

Does Fast ForWord® Provide Implicit Grammar Instruction?

MAPS for Learning: Research Reports, 11(1): 1-7

by Beth A. Rogowsky, M.A., M.S.
Wilkes University*

ABSTRACT

Purpose: The purpose of this literature review is to investigate whether the use of multimedia products, specifically the Fast ForWord family of products, can serve as a legitimate means of grammar instruction that is more effective than the traditional alternatives. **Results:** Based upon the literature, incorporating grammar instruction through the use of the Fast ForWord products appears to be a viable alternative to traditional grammar instruction because Fast ForWord products make use of modeled grammatically-correct language, repetition of subject matter, instant feedback, individualized instruction, combined auditory and visual stimulation, and practice to enhance listening skills, all of which appear to be critical components for improving grammar. However, more research is needed to reveal the extent of the correlation between students' use of Fast ForWord products and the improvement of Standard Edited American English.

Keywords: Literature review, Fast ForWord Middle & High School, Standard Edited American English

INTRODUCTION

This literature review is intended to determine whether there is evidence that would suggest Fast ForWord could be used to improve students' use of Standard Edited American English. The need for this inquiry stems from an awareness of widespread repetitive grammar drills and exercises occurring in many classrooms throughout the country despite decades of research refuting the value and benefit of such instructional practices (Graham & Perin, 2007; Macaro & Masterman, 2006; NCTE, 1985; Schultz, 2006; Weaver, 1996).

Opposition to Explicit Grammar

In 1963, the Braddock Report concluded that "the teaching of formal grammar has a negligible or, because it usually displaces some instruction and practice in actual composition, even a harmful effect on the improvement of writing" (Weaver, 1996, p. 10). In addition to the Braddock Report, the National Council of Teachers of English (NCTE) issued a resolution in 1985 reaffirming the Braddock report: "...the use of isolated grammar and usage exercises not supported by theory and research is a deterrent to the improvement of students' speaking and writing

and that, in order to improve both of these, class time at all levels must be devoted to opportunities for meaningful listening, speaking, reading, and writing..." (NCTE, 1985, ¶ 1). In their most recent news release, the NCTE states, "The National Council of Teachers of English has not changed its position on the teaching of grammar. Decades of research have shown that isolated grammar drills do little to improve student writing and are a poor use of instructional time" (Schultz, 2006, ¶ 1).

"While the presentation of most subjects has drastically changed in the last fifty years, English grammar is still taught basically the same way" (Brown, 1996, p. 99). Researchers Graham and Perin (2007) studied the effectiveness of interventions designed to improve 4th through 12th grade students' writing quality. In a report to Carnegie Corporation of New York, Graham and Perin (2007) found a negative effect for traditional grammar instruction for students across the full range of ability: "This negative effect was small, but it was statistically significant, indicating that traditional grammar instruction is unlikely to help improve the quality of students' writing" (p. 21). Clearly, there is a discrepancy

between research advising against traditional grammar instruction and the reality of explicit and systematic instruction taking place in classrooms.

Like Graham and Perin (2007), Vavra (1996) also finds traditional grammar instruction ineffective. He wrote, “Every year, thousands of teachers instruct the same students, over and over again, that ‘subjects must agree with verbs in number.’ . . .when problems do occur, the teacher’s instructions are useless. The fact is, most students cannot IDENTIFY the subjects and verbs in their own writing” (p. 34). To prove his point, Varva (1996) conducted a study with a group of 131 college freshman. He asked the freshmen to identify the subjects and verbs in the following sentences:

I never look at the sky on a summer evening and catch a glimpse of a small aircraft without recalling in vivid detail the tragic crash two years ago.

The children were playing in the yards, and the entire street was at peace.

Varva (1996) was surprised with the results: 24% of the students did not identify “look” as a verb; 34% did not identify “catch”; 44% did not identify “were”; and 50% did not identify “was.” For explanation, he points to years of research that has shown “little, if any, transference of formal grammar instruction to students’ writing” (Varva, 1996, p. 34).

