Primary school teachers should have a broad knowledge and thorough understanding of the development that typically occurs during a student’s formative years. More importantly, the teacher should understand how children learn best during each stage of development. The effective teacher applies knowledge of physical, social, and cognitive developmental patterns and of individual differences to meet the instructional needs of all students in the classroom. The most important premise of child development is that all domains of development (physical, social, and cognitive) are integrated. Development in each dimension is influenced by the other dimensions. Moreover, today’s educator must also have knowledge of exceptionalities and how these exceptionalities affect all domains of a young child’s development.

PHYSICAL DEVELOPMENT
It is important for the teacher to be aware of the physical stages of development and how changes to the child's physical attributes (which include internal developments, increased muscle capacity, improved coordination, and other attributes as well as obvious growth) affect the child’s ability to learn. Factors determined by the physical stage of development include: ability to sit and attend, the need for activity, the relationship between physical coordination and self-esteem, and the degree to which physical involvement in an activity (as opposed to being able to understand an abstract concept) affects learning and the child’s sense of achievement.

Early Childhood
Children ages 3.5–5 are typically referred to as preschoolers, and this age comprises the area of early childhood education. In their physicality, this age group begins to resemble miniature adults, rather than the physique of a baby. Arms and legs stretch to catch up with their torso and head, baby fat decreases, and their bodies become sleeker and ready for more complex activities. Within this age range, typical gross motor skills acquired include climbing stairs; catching, kicking, and throwing a ball; peddling; standing on one leg; jumping; and skipping. Fine motor skills include drawing a circle, triangle, square, basic
people, and large letters; zippering and buttoning; use of scissors; and twisting
doorknobs and lids.

Once students enter kindergarten, they are referred to as grade-schoolers. Here,
students refine the skills that they learned over the past few years, including
running faster, more complex climbing, improved ball skills, and early exploration
of organized sports. Fine motor development also progresses as students' draw-ings, lettering, and painting improves.

**Early Adolescence**

Early adolescence is characterized by dramatic physical changes, moving the individual from childhood toward physical maturity. Early, prepubescent changes are noted with the appearance of secondary sexual characteristics. Girls experience a concurrent rapid growth in height that occurs between the ages of about 9.5 and 14.5 years, peaking somewhere around 12 years of age. Boys experience a concurrent rapid growth in height that occurs between the ages of about 10.5 to 11 and 16 to 18, peaking around age 14.

The sudden and rapid physical changes that young adolescents experience typically cause this period of development to be one of self-consciousness, sensitivity, and concern over one's own body changes and excruciating comparisons between oneself and peers. Because physical changes may not occur in a smooth, regular schedule, adolescents may go through stages of awkwardness, both in terms of appearance and physical mobility and coordination.

**COGNITIVE (ACADEMIC) DEVELOPMENT**

Jean Piaget, a European scientist who studied cognitive development in the 20th century, developed many theories about the way humans learn. Most famously, he developed a theory about the stages of the development of human minds. The first stage is the **sensory-motor stage** that lasts until a child is in the toddler years. In this stage, children begin to understand their senses.

The next stage, called the **pre-operational stage**, is where children begin to understand symbols. For example, as they learn language, they begin to realize that words are symbols of thoughts, actions, items, and other elements in the world. This stage lasts into early elementary school.

The third stage is referred to as the **concrete operations stage**. This lasts until late elementary school. In this stage, children go one step beyond learning what a symbol is. They learn how to manipulate symbols, objects, and other elements. A common example of this stage is the ability to understand the displacement of water. In this stage, children can reason that a wide and short cup of water poured into a tall and thin cup of water can actually have the same amount of water.
The next stage is called the **formal operations stage**. It usually starts in adolescence or early teen years, and it continues on into adulthood. This stage allows for the development of abstract thinking, logic, critical thinking, hypothesis, systematic organization of knowledge, and other highly sophisticated thinking skills.

