I. Chapter Overview

1. Physical and Motor Development
   - Patterns of Growth
   - Motor Development
   - Brain Development

2. Concrete-Operational Development
   - Conservation
   - Classification
   - Planning
   - Metacognition
   - Limitations of Concrete Operations

3. Information-Processing Approaches
   - The Role of Memory
   - Thinking about Memory
   - Increased Control of Attention
   - Executive Function

4. The Role of Social and Cultural Contexts
   - Is the Acquisition of Conservation Universal?
   - Cultural Variations in the Use of Memory Strategies
   - Cultural Variations in Planning

5. Individual Differences in Cognitive Development
   - Measuring Intelligence
   - Persistent Questions about Intelligence

6. Reconsidering the Cognitive Changes in Middle Childhood

II. Key Concepts to Emphasize

III. Connections to Text: Central Issues and Theories

   Continuity vs. Discontinuity
   Nature vs. Nurture
Plasticity
Individual Differences
Theories

IV. Guide to the Supplements

V. Activities to Enhance Learning (homework, in-class activities, discussion questions)

VI. Handouts

I. Chapter Overview

• The beginning of middle childhood is recognized in cultures around the world, particularly in adults' new expectations of their 6- and 7-year-olds. These expectations relate to children's increased physical capacities and cognitive abilities.

1. PHYSICAL AND MOTOR DEVELOPMENT

• Size and strength increase significantly during middle childhood, although more slowly than in earlier years. Muscle mass and fat tissue both increase.

Patterns of Growth

• Although height and weight are both influenced by genetic factors, environmental factors, such as nutrition and health, also play an important role. For example, in the United States changes in diet in recent decades have contributed to an increase in childhood obesity.

Motor Development

• Strength, agility, and balance all improve in middle childhood. Boys tend to be slightly advanced in motor abilities requiring power and force; girls often excel in fine motor skills and gross motor skills combining balance and foot movement.

Brain Development

• Brain development in the early years of middle childhood includes:
  • continued myelination, especially in the frontal cortex.
  • continued synaptic pruning in late-maturing brain areas, with more stable connections among remaining neurons.
  • a shift to more alpha activity (characteristic of engaged attention) than theta activity (characteristic of sleep states).
  • a significant increase in the synchronization of electrical activity between different brain areas, among them the frontal lobes, with the areas functioning more effectively as coordinated systems.
Figures:
11.1 Developmental changes in strength for boys and girls
11.2 Developmental changes in fat distribution for boys and girls
11.3 Physical changes in middle childhood
11.4 Involvement in sports
11.5 The role of practice in the development of motor skills
11.6 Changes in alpha and theta brain wave patterns
11.7 Differential patterns of developmental changes in the brain for individuals with average and high intelligence

Boxes:
In the Field: Let's Move! A National Campaign to Battle Childhood Obesity

Apply, Connect, Discuss
Discuss some of the ways that physical activity affects physical and psychological development of girls and boys during middle childhood. In your discussion, consider how the effects are similar for boys and girls, how they may differ, and the extent to which culture may contribute to any gender differences you identify.

2. CONCRETE-OPERATIONAL DEVELOPMENT

• According to Piaget, as a result of increasing decentration, at about age 7 or 8, children become capable of mental operations—of logically combining, separating, and transforming information. With the advent of this stage of concrete operations, children can think in a more organized, flexible way and the world becomes more predictable to them.

• Concrete-operational thinking is reflected in new abilities related to:
  • conservation, Piaget's term for the understanding that some properties of an object or substance remain the same even when its appearance is altered in some way.
  • classification, with children now able to understand the relation between a superordinate class and its subclasses and to categorize objects according to multiple criteria.
  • planning, which requires forming mental representations of actions needed to achieve a goal.
  • metacognition, with children better able to think about and regulate their thoughts.

• The limitations of concrete operations are apparent in the difficulty children encounter when reasoning about abstract, unfamiliar situations.

