.

We have presented these strategies for instructors according to six important aspects of learning: engagement with students, metacognition, intentionality, reading, writing, and exam preparation. There are, of course, many other aspects of learning and many other strategies for supporting learning. It is our hope that the ideas presented here will simply kick-start the process of incorporating learning skills into the curriculum.

One of the aspects of learning that we present is intentionality. By this, we mean not only deliberately learning content, but also deliberately learning about learning. We suggest that learning new material and creating new understanding is an activity shared by all members of a discipline, from novice to expert. To the extent that all are engaged in learning, they share a common challenge: to learn new material and to formulate an understanding of that material in the context of what they already know. All learners can be intentional learners, and the goal is for students to become intentional in their learning within the discipline. However, this document is directed towards instructors—the experts—with the *assumption* that experts study and understand their own learning processes and the *hope* that they will articulate and share this understanding with their colleagues and their students, thus enabling the learning of the discipline to become more intentional—a global activity within the discipline.

The principles upon which these strategies are based may provide one way in which learning can be understood and applied. Some principles are intended to foster intentionality in a deliberate way. For example, “thinking aloud” provides a record of one’s thinking process that can be studied, to reveal the steps of the process, after doing discipline-specific thinking. This is useful, since we can’t attend to *how* we are thinking *while* we are thinking. A think-aloud provides a high-resolution record of the thinking process itself that is embedded in the content of the

exercise. When a learning challenge has been successfully addressed, then it is possible to articulate and share the strategy for others to apply to similar challenges.

One-on-one tutoring will provide a similar record of a student's learning processes. We refer to review of such material as "debriefing." When we debrief our learning or teaching processes, we see how we learn and teach—and occasionally we will discover new and effective strategies that we have applied unconsciously or as random trials or experiments. Once we have articulated such strategies, we are much more able and likely to apply them deliberately—and also modify, improve, and transfer them to new situations. In this way, our learning and teaching can bootstrap itself, by a process of natural selection, to new levels of effectiveness and generality.

Other strategies included here are intended to apply general principles of learning in broadly useful and exemplary ways. The emphasis is on the development of skills and the development of ways to strategically apply those skills. It is one thing to apply a strategy and another to apply it deliberately. Clearly, such deliberateness will be beneficial for learners at all levels, novice and expert alike. Those who are expert at deliberate learning can foster such deliberation in those who are less adept and self-aware.

We hope, with this publication, to offer you some useful strategies for fostering learning in your students in higher education. Further, we hope to arouse your interest in the learning process itself, as it is enacted in your discipline, by all levels of learners. Finally, we hope to provide some ways by which you can pursue this interest and generate useful findings that will contribute to the functioning of your discipline. In this way, we can work together to move forward your discipline-specific knowledge, individually and collectively.

We consider this to be an organic sort of document and hope that it will grow and change according to the needs of the users. It is available online at the link noted on the cover and at the bottom of this page; this link will take you to the Centre for Teaching and Learning at Malaspina University-College. We have posted this as both a PDF document and a WORD document, so that it can be added to or changed at any time, for personal use or for sharing with others.

**Learning Specialists Association of British Columbia (LSABC)
2007**

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<http://www.mala.ca/teaching/lisabc.asp>

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Aspect of Learning: Engaging with Students

Strategy: Setting the Stage

Establishing a positive, engaging, collaborative, student-centred learning environment

Underlying Principle

Learners are intrinsically motivated when they are interested in and challenged by the learning task and feel connected to the learning process. Post-secondary education, with large classes and diverse populations, can present barriers to the creation of environments that foster motivated engagement. However, it is possible, and can be intentionally planned and implemented.

How to Teach the Strategy

When planning your course:

- develop introduction activities that are friendly, non-threatening, and appropriate
- keep in mind that the learners are individuals, with prior knowledge and experience, who can offer significant insights and perspectives that you may not have considered
- create on-going opportunities for student interaction in pairs, small groups, and whole class
- assign projects that integrate choices, challenges, construction of meaning, and consequences (such as presentations or other ways to share what has been learned)
- allow sufficient time in each class for topic introduction, interaction, and review

How to Incorporate the Strategy into Coursework

On the first day of classes:

- introduce yourself as an individual as well as a teacher and a professional in the field
- facilitate introduction of students in a manner appropriate to the class size and set-up
- introduce the course as something that you find personally fascinating; acknowledge the students' prior knowledge, experience, and interest in the discipline
- go over the course outline, stressing the learning outcomes, in an interactive manner rather than simply reading it (also, see strategy for using course outlines)
- ask students to note your office hours and contact information and invite them to communicate with you on a regular basis. Suggest that they enter your email address in their address books and bookmark required websites or pages

Each class:

- open with a friendly, personal welcome and an opportunity for students to reflect on and briefly discuss the previous class, assigned readings, or other activities
- introduce the topic/s in a clear and interesting manner and elicit prior knowledge
- provide an opportunity, however brief, for students to interact and collaborate
- close with an opportunity for students to summarize content and reflect on meaning

When assigning activities, papers, projects, etc:

- stress that choice of topic should build on prior knowledge and advance new understanding
- create frameworks and criteria, but give choice and control to students to encourage exploration, reflection, creativity, and engagement

When marking assignments and exams:

- use students' names in your comments
- recognize strengths as well as weaknesses and give concrete feedback for improvement

Resources

Wang, S. & Han, S. (2001). Six C's of motivation. In M. Orey (Ed.), *Emerging perspectives on learning, teaching, and technology*. <http://projects.coe.uga.edu/epltt/>

Hanrahan, M. U. (1998). The effect of learning environment factors on students' motivation and learning. *International Journal of Science Education* 20(6):pp. 737-753.

Aspect of Learning: Engaging with Students

Strategy: Tutoring

Using one-on-one tutoring to gain insight into the experience of learning from the learner's point of view and to foster self-aware learning

Underlying Principle

Work within academic disciplines is an ongoing interplay between the known and the unknown, and the excitement occurs at the interface of inquiry. Inquiry is an experience shared by all, from novice to expert. Instruction may be augmented when the instructor gains insight into the learning processes and experiences of the inquiring novice. Experts often forget what it was like to experience the early challenges of learning. People often become experts simply by working very hard but not necessarily by paying close attention to their own learning processes. Therefore, they may be good at learning but are not able to articulate why or describe specific strategies that they have developed to help them learn. This does not have to be the case.