Time and again, research confirms that explicit instruction does not positively affect students’ grammatical knowledge and usage (Graham & Perin, 2007; NCTE, 1985; Schultz, 2006; Varva, 1996; Weaver, 1996). Macaro and Masterman (2006) studied a cohort of twelve students of French who received a French grammar course immediately before their first year of study at a United Kingdom university. The purpose of Macaro and Masterman’s (2006) research was to determine whether a short and intensive study of grammar would bring about an improvement in students’ grammatical knowledge and performance in production tasks.

Participants were tested three times over the course of the study. The intervention group was tested prior to the start of their intensive grammar course, whereas the comparison group completed their pre-test prior to the start of the fall semester. While both groups received a posttest in the middle of the spring semester, only the intervention group was tested one week after the end of their intensive grammar study and prior to their first semester of study. The tests concentrated on four categories only:

verb/tenses/aspect, relative clauses, agreement, and prepositions. The tests each lasted 1¼ hour. Interestingly, the research team had to develop the tests themselves, as no standardized tests of this type were available. The results were compared with a group of students who did not receive explicit instruction. Based on their analysis of the data, Macaro and Masterman (2006) conclude, “The intensive grammar course was *not* a sufficient factor to bring about a significant improvement in their grammatical knowledge as there was no greater ability to make judgments *overall* of grammaticality when compared to the comparison group” (p. 318).

The Need for Grammar

Despite the long history of poor results from formal and traditional grammar instruction (Graham & Perin, 2007; Vavra, 1996; Macaro & Masterman, 2006), the review of research indicates that teaching grammar is important. “People do judge us by the way we communicate” (Davis, 2004, p. 8B).

In their report, *Writing: A Powerful Message from State Government*, The National Commission on Writing (2005) shares its results from a survey of state human resources directors completed on the Commission’s behalf by the National Governors Association. Forty-nine of the fifty state human resources directors completed the survey online. The state respondents indicated that they employ nearly 2.7 million people. Approximately 80 percent of the state human resources directors reported that they “frequently or almost always take writing into consideration when hiring professional employees” (p. 11). Grammar is included in civil service exams for clerical and support positions. The survey revealed that 83 percent of the state human resources directors would count a poorly written application against the job applicant. “Nearly 100 percent of respondents agree that accuracy, solid spelling, grammar and punctuation, clarity . . . are either ‘important’ or ‘extremely important’ characteristics of good writing” (National Commission on Writing, 2005, p. 19).

Unfortunately, our nation’s schools are not producing the quality writers that employers seek. In 2002, The National Assessment of Educational Progress (NEAP) administered their writing assessment to approximately 276,000 students in grades 4, 8, and 12 throughout the nation. The national examination assessed students in 5,500 schools at grade 4; 4,700 at grade 8; and 700 at grade 12. According to NEAP’s 2002 results, only 24-31 percent of the students tested in grades 4, 8, and 12 performed at or above the *Proficient* level (National Center for Education Statistics, 2003).

Clearly, teachers are left in a quandary over how best to teach grammar. The research indicates that use of proper grammar (also referred to Standard American Edited English) is necessary; however, traditional methods of explicit instruction fail to achieve positive results. A review of the literature revealed sentence combining as a possibly effective alternate method of developing students' writing proficiency. However, after examining the results of the best-documented study on sentence combining to date (Saddler and Graham, 2005), the results are discouraging.

Sentence Combining—Moderate Effects on Grammar

Sentence combining is the alternative method of explicit grammar instruction that has received enthusiasm from professionals in the field (Frater, 2004; Graham & Perin, 2007; Schultz, 2006, Weaver, 1996). Sentence combining requires students to combine two or more basic, simple sentences to construct complex sentences. The exercises students complete when combining sentences covertly teach grammar while students improve their sentence structures. For example, a teacher may instruct students to “play” with the following two sentences:

It surprised me.
Jacques arrived early.

Students are encouraged to put the sentences together into a single sentence in as many ways as possible:

It surprised me that Jacques arrived early.
I was surprised when Jacques arrived early.
Jacques' early arrival surprised me.
What surprised me was the earliness of Jacques' arrival.
Because Jacques arrived early, I was surprised.
Jacques arrived early, surprising me.

Advocates of sentence combining instruction propose that before long, students will be creating grammatically correct sentence structures that include relative clauses, participial phrases, and absolutes.

