

## **Component for Module 370**

### **The Continuum of Learning**

#### **PURPOSE**

All curriculum-based programs and services provide a sequence of experiences that include multiple opportunities for learning. Learning is a lifelong process in which new experiences are assimilated. This component plan introduces the role of sequencing in the process of learning and its importance in developing curriculum-based programs and services.

#### **OBJECTIVES**

At the end of this component, the learner will be able to:

- Describe interrelationships between learning opportunities, interpretive opportunities, and stewardship opportunities.
- Discuss several theories of learning.
- Apply concepts of sequencing in learning to the development of curriculum based programs and services.

#### **APPROACH**

Learning begins from the moment of birth and is a building process involving all the senses. It involves change in knowledge or abilities and is motivated by a variety of human needs. The continuum of learning includes all cognitive (intellectual), affective (emotional) and behavioral change throughout a lifetime as new experience modifies existing paradigms.

Learning plays an important role in resource stewardship. Preconceptions or lack of knowledge may block connections to meanings, and learning new behaviors may help to ensure long term resource protection. Learning more about the resource informs management decisions and deepens appreciation. Learning opportunities have the potential to build understanding, facilitate connections to meanings, and provide avenues for direct personal involvement. An interpretive opportunity is a special kind of learning opportunity.

Curriculums are structured plans for learning which define the scope and sequence of content to be learned by an organized group. A curriculum-based program or service is a structured plan for learning a particular set of objectives through a sequence of experiences. These experiences are designed to facilitate a developmentally appropriate sequence of learning for audiences ranging from pre-school to senior citizens.

A learning sequence begins with the prior knowledge and preconceptions of the learner. The sequence of experiences in a curriculum-based program or service typically involves preparation experiences which lay a foundation, experiences during a park visit, and follow-up experiences in which learners synthesize, apply, or extend their understanding. The sequence may include ranger-leader-or-teacher led presentations, as well as student-centered discovery and presentation. The exact sequence and amount of time apportioned to each step in the continuum may vary, but the "sequenced learning" foundation forms the basis for all effective programs.

Some curriculum based services such as study kits or travelling trunks provide sequences that do not include a ranger-led presentation or a visit to the park / site. Elements potentially common to all sequences are: establishing prior knowledge, concept introduction, concept application, resource connections, and personal extensions. The sequence should include both learning and interpretive opportunities, and may also include stewardship opportunities. It may involve up to ten or more experiences or as few as three. For comparison, a typical instructional unit in a school is 10-15 lessons in length, and may include a park provided sequence.

In designing a sequence of experiences to meet learning objectives, the interpreter might consider how the different senses could be engaged, and what concepts, processes, geography, perspectives, skills, events, and interactions must be understood in order to facilitate opportunities for emotional and intellectual connections to meanings inherent in the resource.

Experiences that may be part of a sequence include museum exhibits, trails, historic structures, creative writing, natural history specimens, dioramas, experiments, interviews, observations, collecting data, making / using tools, clothing / costumes, songs / music, dance, maps, diagrams, research projects, drama or reenactments, role playing, model making, collage, drawing, video, CD-ROMS and other media. Different kinds of experiences will be more effective with different learning styles and multiple intelligences. A successful sequence will include a diversity of learning opportunities that are related in a meaningful way.

The experiences in a curriculum-based program or service should be separated in time (occurring on separate days) and might also be separated in space (occurring in different locations). Sequencing through time allows individuals to assimilate experiences and is important in the process of learning. Other purposes of sequencing include building from simple to more complex understanding, providing a multi-disciplinary approach, increasing learners ability to manipulate information independently, and experiencing parts of a greater whole.

Constructivism, flow learning, the learning cycle, inquiry and service-learning are several learning theories which might be incorporated into the development of curriculum-based programs and services. Human developmental stages, learning styles and multiple intelligences are also important to consider and are discussed in Module 270.