Learners who are aware of their learning processes will be able to become more deliberate and effective learners. Instruction might be improved by exposure to the difficulties experienced by students in their moment-to-moment engagement with learning tasks such as reading, problem solving, writing, remembering, or studying for tests. This strategy of tutoring a novice has the potential to foster self-aware learning in both the student and the instructor, as well as to alert the instructor to specific hurdles that students face.

How to Teach the Strategy

Clearly, no instructor will have the ability to tutor all students, or even all the students who would like to receive tutoring. One way to make the selection process fair would be to do it by lottery. Explain to the class that you will be able to provide weekly one-on-one tutoring for one or two students throughout the term. Explain the rationale for this:

- it will help you learn about the student experience of learning
- it will help you be more responsive to student difficulties in general
- it will help the student learn more effectively

How to Incorporate the Strategy into Coursework

In any educational event, the person who does the teaching learns the most. Therefore, a good tutor will arrange the session so that the student is the person who is doing most of the "tutoring" by way of explaining, solving problems, thinking, and so on. The point is for the student to do the learning, after all. This can be accomplished in a variety of ways:

- Ask the student to perform a task typical of those required by the course, such as interpreting an unfamiliar poem, solving a problem, working on a case study, reading a passage in a text, or memorizing factual material from notes or text.
- Instruct the student to "think aloud" through the process of learning, stating aloud every thought that is experienced during the process.
- Do not interrupt by providing an answer. The difficulties that the student experiences and the mistakes that he or she makes are far more instructive as far as the learning process is concerned than are the successes.
- Question student responses to provide insights into thinking strategies being used as well as misconceptions or assumptions.

Resource

Fitchburg State College. *Tutor guide book*.

<http://www.fsc.edu/tutoring/tutorguidebook/pointers.htm>

Aspect of Learning: Metacognition

Strategy: Levels of Learning

Using Bloom's Taxonomy to improve thinking and enhance learning

Underlying Principle

Although *Bloom's Taxonomy of the Cognitive Domain* was developed for educators to assess student learning, it is also an invaluable tool for students to use to assess their own learning and to intentionally move their thinking to a higher level. The cognitive domain involves knowledge and the development of skills, and the taxonomy orders these skills from the simplest to the most complex. Being a hierarchy, the assumption is that one level must be mastered before moving on to the next. The six levels are as follows: knowledge, comprehension, application, analysis, synthesis, and evaluation. For more details, see the website referenced below.

How to Teach the Strategy

This strategy includes exposing learners to the concept of learning at different levels:

- Prepare a handout, based on the one in the website below, but do not hand out until the end of the session so that the students are participating rather than reading.
- Ask "What is learning?" to elicit prior knowledge and write the definitions on the board.
- Draw a large six-step diagram on the board.
- Ask "What do you think is the lowest level of learning?" and listen to the responses.
- Put the word *knowledge* on the outside of the lowest step and elicit responses.
- Briefly describe the skills demonstrated at the knowledge level and give an example. It is helpful to use the same topic for all the examples, such as a well-known story or even Bloom's Taxonomy itself. (For example: Bloom's Taxonomy has six levels of learning.)
- Briefly discuss some of the cue words for the knowledge level and ask students to write a question or two using the cue words. (For example: Identify the third level of learning according to Bloom's Taxonomy.)
- Continue in the same manner for each of the levels of learning.
- Point out that the top three levels are considered to be "critical thinking."
- Give students the handout and ask them to read it and think about it for next class.

How to Incorporate the Strategy into Coursework

- At the start of the next class, ask students to write, from memory, the six levels of learning, in order, with at least three skills and three examples of cue words.
- During classes, stop periodically and ask students what level of learning is being explored and ask how they know.
- If using texts with question sections, ask students to identify the level of the questions.
- When discussing assignments, ask students to consider the level that is being solicited.
- When discussing upcoming exams, ask students to prepare different types of questions (short answer, multiple choice, true and false, matching, fill-in-the blanks, essay topics, etc.) at each level of the taxonomy. Students can hand in the questions for marks or share them in a study group.
- When reviewing exams, ask students to identify the level of the question.
- Suggest that essay topics be chosen to encourage critical thinking. (For example: *Metacognition and Intentionality: A Synthesis.*)

Resource

From Bloom, B. S. (1984). *Taxonomy of educational objectives*. Boston: Pearson Education. Adapted by permission of the publisher.

<http://www.coun.uvic.ca/learning/exams/blooms-taxonomy.html>

Aspect of Learning: Metacognition

Strategy: Using Course Outlines

Using course outlines to connect learning to expected outcomes

Underlying Principle

Instructors can encourage students to learn to become independent, self-regulated learners by scaffolding the learning process in early stages. Self-regulated learners:

- analyze and interpret tasks in terms of current understanding and beliefs
- set task-specific goals and select, adapt, and invent appropriate strategies
- monitor and evaluate their progress
- adjust strategies and approaches according to perception of progress
- use motivational strategies to keep on track

How to Teach the Strategy

An excellent scaffolding technique is to create course outlines that document essential aspects of the course and provide opportunities for students to interact with the information on the outline:

- course details (level, fit in discipline, prerequisites, topics, texts/readings, schedule)
- teaching and learning (presentation, philosophy, goals, outcomes, support, contact information)
- policies, expectations, responsibilities (student, instructor, institution)
- assessment (participation, assignments, quizzes, exams, other)

Rather than going over the course outline with the students on the first day of class, set up an activity in which students extract, discuss, and reorganize the information themselves. For example, if the course outline has all the above information in paragraph form with no headings, the students can be directed to read it, discuss it in pairs, and rewrite it in a different format (chart, headings, point form) on a single page to hand in at the next class.