**SOCIAL DEVELOPMENT**

Children progress through a variety of social stages, beginning with an awareness of peers but a lack of concern for their presence. Young children engage in “parallel” activities playing alongside their peers without directly interacting with one another. During the primary years, children develop an intense interest in peers. They establish productive and positive social and working relationships with one another. This stage of social growth continues to increase in importance throughout the child’s school years. It is necessary for the teacher to recognize the importance of developing positive peer group relationships and to provide opportunities and support for cooperative small group projects that not only develop cognitive ability but promote peer interaction.

**Skill 1.2** Identifying sequences (milestones) and variations of physical, cognitive, linguistic, social, emotional, and moral development in children from birth to grade six

SEE also Skills 1.1 and 6.1

Teachers should have a broad knowledge and understanding of the phases of development which typically occur in each stage of life, and the teacher must be aware of how receptive children are to specific methods of instruction and learning during each period of development. It is important for the teacher to be aware of the physical stages of development and how changes to the child’s physical attributes affect the child’s ability to learn.

**IDENTIFYING DELAYS IN COGNITIVE DEVELOPMENT**

Early childhood and grade school is a critical time for learning as rapid cognitive and language development occur. Typical children begin to significantly develop language around age 2, and many other foundational aspects of learning occur at this time. Development certainly has many basic milestones in the early childhood years, and knowledge of what development is within a typical range versus what constitutes a delay is crucial for early childhood and elementary teachers. The earlier parents and teachers identify a delay, the more likely the child will make successful progress, many times eliminating the need for later special education services. Early intervention programs for delays such as speech, hearing, motor skills, social skills, and more are often available for parents and teachers.
IDENTIFYING THE MILESTONES OF COGNITIVE DEVELOPMENT

In early childhood and early elementary school years, children are in the learning stage known as pre-operational. In this stage (ages 2–7), students learn to represent objects by images, objects, signs, and words. Students this age remain quite ego-centric and have a hard time understanding that other people have a point of view or perspective.

Later in elementary school (around age 8), students begin to transition into the next stage of learning, known as the concrete operational stage. In this stage, intelligence is demonstrated through logical and systematic manipulation of symbols related to concrete objects. Operational thinking develops (mental actions that are reversible), egocentric thought gradually diminishes, and students begin to think concretely and logically about concepts and ideas.

At this stage of development, the student is becoming able to accept, process, comprehend, and retain more challenging concepts, materials, instruction, and skills. Learning from instruction through multiple perspectives is more effective as the student’s mind is less focused on the self and the environment that supports the self. The increasing ability to use reason and think abstractly during this stage of development makes the mind more receptive to varied input and able to process this input without suffering intellectual “overload.” But, of course, not all young minds are cognitively receptive to the same degree at the same age or grade level. Providing all students with the same knowledge base and the same skills can be challenging in a cognitively diverse classroom.

Around the beginning of middle school (age 11 through to high school), concrete operation thinkers begin to move toward the formal operational stage (generally, identified with full adolescence and adulthood), where intelligence is demonstrated through the logical use of symbols related to abstract concepts. Students can really begin to consider abstract concepts, representations, and various perspectives, probabilities, and ideologies. Students at this age are capable of creating hypotheses, testing them, anticipating outcomes, and engaging in higher levels of problem solving.

Skill 1.3 Recognizing the range of individual developmental differences in children within any given age group from birth to grade six and the implications of this developmental variation for instructional decision making

Those who study childhood development recognize that young students grow and mature in common, recognizable patterns, but at different rates that cannot be effectively accelerated. This can result in variance in the academic performance of different children in the same classroom. With the establishment of inclusion as a standard in the classroom, it is necessary for all teachers to understand that variation in development among the student population is another aspect of diversity within the classroom. This has implications for the
ways in which instruction is planned and delivered and the ways in which
students learn and are evaluated.

Knowledge of age-appropriate expectations is fundamental to the teacher’s
positive relationship with students and effective instructional strategies. Equally
important is the knowledge of what is individually appropriate for the specific
children in a classroom.

Developmentally oriented teachers approach classroom groups and individual
students with a respect for their emerging capabilities. Developmentalists
recognize that kids grow in common patterns but at different rates that usually
cannot be accelerated by adult pressure or input. Developmentally oriented
teachers know that variance in the school performance of different children often
results from differences in their general growth.

