Can Executive Skills Help Underachieving Bilingual Students?
Pedagogical Implications

Lianhong Gao
Florida International University, USA

Abstract: The author explores solutions for bilingual students’ underachievement by embedding elements of executive functioning into bilingual education. Based on analysis of theoretical perspectives, the author recommends teaching executive functions to bilingual students. Implications indicate the importance of embedding executive functions in curriculum development, textbook compiling, and instruction.

Bilingualism and bilingual education are part of a complex system involving education, politics, cognitive development, economics, and anthropology. Bilingual education is common across disciplines and gaining more and more attention among researchers, practitioners, and policy makers, especially concerning the issue of underachievement exhibited by a large number of bilingual students. Currently, almost five million bilingual Limited English Proficient (LEP) and English Language Learners (ELL) students are enrolled in American public schools. Since 1992, this number has increased approximately 85% (Kindler, 2002), indicating that only 18.7% of ELL students met state norms for reading in English. ELLs also exhibit higher drop-out rates and the highest rate of academic failure and more frequent placement in lower ability groups compared to native speakers (Freeman, Freeman, & Mercuri, 2002; Genesee, Lindholm-Leary, Saunders, & Christian, 2005). Thus, educators and the researchers are attempting to answer the question: What are the causes for the high drop-out rates and underachievement of bilingual students?

The purpose of this paper is to explore solutions for bilingual students’ underachievement by means of embedding the elements of executive functioning into bilingual education. After investigating into the extensive literature resulting from research in the fields of cognitive psychology, neuroscience, and bilingual education, the author recommends that executive functions be taught to the bilingual students. Implications are summarized indicating the importance of embedding executive functions in curriculum development, textbook compiling, and educators’ instruction.

Causes of Achievement Gap

Underachievement of bilingual students has been addressed in research by two groups. Cognitive Factors

For one group, academic failure is attributed to the child’s bilingualism which might make confusions in cognitive development (Hakuta, Ferdman, & Diaz, 1986), while another group asserts that bilingualism does not have detrimental effects, but rather can sharpen the brain. Elizabeth Peal and Wallace Lambert at McGill University in Montreal conducted their important study (published in 1962) on the relationship between bilingualism and intelligence. They found that balanced bilinguals outscored their monolingual counterparts on IQ tests (Peal & Lambert, 1962), based on assumptions that a bilingual child whose wider experiences in two cultures have given him advantages which a monolingual does not enjoy. In Proust and the Squid, The Story and Science of the Reading Brain, Wolf and Stoodley (2007) summarize the findings about

http://coeweb.fiu.edu/research_conference/
bilingualism and learning. As cognitive neuroscientists, they reiterate that having a bilingual brain is a good thing, and that an early exposed bilingual brain appears to have certain cognitive advantages over a monolingual brain in terms of linguistic flexibility and multitasking. In other words, the early bilinguals learn to flexibly manage different tasks at the same time from their own learning experience of two linguistic systems.

Environmental Factors

Another cause for the underachievement is shifts to the environment (e.g., family environment, social environment, and school environment). These three educational contexts have an impact to various extents: (a) Family is the closest and earliest; (b) social environment is indirect and unconscious; and (c) school is formal and systematic. Besides genetic inheritance, these three kinds of environment account for academic achievement.

Brisk (2006) lists five external factors that influence the effectiveness of bilingual education, among which two are concerned with family: family’s amount of language use and family’s involvement in school education. Other factors can be categorized from a social education perspective: political attitudes towards immigrants and language diversity; and the size and cohesiveness of the language community.

School education is supposed to be formal, systematic, detailed, and scientific. These four features warrant the critical attention given to school education. Though family and society factors are indicators, Tomlinson (1989) asserted that “stressing social and economic disadvantage as a major cause of educational underachievement can seem to absolve educators from their professional duty to educate all pupils effectively” (p. 26).

Combined with changes in the world political situation and academic advancement, bilingual education has become diversified and better qualified, from compensatory to quality schooling. Recommendations were provided in school administration, curriculum development, and classroom instructions (Brisk, 2006). In curriculum development, Brisk (2006) suggests that a comprehensive curriculum is supposed to aim at thinking skills development and learning strategy training. Freeman et al. (2002) recommends the improvement of bilingual students’ academic achievement by learning strategies. Given the significance of independent learning, teaching the bilingual students how to study should be given priority over others.