How to Incorporate the Strategy into Coursework

- Suggest to students that they consider the outline to be a very important document that they access and use regularly. Ask them how they might use it. Here are some ideas:
 - staple a copy of the restructured (as per above) outline to the original
 - write dates (readings, assignments due, exams) in agenda book
 - enter instructor contact information in email address book
 - browse and bookmark online resources right away
 - create a course folder on the computer with subfolders for assignments, readings, research, learning goals, and outcomes
- Reinforce its importance by asking them to keep it in their binders and bring it to each class:
 - refer to the big picture of the course when introducing new ideas; make the relationship explicit
 - plan regular, brief, small-group discussions on how readings, lectures, assignments, etc., support learning outcomes
 - develop a form that students attach to all assignments on which they summarize what they learned by doing the assignment and how that relates to the expected learning outcomes
 - track the course according to the outline: What went before? What comes next?
 - track student progress according to goals and outcomes; ask students to make appointments to discuss progress.

Resource

Course Outlines: <http://www.mala.ca/teaching/resources.asp#coursedesign>

Aspect of Learning: Metacognition

Strategy: Self Assessment

Developing and applying assessment criteria that support learning outcomes

Underlying Principle

The learning process can be enhanced when students construct their own meaning from information and experience by being active, reflective, strategic, intentional, self-directed, and self-regulated. Instructors can encourage learner construction of meaning by providing specific opportunities to do so.

Usually, instructors include marking grids, outlines, or descriptions that set out the assessment criteria and values. Consider, instead, the value of having the students themselves develop the criteria according to the expected learning outcomes.

How to Teach the Strategy

Spend some time discussing the relationship between learning outcomes and assessment. Explain that some assessment criteria for each assignment will be included in a handout, but that students will also be expected to develop their own criteria and do a self evaluation.

The course outline should include

- specific learning outcomes, relating to cognition, skills, and abilities
- assessment methods, such as participation expectations, quizzes, exams, assignments, and self evaluation
- assessment values, for each method, expressed as percentage of total mark

How to Incorporate the Strategy into Coursework

On the first day of classes:

- Have students work in pairs to discuss the learning outcomes stated in the course outline:
 - What do the learning outcomes really mean, in the context of the course?
 - What might some examples be?
 - What can the students do to ensure that they are progressing towards success?
- Have students work in small groups (combining two pairs, perhaps) to discuss *possible* assessment criteria for each of the assessment methods, in terms of the learning outcomes. Ask them to make and hand in discussion notes.

When an assignment is first being discussed in class:

- Provide a handout that describes the assignment, its purpose, and your expectations.
- Include some broad, generic criteria appropriate to the assignment. For example:
 - answering the question
 - presenting accurate information
 - demonstrating knowledge and understanding of the subject
 - demonstrating ability to construct a sound argument based on evidence
 - demonstrating good standard of academic writing
- Explain that the assignment includes the development of more specific criteria, based on the learning outcomes, for “very good” and “outstanding” performance for each of the generic criteria. This elaborated criteria grid will be handed in for feedback, altered if necessary, and handed in again with the assignment, along with a self-evaluation notation.

Resources

Learning Outcomes: http://www.arts.ac.uk/docs/cltad_learningoutcomes.pdf

Assessment: <http://cdlt.ucsm.ac.uk/Information/assessment.html>

Aspect of Learning: Metacognition

Strategy: Fostering Inquiry

Learning how to ask and answer questions appropriately within the context of the course

Underlying Principle

We normally think of exam questions as prompts for students to show us what they know. However, questioning performs a more serious function in university disciplines. A discipline could be seen as a structure that provides ways to ask and answer questions about a particular topic. Once students learn how to ask important questions—and answer them—in the context of a discipline, they are well on their way to learning how to actually think within the conceptual and epistemological framework of that discipline. Therefore, any course may be seen as an opportunity to teach students the important skill of asking questions.

How to Teach the Strategy

- Explain both the superficial and deeper value of learning how to question within the context of the course content.
- Explain that when students can learn to ask their own questions, they will come to understand the nature and value of inquiry that will improve both their understanding and their grades.
- Explain that students can learn to ask questions by practicing asking questions, discussing questions, and seeing questions that others ask.
- Explain that the questions on exams can be seen as providing an insight into the nature of the discipline itself.

How to Incorporate the Strategy into Coursework

- Establish an atmosphere that is conversational and non-judgemental, where all questions are good questions.
- Start by asking questions that are readily answerable and set the stage for further exploration.
- Model active listening techniques when listening to student responses. Summarize the responses and ask for clarification and confirmation.
- Treat questioning in a very deliberate way in class, modelling questioning during “think-aloud” demonstrations, for example, or eliciting possible questions that prompted the development of research in the discipline. Important figures in the discipline can be introduced through the questions that guided the development of their contributions.
- Provide various assignments that require students to develop questions that might appear on an exam, or that could guide the writing of a term paper, or even a dissertation.
- Ask students to explain their questions and argue their value, as well as provide their answers or possible methodologies by which their answers might be determined.
- Assign group work for developing possible exam questions as a basis for studying. Ask students to discuss, analyze, and critique their questions for relevance, clarity, level of learning, and so on. Questions could be posted for general use. Instructors could comment on sample questions, explaining their virtues in the context of the course.
- Instructors should regularly invite a shift to “intentionality” by asking students why they are being required to do certain tasks, or what the instructor is intending to achieve educationally.

Resources

Inquiry-based Research: <http://www.learner.org/jnorth/tm/KWL.html>

Inquiry Resources: <http://www.mcmaster.ca/cll/inquiry/inquiry.resources.htm>

Aspect of Learning: Metacognition

Strategy: Thinking Aloud

Recording the process of working on a discipline-specific activity

Underlying Principle

Each discipline and each person requires specific learning processes that are typically developed through a non-deliberate and non-systematic process of trial and error as learning progresses. By contrast, this “think-aloud” strategy brings greater intentionality to this extremely complex and challenging learning process. When learners are able to see clearly the processes by which they engage in learning—either successfully or not—they can make decisions more deliberately about how they will engage in learning in the future.