## **CONTENT OUTLINE**

- I. Learning is a lifelong process motivated by a variety of human needs.
  - A. Maslow's hierarchy of needs is one model for considering these needs.
    1. Physiological – food, water, air, shelter, comfort
    2. Safety – security, stability
    3. Love – meaningful relationships with others
    4. Esteem – self-esteem through accomplishment, recognition from others
    5. Self-Actualization – achieve potential, fulfillment, purpose
  - B. Other motivations for learning (brainstorm)
    1. School requirement
    2. Career development or advancement
    3. Contribute to a better world

4. Personal growth / enrichment
5. Decide on a college major
6. Earn a merit badge
7. Survival skill

- II. Curriculum-based programs and services provide a series of interrelated opportunities. Discuss possible distinctions between learning, interpretive, and stewardship opportunities. (Try to give examples from different park / sites.)
- A. Learning opportunity – opportunity to gain knowledge or skills which can be demonstrated
- Some opportunities such as vocabulary or concept building may not provide an interpretive opportunity, but may lay a foundation for an interpretive opportunity. Learning a behavior such as minimum impact camping may not form a connection to meanings of the resource if the learning opportunity isn't accompanied by an interpretive opportunity.*
- An interpretive opportunity can be viewed as a special kind of learning opportunity.*
- B. Interpretive opportunity –opportunity to form emotional or intellectual connections to meanings inherent in the resource
- Connections to meanings can happen very quickly, especially when an interpreter is skilled at conveying the essential significance of a resource. A visitor may grasp the profundity of what occurred at Gettysburg without being able to demonstrate much knowledge about why it occurred or the events that took place. An interpretive opportunity may provoke the desire for more learning opportunities.*
- C. Stewardship opportunity – opportunity to participate in the preservation and/or protection of a resource
1. opportunity to participate in resource monitoring, restoration or research
  2. VIP or internship opportunities
  3. job opportunities
  4. recycling bins or bear proof containers
  5. road or shoreline clean-up
  6. participation in and/or support of related resource protection issues
- III. Several learning theories may prove useful in designing a sequence of experiences for a curriculum-based program or service.
- A. Constructivism
1. learning is an active process in which learners construct new ideas and meanings based on existing knowledge
  2. existing knowledge is organized in cognitive structures (*paradigms*) which provide a framework for assimilating new experiences
  3. dialogue between learner and instructor (*interpreter*) reveals learner's current understanding
  4. considerations for instructional design include predisposition toward learning (*i.e. prior knowledge, learning styles, multiple intelligences*); ways to structure content for particular learners (*age, developmental*

- stage, special interests, etc.*); most effective sequences; nature of rewards for learning
5. successful sequences result in simplifying, learners generating new ideas, and increasing manipulation of content by learners

## B. Flow Learning

1. developed by Joseph Cornell
2. 4 stages
  - a. Awaken Enthusiasm
    - develops full alertness
    - creates involvement
    - gets attention
    - develops rapport with leader
    - provides direction and structure
    - prepares for later, more sensitive activities
  - b. Focus Attention
    - increases attention span
    - deepens awareness
    - channels enthusiasm
    - develops observational skills
    - calms the mind
  - c. Direct Experience
    - personal discovery
    - provides direct, experiential, intuitive understanding
    - develops commitment
  - d. Share Inspiration
    - clarifies, strengthens personal experience
    - introduces role models
    - creates group bonding

\*\*\*For more details on Flow Learning see *Sharing Nature with Children II*, by Joseph Cornell, or visit [www.sharingnature.com/FlowLearning.html](http://www.sharingnature.com/FlowLearning.html).

## C. Service Learning

1. method in which participants learn and develop through active participation in service that:
  - a. meets the needs of a community
  - b. is coordinated with a school, a community service program, and the community
  - c. fosters civic responsibility
  - d. enhances core curriculum or community service program
  - e. provides structured time for participants to reflect on the service experience

## D. The Learning Cycle

1. based in research on concrete and formal operational thinking

2. provides an opportunity for students to deal with objects on a concrete level before formal concepts are introduced
3. involves three stages which are repeated as a cycle: exploration, concept introduction, concept application; and assessment which occurs throughout the cycle
  - a. Exploration – open-ended exploration with physical objects in which students are encouraged to formulate explanations, predictions, experiments with their peers.
  - b. Concept introduction – active presentation of a concept by instructor
  - c. Concept application – students apply concepts to new situations
  - d. Assessment – students knowledge or abilities are reviewed during each phase

#### E. Inquiry

1. Phases of inquiry:
  - a. Learner poses question (or is posed with a question).
  - b. Evidence is collected.
  - c. Explanation is formulated based on evidence.
  - d. Other resources from previous investigations are consulted to add support to explanation.
  - e. Communication of explanation supported by evidence and the findings of others.
2. Research findings on inquiry
  - a. facts. Understanding science [or other subject] is more than knowing
  - b. Students build new knowledge and understanding on what they already know and believe.
  - c. Students formulate new knowledge by modifying and refining their current concepts and by adding new concepts to what they already know.
  - d. Learning is mediated by the social environment in which learners interact with others.
  - e. Effective learning requires that students take control of their own learning.
  - f. The ability to apply knowledge to novel situations... “transfer of learning” is affected by the degree to which students learn with understanding.

