

# Course: Introduction to Inclusive Education (6413)

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### ASSIGNMENT No. 2

#### Q.1 How could you create an awareness campaign about inclusive education as a teacher in the school?

Adaptations, accommodations, and modifications may seem like interchangeable terms, but when it comes to inclusion they carry significantly different meanings. Accommodations and modifications serve as two separate kinds of curricular adaptations. Before delving into the differences between accommodations and modifications, let's take a step back and focus on the concept of curricular adaptations. The California Positive Behavior Initiative [Positive Environments, Networks of Trainers](#) (PENT) defines curricular adaptations as “changes permissible in educational environments which allow the student equal opportunity to obtain access, results, benefits, and levels of achievement.” Simply put, curricular adaptations allow students with disabilities to participate in inclusive environments by compensating for learners' weaknesses.

Accommodations accomplish this objective without modifying the curriculum. As PENT explains, “Some curricular adaptations do not fundamentally alter or lower standards or expectations in either the instructional or assessment phases of a course of study and can be designated as ‘accommodations’.” In other words, students receiving accommodations read the same material and take the same tests as their peers without disabilities.

In contrast, modifications refer to curricular adaptations which change or lower expectations or standards. For instance, say an English course requires reading “The Adventures of Tom Sawyer.” Students who struggle with reading could instead read the simplified version published by [Great Illustrated Classics](#). This allows for participation in classroom discussions but lowers reading level expectations.

- Each student can and will learn and succeed.
- Diversity enriches us all, and students at risk can overcome the risk for failure through involvement in a thoughtful and caring community of learners.
- Each student has unique contributions to offer to other learners.
- Each student has strengths and needs.
- Services and supports should not be relegated to one setting (e.g., special classes or schools).
- Effective learning results from the collaborative efforts of everyone working to ensure each student's success.
- Systems change initiatives in special education are paralleling systems change efforts in general education. Such initiatives for change are often referred to as school restructuring. Fundamental questions regarding the most effective strategies for teaching all students are being raised, and numerous innovative and highly effective strategies are being designed and implemented. School restructuring efforts are described in greater detail in Chapters 4–6 and are summarized below:

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- Heterogeneous and cooperative group arrangements of students are used because they are more effective for learning (Johnson & Johnson, 2002; Oakes, 1985; Oakes & Lipton, 2003; Sapon-Shevin, 1994).
- Students are provided with individualized approaches to curriculum, assessment (e.g., nonbiased assessment procedures, multiple approaches to intelligence—see Carr & Harris, 2001; Hock, 2000), and instruction because of high expectations held for all students (Castellano, 2003).
- Staff, students, parents, and community members collaborate in the design and delivery of effective education for all students (Thousand, Villa, & Nevin, 2002; Villa & Thousand, 2000).
- Teachers and other professionals are giving students the opportunity to learn to think and be creative, and not just to repeat information that they have memorized (Kohn, 1999; Lenz & Schumaker, 1999; Schumm, 1999; Tomlinson, 1999).
- School staff members are facilitating students' social skills as students interact, relate to one another, and develop relationships and friendships (Delpit, 1995; Noddings, 1992).

As the characteristics of the school restructuring movement take hold in more and more schools, inclusion of students with disabilities does not become a separate and distinct action; instead, it occurs simultaneously and naturally. The characteristics of both the school restructuring movement and the building of inclusive schools are the same: all students must experience quality education that meets their specific educational needs in the context of political and social justice.

Inclusive education means that all children are educated in regular classrooms. It does not, however, mean that individual children cannot leave the classroom for specific reasons. For example, a child may require one-on-one assistance in a particular subject. This may or may not be happening during regular class time. Once schools are inclusive, serious thought is given to how often a child may be out of regular classroom and the reasons that this may be happening. It does not mean that children with certain characteristics (for example, those who have disabilities) are grouped together in separate classrooms for all or part of the school day.