The requirement for students within a diverse classroom to acquire the same
academic skills (at the same levels) can sometimes be achieved with
programmed learning instructional materials. While not widely available for every
subject, at every level, a great deal of useful material is in publication.
Professional teachers familiar with the format have often created their own
modules for student use to be incorporated within their lesson planning.

SEE also Skills 1.4, 1.5, and 1.6

Skill 1.4 Identifying ways in which a child’s development in one domain
(physical, cognitive, linguistic, social, emotional, moral) may
affect learning and development in other domains

UNDERSTANDING DOMAINS OF DEVELOPMENT
Child development does not occur in a vacuum. Each element of development
impacts other elements of development. A significant premise in the study of
child development holds that all domains of development (physical, social, and
academic) are integrated. Development in each dimension is influenced by the
others. For example, as cognitive development progresses, social development
often follows.

When it is said that development takes place within domains, it is simply meant
that different aspects of a human are undergoing change. For example, physical
changes take place (e.g., body growth, sexuality); cognitive changes take place
(e.g., better ability to reason); linguistic changes take place (e.g., a child’s
vocabulary develops further); social changes take place (e.g., figuring out
identity); emotional changes take place (e.g., changes in ability to be concerned
about other people); and moral changes take place (e.g., testing limits).
Developmental Advancement
Developmental advances within the domains occur neither simultaneously nor parallel to one another, necessarily. People often comment that adolescents develop slower in the physical domain than they do in the social or cognitive domain (e.g., they may think like teenagers, but they still look like children), however, the truth is that even in such cases, physical development is under progress—just not as evident on the surface. And as children develop physically, they develop the dexterity to demonstrate cognitive development, such as writing something on a piece of paper (in this case, this is cognitive development that only can be demonstrated by physical development). Or, as they develop emotionally, they learn to be more sensitive to others and therefore enhance social development.

What does this mean for teachers? The concept of latent development is particularly important. While teachers may not see some aspects of development present in their students, other areas of development may give clues as to a child’s current or near-future capabilities. For example, as students’ linguistic development increases, observable ability may not be present (i.e., a student may know a word but cannot quite use it yet). As the student develops emotionally and socially, the ability to use more advanced words and sentence structures develops because the student will have a greater need to express him or herself.

An important thing to remember about adolescent development within each of these domains is that they are not exclusive. For example, physical and emotional development are tied intricately, particularly when one feels awkward about his or her body, when emotional feelings are tied to sexuality, or when one feels that he or she does not look old enough (as rates of growth are obviously not similar). Moral and cognitive development often goes hand in hand when an adolescent gives reasons for behavior or searches for role models.

In general, by understanding that developmental domains are not exclusive, teachers can identify current needs of students better and they can plan for future instructional activities meant to assist students as they develop into adults.

Skill 1.5 Applying knowledge of developmental characteristics of learners from birth to grade six to evaluate alternative instructional goals and plans

ADDRESSING YOUNG LEARNERS
Until pre-adolescence, students do not think in abstract forms. They are able to understand symbols, but deep symbolism is not yet comprehended. For example, language is a symbol, and they can understand that certain words symbolize things, actions, emotions, etc. But they do not yet have the ability to see how symbolism works in a story as well as an adolescent would.
When it is said that young children are concrete thinkers, it means that they are driven by senses. In other words, they are very literal thinkers. If they can see something, hear something, or feel something, they are more likely to believe it—and learn it.

Therefore, the more teachers can utilize this concrete thinking, the better their students will master grade-level standards at this age. Take the example of math. Ever wonder why young children always count with their fingers? This is because even though they might be able to do it in their heads, seeing it (and feeling it, as they move their fingers) makes it more “real” to them. So, instead of teaching math through words and numbers on a chalkboard, teachers can be more effective at teaching math through manipulatives. By simply putting objects on a table, having students count the objects, taking away a certain number and having them re-count the left-over objects, students are more likely to understand the concept of subtraction.

Many reading teachers have learned that students can comprehend stories better if they get a chance to dramatize the story. In other words, they “act out” a story, and thereby learn what the words mean more clearly than they could have if they just read it and talked about it.

