Unit 1
Teaching and Learning

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Student Learning Style

Students learn through different learning styles. What is meant by learning style? Essentially, learning style can be viewed as the way an individual begins to process, internalize, and concentrate on new materials. Every person learns in a unique way; they have different learning channels. Some will be auditory learners, those who learn best by hearing; others will be visual learners, those who learn best by seeing or reading; and some will be physical learners, those who learn best through the manipulation of concrete materials (Shaughnessy, 1998). Some students will learn slowly; some rather quickly. Some will need substantial teacher assistance; others will be able to learn on their own. Most students will use each of these styles at one time or another. However, most will favor one style over others.

Researchers have produced valuable information about the relationship between learning and learner characteristics. Dunn and Dunn (1993) suggest learning styles are related to a person’s preference in four main areas:

1. Environmental: The student’s preference in terms of light, sound, temperature, and physical room when learning.
2. Emotional: The persistence and responsibility shown and the structure level, as well as the supervision needed when involved in learning.
3. Sociological: The adult assistance or group support (large group, small group, no support) needed when learning.
4. Physical: The need for movement, food intake, and time of day and sensory mode preference (e.g., visual, auditory, tactile, and kinesthetic) in learning.

These four factors can have a major impact on student learning. For example, some students will prefer bright lighting, while others will prefer dimly lit environments. Frequently, the noise level and room temperature will be the first learning style preferences communicated by students. These environmental effects are too often interpreted by novice teachers as simple complaining. Most experienced teachers, however, have come to realize that just as students are unique, they may learn in unique ways.

(Moore, 2001, 30)
Structure of the Basic Lesson

In the real world of training and education, there is no such thing as the basic lesson. It is a figment of the imagination. Every lesson is different. Every instructor and every teacher instructs in a different way, and few days are the same.

Nevertheless, the concept of the basic lesson serves a useful purpose. It gives instructors a model – something on which they then can pattern their teaching. Such a pattern is a guide rather than a dictate.

A beginning cook will usually follow every instruction in the cookbook. Each recipe is followed exactly. If the cook does not have the right ingredients, the beginner will rush out and buy them. An experienced cook, on the other hand, will be able to make do. A cookbook is still likely to be used as a reference. But every recipe is a springboard for creative action.

So it is with an instructor and the concept of a basis lesson. The structure is a springboard for creative teaching. It is not a straitjacket.

Every lesson should have three basic parts. Each part, of course, should lead naturally to the next. However, each part also needs to have a form of its own. It should be definite and clearcut, with its own beginning, middle and end.

The three parts of the basic lesson are:

• The introduction
  This should be relatively short in duration. It must lead naturally to the main body of the lesson. As a rule of thumb, it should account for less than 10 percent of the instructional time. However, everything depends upon the specific circumstances of the lesson.

• The development
  This is the main body of the lesson. As a rule of thumb, the development will probably account for up to 65 percent of the instructional time in a knowledge lesson. When a skill is involved, this part of the lesson will account for only about 25 percent of the training. This is when the skill is demonstrated.
• The consolidation

This is the end part of the lesson. In a knowledge lesson, it is likely to be relatively short. It will probably account for something like 25 percent of the training. In a skill lesson, however, the consolidation part of the lesson is used to imitate and practice the skill. For this reason, a large chunk of time is normally involved. Sometimes it accounts for up to 60 percent or more of the training.

As we have seen, each of the three parts has a different task to accomplish. Each involves a different set of the "events" of instruction.

(Davies, 1981, 58-59)
Types of Objectives

Three basic types of learning objectives should be described in the planning process: (1) cognitive, (2) affective, and (3) psychomotor. Cognitive objectives describe the knowledge that learners are to acquire. Affective objectives describe the attitudes, feelings, and dispositions that learners are expected to develop. Psychomotor objectives relate to the manipulative and motor skills that learners are to master.

Every instructional design needs to include both cognitive and affective objectives. Psychomotor objectives are most prevalent in those classes involving mastery of physical skills: orchestra, shop, handwriting, computer or typewriter keyboarding, or physical education. Psychomotor skills, however, should not be overlooked as a basic skill for performing other activities. For instance, manual dexterity is essential in working with laboratory equipment or with a compass and protractor in math class.