### **Key Features of Inclusive Education**

- Generally, inclusive education will be successful if these important features and practices are followed:
- Accepting unconditionally all children into regular classes and the life of the school.
- Providing as much support to children, teachers and classrooms as necessary to ensure that all children can participate in their schools and classes.
- Looking at all children at what they can do rather than what they cannot do.
- Teachers and parents have high expectations of all children.
- Developing education goals according to each child's abilities. This means that children do not need to have the same education goals in order to learn together in regular classes.

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- Designing schools and classes in ways that help children learn and achieve to their fullest potential (for example, by developing class time tables for allowing more individual attention for all students).
- Having strong leadership for inclusion from school principals and other administrators.
- Having teachers who have knowledge about different ways of teaching so that children with various abilities and strengths can learn together.
- Having principals, teachers, parents and others work together to determine the most affective ways of providing a quality education in an inclusive environment.

### **The Benefits of Inclusive Education**

Over the years, the benefits of providing an inclusive education to all children have been shown. Inclusive education (when practiced well) is very important because:

- All children are able to be part of their community and develop a sense of belonging and become better prepared for life in the community as children and adults.
- It provides better opportunities for learning. Children with varying abilities are often better motivated when they learn in classes surrounded by other children.
- The expectations of all the children are higher. Successful inclusion attempts to develop an individual's strengths and gifts.
- It allows children to work on individual goals while being with other students their own age.
- It encourages the involvement of parents in the education of their children and the activities of their local schools.
- It fosters a culture of respect and belonging. It also provides the opportunity to learn about and accept individual differences.
- It provides all children with opportunities to develop friendships with one another. Friendships provide role models and opportunities for growth.

### **Q.2 Differentiate between special education and mainstream. Elaborate your answer with the examples.**

“Mainstreaming” and “inclusions” are two different academic programs meant for IEP students. “IEP” stands for “Individualized Education Program.” It is a legal document which describes a particular educational program required and designed specifically for a child's unique requirements and needs. “Mainstreaming” and “inclusion” have become mandatory in schools, and they are no more just a courtesy offered by schools.

“Mainstreaming” refers to children with an IEP attending a regular classroom for their social and academic benefit. These students are expected to learn the same material as the rest of the class but with modifications in the course and adjustments in the assessment. For example, if the class is reading about U.S. states, names and capitals, a mainstream child is expected to learn only the names of the states and the capital of the state where he is living. The students are also expected to show improvement in their social skills and improvement in their academic performance.

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Support in teaching

A mainstreamed child does not have any other help in the classroom except for the teacher. The support they get is in the form of modifications in the course. For example, if a child is dyslexic and has problems in reading or writing, they are occasionally given individualized reading sessions. Their reading material is simplified, and they are given simplified writing assignments.

### Inclusion

Expectations from a child

Inclusion refers to children with an IEP attending a regular classroom for their social and academic benefit, but these children are not expected to learn the same material as the rest of the class. They have their own individualized material, and they are not expected to show improvement as per the class. They are basically “included” in the class so that they have the opportunity to be with the students of their same age and have the chance to get the same education. For example, if the class is reading about U.S. states, their names and capitals, the inclusion child is expected to learn only the name of his own state and capital of the country. Emphasis is paid to their social skill development more than academic performance.

An inclusion child does not always have disabilities. They are also students who are performing above their class level, also called “gifted students,” and students who speak the language in the classroom as their second language.

Support In teaching

The students in inclusion classrooms have a team supporting them. The regular teacher is given tips on how to help the child with special needs. There are specialists like speech therapists and physical therapists who help the teacher understand the needs of the child. The teacher is advised to know how to handle technologies and equipment which assist a special needs child.

Summary:

1. Mainstreaming requires the IEP students to attend a regular classroom and they are expected to show improvement in social skills and academic performance; whereas, inclusion requires IEP students to attend regular classrooms for their own benefit not necessarily showing any improvement.
2. Mainstreaming requires a child to deal and adjust in the class on his own; inclusion classrooms have a team of specialists supporting the child.