The whole concept of science laboratory learning in elementary school is founded on the idea that students will be more successful learning concepts if they use their hands, eyes, ears, noses, etc., in the learning process. Many concepts that would otherwise be very difficult for students to learn can be attained very quickly in a laboratory setting.

**Skill 1.6 Selecting appropriate instructional strategies, approaches, and delivery systems to promote development in given learners from birth to grade six**

**SELECTING ACTIVITIES**
The effective teacher is aware of students’ individual learning styles and human growth and development theory and applies these principles in the selection and implementation of appropriate instructional activities.

Learning activities selected for younger students (below age eight) should focus on short time frames in highly simplified form. The nature of the activity and the content in which the activity is presented affects the approach that the students will take in processing the information. Younger children tend to process information at a slower rate than older children (age eight and older).

**INSTRUCTIONAL PLANNING**
Implementing such a child-centered curriculum is the result of very careful and deliberate planning. Well thought-out planning includes specifying behavioral objectives, specifying students’ entry behavior (knowledge and skills), selecting
and sequencing learning activities so as to move students from entry behavior to objective, and evaluating the outcomes of instruction in order to improve planning.

Planning for instructional activities entails identification or selection of the activities the teacher and students will engage in during a period of instruction. Planning is a multifaceted activity which includes the following considerations:

- The determination of the order in which activities will be completed
- The specification of the component parts of an activity, including their order
- The materials to be used for each part
- The particular roles of the teacher and students
- Decisions about the amount of time to be spent on a given activity
- The number of activities to be completed during a period of instruction
- Judgment of the appropriateness of an activity for a particular situation
- Specifications of the organization of the class for the activity

Attention to learner needs during planning is foremost and includes identification of that which the students already know or need to know; the matching of learner needs with instructional elements such as content, materials, activities, and goals; and the determination of whether or not students have performed at an acceptable level following instruction.

**CHILD-CENTERED TEACHING**

The effective teacher selects learning activities based on specific learning objectives. Ideally, teachers should not plan activities that fail to augment the specific objectives of the lesson. Additionally, selected learning objectives should be consistent with state and district educational goals that focus on national educational goals (Goals 2000) and the specific strengths and weaknesses of individual students assigned to the teacher’s class.

The effective teacher takes care to select appropriate activities and classroom situations in which learning is optimized. The classroom teacher should manipulate instructional activities and classroom conditions in a manner that enhances group and individual learning opportunities. For example, the classroom teacher can organize group learning activities in which students are placed in a situation in which cooperation, sharing ideas, and discussion occurs. Cooperative learning activities can assist students in learning to collaborate and share personal and cultural ideas and values in a classroom learning environment.

If an educational program is child-centered, then it will surely address the abilities and needs of the students because it will take its cues from students’ interests, concerns, and questions. Making an educational program child-centered involves
building on the natural curiosity children bring to school, and asking children what they want to learn.

Teachers help students to identify their own questions, puzzles, and goals, and then structure for them widening circles of experience and investigation of those topics. Teachers manage to infuse all the skills, knowledge, and concepts that society mandates into a child-driven curriculum. This does not mean passive teachers who respond only to students’ explicit cues. Teachers also draw on their understanding of children’s developmentally characteristic needs and enthusiasms to design experiences that lead children into areas they might not choose but that they do enjoy and that engage them. Teachers also bring their own interests and enthusiasms into the classroom to share and to act as a motivational means of guiding children.
Skill 2.1   Analyzing ways in which development and learning processes interact

Anyone who has been in an early childhood or elementary school classroom knows that students do not sit still and focus on one thing for too long. Some people joke that the age of a person equals the amount of time the person is willing to sit and listen for any one time. So, a kindergartener, under this premise, would only be able to sit and concentrate on one thing for five to six minutes.