Tables:
11.1 Piaget's stages of cognitive development: concrete operational
11.2 Children's explanations for how a toaster works

Figures:
11.8 Piagetian truck task
11.9 Piagetian card task
11.10 Piagetian conservation task
11.11 Maze task
11.12 Tower of Hanoi problem
11.13 Age differences in children's self ratings of toaster knowledge
11.14 Age differences in drawings

**Apply, Connect, Discuss**

Explain how Piaget's fundamental concepts of *decentration* and *objectivity* are apparent in the ability of children who are at the concrete-operational stage to solve conservation and classification tasks.

3. **INFORMATION-PROCESSING APPROACHES**

- According to information-processing theorists, the cognitive changes in middle childhood are made possible by changes such as:
  - improvements in memory, as a result of increased processing speed and capacity of working memory, increases in knowledge, and greater use of more effective strategies for remembering, such as rehearsal, organizational strategies, and elaboration.
  - improvements in metamemory, or knowledge about memory, including about memory limitations and strategies.
  - increases in children's ability to regulate their attention, which enable them to stay focused and ignore distractions.
- Developmentalists have suggested that the mechanisms for cognitive change suggested in Piaget's stage theory and those suggested by information-processing theorists may in fact work together.

**Figures:**

11.15 Relationship between memory span and speed of naming
11.16 Visual search strategies
11.17 Exercise improves children's math achievement

**Apply, Connect, Discuss**

Many people believe that a really good memory involves the ability to store a lot of information for considerable periods of time. Memory, however, is not just about that *quantity* of information stored over time but also about how the information is organized. In what specific ways does it seem that children's memories may be organized differently in middle childhood than in early childhood?

4. **THE ROLE OF SOCIAL AND CULTURAL CONTEXTS**

- Cross-cultural studies suggest the universality of concrete operations in middle childhood as well as significant cultural variations that influence performance.
- Across cultures, memory strategies used differ significantly depending on whether children have had schooling. Cross-cultural differences in planning relate to cultural differences in values.

**Figures:**

11.18 Back strap-loom weaving
Apply, Connect, Discuss
In what ways does Michael Cole’s study of Liberian children suggest that culture contributes both to children’s knowledge bases and to the type of memory strategies that children favor?

5. INDIVIDUAL DIFFERENCES IN COGNITIVE DEVELOPMENT

• Definitions of intelligence differ among cultures and may focus on social, rather than cognitive, competence.

Measuring Intelligence

• Intelligence tests, as they have been developed since their introduction by Binet and Simon, attempt to measure cognitive competence by producing an IQ score, based on a child’s performance compared to children of the same age.

Persistent Questions about Intelligence

• Research on intelligence has been dominated by three questions.
• Is intelligence a general characteristic, or are there specific kinds of intelligence? Two approaches taking the second position are Gardner’s theory of multiple intelligences and Sternberg’s triarchic theory of intelligence.
• Are differences among individuals and among groups in performance on IQ tests the result of genetic or environmental factors? Evidence for an environmental role comes from the Flynn effect, the increase across generations in performance on IQ tests.
• To what extent might IQ tests be culturally biased? All tests draw on learning that is culture specific, limiting the conclusions that can be drawn.

Tables:
11.3 Gardner’s multiple intelligences

Figures:
11.21 IQ distribution on bell-shaped curve
11.22 Picture completion test
11.23 “Flynn effect”

Apply, Connect, Discuss
IQ tests were first developed in order to identify children who needed special education. Today, the use of IQ tests in making decisions to place children on different “academic ability tracks” is hotly debated. Using concepts and research evidence presented in this section, describe the pros and cons of IQ testing and ability tracking in schools.

6. RECONSIDERING THE COGNITIVE CHANGES IN MIDDLE CHILDHOOD

• The cognitive changes of middle childhood are associated with children’s increasing control over their thoughts and actions. This is consistent with the greater independence that children of this age are granted by adults.
II. Key Concepts to Emphasize

In the following section, key concepts are discussed for each major section of this chapter. These concepts are key aspects of development during the age period covered in this chapter. They are introduced in this chapter and returned to in later chapters.