### **Q.3 Describe the patterns of environmental adaptation for inclusive education in the schools of Pakistan.**

Inclusive learning provides all students with access to flexible learning choices and effective paths for achieving educational goals in spaces where they experience a sense of belonging. In an inclusive education environment, all children, regardless of ability or disability, learn together in the same age-appropriate classroom. It is based on the understanding that all children and families are valued equally and deserve access to the same opportunities.

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Inclusive learning goes hand in hand with Universal Design for Learning (UDL), a set of principles for curriculum development that gives all students an equal opportunity to learn. According to the National Center on Universal Design for Learning, “UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone — not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs.” UDL shares many commonalities with the Theory of Multiple Intelligences espoused by Harvard Professor Howard Gardner, whose work documented “the extent to which students possess different kinds of minds and therefore learn, remember, perform and understand in different ways.”

### Benefits of Inclusive Education

Studies have shown the benefits that inclusive classrooms offer for children with disabilities and their peers. Instead of pulling children out of the classroom to offer them specialized instruction, in an inclusive classroom special education teachers come into the classroom. This allows for general education teachers and specialists to work together in the same learning environment, benefiting all students, who are offered additional resources and support. This support often results in greater academic gains for students with disabilities as well as students without disabilities.

Think Inclusive reported on a 2001 study that examined “academic progress for students with disabilities in general education and self-contained classrooms over two years. 47.1% of students with disabilities in general education made progress in math, compared to 34% in self-contained classes. Reading progress was comparable in both settings. Interestingly, the study found typical peers made higher gains in math when students with disability were present. Researchers hypothesized that extra help and supports in these classes created gains for all students.”

Additional benefits include better communication skills and improved social skills for students with disabilities, as well as fewer incidents of disruptive behavior and absences.

To do so means challenging the status quo, removing curriculum barriers and presenting educational goals in interesting ways to engage all learners and serve all students equitably. Below are four important strategies to consider when designing an inclusive classroom and curriculum.

#### 1. Use universal design principles to create accessible classrooms

UDL is a set of principles that were born from the desire to offer every student an equal opportunity to learn, based on the idea that every person has their own unique and individual learning style. According to UDL, there are three primary brain networks that are responsible for how a person learns: the recognition network, the strategic network and the affective network. The three main principles of UDL — Representation (the what of learning), Action and Expression (the how of learning), Engagement (the why of learning) — were formed based on these three brain networks. Understanding the foundation of UDL — the principles and brain networks — is imperative for teachers who wish to implement UDL in

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the classroom. The National Center on Universal Design for Learning has a plethora of resources and information for educators interested in universal design. It depends on which ones are relevant to your learning goals. Start with a single lesson or activity and then build success from that, and then start to look at other parts of your curriculum.”

### 2. Use a variety of instructional formats

The first principle of universal design theory is the “what” of learning. It says to use “multiple means of representation.” While some students are visual learners, others may grasp information better when it is presented through text or when it is spoken orally or taught through kinesthetic learning. Some students do best with a combination of the above. While these differentiated teaching methods may support the needs of students with disabilities, they also offer diversity of instruction to the entire classroom, giving each and every student an opportunity to learn in the way they do best. Similarly, using different mediums to present information and engage students is important in inclusive classrooms. Remember that principle two of universal design theory calls for utilizing “multiple means of action and expression.” Some students may find that their best outlet and means of expression comes through writing, while others may prefer to give an oral presentation, act out a play or create a piece of art. Each student is different and should be given the opportunity to express their knowledge through the methods that work best for them. Additionally, teachers can use a diversity of materials and mediums to engage students. Examples of mediums could include theater, art, video and computer software in addition to the traditional mediums of lecture and text. Through using varied teaching techniques and mediums, teachers can increase the engagement of their entire class, not just the students who respond to a particular style of learning and expression.