(Gunter, Estes, and Schwab, 1995, 28)
Cognitive Objectives

Cognitive objectives relate to the processing of information by the learner. They specify what students will be able to do intellectually as a result of instruction; such instructional results range from the memorization of facts to the most complex processes of evaluation and assessment. A committee of college and university examiners, headed by Benjamin S. Bloom of the University of Chicago, placed these cognitive behaviors within a taxonomy, which is the basis of Table 2.1

Table 2.1 Sample of Verbs in the Cognitive Domain

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>to recall, to repeat, to recollect, to memorize, to list</th>
</tr>
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<tbody>
<tr>
<td>Comprehension</td>
<td>to identify, to recognize, to select</td>
</tr>
<tr>
<td>Application</td>
<td>to use, to solve, to practice, to reproduce, to compare, to contrast</td>
</tr>
<tr>
<td>Analysis</td>
<td>To investigate, to separate, to study, to research, to describe, to distinguish</td>
</tr>
<tr>
<td>Synthesis</td>
<td>to combine, to formulate, to deduce, to unite, to assemble, to create</td>
</tr>
<tr>
<td>Evaluation</td>
<td>to appraise, to judge, to assess, to assign value to, to accept, to reject</td>
</tr>
</tbody>
</table>

Bloom's taxonomy is not a statement of educational objectives. Rather, it is a system for classifying educational objectives with respect to cognitive categories. Learning objectives should always be written so as to imply the criteria for their own assessment.

(Gunter, Estes, and Schwab, 1995, 28-29)
Affective Objectives

Following the development of the cognitive objectives by Benjamin Bloom and his committee in 1956, an affective taxonomy of objectives was developed by Krathwohl, Bloom, and Masis. Objectives in this domain concern feelings and attitudes, that students are expected to develop as a result of instruction (see Table 2.2). Krathwohl classified these objectives in five parts on a continuum, ranging from willingness to receive to an internalization of the beliefs or values presented. Because teachers believe that affective objectives are difficult to measure, they frequently omit the affective from lists of objectives. Much teaching is directed toward the development of beliefs, attitudes, and values, however, and it is important to describe these objectives.

Table 2.2 Sample of Verbs in the Affective Domain

<table>
<thead>
<tr>
<th>Receiving</th>
<th>to take in, to listen, to encounter, to be aware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responding</td>
<td>to react, to reply, to answer, to comply</td>
</tr>
<tr>
<td>Valuing</td>
<td>to accept, to reject, to esteem, to regard, to desire</td>
</tr>
<tr>
<td>Organization</td>
<td>to compare, to order, to prioritize</td>
</tr>
<tr>
<td>Characterization</td>
<td>to internalize, to personalize, to demonstrate</td>
</tr>
</tbody>
</table>

Affective learning is not completely separable from cognitive learning. Students often think about their attitudes and feelings, and they will have attitudes and feelings about what they think. Teachers should write objectives that describe attitudes and feeling because they want students to care about the subject being taught and to grow from the experience. If the subject is worth learning, it should have some impact on the life of the learner, it should affect learners in other than intellectual ways. It should make them more understanding, more caring, more tolerant, more effective, more communicative, and so on...

(Gunter, Estes, and Schwab, 1995, 33-34)
Psychomotor Objectives

In the domain of psychomotor objectives, learning depends on mastery of a physical skill. Learning to hold a pencil, to play the piano, to throw a baseball, and to operate a machine all depend at least in part on manipulative and motor skills. This domain has not, however, received the attention and development of the cognitive and affective domains. Table 2.3 describes one taxonomy in the psychomotor domain.

Table 2.3 Sample of Verbs in the Psychomotor Domain

<table>
<thead>
<tr>
<th>Readiness</th>
<th>willing, prepared, watched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>attends, is interested</td>
</tr>
<tr>
<td>Perception</td>
<td>senses, has a feel for, is able</td>
</tr>
<tr>
<td>Response</td>
<td>practices, initiates, replicates</td>
</tr>
<tr>
<td>Adaptation</td>
<td>master, develops, changes</td>
</tr>
</tbody>
</table>

Too often, psychomotor objectives are considered to be the domain of the physical education teacher or the teacher of the very young. Many learning difficulties are associated with an inability to use some part of the body effectively. A person who has difficulty with handwriting may have great difficulty completing exams; a person with speech problems seldom volunteer answers in class.

