The Learning Process Methodology (LPM) is a guide for learners who wish to improve their efficiency and depth of learning and for educators who wish to help learners achieve these goals. Implementing each of the steps in the LPM can add value to any learning activity. The LPM flexibly supports the construction of knowledge in any field and its elevation from basic information to applications. It also supports the creation of new knowledge. The steps in the methodology have validity across disciplines and are consistent with the tenets of major learning theories. Examples are provided to demonstrate use of the LPM at novice and at expert levels.

Universality of the LPM

Learning is a complex process involving multiple steps (Table 1) which are usefully modeled as a methodology. Learning also requires simpler processes which are identified in the Classification of Learning Skills (2.3.3). For fully developed knowledge in a specific topic or application, learners will need several other process methodologies to complement the LPM, such as those for information processing, reading, writing, and assessment. Although it is created from the constructivist perspective of Process Education, the LPM approach is consistent with virtually all models of learning (e.g., Grow, 2003; Lorsbach, 2003; NCREL [North Central Regional Educational Laboratory], 2003; Epsilon Learning Systems, 2003; Dufresne, Leonard, & Gerace, 2003).

Every learning theory or model includes elements or implications related to each step in the LPM. The authors of the sample of models cited above exemplify, argue, or describe why learning occurs best when the learner is motivated; is aware of his or her current personal level of knowledge; has set specific learning objectives and related performance criteria; has a plan for finding, remembering, and managing information; can transfer the learning to new situations and problems; and can create new knowledge through research if desired. The LPM provides additional value because it is a generalized model of the learning process and is a basis for evaluating the pros and cons of any specific model of learning because it integrates and is consistent with tenets of major learning theories.

Using the LPM to Elevate the Level of Knowledge

Because learning is a process that is characterized by the distinct steps in the LPM, it is possible to add value to learning activities in any discipline through its use. Bloom (2.2.1 Bloom’s Taxonomy—Expanding its Meaning) pioneered the concept of a hierarchy of knowledge levels that should guide curriculum design and learning facilitation (2.2.2 Elevating Knowledge from Level 1 to Level 3 and 2.2.3 Developing Working Expertise (Level 4 Knowledge)).

Halpern (2003) argues, consistent with Process Education principles, that the essential purpose of learning is to be able to transfer learning/knowledge to new situations and problems. She provides the following set of scientifically supported principles and propositions that support this position.

1. Long-term transfer requires a series of learning opportunities that involve varied “cues” for use of the learning, e.g., in different contexts.

2. Long-term transfer also requires that learning episodes be spaced over time, i.e., the learner must use “spaced practice.”

3. Varying cues and contexts make learning more challenging; this is essential for improving the probability that learning will transfer.

4. Using multiple kinds of models and representing knowledge in multiple ways enhances the construction of knowledge so that it will transfer.

5. Learner assumptions (e.g., that they are innately incapable of certain kinds of learning), experiences (e.g., of anxiety or pleasure with certain kinds of learning), and expectancies (e.g., that learning certain subjects is easy) must be assessed in order to help learners build effective models of knowledge that will transfer.

6. Performance assessment and evaluation must focus on the main learning objectives in order to avoid learner misperceptions and the forgetting of essential knowledge as a result of attending to the wrong knowledge for the purpose at hand (e.g., learning to pass a test rather than learning to perform in a real context).

7. In-depth knowledge is usually needed for effective transfer. The amount of information to be learned at Bloom’s Levels 1 and 2 must support the goal of transfer.

8. Learning strategies must be validated with empirical evidence that they actually produce desired outcomes in learner transfer of knowledge.
Table 1