Good teachers know how to capitalize on the need of children to move and change topics. Generally, young children should be changing academic activities every 15-20 minutes. This means that if a teacher wants to fill a block of two hours for literacy learning in the morning, the teacher should have about 6-8 activities planned. Here is an example:

1. Teacher has students write something to access background knowledge; in kindergarten, this might include just a picture, but in grade four, this might include a paragraph
2. Teacher might spend a few minutes asking students what they wrote about in a large group
3. Teacher might introduce a new book by doing a “book walk”—looking at the title, the pictures, etc.
4. Teacher reads book aloud as students follow along
5. Students do a pair-share where they turn to their neighbors to discuss a question
6. Students return to desks to do a comprehension activity on their own
7. Whole class discussion of what they wrote
8. Students go to centers to practice specific skills as teacher works with small groups of students
9. Teacher conducts a vocabulary activity with the whole class

Teachers who switch things around like this are more likely to keep their students’ attention, engage their students more, and have a more behaved classroom. When children get bored, they obviously will start to not pay attention, and many will become disruptive. The key is to keep them interested in what they are learning.
Skill 2.2 Analyzing processes by which students construct meaning and develop skills, and applying strategies to facilitate learning in given situations (e.g., by building connections between new information and prior knowledge; by relating learning to world issues and community concerns; by engaging students in purposeful practice and application of knowledge and skills; by using tools, materials, and resources)

SEE also Skill 2.4.

BEHAVIORAL AND COGNITIVE LEARNING
First, teachers should realize that historically, there are two broad sides regarding the construction of meaning, the application of strategies, etc. One is behavioral learning. Behavioral learning theory suggests that people learn socially or through some sort of stimulation or repetition. The other broad theory is cognitive. Cognitive learning theories suggest that learning takes place in the mind, and that the mind processes ideas through brain mapping and connections with other material and experiences. In other words, with behaviorism, learning is somewhat external. We see something, for example, and then we copy it. With cognitive theories, learning is internal. For example, we see something, analyze it in our minds, and make sense of it for ourselves. Then, if we choose to copy it, we do, but we do so having internalized the process.

There are several cognitive educational learning theories that can be applied to classroom practices. One classic learning theory is Piaget’s stages of development, which consists of four learning stages: sensory motor stage (from birth to age 2); pre-operation stages (ages 2 to 7 or early elementary); concrete operational (ages 7 to 11 or upper elementary); and formal operational (ages 11-high school). Piaget believed children passed through this series of stages to develop from the most basic forms of concrete thinking to sophisticated levels of abstract thinking. For more information on Piaget’s stages of development, see Skill 1.1.

The metacognition learning theory deals with “the study of how to help the learner gain understanding about how knowledge is constructed and about the conscious tools for constructing that knowledge” (Joyce and Weil 1996). The cognitive approach to learning involves the teacher’s understanding that teaching the student to process his/her own learning and mastery of skill provides the greatest learning and retention opportunities in the classroom. Students are taught to develop concepts and teach themselves skills in problem solving and critical thinking. The student becomes an active participant in the learning process, and the teacher facilitates that conceptual and cognitive learning process.
Skill 2.3  Demonstrating knowledge of different types of learning strategies (e.g., rehearsal, elaboration, organization, metacognition) and how learners use each type of strategy

LEARNING STRATEGIES
Learning strategies are methods of teaching content to students. There are many theories on how best to reach content objectives within a classroom. It is important for teachers to accumulate an effective “tool box,” or a variety of strategies and tactics, in order to help both individual students and the entire classroom succeed. It is also important for teachers to utilize proper metacognition skills (or thinking about the mental processes of students) to review and modify learning strategies and tactics, create challenging goals and objectives, use appropriate assessments, and find out through experience and peer review what works best in certain situations.

The Behaviorist Model
As stated in Skill 2.2, the most basic learning strategy is the behaviorist model. In this model the teacher puts forth an objective that students should reach. Success is based on mastering the objective’s knowledge or skills. In other words, students learn to master behaviors. This is often seen as a passive learning strategy where there is lectured content and students need to memorize and practice the content to succeed.

The Constructivist Model
SEE Skill 2.4 for information relating to the Constructivist Model.

Learning Tactics
While learning strategies are philosophies on how to best teach a single student or a group of students, all teachers use a variety of learning tactics to accomplish objectives. Some of these tactics include rehearsal, elaboration, organization, and metacognition. Learning tactics should be consistent with the learning strategy that the teacher has chosen.

