Chapter 15 describes the cognitive advances, and limitations, of adolescence. With the attainment of formal operational thought, the developing person becomes able to think in an adult way—that is, to be logical, to think in terms of possibilities, and to reason scientifically and abstractly.

Even those who reach the stage of formal operational thought spend much of their time thinking at less advanced levels. The discussion of adolescent egocentrism supports this generalization in showing that adolescents have difficulty thinking rationally about themselves and their immediate experiences. Adolescent egocentrism makes them see themselves as psychologically unique and more socially significant than they really are.

The next section explores teaching and learning. As adolescents enter middle school, their grades often suffer and behavioral problems increase. Larger schools and student populations deteriorate teacher and peer bonds. In most high schools, rigid behavioral demands and intensified competition do not, unfortunately, provide a supportive learning environment for adolescents.

**What Have You Learned?**

The “What Have You Learned?” questions at the end of the text chapter are reprinted here for your convenience in checking students' understanding of the chapter contents.

1. How does adolescent egocentrism differ from early childhood egocentrism?
2. What are the two extreme perceptions that arise from the imaginary audience?
3. Why are the personal fable and the invincibility fable called “fables”?
4. How does formal operational thinking differ from concrete operational thinking?
5. What are the advantages and disadvantages of using induction rather than deduction?
6. How certain are contemporary developmentalists that Piaget accurately described adolescent cognition?
7. When might intuition and analysis lead to contrasting conclusions?
8. What mode of thinking do most people prefer, intuitive or analytic, and why?
9. How does personal experience increase the probability of base rate neglect?
10. How does egocentrism account for the clashing priorities of parents and adolescents?
11. When is intuitive thinking better than analytic thinking?
12. Why have most junior high schools disappeared?
13. What characteristics of middle schools make them more difficult for students than elementary schools?
14. How does being a young adolescent affect a person's ability to learn?
15. Why are transitions a particular concern for educators?
16. What benefits come from the adolescent use of technology?
17. How do video games affect student learning?
18. Who is most and least likely to be involved in cyberbullying?
19. If an adolescent consults Internet sites regarding cutting, what should adults do and why?
20. Why is the first year of attending a new school more stressful than the second year?
21. What is the United States doing to raise the education standards in secondary schools?
22. What are the advantages and disadvantages of high-stakes testing?
23. Why is Germany's apprentice/vocational education system no longer prevalent?
24. How does PISA differ from other international tests?
25. Why is high school achievement likely to advance the national economy?

Chapter Guide

“On Your Own” Activities: Developmental Fact or Myth? Portfolio Assignment
Classroom Activity: Case Study of an Adolescent
Teaching Tip: Revise and Resubmit

I. Adolescent Thinking

Instructional Objective: To describe adolescent egocentrism, and to provide three examples of egocentric fantasies or fables.

✓ AV: Teenage Mind and Body; Adolescent Cognition: Thinking in a New Way; Formal Thought; Adolescence: Cognitive and Moral Development
✓ Classroom Activities: Adolescent Egocentrism; Adolescent Logic; Logical Versus Practical Intelligence
✓ “On Your Own” Activity: Formal Operational Thought: Test Yourself

1. Adolescent egocentrism is a stage of development in which young people typically regard themselves as much more socially significant than they actually are, and focus on themselves to the exclusion of others.

2. The personal fable reflects the adolescent’s belief that his or her thoughts, feelings, and experiences are unique.

3. The invincibility fable that they are somehow immune to common dangers is an extension of adolescents’ egocentrism. Recent research suggests that many adolescents do not feel invincible and that egocentrism “may signal growth toward cognitive maturity.”

4. As another part of their egocentrism, adolescents often create for themselves an imaginary audience that allows them to fantasize about how others will react to their appearance and behavior.

5. Piaget described the reasoning that characterizes adolescence as formal operational thought, which arises from maturation and experience. Many standard Piagetian tasks (including the balance-scale test) assess how children of various ages reason hypothetically and deductively.

6. The distinguishing feature of adolescent thought is the capacity to think in terms of possibility rather than only in terms of reality. With this capacity for hypothetical thought, the adolescent is able to consider the here and now as one among many alternative possibilities.
7. In developing the capacity to think hypothetically, adolescents become capable of **deductive reasoning**, or top-down reasoning (deriving conclusions from premises), unlike **inductive reasoning**, or bottom-up reasoning (reasoning from one or more specific experiences or facts to a general conclusion), which predominates during the school years.

8. While most developmentalists agree with Piaget that adolescent thought can be qualitatively different from children’s thought, they have found marked variability in adolescents’ level of cognition.

II. Intuitive, Emotional Thought

*Instructional Objective: To describe the two brain pathways and the two modes of thinking they enable.*

1. The **dual-process model** indicates that the brain has at least two pathways, or networks. In addition to the one for hypothetical-deductive thinking, there is one for intuitive thought. The hypothetical-deductive reasoning described by Piaget is called **analytic thought** (or decontextualized or rational, for example). The second mode of thinking, which begins with a prior belief, is called **intuitive** (or contextualized or experiential, for example) **thought**. If this is true, it might mean that thoughts and emotions build and develop independently.

2. Although adolescents have the ability to think logically, they sometimes find analytic thinking too difficult. For example, the **sunk cost fallacy**, an error in logic that affects people of all ages, is more apparent in adolescence than during other years. Another common fallacy is called **base rate neglect**, in which decisions are made on an emotional basis despite statistical evidence to the contrary.

3. As the knowledge base increases and the brain matures, both analysis and intuition become more forceful.

4. Adolescents’ religious beliefs tend to be egocentric, with faith considered a personal tool to be used in times of difficulty.

III. Teaching and Learning

*Instructional Objective: To describe the mismatch between the typical high school environment and adolescents’ needs.*

1. The period after **primary education** and before **tertiary education** is called **secondary education** (traditionally grades 7 through 12). With puberty coming earlier than in years past, many intermediate **middle schools** have been established to educate children in grade 6 alongside those in grades 7 and 8.

2. During the middle school years, academic achievement often slows down. In addition, behavioral problems become more common. Most developmentalists believe that learning suffers more because of the organizational structure of middle schools than because of the biological stresses of puberty.

3. The digital divide that once separated boys from girls and rich from poor has been bridged. In the United States today, the greatest divide, in terms of technology use, is age.

4. Potential dangers of the use of computers in education include sexual predators; **cyberbullying**, which occurs when one person spreads online insults and rumors about someone else; and Web sites devoted to self-mutilation, known as **cutting**.
At the same time, children may have the opportunity to learn more about other groups and cultures via online learning than they might otherwise.

5. The first year of a new school often correlates with a number of disorders and psychopathology, including depression, substance abuse, and eating disorders.

6. In most high schools, formal operational thinking is preferred over the egocentric and intuitive thinking that students themselves like.

7. Another feature of the secondary school environment is high-stakes testing, so-called because the consequences of failing are so severe. The appropriateness of this environment has been questioned, especially for students who have learning disabilities and those who come from low-income families. Whenever high-stakes tests are a requisite for graduation, there is the potential for more high school dropouts.

8. The PISA (Programme for International Student Assessment) is designed to measure cognition needed in adult life.