A New Perspective to Approach the Underachievement Problem

A retrospective investigation reveals that researchers and educators are putting a larger burden on bilingual students. When new programs are started, bilingual students are provided additional training of strategies and skills, and the curriculum is enriched by adding more culture-related information. In other words, bilingual students are asked to learn more than their native peers. Bilingual students have to simultaneously deal with two linguistic systems. Thus, they must remain much more engaged than their monolingual counterparts. Therefore, how to help bilingual students plan and manage different tasks with efficiency emerges as a priority. Psychological research findings suggest that executive skills are the ones that people need to plan, manage, evaluate, and to maintain control. In this section, the definition of executive skills is provided first followed by the development of executive skills and the importance of executive skills for academic achievement.

Definition of Executive Skills

Executive skills are defined as “a collection of higher order cognitive capabilities including planning, organization, time management, working memory, and meta-cognition, all of which support the development of response inhibition, self-regulation of affect, task initiation, flexibility, and goal-directed persistence” (Grier, 2005, p. 450). They are the skills we need both
to choose the tasks which deserve our attention and to be devoted to accomplishing (Hart & Jacobs, 1993). Dawson and Guare (2004) further specified them as 10 skills: planning, organization, time management, working memory, meta-cognition, response inhibition, self-regulation of affect, task initiation, flexibility, and goal-directed persistence. The first five are the basic executive skills to reach a goal, paving the path to the goal; but in order to reach the goal, the latter five are needed to guide or modify people’s behavior as they are pushing along the path.

Development of Executive Skills

Researchers have found that the development of the brain parallels the “development of the child’s ability to act, think, and feel” (Dawson & Guare, 2004, p. 3). Further, different areas of the brain have been associated with various abilities, and the frontal lobes are most often linked to the executive function (Goldberg, 2001, p. ix). The frontal lobes are necessary for “all higher-order purposeful behavior—identifying the objectives, projecting the goal, forging plans to reach it, organizing the means by which such plans can be carried out, monitoring and judging the consequences to see that all is accomplished as intended” (Goldberg, 2001, p. ix.) In order to play the executive function, the frontal lobes have to depend on other brain areas for input (Cooke, 2005). According to Dawson and Guare (2004), although the groundwork for developing executive skills is formed before birth, scientists believe that the skills follow a gradual development “in a clear procession through the first two decades of life” (p. vii). As children grow and develop, they are better able to regulate their behavior. Their ability to plan, set goals, and respond to their environment develops gradually from simple to complex (Dawson & Guare, 2004).

The Importance of Executive Skills for Academic Achievement

Blair (2002) and Zimmerman & Schunk (1989) assert that in schools, the academic success of students is largely influenced by the degree to which students self-regulate their own study. Being aware of their own strengths and weaknesses, effectively allocating their time and energy, and selecting the most appropriate learning strategies for themselves are skills that may lead successful independent learning. Nevertheless, some hard-working students seem to always perform poorly on exams, especially the important ones. Additionally, some students with high IQs do not obtain comparably high academic achievement grades. These phenomena were confounding until associated with executive deficiency (Meltzer, Roditi, Steinberg, Rafter, & Taber, 2006). This is important for students who do not know how to study (e.g., how to prioritize, how to prepare for exams, how to manage time efficiently, how to establish goals and persist in working towards these goals). Many researchers working on the effects of learning strategies on students’ academic achievements found that students making good use of effective learning strategies tend to be more successful (Meltzer et al., 2006).

The importance of executive skills for ESLs is threefold. First, they may benefit bilingual students who tend to have to deal with multiple learning tasks (e.g., two language systems, two languages to learn subject areas, two cultures, multiple ways of thinking in different cultures) concurrently. Second, some other issues bilingual students face include cultural identity and cultural as well as economic inferiority, which require bilingual students to learn to disregard the distractions caused by these issues and pursue their goals with persistence and confidence, and most of all, with the right strategies. Additionally, bilingual students tend to think in more divergent ways. Thus, more possibilities can be produced, but creativity will not result unless convergent ways of thinking are integrated to find associations among those possibilities. Such executive functions as global assessment, summarization, and metacognition can make divergent minds convergent to achieve integration in ways of thinking. Executive functions are not only
needed for the purpose of academic achievement but for achieving goals in human life. What should be stressed is that school education is the preparation for one’s future career. In other words, executive functions refined at school may better equip students for the future.