How to Teach the Strategy:

- Explain the importance of paying attention to the processes of learning: different learning processes are effective for different purposes, and if students can determine precisely which processes are being used, and which processes are required to perform the task successfully, then they can decide more effectively which processes to apply.
- Explain that it is possible to speak aloud every thought that goes through our minds while working on a task, such as solving a problem, summarizing a passage one has read, critiquing a work of literature, creating a painting, and so on. By recording the ongoing thought process, and then listening to the recording, we can get a very finely-grained picture of the thinking process. The recording can also be transcribed for more in-depth analysis.
- Explain that it is not possible to think about a topic and also think about thinking itself at the same time. This think-aloud technique enables a person to think about his or her own thinking without having to rely on memory.
- Instructors can model the activity by providing examples of their own engagement with an unfamiliar problem by speaking aloud everything they think in response to the task, as well as writing on a blackboard or overhead.
- Debriefing is an important aspect of any demonstration, since this provides the instructor with the opportunity to point out the use of important strategies, application of prior knowledge, typical relationships among various discipline-specific concepts, problems that may have occurred, and so on.

How to Incorporate the Strategy into Coursework

- As noted above, the instructor may model the process of thinking aloud, and analyze the results, so that students will learn how to apply this technique.
- Students can be assigned tasks, individually, to be used as a basis for thinking aloud, and the think aloud recording, transcript, or analysis may be required for submission.
- Students may be assigned this strategy as a paired or group activity, in which they take turns listening to one another thinking aloud as they solve problems or perform other tasks, so they can see the strategies others use in their thinking and compare it to their own processes. They may be required to summarize their findings, and apply strategies that they have not used before.

Resources

Perkins, D. (1981) *The mind's best work*. Cambridge, Mass.: Harvard University Press.

van Someren, M. W., Barnard, Y. F. , & Sandberg, J. (1994). *The think aloud method: A practical guide to modelling cognitive processes*. <http://staff.science.uva.nl/~maarten/Think-aloud-method.pdf>

Aspect of Learning: Metacognition

Strategy: Developing Checklists

Developing and using checklists to address specific learning difficulties

Underlying Principle

Students have individual and idiosyncratic difficulties that they can learn to identify and correct. Checklists provide efficient tools for students to identify, label, recognize, deliberately notice, and correct such difficulties. Instructors can provide help for students who would like to use checklists to improve their learning. By using checklists, students can gain greater control over what they learn and also over how they learn it.

How to Teach the Strategy

- Explain the advantages of using a checklist as a tool for making sure that personal difficulties are not overlooked, but are identified and corrected before material is handed in for marking.
- Explain that in many cases, marks are lost because of numerous occurrences of a small number of “silly mistakes” that can be identified and corrected relatively easily.
- Provide examples of uses of checklists:
 - To identify conditions under which problems may occur. For example, a student may forget to change the sign of a number or variable when moving it from one side of an equation to the other; or a student may commit errors of parallel grammatical construction (tense, number, etc.) in complex sentences with numerous subordinate clauses.
 - To provide specific “cues” that may draw attention to errors. For example, a student who habitually ends sentences with prepositions may check through an essay for the words that occur before periods. A list of common prepositions could also be included in the checklist.
 - To provide techniques for correcting the various problems. For example, gendered language may be corrected by use of plurals.
- Suggest that a checklist can be used not only as an editing tool, but also as a learning tool. Students should be helped to decide whether to use a checklist while working or while editing. For example, students should check the sign of numbers and variables *during* the process of solving an algebraic problem, but they should *not* be checking for prepositions while writing as that would impede the flow of ideas. However, diligent use of a checklist during editing will sensitize students to specific difficulties so that they may come to be corrected automatically during the writing rather than later.
- Suggest that each checklist item be applied separately. For example, it is easier to look for prepositions throughout an essay, and then look for passive voice, rather than to look for both at once.

How to Incorporate the Strategy into Coursework

- Assign checklists based on known areas of difficulty.
- Assign checklists based on feedback on marked assignments. Ask students to give evidence that the checklists have been applied in subsequent assignments. For example, they may be required to attach the checklist to the assignment.

Resources

Sample: http://www.unbc.ca/assets/lsc/handouts/editing_checklist_for_common_mistakes.pdf

Checklist guidelines: <http://www.wmich.edu/evalctr/checklists/guidelines.htm>

Aspect of Learning: Intentionality

Strategy: Learning on Purpose

Developing and expressing the intention to learn on purpose

Underlying Principle

When students articulate their reasons for learning and their intentions to learn, learning is specified as the goal rather than an outcome. There are five attributes of intentional learning: questioning, organizing, connecting, reflecting, and adapting. Providing students with opportunities to practice these attributes will contribute to the development of metacognitive processes and independence as learners.

How to Teach the Strategy

- Be explicit about the importance of intention and provide opportunities for reflection.
- Incorporate all five attributes:
 - Questioning: Name and model Socratic questioning strategies in class discussion and in responses to written assignments
 - Organizing: Demonstrate and provide examples of different ways of structuring, organizing, and thinking about new information (tables, concept maps, diagrams, etc.)
 - Connecting: Guide students to identify what is already known and integrate new information and understanding with that knowledge. Also, connecting academic learning to life and career experiences helps to solidify learning.
 - Reflecting: Create ongoing opportunities to reflect on learning activities, processes, achievements, and difficulties.
 - Adapting: Stress the importance of application of learning to practice. Encourage students to understand the importance of adaptation and decision making.

How to Incorporate the Strategy into Coursework

Start of the term:

- Clarify in the course outline your intention to guide students to develop a conscious commitment to learning. Discuss what it means and how you will do it.
- Connect the concept to a practical application in your discipline and to long-term learning.

Early in the term:

- Briefly revisit intentionality and set up discussions in small groups to come up with a specific number of strategies to encourage it. Share in plenary.
- Provide information in different organizational formats (tables, concept maps, etc.).

Mid-term:

- Provide opportunities (small group, short written assignment, in-class free writing) for students to reflect on their use of the strategies identified earlier in the term.
- Have students provide evidence of learning in several different organizational formats, such as notes from a specific class, a table summarizing information, or a chapter summary.

Assignments:

- Ask students to develop a set of Socratic questions that they can apply to a specific assignment. Direct them to identify the questions on a separate page, as headings, in margin notes, as footnotes, or in some other manner.
- Have students keep a learning journal based on the articulation of personal and course learning goals, application of learning strategies, and reflection of learning processes and outcomes.