(Gunter, Estes, and Schwab, 1995, 34-35)
Planning for Instruction

Even though planning and making decisions about instruction are demanding processes that call for rather sophisticated understanding and skills, a beginning teacher does not have to feel overwhelmed. Most of you have planned trips that required complicated travel arrangements. You have planned college schedules, made-to-do lists, and survived externally imposed deadlines for term papers and final examinations. Graduation celebrations and weddings are other events most people have experienced that require planning skills of a high caliber. Planning for teaching may be a bit more complex, but the skills you already have can serve as a foundation on which to build. (Arends, 1989, 87)

Thinking about and conducting research on the teacher's role as a planner has recently gained attention in education. It is motivated by the same assumptions that inspire a wish to understand planning in other areas of life – namely, the drive to control what happens through purposeful, organized activities that lead to targeted outcomes. Planning and decision making are vital to teaching and interact with all the other executive functions of teachers. One measure of the importance of planning is illustrated when you consider the amount of time teachers spend on this activity. Clark and Yinger (1979), for example, report that teachers estimate they spend between 10 percent and 20 percent of their working time each week on planning activities. The importance of planning is illustrated in another way when you consider the wide variety of educational activities affected by the plans and decisions made by teachers as described by Clark and Lampert (1986):

Teacher planning is a major determinant of what is taught in schools. The curriculum as published is transformed and adapted in the planning process by additions, deletions, interpretations, and by teacher decisions about pace, sequence, and emphasis. And in elementary classroom, where a teacher is responsible for all subject matter areas, planning decisions about what to teach, how long to devote to each topic, and how much practice to provide takes on additional significance and complexity. Other functions of teacher planning include allocating
instructional time for individuals and groups of students, composing
student groupings, organizing daily, weekly, and term schedules,
compensating for interruptions from outside the classroom and
communicating with substitute teachers.

(Arends, 1989, 88)
Teacher-Centered Instruction

This section will focus on the major direct modes of instruction: exposition teaching, exposition with interaction teaching, Socratic teaching, and demonstration teaching. These are modes of instruction with which you should have had much experience in your own past schooling.

*Exposition Teaching*  Exposition teaching is most often used to communicate large amounts of information in a relatively short period of time. Exposition techniques include those methods in which some authority – teacher, textbook, Internet, videotape, or microcomputer – presents information without overt interaction between the authority and the students.

The *lecture* is probably the most widely used exposition teaching method in our schools. Virtually every teacher uses it to some degree, and some secondary teachers use it almost exclusively. However, the lecture does possess some strengths. It is an excellent way of presenting background information when building a unit frame of reference or when introducing a unit. Moreover, a short lecture can set a lesson atmosphere, focus student activities, or wrap up a unit, activity, or lesson. Finally, the lecture is time efficient, that is, planning time is devoted to organizing content, rather than to devising instructional procedures. However, it is a passive form of learning, with very low student involvement.

*Exposition with Interaction Teaching*  The exposition with interaction or lecture-recitation technique is an instructional method in which the teacher presents information in some form and follows up with question-and-answer sessions at periodic intervals. In effect, questions are used to summarize the content of the lecture and to help students consolidate and organize the presented information. The lecture-recitation method is often time efficient in terms of time flexibility and learning while actively involving students in the lesson. Its basis structure of – teacher talk/teacher question/student response/teacher talk – makes questioning the key component of the method.

*Socratic Teaching*  The Socratic method is a technique that uses a questioning and interaction sequence which has been designed to draw information out of student, rather than
pouring it into them. This is a purely verbal and interactive method. The Socratic method can be quite effective and works best in small-group sessions and in tutorial sessions.

**Demonstration Teaching** The demonstration method is a technique in which the teacher or another designated individual stands before the class, shows something, and tells what is happening or what has happened or asks students to discuss what has happened. The demonstration can be viewed as a process of teaching by means of using materials and displays, but the only person directly involved with the materials is the teacher or individual conducting the demonstration.