### 3. Know your students’ IEPs/504s

To create an equitable learning environment for everyone, it is important to familiarize yourself with students’ IEP or 504 plans. If you have a student with a 504 or IEP plan, you are legally required to make any necessary accommodations as outlined in the 504 or IEP. You can work with the school counselor or teaching specialists to better understand the student’s specific needs. Much like the concept of inclusive learning, 504s were designed to ensure that students with disabilities are allowed to learn in a regular classroom environment, while still being provided with services, educational aids or accommodations they may require. An IEP is only slightly different than a 504; the difference being that students with an IEP may require additional educational services outside of the regular classroom. These services are typically provided and monitored by additional support staff.

### 4. Develop a behavior management plan

Disruptive classroom behavior can affect not just the teacher, but the other students in the classroom as well. Developing a behavior management plan can help you prepare for the inevitable moment a student or students exhibit disruptive behaviors — with the understanding that some behaviors are of much less

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consequence than others (talking out of turn vs. being defiant or aggressive). The behavior plan should be shared with parents and students, so that everyone is aware of the expectations and consequences should those expectations not be met. The most effective plans typically involve a great deal of positive reinforcement and a clear understanding of the expectations. There are several different types of behavior management plans you can implement depending on the needs of your classroom, including a whole group plan, a small group plan, an individual plan or an individual plan designed for particularly challenging students.

### **Q.4 Lesson planning is essential for every teacher, either in special or general school teaching. As a teacher of inclusive education, discuss lesson planning, steps and components of a lesson plan.**

According to the International Institute of Educational Planning (IIEP), teacher guides must : support teachers and student learning through the following essential components: 1) explicitly communicating conceptual goals with direct links to proposed activities; 2) providing knowledge and support to help understand and implement teaching plans; 3) reinforcing pedagogical content knowledge; 4) offering practices and understandings of relevant pedagogical activities; 5) presenting alternatives and freedom of choice; and 6) engaging teachers in ongoing reflection.

In countries where teachers do not receive a quality pre-service training, these materials can help them compensate – in a relative way- their missing knowledge or practice. Thus, elaborating lesson plans and/or teacher guides seems important in order for pupils to learn in the best conditions, that is why political actors must consider giving attention to these teaching supports in order to increase quality education in their countries.

This Policy page will deal with strategies related to lesson plans as well as some strategies regarding teachers' guides. The objective is to highlight strategies in order to help teachers by giving them a course scenario for the entire school-year.

Lesson plans and teachers' guides must be on the alignment with the curriculum and classroom realities. They aim at helping teachers to adapt their pedagogy and to have a directive line in what they teach and how they teach it. Lesson plans, as well as teachers' guides usually promote one pedagogical aspect: learner-centered or most often teacher-centered pedagogies. This type of teaching material indeed includes pedagogical aspects in order to help teacher managing the classroom and to transmit knowledge as efficiently as possible.

Lesson plans and teacher guides are the two common resources when it comes to teacher education and support. Lesson plans can take several formats: they can be scripted or just shared orally between actors, most generally teachers. On the one hand, they can help vary methods and tasks since they give teachers more instruments and possibilities in their way of teaching. On the other hand, they may also prevent teachers from being free to teach in their own way, in their own timeframe. In this respect, it seems prominent to guarantee that lesson plans give enough pedagogical guidelines to teachers but are also adequate to the local context, so teachers do not feel frustrated in their way of teaching.

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Moreover, it is important that teachers rely on each other while there are planning their lessons. If they do it only by themselves, not only it takes teachers a lot of time not doing other tasks, but it also prevents them from improving their teaching skills by sharing their opinion and experiences with their peers. This leads to an increase in the teachers' availability for their students and may affect positively learning outcomes.

According to UNESCO, lesson plans must have several characteristics in order to ensure their appropriateness to the learning context:

- Teaching and Learning Material must be put at disposition for the subject taught;
- duration, timing, and environment must be adjusted to topic-specific learning activities;
- a set of objectives must be reached after one lesson. These may be fixed according to the SMART goals reference, which means that they must be Specific, Measurable, Achievable, Realistic and Time-scaled;
- there has to be an elaboration of a prior organization and progression related to each activity before it is taught; and
- it must include an evaluation, including marking and feedback and adapted to the type of activity taught.