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<tr>
<th>Description of LPM Steps</th>
<th>Learning Plan Criteria</th>
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| 1. **Why**: Motivation to learn depends upon the relevance of learning to personal, educational, career, and life goals. State why learning about this topic is important and how it is relevant to your interests, needs, or concerns. Think beyond immediate needs. | a. Reason is personally meaningful  
b. Reason indicates a practical benefit |
| 2. **Learning Objective**: State a knowledge or skill outcome or result that you intend to achieve. It should be personally meaningful, relevant, valuable, motivating, and supportive of your larger learning goals. | a. Outcome specified as a positive achievement  
b. Medium "scope" or range of learning described |
| 3. **Performance Criteria**: Indicate two or three general areas of performance, e.g., writing quality, and what standard you intend to meet in each area, e.g., Level 3 on a writing rubric, to demonstrate that the learning outcome has been met. These should be measurable, observable, fair, and challenging. | a. Indicates qualities or types of performance that will indicate achievement of the objective  
b. Describes how the learning outcome will be measured, e.g., by a rubric or exam  
c. Sets a standard that must be met for success, e.g., level, grade, number of items completed  
d. Method of documenting results is clear, e.g., in a Recorder Report or from an exam grade |
| 4. **Orientation**: Review the instructions, materials, and main focus of what is to be learned about the topic. Usually a subset of knowledge is needed but one must be aware of the whole topic area and how the knowledge is used. | a. Statement indicates the context, e.g., a course assignment or a research project  
b. Statement demonstrates awareness of the overall topic or area of knowledge, e.g., factoring problems in algebra or hormone systems in biology |
| 5. **Prerequisites**: Identify what prior learning or skills are necessary as background or foundation for new learning about this topic. Review this issue again after setting a specific learning objective. | a. Required entry or background knowledge is described briefly  
b. Personal limitations in background knowledge specified |
| 6. **Study Plan**: Identify resources to use, concepts to study, models and examples to apply, questions that must be answered, a study schedule, and what to assess about your learning process in Steps (a) through (f). | Record elements of your study plan in the cells below as specified in Steps (a) through (f) |
| a. **Information**: Follow the Information Processing Methodology (IPM) to identify a list of relevant resources, e.g., readings, library items, notes, Internet. | a. List of useful resources compiled  
b. List validated by reviewing the IPM steps |
| b. **Vocabulary**: Identify essential concepts that must be understood and remembered. Use analysis techniques, e.g., concept mapping, and memory techniques, e.g., chunking, to deeply learn concepts. | a. List of concepts collected from all relevant information resources, e.g., text, notes, articles  
b. Categorization or organization techniques used before memorizing or using terms  
c. Effective memorization technique chosen |
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| c. **Models and Examples**: Identify simpler models/examples to study first, such as easy or worked-out problems. Then plan more complex or varied ones. | a. Collect and rank-order models/examples from easy to complex  
  b. Time management plan (Step 6e) includes spaced practice of problems in order of difficulty |
| d. **Critical Thinking Questions**: State the most important questions that relate background knowledge to the learning objective. Questions should be open-ended, logical, and challenging. | a. Questions are open-ended  
  b. Questions raise important issues  
  c. Questions suggest connections between the learning objective and background or prerequisite knowledge |
| e. **Time Management**: Schedule enough time, and space the time over a number of days to benefit from “spaced practice.” Allot time for each step in your plan. Make use of brief time periods to review. | a. Include enough time to realistically complete all learning steps  
  b. Include spaced practice spread over days or weeks  
  c. Calendar record is not too detailed or general |
| f. **SII (Strength, Improvement, Insight)**: Use to assess your performance in terms of your study plan steps and in terms of the performance criteria for your learning objective. | a. Assessments focus on processes in the study plan used to achieve the learning objective  
| 7. **Transfer/Application**: To enhance your learning, change the context/situation to demonstrate flexibility in applying knowledge related to the learning objective. This step may require a new learning objective and related plans. | a. State a related learning objective for a new context or situation  
  b. SII assessments indicate generalization of the original learning to the new context or situation |
| 8. **Problem Solving**: To enhance application of knowledge related to the learning objective, challenge yourself to solve more complex types of problems that are closer to those worked on by experts in the field. | a. Document use of knowledge to analyze and solve a problem in an “unstructured” context  
  b. Document awareness of perspective and skills used by experts in the problem type |
| 9. **Research**: Increase the creative aspects of your learning by designing new ways to investigate knowledge or applications related to the topic. Expand your range of artistic expression or interpretation. | a. Design a study that investigated a challenging question related to the learning or problem area  
  b. Share results and interpretation to an appropriate audience |
| 10. **Self-Assessment of Growth**: Document improvements in “knowing you know” that will change your future “learning style.” Steps 7, 8, & 9 involve challenges that demonstrate growth. | a. Use appropriate rubric(s) related to growth in learning skills  
  b. Identify new ways to challenge still further growth in learning skills and metacognition |