The introductory section provides the opportunity to discuss the relationship between universal aspects of development and culturally different aspects. The description of the different expectations for children across cultures might be used to highlight cultural differences. At the same time, underlying them is the “universal” notion that expectations change as a child enters middle childhood. A change occurs across cultures, but the nature of the change varies.

1. PHYSICAL AND MOTOR DEVELOPMENT

This section provides an opportunity to connect with several central issues in the text. The role of genes and the environment in growth clearly relates to the nature/nurture question as well as the individual difference question. Motor developments provide an opportunity to talk about how nature and nurture influence gender differences. The role of practice in motor development offers an opportunity to further discuss the interaction between nature and nurture. Brain developments provide an opportunity to discuss continuity and discontinuity as well as plasticity. Explicitly tying the discussion of these aspects of biological development in middle childhood to these issues can help students make connections between this chapter and others (see Handout 11.10). With the growing number of obese children, Kristen Harrison and her colleagues’ Six C’s Developmental Ecological model should be emphasized as a framework for understanding the growing trend.

The brain developments that occur during middle childhood can be emphasized by focusing on the four major aspects of the changes that occur as summarized on p. 398. Figure 11.6 shows a clear shift in brain functioning that occurs between ages 5 and 10.

2. CONCRETE-OPERATIONAL DEVELOPMENT

This section of the text provides an opportunity to emphasize concrete operations including conservation, classification, planning, and metacognition. The implications of Piaget’s work can be understood by comparing children who have acquired conservation with those who have not. The accompanying video for the text showing preoperational children in the early childhood section can be compared with the middle childhood section on concrete operations. Children can be brought to class to demonstrate the task, or students can try the conservation task with children in lab sites. In small groups, the students can then define each of these terms and describe their relationship to reasoning and problem solving.

Students can also be asked to observe children and look for examples of how children apply these factors in their daily problem-solving at home and school (see Handout 11.3).

This section of the text also describes multiple methods and tasks used to assess children’s cognitive abilities. The students can try these tasks with each other or with children to better understand how developmentalists study basic cognitive abilities. Some of the tasks to try would be:

• conservation tasks (pp. 402–404)
• maze (p. 405)
• Tower of Hanoi game (p. 406)

To conclude the activity, students can describe how their results were similar to or different from what was described in the text and also what the task demonstrated about cognitive abilities.
Limitations of concrete operations are also discussed in this section. Figure 11.14 where children of various ages draw themselves with a third eye and then explain why they put the eye where they did shows a nice developmental progression in reasoning.

3. INFORMATION-PROCESSING APPROACHES

Information processing approaches are reviewed next. An instructor can emphasize the role of memory by reviewing the 3 factors that bring about memory changes as presented on p. 409: 1) increases in the speed and capacity of working memory, 2) increases in knowledge about the things one is trying to remember, and 3) the acquisition of more effective strategies for remembering. To help students better understand this material, students can be asked to discuss how they use the memory strategies of rehearsal, organizational strategies, elaboration, metacognition, increased control of attention, and executive function. You can ask students to solve the house task on p. 413 making note of the attentional strategies that they employ.

4. THE ROLE OF SOCIAL AND CULTURAL CONTEXTS

Cultural variations in conservation, memory strategies and planning are presented next. Figure 11.18 and 11.19 can be used to emphasize cultural variations in conservation task performance. Michael Cole’s research with children in Liberia should also be emphasized. Figure 11.20 can be used to emphasize cultural variations in planning.

5. INDIVIDUAL DIFFERENCES IN COGNITIVE DEVELOPMENT

This section reviews definitions of intelligence and also emphasized cultural differences in how intelligence is defined. For a class activity, students can be asked to summarize the various definitions of intelligence found in the text including cultural differences. Students can then propose a new definition of intelligence. Students may find this challenging which is a good lead in to the next section on measuring intelligence. Figure 11.21 is the bell shaped curve and should be emphasized so as to make clear some of the psychometric properties of IQ tests.