Teachers' guides must follow inclusiveness characteristics, which are also supposed to be present in textbooks, for instance regarding gender equality:

- explain the subject matter and the philosophy of teaching it;
- provide clear guidance on how to teach and assess pupils;
- include lessons plans that are simple enough for teachers to apply them in class;
- include the relevant excerpt from the textbooks with the number of the pages related to each specific subject. The aim is to link efficiently the teaching and learning processes;
- be trialled and piloted in marginalized areas in order to be more realistic and helpful for teachers;
- include suggestion for optional and more complex activities; and
- include more detailed notes and resources to help teachers conducting lessons.

### **Q.5 What is meant by IEP term? Describe the reasons for the development of IEP?**

Most educators do not enter teaching with the expectation that they will be working with consistently well-behaved, enthusiastic, successful learners who enjoy sitting quietly in rows listening to teachers lecture at them. Nor do most teachers anticipate that all their students will dutifully use their highest cognitive processes to memorize, prioritize, analyze, and reflect on everything they hear. There may be some days when such a prospect is appealing, but for the most part, teachers and students have at least one thing in common: their brains are inspired and stimulated by challenge. Robotically attentive "Stepford" children, always ready for rote memorization and one-size-fits-all instruction, would not need teachers. Videotaped lectures and textbooks could serve their needs.

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What makes teachers true educators is their acknowledgment, appreciation, and respect of students' differences. Students' diverse intelligences, talents, skills, interests, and backgrounds enrich our schools and our lives as teachers. Many of today's classrooms are more diverse than ever, including as they do students with LD.

Most of us know that the L in LD stands for learning, but the D can stand for a variety of terms: disability, dysfunction, difficulty, diversity, dichotomy, or difference. The fact that these two letters can represent more than one term is of value. The terms may not be clinically or diagnostically interchangeable, but my goal is to offer approaches to enrich the classroom experiences of students in all of the LD categories, as well as those of their classmates. No two students are the same, and no individual student has the same response to learning in every situation. What we consider a disability for a student in one situation may be a difference that enriches that student's learning experience in another situation. The generally accepted definition of the term learning disability is a cognitive, neurological, or psychological disorder that impedes the ability to learn, especially one that interferes with a person's communicative capacities and potential to be taught effectively. Some states require that students labeled learning disabled have normal or above-normal intelligence and difficulties in learning specific skills. Other states extend the definition to include people of below-normal intelligence who have such conditions as perceptual handicaps, minimal brain dysfunction, dyslexia, developmental aphasia, and AD/HD, but they do not include learning problems due to mental retardation, emotional disturbance, cultural or environmental disadvantage, or physical handicaps (for example, impaired sight or hearing or orthopedic disabilities).

Neither learning nor teaching is a single process. Neuroimaging studies show individuals' varying abilities to identify such sensory stimuli as color, shape, sound, and location. These variations correlate with individual students' different recognition capacities, learning styles, and responses to instructional materials and teaching techniques. Because each student is unique, teachers—especially those in inclusion classes—must use diverse strategies suited to students' broad array of abilities, intelligences, and learning styles. When we offer a variety of individually appropriate strategies, we enable all students to be true participants in a community of learners.

As teachers strive to meet the needs of all students, they will realize that there is no clear, consistent dichotomy between “special” and “regular” students. The same students will not always be at the top or the bottom when they are evaluated according to their intellectual, social, physical, and creative abilities. With the move from a divided general education/special education model to a unified inclusion system, the most successful educators will be those who work together and share resources and expertise to meet all students' needs in any way possible (Stainback, Stainback, & Forest, 1989).

As educators, we won't know what gifts are hidden in our students until we unwrap their packages. Most successful teachers of inclusion classes have found that when they teach basic skills within the context of meaningful lessons, all students can achieve higher-level learning. Such lessons stimulate critical thinking and motivate students to make personal connections with the material.