For example, if a teacher prefers a behaviorist model for a particular group of students, s/he might use rehearsal, or mnemonic devices, to encourage memorization of vital concepts. Rehearsal is a tactic that relates to recitation of material in order to lay the groundwork for the basic knowledge needed to engage a topic. Most rote learning is done in this way. Mnemonic devices are used to memorize concepts by creatively grouping them together. A well-known mnemonic device is creating an acronym out of the concepts needing memorization. An example of this is PEMDAS for the order of mathematical operations (one performs the operations within parenthesis first, then figures the exponents; multiplication is done before division; lastly, one adds before subtracting). Behavioral tactics can also be as simple as teaching note-taking and organizational skills that will pay dividends throughout a student’s education.
A tactic that encourages the constructivist learning strategy would be self-questioning: students create questions in order to direct their learning towards the things they most need to know. This tactic gives the student the chance to discover the components of a good primary question and then how to follow up with further clarifying questions that aim for more concise information. Another constructivist tactic is elaboration.

Elaboration relies on concepts the student already knows and is an excellent way to increase confidence. The student must expand or elaborate upon the target information in some prescribed fashion. Examples include creating an analogy (for instance, an election campaign might be like a “battle” in which two sides are trying to employ their own strengths and exploit their opponent’s weaknesses and the outcome may affect large populations), or establishing a relationship (plant respiration is the opposite of human respiration).

**Brain Based Learning**

Recently developed, brain-based learning is a strategy related to the constructivist model. Based on a popular 1998 book by Eric Jensen, *Teaching with the Brain in Mind*, the brain-based model attempts to achieve the objectives of a school district’s learning standards through both the child’s search for meaning and pattern-recognition.

A common teaching tactic used that provides visual meaning and a discernible pattern is the graphic organizer. For example, Venn-Diagrams show differences and similarities between two objects; timelines exhibit a sequence of events; pyramid style organizers display importance or hierarchy. Graphic organizers present patterns that the brain can easily recognize and evaluate. A math-based variation of this brain-based learning tactic is to ask students to make a poster displaying all the mathematical operations they might use to get the answer 81. Students would then display their work and the class would tour the posters to learn cooperatively.

**Project Based Learning**

Project-based learning is a comprehensive learning strategy and takes careful planning, usually between two or more faculty members. Students participate in content input, guided and individual practice, projects, and assessments within an interdisciplinary array of skills from math, language arts, fine arts, geography, science, and technology.

Some teachers have labeled this the “middle school model” and, since middle schools and junior high schools are often separated into teams that divide the core subjects among four or five teachers who plan together frequently, the name is appropriate. However, elementary teachers who are responsible for all of their students’ core subjects have also found great success with project-based learning. Connections between the core subjects can be made while the classroom studies central topics like the American Civil War, Alternative Energy
Sources, or The Diary of Anne Frank. Each unit might take a marking period or a semester, depending upon the school calendar and how creative faculty members can be.

Expeditionary learning schools center their academic year on project-based learning units and tied-in authentic experiences. A topic begins with a “kick-off” that might include a guest speaker or field trip, and finishes with a “culminating event” of student demonstrations in front of an audience of family members, school community, and the general public. Many tactics from other learning strategies are utilized among the core team of teachers in project-based learning and there is constant feedback and revision.

SEE Skill 2.4 for information about the learning strategies of differentiated instruction, constructivism, and cooperative learning.

**Skill 2.4** Analyzing factors that affect students’ learning (e.g., learning styles, contextually supported learning versus decontextualized learning), and adapting instructional practices to promote learning in given situations

SEE also Skill 12.2.

**ADDRESSING LEARNING DIFFERENCES**

No two students are alike. It follows, then, that no students learn alike. To apply a one-dimensional instructional approach is to impose learning limits on students. All students have the right to an education, but there cannot be a singular path to that education. A teacher must acknowledge the variety of learning styles and abilities among students within a class (and, indeed, the varieties from class to class) and apply multiple instructional and assessment processes to ensure that every child has appropriate opportunities to master the subject matter, demonstrate such mastery, and improve and enhance learning skills with each lesson.