Resource

Smith and Associates, 1990. American Accounting Association. *A Process for Learning to Learn in the Accounting Curriculum*. http://aaahq.org/AECC/intent/0_2.htm

Aspect of Learning: Intentionality

Strategy: Structuring of Information

Re-organizing information and ideas into a framework for learning

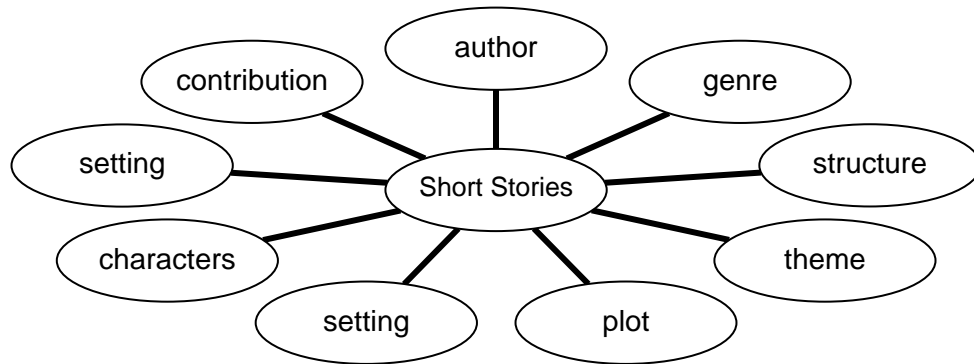
Underlying Principle

Learners who consciously think about information and structure it into a framework instead of trying to memorize it are more likely to understand it, store it in long-term memory, and retrieve it efficiently. Structuring can take different forms, such as concept maps and hierarchies, but it is the engagement with the relationship of ideas that promotes meaningful learning. This strategy provides modelling and practice.

How to Teach the Strategy

Frameworks are based on predictable patterns that may seem obvious to seasoned learners but are not so obvious to unsophisticated ones.

- Use for courses based on argument or systems, such as literature, psychology, biology
- Explain that the course is based on the exploration of relationship of elements to the main idea and the arguments to the theme
- Present and handout a template of a graphic representation of the course and ask students to be able to access this easily (perhaps put it in a page protector)
 - briefly name and explain different labels/elements
 - stress advantage of information being graphically presented on one page
 - explore the main idea in terms of the elements in a systematic way



How to Incorporate the Strategy into Coursework

- Refer to template when teaching a new element/argument or assigning writing tasks.
- Have students expand the template as they learn different aspects of elements.
- In-class idea: quickly reproduce the template from memory.
- Assignment idea: have students make notes from the text or a lecture in this format, based on headings and subheadings, with points and ideas only—no sentences.
- Assignment idea: ask students to provide their essay drafts in framework format, thus focusing on the ideas rather than on the wording.
- Exam idea: create a structure to explore any one of the elements. (For example: identify and elaborate on six literary devices used in the short story)

Resource

Fleet, J., Goodchild, F., & Zajchowski, R. (1994). *Learning for Success: Skills and Strategies for Canadian Students*. Toronto: Harcourt Brace & Co.

Aspect of Learning: Intentionality

Strategy: Practicing Remembering

Practicing remembering to enhance understanding and improve test performance

Underlying Principle

Students often rely heavily on reviewing (or looking at) information rather than recalling it from memory. Reviewing is really the recognition of information and ideas and does not necessarily include the understanding of them. Recalling or remembering is a skill and can be practiced. Sometimes, the first time that a student attempts to recall something from memory is on a test, which is certainly not the best time to be practicing. Providing regular opportunities to practice remembering will help students

- realize the difference between review and recall
- develop strategies for remembering
- listen and read with the intention to remember

How to Teach the Strategy

- Point out the difference between reviewing and remembering.
- Explain that when we look at something that we recognize, we can be fooled into thinking that we know it—when in fact, we may not be able to recall it, explain it, or apply it with any depth of understanding.
- Teach several different methods of getting information on a page quickly and create opportunities to practice using each of them:
 - concept map: makes connections more obvious
 - point form: provides practice thinking in ideas not sentences
 - numbered list: pre-determines the number of items/ideas to be recalled
 - one-minute paper: write quickly without stopping for one minute
- After students write down what they remember, ask them to refer to it later, comparing it to their notes or readings so that they can identify gaps and concentrate on what they don't know rather than what they do know.

How to Incorporate the Strategy into Coursework

At the beginning of each class, provide a few minutes for students to write down what they remember about

- the last class
- their reading assignment
- a specific topic from previous classes or readings

During the class, stop and provide a few minutes for students to write down what they remember about

- the main ideas/concepts just discussed
- details that pertain to a specific topic discussed in class

At the end of the class, provide a few minutes for students to write down what they remember about

- the point of the lecture/discussion/lab
- the development of ideas
- a specific aspect of the class

Resources

Remembering: <http://www.coun.uvic.ca/learn/remember.html>

Hopper, C. (2003). *Practicing College Learning Strategies*, 3rd Ed. Geneva, IL: Houghton Mifflin. <http://www.mtsu.edu/~studskl/mem.html>

Aspect of Learning: Intentionality

Strategy: Paraphrasing

Paraphrasing to teach discipline-specific vocabulary

Underlying Principle

Experts (teachers) tend to quickly revert to their discipline-specific vocabulary. Novices (learners), however, must access their “new” knowledge of the vocabulary while also trying to listen to and understand the instruction. Teachers not only need to model the use of discipline-specific vocabulary, but they also need to provide plenty of scaffolding and encouragement to students who are learning to recognize it, recall it, and use it appropriately. Students should be discouraged from trying to memorize textbook definitions and should be encouraged to focus on understanding the meaning of the terms.

How to Teach the Strategy

- Explain the importance of understanding and using the language of the discipline.
- Also explain that, whenever possible, you will be paraphrasing in “plain language” until a term becomes familiar.
- Provide examples of ways to learn unfamiliar terms
 - Flash cards: Write the word on one side and on the other side write the definition *in own words*, a brief example of use, and other forms of the word. Colour code flash cards according to type of word. Separate piles into categories of *know well*, *sort of know*, *don’t know*. Put time into the last two, only reviewing the *know-well* pile once in a while.
 - Word parts: Break the words into parts and look for roots, prefixes, and suffixes that provide clues to the meaning of the word. Make associations with known terms or words.
 - Categorizing and classifying: Since items are categorized according to characteristics, it makes more sense to learn the characteristics of the category than to try to memorize the characteristic of each item individually.