(Moore, 2001, 133)
Student-Centered Instruction

This section will focus on the major indirect modes of instruction: the discussion, cooperative learning, discovery learning, inquiry learning, simulations and games, and individualized strategies. These strategies are typically less teacher-directed, but more time-consuming.

Discussion A discussion is a carefully structured exchange of ideas directed toward a specific goal. Two kinds of classroom goals are conductive to using the discussion method. First, subjects that pose questions with no simple answer. For example, is there a simple answer to the rising cost of medical care? What can be done about the growing world population? Questions of this type are open to debate. Through discussion of issues from government, science, literature, history, or societal issues, students develop an understanding of the issues, rather than simply receiving and rehearsing factual information.

The second type of goal that lends itself to the discussion method involves situations in which issues from the affective domain are addressed. A discussion relative to drug use, for example, would likely tap into students’ attitudes. Similarly, discussions on issues such as poverty, types of music, voting, and art can lead to the establishment of such attitudes as civic duty, patriotism, and a commitment to the arts.

Cooperative Learning An emerging approach to grouping which is proving effective at both the elementary and secondary level is cooperative learning. Generally, cooperative learning requires that mixed-ability students work together to accomplish a set of tasks. Students are placed in task groups composed of high, middle, and low learner. The percentage of each level that is represented in the group generally approximates the percentage of that level in the whole class. Rewards to individual students are usually based on the performance and accomplishment of the whole team rather than on that of individual team members, which provides an incentive for students to work together productively. Advantages associated with cooperative learning include: (1) higher academic achievement than is generally achieved with other commonly used approaches, (2) development of better interpersonal relationships, (3) increased time on-task, and (4) development of more positive attitudes toward the subject and classroom.
**Discovery Learning** Discovery learning is a means by which students develop knowledge or skills while engaging in problem solving. Discovery learning can be viewed as intentional learning through supervised problem solving following the scientific method of investigation. Thus, students follow a well-defined sequence of problem-solving steps: identify a problem, develop possible solutions, collect data, analyze and interpret data and test conclusions. Discovery learning can take place at three levels, depending on the level of problem solving. At level I, discovery learning is carefully guided (guided discovery); at level II, a moderate amount of guidance is administered (modified discovery); at level III, it is very casually supervised (open discovery).

**Inquiry Learning** Inquiry learning is basically a problem-solving technique. The emphasis is placed on the process of investigating a problem, rather than on reaching a correct solution. Unlike discovery learning, no established pattern is followed in inquiry learning. Indeed, different students may use different strategies in obtaining information related to a problem. As with discovery learning there are three levels to inquiry learning: guided inquiry, modified inquiry, and open inquiry. Thus the teacher may want to identify the problem and then decide how to investigate it (guided inquiry); the teacher may want to identify the problem and then have students decide how to go about finding out about it (modified inquiry); or the teacher may want the students to identify the problem and then design ways for obtaining information (open inquiry). The inquiry approach is flexible yet systematic. It is systematic in that a basic, three-step problem-solving procedure is followed: identify the problem, work toward solutions, and establish solutions.

**Simulations and Games** Simulations and game activities can be very useful as teaching tools. The only distinction between simulations and games is that games are played to win, whereas simulations need not have a winner.

Simulations are presentations of artificial situations or events that represent reality. There are two basic types of simulations: human simulations and person-to-computer simulations. Human simulations are usually conducted in the form of role playing and sociodramas, whereas person-to-computer simulations often take the form of simulation games.
Simulations and educational games involve students in decision-making roles. Thus, educational games should reflect society; they should offer students the opportunity to experience roles that are common in life.

(Moore, 2001, 134-135)
Student Team Learning

Student Team Learning methods are cooperative learning techniques developed and researched at Johns Hopkins University. More than half of all studies of practical cooperative learning methods involve these methods.

All cooperative learning methods share the idea that students work together to learn and are responsible for their teammates’ learning as well as their own. In addition to the idea of cooperative work, in Student Team Learning the students’ tasks are not to do something as a team but to learn something as a team.