#### F. Some of the people behind the ideas

1. John Dewey (1859-1952) - Commonly regarded as the father of progressive education in America. Proposed that students learn by "directed living," with an emphasis on workshop-type projects so that learning is combined with concrete activity and practical relevance. He rejected the practice of rote learning which was the common mode of instruction in his day.

2. Maria Montessori (1870-1952) – The first woman physician in Italy. She developed an interest in the diseases of children and in the needs of those said to be 'ineducable'. Her work led to her ideas about education for all. This view 'decentered' the teacher who was primarily the 'keeper' of the environment. While children got on with their activities the teacher's task was to observe and to intervene from the periphery. Focused on self-realization through independent activity. *“first the education of the senses, then the education of the intellect...”* ; *“Looking becomes reading; touching becomes writing...”*
3. Jean Piaget (1896-1980) - Swiss psychologist and pioneer in the study of cognitive development. His theories became founding principles of the constructivist movement. Children evolve through specific stages in which cognitive structures become progressively more complex. Four levels of cognitive development: sensorimotor, preoperational, concrete operational, and formal operational. Learning occurs through adaptation to interactions with the environment. *Disequilibrium* (mental conflict which demands resolution) gives rise to *Assimilation* of a new experience which are added to existing knowledge, or *Accommodation*, which is modification of existing understanding to provide for the new experience.
4. Lev Vygotsky (1896-1934) – Russian psychologist. Social interaction plays a fundamental role in the development of cognition. Vygotsky believed everything is learned on two levels. First, through interaction with others, and then integrated into the individual's mental structure. A more experienced partner (peer or teacher) is able to provide "scaffolding" of the subject matter to support the student's evolving understanding. Potential for cognitive development is limited to a "zone of proximal development" -- the area of exploration for which the student is cognitively prepared, but requires help and social interaction to fully develop.
5. Jerome Bruner (1915-present) – American psychologist. Views learning as an active, social process in which students construct new ideas or concepts based on current knowledge. The student selects information, originates hypotheses, and makes decisions in the process of integrating experiences into their existing mental constructs. The teacher encourages students to discover principles by themselves. The teacher and students should actively discuss issues and concepts (i.e. Socratic learning). The teacher must translate information to be learned into a form appropriate to the learner's current state of understanding. A variety of teaching

methods, many choices available to the student, and multi-age peer groups all facilitate learning.

6. Joseph Cornell (present) – Internationally acclaimed nature educator. Developed Flow Learning Model for enhancing experience, awareness and understanding of nature through a sequence of activities. Author of several books, “Sharing Nature with Children”, “Listening to Nature”, “With Beauty Before Me” and “John Muir: My Life with Nature”; founded the Sharing Nature Foundation in 1978; works with the Japan Nature Games Association. Philosophy stems from experience as a classroom teacher, school district outdoor educator and Boy Scouts of America naturalist and certifier.

7. Howard Gardner (1943-present) – American psychologist who developed the theory of multiple intelligences. This idea stemmed from research focusing on cognitive and symbolic-using capacities in normal and gifted children and adults suffering from brain damage. Gardner and colleagues at Project Zero (Harvard University) have been working on the design of performance-based assessments, education for understanding, and the use of multiple intelligences to achieve more personalized curriculum, instruction, and assessment.

IV. Initial considerations for developing a sequence of experiences which include multiple learning opportunities:

A. What are the characteristics of the group?

1. reading level
2. physical abilities
3. analytical abilities
4. verbal abilities
5. attention span
6. subject being studied, special interests

B. What senses might be engaged to facilitate the formation of emotional and intellectual connections to the meaning(s) of the resource?