How to Incorporate the Strategy into Coursework

- Model the use of paraphrasing and of discipline-specific language
 - During class, give students a chance to explain to the group (or to each other in pairs) what the class is about. Allow them to use whatever language is necessary to communicate the meaning.
 - Re-phrase what they say, using discipline-specific language.
 - Introduce a *Word of the Day* activity: introduce word/paraphrase/use repeatedly.
- Quiz idea: Use the plain-language definition, rather than the textbook definition, and ask students to supply the word.
- In-class idea: For a few minutes at the beginning of each class, ask students to explain to each other the meaning of selected vocabulary words (put on board).
- Assignment idea: To ensure comprehension of the terms, ask students to hand in a list of vocabulary definitions written in their own words.

Resources

Morgan, H., & Cody, M. *Models for interactive learning modules*. Division of Distance and Distributed Learning, Georgia State University.

<http://www.webct.com/service/ViewContent?contentID=2338975>

Teaching Today. *A test-taker’s vocabulary for social studies*.

<http://teachingtoday.glencoe.com/howtoarticles/a-test-takers-vocabulary-for-social-studies>

Aspect of Learning: Reading

Strategy: Reading to Learn

Identifying main ideas in course readings

Underlying Principle

Most people are such fluent readers that most of the time they read “unconsciously,” simply “absorbing” the content passively, unaware of the reading process itself, and without critical engagement with the text. Academic reading is—and must be—different: it is inherently intentional, deliberate, strategic, engaged, and critical. Instructors can help students realize this, and can help them begin to do it, rather than trusting to their inherent interest in the material.

How to Teach the Strategy

- Explain about writing in your discipline and talk about how recognizing the idea structure can help with understanding the main idea. Show how you can recognize indicators of this conceptual organization in the passage:
 - how information is usually structured (For example: classification, narrative, process, cause/effect, examples, compare/contrast)
 - what construes evidence, hypothesis, observation, etc.
 - deductive/inductive thinking and argument
- Model active reading by displaying one or two sample paragraphs from the text or relevant reading material (preferably a passage you have not seen before) on an overhead. Demonstrate your reading process by “thinking aloud” through the passage, voicing the questions and active thinking you do as you read the text. Talk through the reading process stating aloud what you are thinking as you read, engaging with the passage and attempting to make sense of it: “Oh, I see this first sentence refers to causes—I guess that’s what I need to watch for and learn from this.” Highlight major points. Restate the author’s main idea in your own words in a single sentence.
- Explain what you want the students to get out of the reading.
- Explicitly link what you talk about to the objectives stated in the text
- Encourage students to pay close attention to the chapter title, the headings, and the relationship between them.
- Point out that paragraphs have topic sentences that contain the main idea of the paragraph
- Demonstrate effective highlighting
 - use three colours: one for headings, one for main idea in topic sentence, one for supporting details.
 - suggest that they commit to a maximum of three consecutive words

How to Incorporate the Strategy into Coursework

- Assign student groups to construct questions, based on the reading that could be on an exam or chapter quiz. Require them to explain the relevance of the questions with relation to the content, the structuring of the information, and the function of the issue in light of the discipline.
- Ask students to create a graphic organizer (chart, process diagram, concept map, etc.) on one page, which includes key ideas for the chapter; show an example.
- Assign students to submit a passage from the text with relevant questions and responses that would be typical of an “active reading” process.
- Encourage students to “think aloud” in pairs as they read a paragraph or two, to “get a feel” for this activity.

Resource

<http://www.coun.uvic.ca/learning/reading-skills/comprehension.html>

Aspect of Learning: Reading

Strategy: Using Textbooks

Becoming familiar with the organization, features, and use of textbooks

Underlying Principle

The academic textbook has evolved as a very sophisticated means of containing, organizing, and presenting information. Often, it incorporates activities that prompt student interaction with the content to encourage effective learning. Textbooks are designed to be used individually by students. Furthermore, textbooks often assume that students will be familiar with discipline-specific presentations of complex information. To use textbooks effectively, therefore, all students must develop sophisticated reading strategies that go beyond the relatively simple accumulation of knowledge. They may be able to pick up these strategies through wasteful trial and error, but instructors can help them learn how to use texts deliberately by informing them of the various features of the texts, and of ways to use those features efficiently and effectively.

How to Teach the Strategy

- Explain to students that textbooks are not ordinary reading material and should not be read as if they are. They should be used as resources. This means that
 - students should not read them “linearly,” word for word, from start to end.
 - students should not expect themselves to retain large and complex amounts of information on one reading.
 - students should learn the organizational pattern of each text and how to find the information they need quickly.
 - students should become familiar with the various special features of the text and learn how to use those features.
- Explain to students the various features of the text for the course. Justify the choice of that text on the basis of those features, as well as the author’s expertise, related Internet resources provided by the text publisher, currency of information, and the perspective that the text takes on the content.
- Use an overhead projector to show students the various useful features of the text.
- Explain that the organizational pattern and various resources of the text actually mirror the thinking processes and intellectual content of the discipline. Give examples.
- Discuss ways of interacting with the text, such as writing comments and questions in the margin, highlighting, and using tabs or sticky notes to identify important features. Such interaction considerably augments learning.

How to Incorporate the Strategy into Coursework

- Refer to the text during lectures.
- Give short exercises on using various organizational features of the text (glossary, summaries, indexes, study questions, quizzes, tables of contents, chapter overviews, lists of formulae, schematic diagrams, flowcharts, tables, graphs, charts, etc.)
- Demonstrate the ways that you would use the features and resources provided by the text, using an overhead or data projector with slides of those features.
- If appropriate, assign group work requiring students to use the text.
- Test explicitly for course content from text features such as keyword lists and diagrams.
- Tell students when they need the text for class and when they can leave it at home.