Three concepts are central to all Student Team Learning methods – team rewards, individual accountability, and equal opportunities for success. Teams may earn certificates or other team rewards if they achieve above a designated criterion. Teams do not compete to earn scarce rewards; all (or none) of the teams may achieve the criterion in a given week. Individual accountability means that the team’s success depends on the individual learning of all team members. Accountability focuses the activity of the team members on helping one another learn and making sure that everyone on the team is ready for a quiz or any other assessment that students take without teammate help.

Equal opportunities for success means that students contribute to their teams by improving on their own past performance. This ensures that high, average, and low achievers are equally challenged to do their best, and that the contributions of all team members are valued.

Research on cooperative learning methods summarized in Chapter 2 has indicated that team rewards and individual accountability are essential for basic skills achievement (Slavin, 1983a, b, 1989). It is not enough to simply tell students to work together; they must have a reason to take one another’s achievement seriously. Further, research indicates that if students are rewarded for doing better than they have in the past, they will be more motivated to achieve than if they are rewarded for doing better than others, because rewards for improvement make success neither too difficult nor too easy for students to achieve (Slavin, 1980a.)

Five principal Student Team Learning methods have been developed and extensively researched. Three are general cooperative learning methods adaptable to most subjects and grade
levels: Student Team-Achievement Divisions (STAD), Teams-Games-Tournaments (TGT), and Jigsaw II. The remaining two are comprehensive curricula designed for use in particular subjects at particular grade levels: Cooperative Integrated Reading and Composition (CIRC) for reading and writing instruction in grades 2-8, and Team Accelerated Instruction (TAI) for mathematics in grades 3-6. All five methods incorporate team rewards, individual accountability, and equal opportunities for success, but in different ways.

(Slavin, 1995, 5)
Teacher Questioning

Human beings and particularly teachers find it difficult to communicate without asking questions. Questions permit people to check for understanding, obtain information, and provide indirect cues. Can you imagine an entire lesson in which no questions are asked? It has been estimated, for instance, that an elementary teacher conducting a science or social studies lesson averages approximately 150 questions per hour. A variety of studies over the past three decades suggests that certain aspects of teacher questioning are related to student learning.

Take the cognitive level of questions, for example. Meredith Gall found that roughly four out of every five teacher questions tended to require the simple recall of facts or information. While factual recall is crucial, neglect of questions requiring more complex cognitive operations can inhibit student intellectual development and convey the impression that schooling is simply a matter of accumulating discrete bits of information. Sometimes teachers are selective, asking higher order questions only of brighter students. While such a strategy may be intended to reduce the possibility of embarrassment for less able students, its practical effect is to ensure that these students remain less able. The only way for students to learn how to answer challenging questions is to be asked challenging questions!

So that the experience of being asked challenging questions is not overly frustrating, teachers must give students sufficient time to respond. Research indicates that teachers generally wait less than a second for students to provide a response after asking a question. By extending “wait time” to a mere three seconds, it has been shown that teachers can reduce the number of failures to respond and increase the number of responses by less able students. When less able students are not given sufficient time to reflect on questions and formulate responses, they may quit trying to answer at all.

Researchers have also investigated what teachers should do when students answer questions incorrectly. Two productive alternatives are to ask the same student additional questions (probing) and ask the same question to a different student (redirecting). Both these strategies maintain or increase student involvement in the lesson, as well as provide the teacher
with useful feedback on the clarity of the original question. Studies show that one reason students fail to answer questions correctly is because the question is vague or confusing.

If the research on teacher questioning has one clear and consistent message, it is that no teacher should underestimate the value of good questioning techniques. Questioning provides one of the easiest ways to monitor student progress on a continuous basis and detect problems before great harm results. Evaluation activities like teacher questioning that take place every day in class, more than major tests and final examinations, are the most useful source of information on student learning.

(Duke, 1990, 120-121)
What is unit teaching?

A unit is a plan that organizes ideas and knowledge into a meaningful structure for teaching purposes. Basic concepts within a subject field or across subject fields are selected to achieve specific purposes. The content of the unit facilitates communication. Without content there is very little for students to communicate about expression and reception purposes. The unit should provide integrative experiences to satisfy students’ needs and to develop understandings, values, and skills.