To study the effectiveness of sentence combining, Saddler and Graham (2005) randomly assigned forty-four fourth-grade writers from nine different classrooms across three schools located in the Washington, DC metropolitan area to two conditions—sentence combining or grammar instruction. The experimental treatment was designed to improve students' sentence-construction skills through the use of sentence combining and to promote use of these skills when revising. The comparison treatment involved teaching specific grammar skills,

focusing mainly on the parts of speech. Students in both treatment conditions received thirty lessons, twenty-five minutes in length, three times a week for ten weeks. To ensure delivery validity, instructors were taught how to deliver both treatment conditions without error.

Upon analysis of the results, Saddler and Graham (2005) write, “When students in the sentence-combining condition revised their post-test papers, the overall quality of their writing improved. This did not occur for children who received grammar instruction.” While such conclusions seem encouraging, it is important to point out, however, “Spelling, punctuation, and capitalization errors were ignored in scoring the produced sentence as correct or incorrect” (Saddler & Graham, 2005). Furthermore, when the effects of sentence combining were separated for different types of writers (low-achieving and average writers), the effect for the weaker writers was mild. Because the overall impact on improving the quality of writing using sentence combining is moderate, researchers and practitioners are still left seeking alternative methodologies.

Clearly, there is a need for methods better than explicit instruction or sentence combining to teach students usage of Standard Edited American English. The purpose of this literature review is to investigate whether the use of multimedia programs, the Fast ForWord family of products, could serve as a legitimate means of grammar instruction that is more effective than the traditional alternatives. This review of the literature is guided by the following question:

Based on the psychology behind how proper grammar (Standard Edited American English-SEAE) is learned, does Fast ForWord serve as a legitimate implicit method of grammar instruction?

In order to answer this question appropriately, research on the psychology behind how grammar is learned, combined with an understanding of the Fast ForWord products, will be used to determine whether Fast ForWord serves as a legitimate implicit means of teaching grammar.

In order to answer this question appropriately, research on the psychology behind how grammar is learned, combined with an understanding of the Fast ForWord products, will be used to determine whether Fast ForWord serves as a legitimate implicit means of teaching grammar.

FINDINGS

Grammar in Infancy

In their research, Chang et al. (2006) refer to Chomsky's (1959) noteworthy view: "Speakers possess abstract syntactic knowledge, and the basis for this knowledge is in the human genes" (§ 4). In their conclusion, Chang et al. (2006) emphasize what is learned over what may be innate. An infant is capable of producing unusual utterances that are grammatical (Chang et al., 2006). Later in life, such utterances are described in terms of syntactic categories (such as nouns and verbs), functions (such as subjects and objects), and rules (apostrophes are used to show possession). The knowledge of grammar in infancy is abstract in the sense that it is not attached to the meaning of words. Meanings and rules are attached to words once learners create concrete connections between what they hear and what they attempt to speak. In this case, learners make predictions about upcoming words in what they hear. "If those predictions are erroneous, the learner makes changes to the system that generated the predictions" (Chang et al., 2006, ¶ 5). Simple recurrent networks occur as language, sequence, and context are learned. Listening to grammatically correct language, retaining the memory of the language, and then unconsciously modeling the structure is vital to the acquisition of correct grammar.

Defining Correct Grammar

The correct use of grammar is one component that contributes to students' success in writing. In 1985, Kolln wrote, "The source of the grammar issue is tied up with the problem of definition" (p. 875). Much literature battles over the terminology on whether the grammar English and language arts teachers teach is formal grammar, prescriptive grammar, descriptive grammar, generative grammar, transformational grammar, instrumental grammar, functional grammar, rhetorical grammar, and so on. For the purpose of this review, grammar will be defined as the unconscious knowledge of language that allows people to produce linguistically correct language (Asselin, 2002).

Kellogg (1999) contends, "A major development in writing skill is learning the rules of spelling, punctuation, handwriting, and other mechanics of consensual symbol systems" (p. 88). Kellogg (1999) points out, "Translating ideas into text is a qualitatively different operation when one must struggle with these low-level production concerns than when they come automatically" (p. 88).

The Need for Automaticity

In order for the production of grammatically correct language to become automatic, Frater (2004) finds that explicit instruction of English grammar is not appropriate. In theory, repetitive drilling, which is often the mode of traditional grammar instruction, enables students to transfer the definitions memorized and the correct tenses circled on worksheets to their own writing. However, students usually fail when they are asked to transfer the rules of grammar recently learned from a unit to their own writing.