By facilitating the systematic use of the LPM, educators can help learners at any level to elevate their learning. The initial steps in the methodology engage learners and educators in considering the rationale for specific learning objectives, in assessing readiness to learn, in planning effective study methods, and eventually in learning to transfer and problem solve with the new knowledge. Initially users of the LPM struggle to understand how to respond to the requirements of each step, but over time the purpose and potential become more apparent. The “Rubric for Internalization of Methodologies” from 2.3.7 Learning Processes through the Use of Methodologies provides a guide for expected levels of progress in using the LPM. New users of a methodology typically move from a step-by-step (Level 1) or outcome-oriented (Level 2) approach to a task before achieving a true level of comfort at Level 3 (“explorer”). Meta-cognitive awareness must be developed by exposing of learners to increasingly challenging learning tasks that they achieve with decreasing amounts of guidance. Extensive assessment (4.1.1 Overview of Assessment and 4.1.4 Assessment Methodology) is essential for progress.
Applying the Learning Process Methodology

Example 1: A Novice Learner’s Use of the LPM

Students in an introduction to psychology course are engaged in an activity designed to facilitate learning about Piaget and Vygotsky’s theories of development. The LPM was introduced in the previous class session as a framework to use to guide their learning process. In that “guided tour” of the LPM, the students readily found that these theories of development are important because they could easily imagine themselves as future—or present—parents. The stated objective is for them to provide a model that they can learn from for future independent work. They are to “Identify three insights that Piaget and/or Vygotsky propose in their theories about the developmental basis for ‘internalization’ of learning styles.” The orientation process is assisted by reviewing the Critical Thinking Questions in the activity. This review helps the students realize that internalization is a basic feature of all development and that their own learning style is a good example. There are no academic prerequisites, but students find that once they move into teams and address the objective, it is important to have read the assignments. The performance criterion is to identify three insights about developmental internalization that are related to learning style. The steps in the Study Plan section of the LPM are reviewed so the students recognize that various components and strategies are part of effective studying. At this point the students are ready to do the work to prepare for the cooperative teamwork on the objective during the next class. Assessment of their insights helps them realize the quality of their insights, and provides the instructor with an opportunity to discuss potential ways to transfer and problem solve with the knowledge attained.

Example 2: An Expert Learner’s Use of the LPM

A curriculum designer wishes to produce an integrated set of learning activities for an introductory course in psychology. It is clear from previous knowledge and experience that courses are much more effective if the knowledge to be learned is properly analyzed to identify a realistic set of concepts, processes, and tools that are related to the context and the “way of being” of the learners. Curriculum design steps are an essential resource that must be well-internalized; the educator must also have at least Level 3 (application) and preferably Level 4 (working knowledge) of the topic at hand (2.2.1 Bloom’s Taxonomy—Expanding its Meaning). For the expert, setting a clear objective with challenging performance criteria takes special attention and care. The critical thinking questions and models in the Study Plan section are also significant because of the need to identify assumptions, discover inconsistencies, and to articulate the model one is using. The transfer and problem-solving steps are essential as indicators of the level of expertise and ongoing assessment of growth in the processes of curriculum design. These are extremely important because of their career and employment implications.

Concluding Thoughts

The LPM supports educational process from both the learner and the educator perspectives. Using the LPM, learners increase their metacognitive awareness; as a result, they can self-assess and expand the learning skills and strategies that they use. Educators “leverage” their influence through effective curriculum design in combination with thoughtful planning and facilitation. They raise the level of challenge so that learners become more active, independent, and self-directed. The examples illustrate how to facilitate the use of the LPM with novices and show how it can serve as a guide for an expert. Novices are unaware of the process of knowledge construction that should be at the heart of their learning efforts. Experts have internalized the LPM so well that all the steps occur without need for much direct attention once the objective has been established.

References