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Students who are part of a community of learners tend to rise to higher levels of learning and joy, especially when they work cooperatively on in-depth, project-based units of discovery. In these supportive classroom communities, students acknowledge and appreciate one another's skills and talents. Stereotypical academic success no longer becomes the only standard for who is “smart.” Students who learn about their own and their classmates' multiple intelligences and unique abilities begin to shed previous negative attitudes or preconceived notions about LD students. In addition, an education environment that values participation in cooperative activities can reduce LD students' academic anxieties and build their confidence as they receive positive recognition for what they bring to the community of learners.

### The Law

The Individuals with Disabilities Education Act (IDEA) requires public schools in the United States to make available to all eligible children with disabilities a free education in the least restrictive environment appropriate to their individual needs. Under IDEA, public school systems must develop an appropriate individualized education program (IEP) for each of these students. The specific special education plan and related services outlined in each IEP should reflect the individual needs of the student. IDEA also mandates particular procedures that schools must follow in developing IEPs. Each student's IEP must be developed by a team of knowledgeable persons and be reviewed at least once annually. The team includes the student's teacher; the student's parents, subject to certain limited exceptions; the student, if determined appropriate; a state agency representative who is qualified to provide or supervise the provision of special education; and other individuals at the parents' or agency's discretion.

The decades since the initiation of IDEA in 1975 have seen the almost complete elimination of separate pullout classes for students with disabilities. Now students who were previously sent to “special” schools attend classes with their siblings and neighbors. Inclusion classes, when successfully planned and taught, become places where friendships are founded on the appreciation of similarities and differences.

The word inclusion carries positive connotations of belonging. Indeed, full inclusion of all students—even those with severe disabilities—in general education classrooms doesn't mean LD students work separately with their aide while the rest of the class does other work. Truly inclusive classrooms integrate and coordinate specialized school support programs within the general education program. This approach has replaced what was previously dubbed mainstreaming—nonacademic inclusion, in which LD students joined general classes for nonacademic work and were removed for academic special education.

### Benefits of Inclusion

In the past, many students with severe disabilities were separated into special education classes and missed out on the benefits of having long-term social relationships with classmates who did not also have severe disabilities. As a result, when they left the supervised classrooms, they were not ready to join the larger, heterogeneous communities in which they would live and work for the rest of their lives. In contrast, a 10-year

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follow-up in one study found that LD students who had been taught in integrated classes demonstrated more independent functioning and social adjustment (Stainback et al., 1989).

Sometimes problems in separate special education classes arose because of insufficient teacher training. For example, teachers may have learned to identify and accommodate the needs of LD readers but lacked instruction in teaching higher-level reading. Also, because special education classes were not necessarily smaller than regular classes, many students with disabilities received no more individual attention in the segregated classes than they would have gotten in the integrated classes. In some such cases, teachers were obliged to teach the majority of the class to the level of the least common denominator—the most severely disabled students who needed the slowest pace and the least-challenging lessons (Affleck, Madge, Adams, & Lowenbraun, 1988).

Strategies derived from brain research enable LD students to learn according to their strengths and help them develop the characteristics found in successful students. In addition to promoting academic success, these strategies uncover such strengths as energy, curiosity, concentration, exceptional memory for details, empathy, openness, perceptiveness, and divergent thinking. Many students who struggle with LD become self-reliant at an early age, are good at expressing their feelings, are aware of their thinking and decisionmaking processes, and are tolerant of others' weaknesses (Goldberg, Higgins, & Herman, 2003).

Teachers who have used brain-compatible learning strategies to build on LD students' strengths report an additional long-term benefit over the course of 5 to 10 years. When I spoke with Judy Gamboa of the Learning Disabilities Association of Arizona, she noted that

Children who practice the strategies successfully to compensate for limitations associated with their LD have become college and graduate students who stand out among classmates who never had to struggle with LD. The students who have incorporated the adaptive strategies are standouts in their ability to express their feelings and exhibit tolerance and empathy for others. I have found that these former students who achieve success in later life have used the adaptive strategies they learned in school to enrich their lives once they leave the classroom. The discoveries they made about the correlation of practice with skill building and mastery stay with them and continue to empower them to work to achieve their goals. It is so satisfying to see these former LD students reach their goals and use the strategies we practiced to achieve competence. Joy of learning has taken the place of frustration and avoidance of challenge. There is nothing as rewarding as seeing my students years later with the confidence and perseverance to make their dreams become realities. (J. Gamboa, personal communication, Feb. 17, 2006)