To draw such conclusions, Frater (2004) surveyed two schools in the United Kingdom (one at Key Stage 2 and the other at Key Stages 3-4) that were "unusually effective in teaching writing" and conducted a case study of a low-achieving Y7 writer, referred to as Dean, from a UK inner-city boys' school (p. 78). In his case study, Frater (2004) specifically examines England's National Curriculum (expressly the National Strategy's *Grammar for Writing*, 2000 ed.), the instruction Dean received, and the original texts Dean composes. Frater (2004) notes Dean's "weak spellings, frequent failures with stops and caps, his faulty manuscript distinctions between upper and lower case..." (p. 78). Additionally, Frater (2004) finds that Dean's sentence patterns "need attention" and Dean makes little use of subordination, classifiers, and modifiers. Based on his research, Frater (2004) argues, "Purposeful text-level teaching, reading in particular, and the creation of real relationships offer more secure ways of promoting progress in writing" (p. 78).

Reading to Writing

In his discussion, Frater (2004) suggests that writing is the flip-side to reading. If this were the case, it would be reasonable to assume that helping students learn to read better would then naturally lead students to write better. However, in their research, Graham and Perin (2007) note,

"...although reading and writing are complementary skills whose development runs a roughly parallel course, they do not go hand-in-hand... While readers form a mental representation of thoughts written by someone else, writers formulate their own thoughts, organize them, and create a written record of them using the conventions of spelling and grammar." (pp. 7-8)

Because the rules of grammar are often relaxed in ordinary conversation, remembering the rules and then applying the rules to writing becomes increasingly difficult. In informal conversations, errors in grammar are typically accepted. Children who repeatedly listen

to errors as they develop, remember and repeat those errors. Ranpura (2000), a neuroscience researcher, writes, “Our habits...are all influenced by what we remember of our past” (§ 2). Ranpura (2000) explains, “At the most basic level, we remember because the connections between our brain’s neurons change” (§ 2). Each new experience gets us ready for the next experience. As a result, we remember things more easily if we have been exposed to similar things before. Ranpura’s (2000) explanation supports the research of Chang et al. (2007). Chang et al. (2007) found that learners make predictions about upcoming words, and based on these predictions apply what they hear to their own generated language.

Fast ForWord

In “Beyond Grammar Drills: How Language Works in Learning to Write,” the National Council of Teachers of English states, “The evidence is clear that to learn to write well, students need time living in and making decisions among a forest of sentences, manipulating syntactic parts and grouping thoughts...” (Beyond, 2006, ¶ 3). The Fast ForWord software programs provide students with time (one protocol calls for participation ninety-minute-a-day, five-times-a-week for approximately six weeks), allow students to make decisions (the products are set up like video games where students continually answer questions and score points), and require the manipulation of syntactic parts and the grouping of thoughts (students continually answer language-related questions).

Fast ForWord software “engages the user in a series of cognitive exercises using language and listening designed to build the language-based skills necessary...” (Agocs et al., 2006, p. 471). According to Agocs et al. (2006), patented technologies behind the software adjust to each student’s progress and persistently build skills critical for improving thinking, listening, speaking, and reading.

The Fast ForWord family of products includes products appropriate for elementary students, secondary students, and beyond. Six different exercises comprise the Fast ForWord Middle & High School product. In the exercise entitled *Stories*, there are three tasks. In one task, students listen to a story and answer questions that relate to the story. Secondly, students listen to a sentence and, from four pictures, select the one that most accurately represents the sentence they heard. Finally, the students follow verbal instructions to identify and manipulate objects of various colors and sizes. In *Stories*, students are working on language comprehension, listening comprehension, syntax and morphology, and listening accuracy. Unbeknownst to the students, they are

learning such grammatical skills as distinguishing singular and plural nouns by inflection only, choosing correct verb tenses, using “who” versus “what” appropriately, and case marking prepositions (for, with, from, to, and by). Students also work with possessives, subject relative clauses, quantifiers, pronouns, passive and active voice, and so forth. Users receive implicit grammar instruction as they use the Fast ForWord product (Scientific Learning, 2006).