The next section discusses persistent questions about intelligence. First, the question of whether intelligence is general or specific is discussed. Students can be asked to return to their own definition of intelligence and see if they would describe it as falling more in the general or the specific category. Table 11.3 can be discussed to show a model of intelligence that fits within the specific category. The second persistent question to be discussed is what explains population differences in intelligence. The innatist versus environmental hypotheses of intelligence can be reviewed to help students understand a variety of perspectives on how to best explain population differences in intelligence. Finally, the section ends with a discussion of whether IQ tests are culturally biased. This provides an opportunity to return to the problem with defining intelligence and the difficulties in developing a culture-free test.

6. RECONSIDERING THE COGNITIVE CHANGES IN MIDDLE CHILDHOOD

This short section reinforces the importance of the social context in supporting children’s cognitive development.
III. Connections to Text: Central Issues and Theories

This chapter provides multiple opportunities to draw connections to the key themes for this text and the frameworks, as presented in Chapter 1. These connections can be drawn in lectures, class discussions, or activities.

CONTINUITY VS. DISCONTINUITY

Remind students to review the section on continuity and discontinuity in Chapter 1 before participating in the discussion or completing the activity.

Several examples of connections with the continuity/discontinuity theme are included above. Differences of opinion about **stagelike vs. gradual shifts** in cognition represent one of the best examples of this theme in the field of developmental psychology. The brain changes as described in the text and depicted in the figures provide a possible example of discontinuity in development (Handout 11.10). The stagelike model of Piaget can be compared with the more gradual shift model that this found with information processing approaches.

NATURE VS. NURTURE

This chapter provides several opportunities to discuss the complex interplay between “nature” and “nurture” as they affect development. Remind students to review the sections on nature and nurture in Chapter 1 prior to discussion.

As noted above, **gender differences in motor development** provide an excellent opportunity to discuss the influence of nature and nurture. The text describes clear physical differences related to biology but also describes the potential influence of cultural factors. Handout 11.10 provides a framework to use in helping students summarize and organize their thinking on this topic. Students can also be asked to consider what they view as the main influences of nature and nurture in the motor development of boys and girls.

PLASTICITY

The section on the role of social and cultural contexts can be used to bring attention back to plasticity. In the discussion of whether or not the acquisition of conservation is universal, early research was described showing that the acquisition of conservation was not universal. Later research that challenged this conclusion is also presented. The role of training in improving performance can be presented as a challenge to the role of critical or sensitive periods in the acquisition of conservation.

INDIVIDUAL DIFFERENCES

The text describes multiple **individual differences in children’s physical and motor development** during middle childhood. Examples are provided on factors that influence these individual differences. These can be discussed along with the other themes by using Handout 11.10. The influences of social class and health factors can be considered. A focus on the box concerning the edible schoolyard can provide a good example of a specific way in which growth differs among individual children and ways to intervene at times of greatest risk for obesity.

THEORIES

This chapter provides a direct comparison of the claims of Piaget’s constructivist theory and information processing approaches. Students can be asked to summarize the main claims of both Piaget
and information processing approaches and then debate the relative strengths and weaknesses of each position. Students can explain which research in the section on developmental changes in cognition would each theory focus on and why (Handout 11.11).

IV. Guide to the Supplements

This chapter is supported by multiple readings from the supplemental readings packet available for the text (Readings on the Development of Children, Fifth Edition, by Mary Gauvain and Michael Cole). These readings can be used directly by the instructor to support a presentation of the material or may be assigned to students to further broaden their understanding of the material.

Some of Piaget’s claims are written about in Chapter 5 of the supplemental reading. Reading this chapter would be a good way for students to gain a better understanding of Piaget’s model in his own words.