**DIFFERENTIATED INSTRUCTION**

The effective teacher will seek to connect all students to the subject matter through multiple techniques, with the goal that each student, through their own abilities, will relate to one or more techniques and excel in the learning process. Differentiated instruction encompasses several areas:

- **Content**: What is the teacher going to teach? Or, better put, what does the teacher want the students to learn? Differentiating content means that students will have access to content that piques their interest about a topic, with a complexity that provides an appropriate challenge to their intellectual development.
- **Process**: A classroom management technique where instructional organization and delivery is maximized for the diverse student group.
These techniques should include dynamic, flexible grouping activities, where instruction and learning occurs both as whole-class, teacher-led activities, as well as peer learning and teaching (while teacher observes and coaches) within small groups or pairs.

- **Product:** The expectations and requirements placed on students to demonstrate their knowledge or understanding. The type of product expected from each student should reflect each student’s own capabilities.

**CONSTRUCTIVISM**

For constructivist teachers, the belief is that students create their own reality of knowledge and how to process and observe the world around them. Students are constantly constructing new ideas, which serve as frameworks for learning and teaching.

Researchers have shown that the constructivist model is comprised of the four components:

1. Learner creates knowledge
2. Learner constructs and makes meaningful new knowledge to existing knowledge
3. Learner shapes and constructs knowledge by life experiences and social interactions
4. In constructivist learning communities, the student, teacher and classmates establish knowledge cooperatively on a daily basis

Constructivist learning for students is dynamic and ongoing. For constructivist teachers, the classroom becomes a place where students are encouraged to interact with the instructional process by asking questions and posing new ideas to old theories. The use of cooperative learning that encourages students to work in supportive learning environments using their own ideas to stimulate questions and propose outcomes is a major aspect of a constructivist classroom.

**COOPERATIVE LEARNING**

Cooperative learning situations, as practiced in today’s classrooms, grew out of searches conducted by several groups in the early 1970’s. Cooperative learning situations can range from very formal applications such as STAD (Student Teams-Achievement Divisions) and CIRC (Cooperative Integrated Reading and Composition) to less formal groupings known variously as “group investigation,” “learning together,” and “discovery groups.” Cooperative learning as a general term is now firmly recognized and established as a teaching and learning technique in American schools.

Since cooperative learning techniques are so widely diffused in the schools, it is necessary to orient students in the skills by which cooperative learning groups can operate smoothly, and thereby enhance learning. Students who cannot interact constructively with other students will not be able to take advantage of
the learning opportunities provided by the cooperative learning situations and will furthermore deprive their fellow students of the opportunity for cooperative learning.

These skills form the hierarchy of cooperation in which students first learn to work together as a group, so they may then proceed to levels at which they may engage in simulated conflict situations. This cooperative setting allows different points of view to be constructively entertained.

Most classrooms contain a mixture of the following:

- Differences among learners, classroom settings, and academic outcomes
- Biological, sociological, ethnicity, socioeconomic status, psychological needs, learning modalities, and styles among learners
- Differences in classroom settings that promote learning opportunities such as collaborative, participatory, and individualized learning groupings
- Expected learning outcomes that are theoretical, affective, and cognitive for students

**APPLYING LEARNING THEORY IN THE CLASSROOM**

No one theory will work for every classroom and a good approach is to incorporate a range of learning styles in a classroom. Still, under the guidance of any theory, good educators will differentiate their instructional practices to meet the needs of their students' abilities and interests using various instructional practices. Today, even though behavioral theories exist, most educators believe that children learn cognitively.

For example, when teachers introduce new topics by relating those topics to information students are already familiar with or exposed to (prior knowledge), they are expecting that students will be able to better integrate new information into their memories by attaching it to something that is already there. Cognitively, this makes a great deal of sense. Think of a file cabinet. When we already have files for certain things, it's easy for us to find a file and throw new information into it. When we are given something that does not fit into one of the pre-existing files, we struggle to know what to do with it. The same is true with human minds.

The teacher will, of course, have certain expectations regarding where the students will be physically and intellectually when he/she plans for a new class. However, there will be wide variations in the actual classroom. If he/she does not make the extra effort to understand where there are deficiencies and where there are strengths in the individual students, the planning will probably miss the mark, at least for some members of the class. This can be obtained through a review of student records, by observation, and by testing.