The initial Fast ForWord products were originally developed to meet the needs of students with central auditory processing disorders (Greenwald, 1999); however, using the family of Fast ForWord products has been shown effective with alternative high school students, special education students, limited English proficiency students, at-risk students, as well as average and gifted students who, presumably, do not have central auditory processing disorders (Agocs et al., 2006).

The Fast ForWord products are based on neuroscience research claiming that the brain is plastic and can be shaped and reorganized over time (Begley, 2000). As a result, “...we can now fix the brain’s way of connecting oral language with the written word...” states neurobiologist Merzenich of the University of California, San Francisco (Begley, 2000, p. 64).

Limited research is available on the direct effect of Fast ForWord participation on students’ use of grammar. The Callier Center for Communication Disorders documented four case studies in the *Texas Journal of Audiology and Speech Pathology* (Turner and Pearson, 1999). One case study revealed language gains in an 11-year, 11-month old Hispanic male. One of the child’s goals when entering the Fast ForWord program was to utilize irregular past tense verb forms when making sentences. Upon successful completion of the program, the child’s speech-language pathologist who had been treating the child prior to his use of the Fast ForWord product, reported “a significant improvement in his expressive language and semantic abilities after he had completed the Fast ForWord Language Program” (Turner and Pearson, 1999).

DISCUSSION

Because using Standard Edited American English is a vital basic skill, it is obvious that grammar instruction be included in the English curriculum. However, how best to teach grammar remains open for debate. Teaching students to utilize the rules of Standard Edited American English is our nation’s challenge. Research reveals the limited value of explicit instruction and recommends sentence-combining.

However, Saddler and Graham's (2005) research on sentence combining offers less than promising results.

Frater's (2004) research emphasizes reading and real relationships. Graham and Perin (2007) support the connection between reading and writing, but point out the cognitive distinctions between the two applications. Ranpura (2000) explains the crucial role memory plays in effective learning. Chang et al. (2006) emphasize the value of repeated listening to grammatically correct language. Together, the research of Frater (2004), Graham & Perin (2007), Ranpura (2000), and Chang (2006) makes a strong case for the use of Fast ForWord products as an implicit method of teaching grammar.

Incorporating grammar instruction through the use of Fast ForWord products appears to be a viable alternative to traditional grammar instruction because Fast ForWord products make use of modeled grammatically-correct language, repetition of subject matter, instant feedback, individualized instruction, combined auditory and visual stimulation, and practice to enhance listening skills. However, more research is needed to reveal the direct correlation between students' use of Fast ForWord products and the improvement of Standard Edited American English before concluding that Fast ForWord products are a legitimate method for implicit grammar instruction.

Notes:

*This manuscript was submitted in partial fulfillment of the requirements for a doctoral degree from Wilkes University.

To cite this report: Rogowsky, Beth A. (2007). Does Fast ForWord® Provide Implicit Grammar Instruction?, MAPS for Learning: Research Reports, 11(1): 1-7.

APPENDIX

Descriptions of the exercises in the Fast ForWord Middle & High School product.

Sweeps: Students hear a series of short, non-verbal tones. Each tone represents a different fragment of the frequency spectrum used in spoken language. Students are asked to differentiate between these tones. The exercise improves working memory, sound processing speed, and sequencing skills.

Streams: Students hear a single syllable that is repeated several times, and then interrupted by a different syllable. Students must respond when they hear the change in the syllable. This exercise improves auditory processing, develops phoneme discrimination, and increases sustained and focused attention.

IDs: Students hear a target syllable or word, and then must identify the identical syllable or word when it is presented later. This exercise improves auditory discrimination skills, increase sound processing speed, improve working memory, and help students identify a specific sound.

Matches: Students choose a square on a grid and hear a sound or word. Each sound or word has a match somewhere within the grid. The goal is to find each square's match and clear the grid. This exercise develops auditory word recognition and phoneme discrimination, improves working memory, and increases sound processing speed.

Cards: Students see two pictures representing words that differ only by the initial or final consonant (e.g., "face" versus "vase", or "tack" versus "tag"). When students hear one of the words, they must click the picture that matches the word. This exercise increases sound processing speed, improves auditory recognition of phonemes and words, and helps students gain an understanding of word meaning.

Stories: Students follow increasingly complex commands, match pictures to sentences, and answer multiple-choice questions about stories that are presented aurally.