Types of Units

Single Subject and Broad field Units. Units can be developed for most subjects: science (such as biology and astronomy), music, art, health, mathematics, history. When a unit is intended for a single subject field only, content is structured for the single discipline, and it is considered discipline-oriented. But units can be designed to teach content from a board field, such as social studies, life sciences, and health education.

Resource Units. These units are often developed at the district level by a committee of teachers or subject field specialists. The purpose of the resource unit is to provide a great deal of information on possible ways to teach a specific topic. It is not planned with any specific group of students in mind. The resource unit includes learning activities, resource materials, and evaluation methods, as well as lists of objects and questions.

Teaching Unit. The teaching unit differs from the resource unit in degree of specificity: it is focused and planned for a particular group of students and is formulated to teach a limited number of concepts, skills, and values. Before developing a teaching unit, the teacher may make use of a resource unit. The teaching unit ensure that there is a purpose to the day - to - day lessons. It represents long-range planning for teaching the curriculum. Unit activities should include a broad range of processes and experiences, such as problem-solving, research skill activities, language development, dramatic activities.

(Lemlech 1993, 183)
Individualized Instruction

Individualized Instruction has been a concern of educators for a number of years perhaps beginning in the minds of early teacher-philosophers such as Plato and Aristotle. These scholars, as well as Rousseau, Froebel, and others, relate to a common theme in their writings, that of providing consideration to the needs of the individual within the instructional process.

However, current conceptions of individualized instruction take on a much more comprehensive focus. Individualized Instruction as provided in contemporary educational curricula is comprised of at least five basic components. These components are the students, instructional environments, instructional content, instructional media, and instructional strategies. Of these five components, the student is central, with the others arranged in a manner designed to maximize learning. Obviously, different arrangements might be more appropriate for attaining different instructional objectives or for two students to achieve the same objective. For example, providing a nonreading option (the media component) might be most critical in aiding a poor reader to achieve mastery of a certain competency, whereas another student might be aided to a greater extent by physical setting (the environment component).

If instruction is to truly individualized, these components cannot be dealt with one at a time. Instead, they must be examined, organized, and used in concert. The teacher should ensure that all factors that may contribute to student learning are taken into account. Although instructional content, media, environments, and strategies are also taken into account in individualized instruction, the student should always serve as the primary focal point.

Individualization, then, is seen as a means of enhancing instruction so there may be greater assurance of meeting students’ individual needs and providing learning experiences that align with personal capabilities. By making a commitment to individualizing instruction, the teacher is saying that he or she will provide whatever arrangements are necessary to ensure that each student will be constantly engaged in learning those things that are of the greatest value to himself or herself.

(Finch and Crunkilton 1994, 247)
Models of Integration

1. The traditional model consists of separate and distinct disciplines which fragment the subject area. Teacher applies this view in math, social studies, language arts, humanities, fine arts and practical arts.

2. Within each subject area, course content is connected topic to topic, concept to concept, one year’s work to the next, and relates idea(s) explicitly. For example, teacher relates the concept of fractions to decimals, which in turn relates to money, grades, etc.

3. Within each subject area, the teacher targets multiple skills: a social skill, a thinking skill and a content-specific skill. For example, teacher designs the unit on photosynthesis to simultaneously target consensus seeking (social skill), sequencing (thinking skill) and plant-life cycle (science content).

4. Topics or units of study are rearranged and sequenced to coincide with one another. Similar ideas are taught in concert while remaining separate subjects. For example, English teacher presents a historical novel depicting a particular period while the history teacher teaches that same historical period.

5. Shared planning and teaching take place in two disciplines in which overlapping concepts or ideas emerge as organizing elements. For example, science and math teachers use data collection, charting, and graphing as shared concepts that can be team-taught.

6. A fertile theme is webbed to curriculum contents and disciplines. For example, teacher presents a topical theme such as a circus and webs it to the subject areas.

7. The approach threads thinking skills, social skills, multiple intelligence, technology, and study skills through the various disciplines. For example, teaching staff targets prediction in reading, math, and science lab experiments while social studies teacher targets forecasting current events and threads the skill (prediction) across disciplines.

8. This interdisciplinary approach matches subjects for overlaps in topics and concepts with some team teaching in an authentic integrated model.

(Forgarty 1991, XV)