Chapter 23 is a paper by E. Maccoby on Gender and group process. This paper can serve to support the discussion of gender differences in motor development as found in this chapter. Students might consider how motor differences contribute to gender differences in interaction and relationships.

Chapter 26 presents the results of research conducted by Duran and Gauvain. It directly compares the claims of Piaget and Vygotsky so provides an opportunity to return to those models. It also reviews performance in planning tasks and nicely supports the chapter material on development in planning abilities and the role of social support.

The supplemental video clips show children performing on the conservation of liquid and number tasks. It compares younger children who fail the task with those who succeed. This is also found in the Three Mountains Animation task segment.

The Life’s Lessons tape of the Childhood video series nicely presents the cognitive shifts that occur around ages 5–7. While the focus is on schooling, as will be discussed in the next chapter, part of the focus in the tape is on the physical and cognitive changes that accompany the shift to middle childhood so that part can be watched as this chapter is introduced and then the schooling piece can be the focus when the next chapter is reviewed. (See the video guides in Handouts 11.12.)

V. Activities to Enhance Learning (homework, in-class activities, discussion questions)

The preface introduced a variety of activities that an instructor can use to enhance learning. These include homework which a student can complete outside class and then turn in for grading or review. The results of these homework activities can also be reviewed during a class session. The activities found on the Tool Kit lend themselves to review and discussion in class. Also, the Apply, Connect, Discuss sections of this chapter lend themselves well to in-class activities. A few examples of activities will be presented here specific for this chapter, but we also give you a reminder to review the activities described in the preface for other activities that you can use to enhance the learning of the material in this chapter.
HOMEWORK

- Select one of the studies described in the text and review the original report on the study. Summarize the hypothesis, methods, results, and conclusions for this study. Do you agree with or disagree with the summary of the study as presented in the Lightfoot et al text? What is the basis for your position?
- Conduct a literature search to find the research that Michael Cole (one of the text's authors) conducted in rural Liberia. What methods did they use to examine cultural variations in the use of memory strategies? In addition to those described in the text what findings do you find to be of greatest interest? (See p. 417.)
- Interview a parent about his/her child's changing responsibilities (Handout 11.4).
- Interview a school-aged child who collects stamps, baseball cards, coins, or other items. Examine the collection with the child and look for evidence of a categorization system. What is the hierarchical structure of the categorization system?
- Observe and/or interview a school-aged child at home or school who is involved in daily tasks that provide opportunities for problem-solving such as completion of a chore, homework, classroom or recess activities, lunch, and so forth. How does the child apply the cognitive skills listed on Handout 11.3 to complete these tasks? How does this relate to what was described in the text?
- Observe a group of preschool-aged children and a group of elementary school-aged children in conversation with each other. What differences do you note in their conversation?
- Measure a group of preschool-aged and school-aged children. Graph the trends and variance within and across ages in terms of height and weight. Do your results match the material in the text?
- To incorporate Michelle Obama’s national campaign “Let’s Move,” locate an elementary school to conduct observations or interview programs to see what they are doing to reduce childhood obesity. Rate the school using the six Cs. Does the school utilize a comprehensive intervention? Do they consider biological and environmental factors when developing and implementing programs to reduce childhood obesity?
- Talk with an elementary school teacher. Ask the teacher the main ways he or she uses to facilitate development of basic problem-solving and memory capacities. Which aspects of the material in the text were reflected in the views of this teacher?

IN-CLASS ACTIVITIES

- In small groups, ask students to review what new expectations people had for them when they were around the age of 6. Ask them to compare and contrast the changing expectations with what was presented at the start of this chapter.
- To make clear the role of strategic thinking and metacognition, you can have a pop math quiz. Ask students to solve a series of math problems (e.g., $2 + 3, 46 + 59, 125 + 359$) and then write down the strategies they used to solve the problem. In a large group discussion, you can ask students to share how they solved the problem and also even write the solution on the board. Try to find a variety of different strategies that students used for
the harder problems in particular. You should be able to find different uses of classification and planning as well as varied levels of metacognition.