Resource

<http://www.coun.uvic.ca/learning/reading-skills/>

Aspect of Learning: Writing

Strategy: Writing to Learn

Using the writing process and writing assignments to foster learning

Underlying Principle

Students tend to find writing difficult. In fact, it is probably the most difficult task in higher education, since it is inherently very complex and multifaceted, and it requires the highest level of abstract thinking, as well as the coordination of all the lower levels of thinking. A good paper will present an integrated understanding or formulation that is original, insightful, and arguably more comprehensive than what has been produced before.

In keeping with the difficulty inherent in writing is its educational potential; students probably learn more from their writing assignments than they learn from anything else. They learn not only about the content and meaning of the paper topic, but they also learn about how to learn and formulate meaningful statements about academically relevant topics. In this way, paper writing can be seen as fostering educational intentionality in students. One of the problems with writing is that the end product—the submitted assignment—looks nothing like the process by which it was generated. The process is exploratory, and therefore somewhat messy and chaotic; the product, on the other hand, is well-organized and presents a clear position or argument. The process is the most important part, but the product receives the most attention, since it is the product that is graded. A good product will not come of a poor process, however, and instructors can help students by explicitly discussing the essay writing process.

How to Teach the Strategy

- Explain that the primary purpose of writing assignments is to provide students with the opportunity to do what academics themselves do, albeit at a simpler level: to study the topics relevant to the discipline; to address problems, such as conflicting explanations and gaps of knowledge, within the discipline; and to clarify those difficulties and attempt to address them in ways acceptable within the framework of the discipline.
- Explain that writing is comprised of a number of stages, and that the early stages are indeterminate and often confused. Students may feel frustrated because they don't know what to say, but in fact, this is a necessary part of the process; they will discover what to say through study of the topic.
- Explain that the best way to figure out what to write is to write a lot *before* you know what to write, rather than after. This should be exploratory rather than expository writing and should contain questions, unanswered hypotheses, implications of various possible positions, and so on. Explain that the early parts of writing are non-linear and messy.

How to Incorporate the Strategy into Coursework

- Divide the assignment in parts according to the process, enabling students to familiarize themselves with the topic and generate questions that might produce acceptable essay theses. Expect to coach many students through this unfamiliar and awkward process.
- Encourage students to discuss their ideas with one another by “teaching” each other what they have learned and how they have learned it.
- Require students to submit their tentative areas of interest and questions. Provide feedback in terms of acceptability for the discipline, in general, and the course objectives, in particular. Focus particularly on relevance, argument, and methodology.
- Provide examples of writing for exploratory purposes.

Resource

Elbow, P. (1981). *Writing with power: Techniques for mastering the writing process*. New York: Oxford University Press.

Aspect of Learning: Writing

Strategy: Peer Review

Using peer review of writing assignments to improve writing and editing skills

Underlying Principle

It is helpful for students to give input and receive feedback on writing assignments in order to become aware of strengths, weaknesses, alternate perspectives, and mindfulness. Peer review is an introspective process as well as a collaborative one. When students are reading and responding to each other's interpretations of the same assignment, they are also reflecting on their own work. However, the peer review process can only be beneficial to students if they know how to do it effectively and feel confident that they will not hurt someone else's feelings or be subjected to harsh criticism themselves. Instruction, guidelines, and criteria are necessary to scaffold the learning process for students as they undertake to assume the role of critic as well as author.

How to Teach the Strategy

- Understand: Many students will not have the expected level of academic writing skills.
- Discuss: Elicit prior knowledge and student input. What do students think peer review is? What is the purpose? What previous experiences have they had with it? What do they think are the most important aspects? What do they think are the benefits? The drawbacks? At what stage of the assignment/writing process do they imagine it being most useful? How would the reviewing process differ from one stage to the next? How do they feel about other students reading their work? Should it be done as an in-class or as a take-home assignment? Should they receive marks for it?
- Model: Prepare a transparency of a one-page writing sample and model the process of identifying and responding to it. Talk about being non-judgemental, honest, specific, and analytical. Give specific examples of a mindful approach rather than a superficial, vague, or negative approach.
- Coach: Prepare and distribute a handout with a criteria grid and feedback forms (see first website below for examples). Have students hand in the forms to you as well as to the peer whose paper they are reviewing. Provide input and feedback on their reviews.

How to Incorporate the Strategy into Coursework

Students will benefit most from peer review if they are given the opportunity to develop it as a skill. This takes time and consistency. Building it into the course as part of all writing assignments is a better approach than assigning it only once.

- Frame the peer review process as a positive, productive, interpersonal activity that is an important part of the revision process. Review provides input and should lead to editorial change, either at the substantive level or the copy-editing level.
- The first assignment should be a very simple one, preferably an in-class activity so that you can monitor and support. This will allow the students to focus on the process of the review rather than the product. It will also help students who feel vulnerable or intimidated respond more positively to the experience.
- Plan for peer review to occur at different times in the writing process so that students can experience different levels of editorial input.
- Consider having the student pairs discuss their responses to the reviews.

Resources

Peer Reviews: <http://depts.washington.edu/pswrite/peerrev.html>

Tagg, J. (2000). *Thinking about peer review*. <http://daphne.palomar.edu/jtagg/thinkpeerrev.html>

Aspect of Learning: Exam Preparation

Strategy: On-going Learning Through Review

Studying deliberately for exams through the entire course, rather than cramming before the exam

Underlying Principle

Some students hold the mistaken belief that they should not waste their time by studying too soon because they will forget everything they learn with the passage of time. There are two reasons, at least, that students should be encouraged to actively study throughout the term:

1. There is too much to learn to leave it all to the end.
2. It takes time to consolidate learning and to learn how to apply newly learned content and skills.

It is true that forgetting is a problem that is exacerbated by the passage of time. However, if students are encouraged to pay attention to what they remember and forget, they will discover that memory can be ensured by regular review. Regular review will facilitate permanent learning, which will bear fruit on the final exam, as well as in subsequent courses. Students generally need some nudging to do this, though, as they get very busy with assigned work. Incorporating review into the coursework is a powerful teaching and learning strategy.