**Pedagogical Implications**

Pedagogical implications from research findings related to the study of executive functions (Gaskins, Satlow, & Pressley, 2007; Graham, Harris, & Olinghouse, 2007; Meltzer, 1992; Meltzer et al., 2006, Meltzer, Pollica, & Barzillai, 2007; Roditi & Steinberg, 2007; Rose & Rose, 2007) have been proposed as follows.

**Curriculum Development: Including Executive Functions as the Cognitive Objectives**

A school’s general education curriculum provides guidance for instruction, teaching, and learning. It “identifies the goals for instruction and the means for achieving those goals—the materials and methods that can be used, the sequence of instruction, and the ways progress can be measured” (Rose & Rose, 2007 p. 288). Cognitive development is one of the goals of curriculum, but cognitive goals usually refer to the skills to reason, speculate, infer, deduce, and analyze (Eisner & Vallance, 1974). Considering the importance of executive skills supports the author’s recommendation to include and highlight them in school curriculum goals.

**Textbook Compiling: Prioritizing the Disciplinary Framework**

Textbooks tend to be getting thicker and heavier, which is very likely to be distracting. No matter how refined students’ executive skills are, it is impossible to hold so much information in memory. Admittedly, some textbooks are interesting and specific, but at the cost of interesting and specific, main points are lost in the vast pool of specifics. This is especially true for science and technology, which are rich in principles and formulae. Interesting and specific components should be entrusted to instructors to deliver during lectures or to print in the handbook. As a result, textbooks can fulfill the task of highlighting the framework of designated important knowledge—patterns for the students to memorize. As for students, it becomes easier for them to recognize the priority or the patterns and master them. For ESLs, limitations lie in the English language. A thicker textbook raises the difficulty level for ESL. Executive functions could be embedded into exercises in the textbook, arranged from basic to complicated, primary to derivative, and compulsory to elective to ensure that the first thing read is always the most important or primary thing for students to memorize or process in their brain.

**Teacher’s Instruction in the Classroom: Introducing Strategy Instruction into the Classroom**

Teachers’ instruction in the classroom actualizes cognitive objectives of the curriculum and reinforces the effects of the textbooks’ implicit elements of executive functions. To a large extent, it is the teachers who put all these expectations into effect. Meltzer et al. (2007) proposed four principles of effective strategy instruction, which can be adjusted and expanded as follows, based on the characteristics of the executive skills already mentioned and empirical observations. (Considering the effects of executive functions, the following principles are listed according to priority):

1. The aim of strategy instruction is to facilitate solving problems and overcome learning difficulties, but the difficulty lies in being able to generalize these skills since executive skills are context-sensitive. Therefore, it is advisable to stress that the aim of strategy instruction is to solve learning problems in specific contexts.
2. Strategy instruction should be conducted step-by-step, from basic to complex. Take examination preparation as an example. Students should be guided to make use of executive skills to prepare several examinations concurrently. Such skills as time management and self-evaluation are not as hard to digest as the complicated ones.
Rewarding experiences pave the road for confronting more complicated executive functions.

3. Detailed instructions are needed to explain what (what is the skill), why (why it is facilitated in this situation), and how (how to exercise the skill). Accumulated experiences are what the teachers need in order to make professional judgments.

4. The last principle is that goal-directed persistence should be the skill stressed for every problem solving. Persistence can also be interpreted as the state of mind to play with different options until the final solution comes out. Under such a pleasure-seeking mentality, the students’ executive skills will be in full play.

Meltzer and colleagues (2006) summarized three keys to student success: positive self-concept, effective strategy use, and focused efforts. To put it in another way, in the classroom, teachers are encouraged to hold high expectations for all students, including the underachieving ones, and then teach them the strategies. In the end, focused efforts may be made by the students to achieve their goals.

**Conclusion**

When bilingual students’ underachievement is examined, faults are often found with extrinsic factors, such as family, community, and school. As with other underachieving students, bilingual students’ underachievement may be due to their weakness in executive functions. Problems may be more challenging, considering their bilingualism. This calls for bilingual students to be aware of the executive functions and refine them while exercising them during the process of learning. They can also benefit from executive functions through their road of life, from students to professionals, and from children to adults.

**References**


Meltzer, L. J., Roditi, B. N., Steinberg, J. L., Rafter, B. K., & Taber, S. E. (2006). Strategies for success: Classroom teaching techniques for students with learning differences (2nd ed.). Austin, TX: Pro-Ed.