- In small groups, ask students to rate their general strengths and weaknesses in each of Gardner’s areas of multiple intelligences. As a preview for the coming chapter, also ask them to identify the ways that these strengths and weaknesses impact their learning. Are some things easier to learn than others? They can also identify strengths and weaknesses on Sternberg’s triarchic theory.

- Show Figure 11.23 in class. Ask students to generate as many hypotheses as possible as to why there is the “Flynn effect.” Ask them to identify which hypotheses appear to be the strongest ones. They can also describe the research studies they would design to test their hypotheses.

**DISCUSSION QUESTIONS**

The following questions require the student to summarize, analyze, and evaluate material from the text.

- The text describes differences in the way boys and girls are encouraged, coached, and rewarded for participation in sports activities. List examples of differences in these areas for elementary school-aged children, high school-aged children, and for individuals in college.

- What are the implications of changes in the brain that influence functioning of the frontal lobes?

- Describe evidence for the connection between brain wave patterns and performance on Piagetian conservation tasks. What is the importance of this connection?

- Summarize the course of developmental changes in the rates of maturation of various types of cells in the frontal cortex and the rate of increase in the surface area of the frontal lobe.

- How might a child explain his or her reasoning upon successful completion of the conservation task to reflect decenteration and logic?

- How does training change performance on conservation and memory tasks? What is the implication of the effect of training?

- What is the relationship between memory span and speed of naming?

- What results indicate that children must acquire the ability to use metamemory knowledge in addition to acquiring useful strategies for effective problem-solving?

- What rehearsal, organizational, and elaboration strategies do you use to help you remember?

**VI. Handouts**

The handouts and activity forms for this chapter are listed below.

- 11.1 Advance Organizer
- 11.2 Key Terms
- 11.3 Observation Guide
- 11.4 Interview Guide
- 11.5 Apply, Connect, Discuss: Physical Activity and Gender Differences
11.6 Apply, Connect, Discuss: Decentration and Objectivity
11.7 Apply, Connect, Discuss: Memory Organization
11.8 Apply, Connect, Discuss: Michael Cole’s Research in Liberia
11.9 Apply, Connect, Discuss: IQ and Ability Tracking
11.10 Themes of the Text and Biological Developments
11.11 The Theories and Developmental Change in Cognition
11.12 Video Guide for Life’s Lessons
### Chapter Outline

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<th>1. Physical and Motor Development</th>
<th>Key points and questions</th>
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<td>Brain Development</td>
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<td>Conservation</td>
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<td>Classification</td>
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<td>Planning</td>
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<td>Metacognition</td>
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<td>Limitations of Concrete Operations</td>
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<td>3. Information-Processing Approaches</td>
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<td>4. The Role of Social and Cultural Contexts</td>
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<td>Is the Acquisition of Conservation Universal?</td>
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<td>Cultural Variations in the Use of Memory Strategies</td>
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<td>Cultural Variations in Planning</td>
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<td>5. Individual Differences in Cognitive Development</td>
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<td>Measuring Intelligence</td>
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<td>Persistent Questions about Intelligence</td>
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<td>6. Reconsidering the Cognitive Changes in Middle Childhood</td>
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<tr>
<td>Key terms</td>
<td>Define in your own words here</td>
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<td>concrete operations</td>
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<td>conservation of number</td>
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<td>conservation of volume</td>
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<td>identity</td>
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<td>compensation</td>
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<td>reversibility</td>
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<td>metacognition</td>
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<td>memory span</td>
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<td>memory strategies</td>
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<td>rehearsal</td>
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<td>organizational strategies</td>
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<td>elaboration</td>
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<td>metamemory</td>
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<td>executive function</td>
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<td>Intelligence Quotient (IQ)</td>
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<td>Flynn effect</td>
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Observe and interview a school-aged child at home or school involved in daily tasks that provide opportunities for problem-solving such as completion of a chore, homework, classroom or recess activities, lunch, and so forth. How does the child apply the cognitive skills listed below to completion of these tasks? How does this relate to what was described in the text?