Inclusive classes are also good for teachers. Whereas isolated special education teachers experience more burnout and attrition than regular teachers do, effective inclusion teachers tend to describe themselves as tolerant, flexible, and prepared to take responsibility for all their students (McGregor & Vogelsberg, 1998). These successful teachers' colleagues and administrators found them to be good collaborators who exuded warmth and sincerity in their interactions with students. Their most common concerns were insufficient time for

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collaboration and the challenges of managing students whose severe behavioral problems disrupted class. Evaluations have found that the most beneficial supports to successful inclusion teachers are strategic training, support from a team of professionals, and assistance personnel in their classrooms (Pryor, 2003).

### **The Road to Success**

The principal goal for all students is to achieve their own highest level of success in supportive classrooms, taught by teachers who give them the tools to overcome obstacles and learn to their fullest potential. Although success means different things to different people, most people agree on certain common factors as important components of success, including positive family and peer relationships, self-approval, academic success, job satisfaction, physical and mental health, financial comfort, and a sense that one's life has meaning and value.

A study tracking LD students over the course of 20 years identified several specific attributes that seem to lead to such successful life outcomes. These attributes include a positive self-concept, a proactive approach to life, a tendency to set goals, perseverance, effective support systems, and effective emotional coping strategies. Although not every subject who achieved successful life outcomes had all of these attributes, the study found that their presence was more predictive of success than were such variables as school grades and IQ (Raskind, Goldberg, Higgins, & Herman, 1999).

### **Five Critical Conditions of Learning Success**

A sequence of five critical conditions of brain processing helps promote some of these attributes of success. I have defined the conditions according to the brain structures and functions that neuroimaging research has demonstrated are the basis of processing raw sensory data into retained and accessible memory. Most of the strategies I describe in this book help promote these five conditions. The strategies aim to empower students' brains to recognize which sensory data are worthy of focus; promote the passage of these data through alerting and affective filters; pattern the data into the coding of brain cell communication; and prepare the data to be successfully stored, maintained, and retrieved. The entire process turns information into the memories that become accumulated knowledge. The following five steps describe how the sequence of these necessary conditions of learning unfolds.

1. The brain responds to sensory input that engages the attention of sensory processing filters.
2. After the senses register the information, it passes along to the neurons in the amygdala, where it can be moved to memory storage. At this point, the affective filter in the limbic system must be set to accept and not block incoming data. If high stress or negative emotions have overloaded the amygdala, the affective filter will block passage of the data into memory. On the other hand, pleasurable, positively reinforcing, and intrinsically motivating stimuli unlock the gates of the limbic system to facilitate active information processing. Such information has the best chance of entering long-term memory storage banks (Willis, 2006).
3. Sensory data that pass through the brain's filters are coded into patterns that can be connected to existing neuronal pathways.

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4. Dendrites (neuron extensions that conduct electrical impulses to neighboring neurons) and the synaptic connections they form build neuronal pathways that cross-connect to multiple storage areas of the brain. These neuronal pathways are activated through relational, emotional, personally relevant, learner-participatory, and experiential stimuli. The repeated activation of these new circuits by the variety of access stimuli will strengthen the new pathways, limit their susceptibility to pruning (a process of eliminating inactive brain cells), and increase the efficiency of memory retrieval.
5. Repeated multisensory stimulation brings new memories from the brain's data storage areas to its executive function processing centers. When the brain's highest cognitive levels use the facts, processes, sequences, and routines that it has acquired as memory, all learning comes together. At this stage, synapses are firing in brain centers of critical reasoning, prioritizing, judging, and pattern analyzing. This is the brain's electrical dance of original, creative discovery—the “aha” moments.