1. Sight
2. Sound
3. Touch
4. Smell
5. Taste

C. What concepts, processes, geography, perspectives, events, skills or interactions need to be understood in order to facilitate the formation of emotional and intellectual connections to the meaning(s) of the resource?

1. Concepts -

- e.g. gravity, poverty, tragedy, leadership, geologic time, rites of passage
- 2. Processes –  
e.g. erosion, immigration, glaciation, exploration, commerce, speciation
- 3. Geography –  
e.g. spatial relationships on different scales and through time; use of maps, GIS, aerial photos, diagrams relating archaeological or historical structures
- 4. Perspectives –  
e.g. different points of view related to resource or topic
- 5. Events –  
e.g. war, epidemic, invention, eruption, flood
- 6. Skills –  
e.g. weaving, excavation techniques, GIS/GPS, diplomacy, sculpting
- 7. Interactions –  
e.g. between species, groups of people, humans and environment

D. What types of activities are most likely to engage multiple intelligences?

1. Linguistic Intelligence (“word-smart”) – creative writing: letters, diaries, poetry, etc.; storytelling; word games  
*action: read, write, talk*
2. Spatial Intelligence (“picture-smart”) – map activities, art projects, 3-D models  
*action: see, draw, visualize*
3. Interpersonal intelligence (“people-smart”)- group projects, skits, mentoring, work with partners  
*actions: interact, collaborate, teach*
4. Intrapersonal Intelligence (“self-smart”) – reflective writing, independent study  
*actions: personalize, reflect, choose*
5. Musical Intelligence (“music-smart”) - songs, instruments, tape recordings  
*actions: sing, listen, rhythm*
6. Logical-Mathematical Intelligence (“number/reasoning smart”) - graphs, data, number games, problem solving  
*actions: count, quantify, experiment, think critically*
7. Bodily-Kinesthetic Intelligence (“body-smart”) - hiking, using tools, dance  
*actions: build, touch, dance, climb*

8. Naturalist Intelligence (“nature-smart”) -\_classifying shapes, nature observations  
*actions: connect, observe, find patterns*

E. Considerations for building relationships between the experiences provided in the sequence:

1. How will prior knowledge of the subject be determined?
  - a. discussion, questioning
  - b. diagnostic activity
2. How will an introduction or foundation for new experiences be provided?
  - a. grabbers, provocation, awaken enthusiasm
  - b. concepts and park resources which illustrate concepts
3. How will learners be immersed in the resource?
  - a. park visit
  - b. photographs
  - c. activities involving specimens, artifacts, archives, replicas
  - d. autobiography, biography
  - e. data collected in park
4. How will multiple learning styles and intelligences be engaged?
5. What transitions or linkages will be provided to connect the experiences?
6. Are there opportunities for learners to transfer the experience to new situations?
7. What opportunities are provided for emotional and intellectual connections to meanings inherent in the resource?
8. Are the experiences provided developmentally appropriate?
9. Will any stewardship opportunities been provided?
10. Does the sequence of experiences cohesively develop a relevant idea or ideas?
11. Are there opportunities for learners to synthesize, apply or extend the connections they have made to the resource?

## **SUGGESTED DEVELOPMENTAL ACTIVITIES**

1. Obtain information about the group you are developing a curriculum-based program or service for by contacting teachers or group leaders who know what is most effective with the group, and / or by requesting to observe classes or activities the group participates in. (application?)
2. Find examples at other parks or museums of the type of program or service you are designing. Make a flow chart of the sequence of experiences provided. Identify what learning and interpretive opportunities are provided throughout as well as what types of learning styles and multiple intelligences will be most effectively engaged. Are there any stewardship opportunities provided? Could any be included?

3. Use a library or consult with a school district office about obtaining examples of published teaching materials or instructional units that contain sequences of lessons. These will provide insights on how to organize the sequence you are developing.
4. Reflect on experiences you have learned the most from throughout your life in different settings or contexts. Write about them from memory. What did you learn? Did a person or activity facilitate the process? Why did the experience have such an impact? How did it connect with previous and subsequent experiences? Exchange reflections with others.

## RESOURCES

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## **EXAMPLES**

Example of a sequence involving a park visit:

“Change in the Making Activity Guide”, Lowell National Historical Park.

Example of a sequence without a park visit:

“Hands on the Land” (website), Olympic National Park.