<table>
<thead>
<tr>
<th>Cognitive skill</th>
<th>Examples from your observation</th>
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<tbody>
<tr>
<td>• conservation</td>
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<td>• classification</td>
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<td>• planning</td>
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<tr>
<td>• metacognition</td>
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<tr>
<td>• speed and capacity of memory</td>
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<td>• knowledge base</td>
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<tr>
<td>• memory strategies (rehearsal, memory organization, elaboration)</td>
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<tr>
<td>• metamemory</td>
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<tr>
<td>• attention</td>
<td></td>
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<tr>
<td>• planning</td>
<td></td>
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<tr>
<td>• executive function</td>
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</table>
Handout 11.4

Interview Guide

Interview the parents of a 6 year old and of an 11 year old. Ask the parents to describe, in general, the ways in which they expect their children to behave more maturely.

<table>
<thead>
<tr>
<th>Interview</th>
<th>How does this match with the text?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What tasks and chores do you expect your child to perform independently?</td>
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<td>Do you believe the child’s personality has emerged?</td>
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<td>Can your child take messages to a neighbor?</td>
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<tr>
<td>Can your child go to shop for a small purchase?</td>
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</tbody>
</table>
Handout 11.5 Apply, Connect, Discuss

Discuss some of the ways that physical activity affects physical and psychological development of girls and boys during middle childhood. In your discussion, consider how the effects are similar for boys and girls, how they may differ, and the extent to which culture may contribute to any gender differences you identify.
Explain how Piaget’s fundamental concepts of decentration and objectivity are apparent in the ability of children who are at the concrete operational stage to solve conservation and classification tasks.
Many people believe that a really good memory involves the ability to store a lot of information for considerable periods of time. Memory, however, is not just about that quantity of information stored over time but also about how the information is organized. In what specific ways does it seem that children's memories may be organized differently in middle childhood than in early childhood?
In what ways does Michael Cole’s study of Liberian children suggest that culture contributes both to children’s knowledge bases and to the type of memory strategies that children favor?
IQ tests were first developed in order to identify children who needed special education. Today, the use of IQ tests in making decisions to place children on different “academic ability tracks” is hotly debated. Using concepts and research evidence presented in this section, describe the pros and cons of IQ testing and ability tracking in schools.
## Handout 11.10  Themes of the Text and Biological Developments

For this activity, consider how the themes of the text are reflected in the discussion of biological developments in middle childhood. What evidence do you see for continuity and discontinuity? What are the key influences of nature and nurture? Is there evidence of plasticity? What accounts for individual differences?

<table>
<thead>
<tr>
<th>Themes</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity and discontinuity</td>
<td></td>
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<tr>
<td>Nature vs. nurture</td>
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<tr>
<td>Plasticity</td>
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<td>Individual differences</td>
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</tbody>
</table>
### The Theories and Developmental Change in Cognition

Which research in the section on developmental changes in cognition would each of the following theories focus on? Why?

<table>
<thead>
<tr>
<th>Theory</th>
<th>Focus? Why?</th>
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</thead>
<tbody>
<tr>
<td>Psychodynamic</td>
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<tr>
<td>Behaviorism</td>
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<tr>
<td>Piaget’s constructivism</td>
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<tr>
<td>Vygotsky’s sociocultural theory</td>
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<tr>
<td>Evolutilional theory</td>
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<tr>
<td>Social learning theory</td>
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<tr>
<td>Information-processing</td>
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<tr>
<td>Systems theories</td>
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</tbody>
</table>
What is the “5–7 shift?”

What physical changes accompany the “5–7 shift?”

What cognitive changes accompany the “5–7 shift” (e.g., Piagetian operations)?