How to Teach the Strategy

- At the beginning of the course, explain to students the advantages of ongoing study and review, preferably immediately after each class, reading session, or other learning opportunity.
- Stress the importance of practicing remembering as well as reviewing. See “Practicing Remembering” strategy in the Intentionality section.
- Show models of good reviews, which might be in concept map, free-writing, or list format, and may include diagrams or other visual aids.
- Explain to students that they should experiment with review for learning on their own, by attempting to reproduce the lecture material from memory the next day, two days later, and a week later—with and without review—so that they can find out for themselves how much review they need to do in order to consolidate their learning over the longer term.
- Encourage students to discuss their strategies and observations about learning with one another and with you.

How to Incorporate the Strategy into Coursework

- Ask students to develop, use, and hand in a review checklist, based on the reading and lecture list on the course outline.
- For the first few lectures, provide students with five minutes at the end of each class to do a quick summary from memory of the lecture content. These can be handed in and returned, but should not be marked for content.
- For the next few lectures, tell the students to do the review on their own time. The review should not take more than ten minutes. Students should check their notes when they are finished to make sure they didn't miss anything important. Again, the summary can be submitted, but not marked.
- To encourage students to continue reviewing on their own, give frequent short quizzes, scheduled or unscheduled, that will be based on these reviews.

Resources

The Forgetting Curve. http://en.wikipedia.org/wiki/Forgetting_curve

<http://www.adm.uwaterloo.ca/infocs/study/curve.html>

Aspect of Learning: Exam Preparation

Strategy: Managing Time

Scheduling and pacing study time and activities

Underlying Principle

The more completely and accurately students can plan to study, the more likely it is that they will study successfully. Post-secondary institutions place most of the responsibility for planning and time management on the student, and since most students have had little practice in such activities, they may not be very good at them. Even one typical university course requires considerable planning. A course that lasts one term (say 14 weeks) and consists of three hours of lecture time per week will require students to work on their own for about 80 hours over the term, based on the guideline of two hours of study per one hour of lecture time. This assumes that the student is using relatively efficient study strategies, including active learning and review, paced study (vs. cramming), accurate assessment of course requirements, and so on. Although it is not the responsibility of the instructor to teach time management in the course, instructors can help students develop the metacognitive and intentional strategies required for them to successfully complete course requirements.

How to Teach the Strategy

This strategy takes a marks-based (as distinct from a “learning-based” approach) to time and task management, since if students do not put in the time, they will simply not learn.

- Explain to students that to do well in the course, they will have to spend about 80 hours (or whatever applies) outside of lecture time on reading, studying, and doing assignments. This means a bit less than an hour per percent (i.e. 80 hrs. to cover 100 per cent of the material) – useful in estimating how long to spend on assignments.
- Explain that the course syllabus contains vital information for time management: due dates and values of assignments, quizzes, exams, presentations, late papers, etc. This information can be transferred to a large, erasable, four-month calendar, available in stationery stores, or to an agenda book.
- Discuss procrastination. A good starting point is to ask if anyone in the class procrastinates and then ask why. Suggest counselling for those who think that it is a serious problem.
- For courses that have numerous small assignments or tests due throughout the term, students should be warned against the danger of “blowing off” a few percentage points here and there. A student who misses a 5 per cent quiz may forfeit a letter grade as a result.
- Find out what resources are available to students through Student Services. Remind students of these opportunities, including workshops and individual help. Many resources are also available on the Internet.

How to Incorporate the Strategy into Coursework

- Refer often to the course syllabus, reminding students of the various due dates and values of assignments and tests.
- Break down assignments into manageable chunks with due dates for each chunk.
- For courses that have heavily weighted assignments due at the end of term, in the form of term papers or final exams, stress the importance of keeping up and working ahead. A term paper due at the end of the course should be half completed halfway through the course. Interim due dates—for necessary components such as outlines, reading lists, and so on—should be provided.

Resources

<http://learningcommons.sfu.ca/studyskills/documents/TimeManagement.pdf>

<http://www.yorku.ca/cdc/lsp/tmonline/time.htm>

Aspect of Learning: Exam Preparation

Strategy: Preparing for Exams Through Practice

Regarding studying for an exam as an activity that should include practice as well as review

Underlying Principle

Most people would study for a swimming test by practicing swimming, and not by reading about swimming or “going over” notes on swimming. However, most students do not transfer this rather obvious technique to studying for exams at the post-secondary level. The more accurately students are able to practice the tasks they will be required to perform on the exam, the better they will perform on the actual exam.

How to Teach the Strategy

- Explain to students the common-sense notion that study should involve practice.
- Explain that the more accurately the practice represents the actual task (the test itself), the more effective it will be.
- Explain that there are many ways to refine the accuracy of studying practice, to ensure that one is actually practicing “under exam conditions”:
 - Time: If the test will require the student to write a 20-mark essay in 20 minutes, then he or she should practice writing 20-mark essays in 20 minutes.
 - Resources: Many tests require students to work completely from memory; however, some provide lists of formulae, tables of information, and so on—and some are open-book.
 - “Level of learning”: This is to do with Benjamin Bloom’s Taxonomy. Students can learn to assess questions on old exams according to whether they require reproduction of memorized material, application of formulae or other processes to novel situations, or critical analysis of new conceptual or previously discussed material.
 - Type of question: If the test will require essay responses, the student should practice writing essay responses; if it will be comprised of multiple-choice items, the student should practice answering that type of question.
 - Content: The student should learn to assess what is likely to be tested on the basis of the level of importance of the various aspects of the course content.
 - Style of question: Do typical questions require information to be reorganized or compared and contrasted or analyzed or exemplified? Show students how to discern patterns in questions and how to make up their own questions based on these patterns.

How to Incorporate the Strategy into Coursework

- Provide students with practice questions of all sorts.
- Practice without corrective feedback is of little use. Most instructors do not have time to provide such feedback for all the students they teach, so a more practical technique might be to provide models of good responses to questions, with explanations about the specific reasons they received the marks they did.
- Provide students with specific information about course requirements and criteria as far as knowledge and skills are concerned, to help them determine what and how to practice.

Resources

Bloom’s Taxonomy: <http://www.coun.uvic.ca/learning/exams/blooms-taxonomy.html>

Sample: <http://www.coun.uvic.ca/learning/exams/sociology-example.html>

Sample: http://www.ops.org/reading/blooms_taxonomy.html