REFERENCES

Agocs, M., Burns, B., De Ley, L., Miller, S., & Calhoun, B. (2006). Fast ForWord language. In McCauley, R. & Fey, M. (Ed.), *Treatment of Language Disorders in Children*. (pp. 471-508). Baltimore: Paul H. Brookes.

Asselin, M. (2002). Teaching grammar. *Teacher Librarian*, 29(5), 52-53. Retrieved Monday, September 25, 2006, from the Academic Search Premier database.

Begley, S. (2000, January 1) Rewiring your gray matter—The brain: You can teach an old brain new tricks—Neuroplasticity promises to give a whole new meaning to 'changing your mind. *Newsweek*, 134(26), 63+.

Beyond grammar drills: How language works in learning to write. (2006, October 25). *The Council Chronicle Online*. Retrieved Thursday, October 26, 2006, from <http://www.ncte.org/pubs/chron/highlights/125935.htm>

Brown, Alvin. (1996). Correct grammar so essential to effective writing can be taught—really! *English Journal*, 85(7), 98-101.

Chang, F., Dell, G., & Bock, K. (2006). Becoming syntactic. *Psychological Review*, 113(2), 234-272. Retrieved Monday, September 25, 2006, from the Academic Search Premier database.

Davis, Gina. (2004, November 21). Carroll schools redirect emphasis on grammar. *The Baltimore Sun*, p. 8B.

Frater, G. (2004). Improving Dean's writing: Or, what shall we tell the children?. *Literacy*, 38(2), 78-82. Retrieved Wednesday, October 25, 2006 from the ERIC database.

- Graham, S. & Perin, D. (2007). Writing next: Effective strategies to improve the writing of adolescents in middle and high schools—A report to Carnegie Corporation of New York. Washington, DC: Alliance for Excellent Education. Retrieved Thursday, October 26, 2006 from <http://www.all4ed.org/publications/writingnext/.pdf>
- Greenwald, J. (1999, July 5). Retraining your brain. *Time Magazine*, 154 (1), 52+.
- Kellogg, R.T. (1999). *The psychology of writing*. New York, NY: Oxford University Press.
- Kolln, Martha. (1985). A comment on “grammar, grammars, and the teaching of grammar”. *College English*, 47(8), 874-877.
- Lyon, G.R. (1996). Learning Disabilities. *The future of children: Special education for students with disabilities*. 6:54-76.
- Macaro, E., & Masterman, L. (2006). Does intensive explicit grammar instruction make all the difference? *Language Teaching Research*, 10(3), 297-327. Retrieved Thursday, September 28, 2006, from the Academic Search Premier database.
- Merzenich MM, Jenkins WM, Johnston P, Schreiner CE, Miller SL, & Tallal P (1996). Temporal processing deficits of language-learning impaired children ameliorated by training. *Science*, 271, 77-80.
- Miller, S.L., Merzenich, M.M., Tallal, P., DeVivo, K., Linn, N., Pycha, A., Peterson, B.E., Jenkins, W.M., (1999). Fast ForWord Training in Children with Low Reading Performance, *Nederlandse Vereniging voor Lopopedie en Foniatrie: 1999 Jaarcongres Auditieve Vaardigheden en Spraak-taal*. (Proceedings of the 1999 Dutch National Speech-Language Association Meeting).
- National Center for Education Statistics. (2003, July). The nation's report card: Writing 2002. Washington, DC: Education Printing Office. Retrieved Saturday, October 27, 2006, from <http://nces.ed.gov/nationsreportcard/pdf/main2002/2003529.pdf>
- National Commission on Writing. (2005, July). Writing: A powerful message from state government. Retrieved Saturday, October 28, 2006, from http://www.writingcommission.org/prod_downloads/writingcom/powerful-message-from-state.pdf
- NCTE position statement. (1985). The National Council of English Teachers. Retrieved Thursday, October 26, 2006, from <http://www.ncte.org/about/over/positions/category/gram/107492.htm>
- Ranpura, A. (2000, June). How we remember, and why we forget. Retrieved Thursday, October 19, 2006, from <http://www.brainconnection.com/topics/?main=fa/memory-formation>
- Saddler, B. & Graham, S. (2005). The effects of peer-assisted sentence combining instruction on the writing performance of more and less skilled young writers. *Journal of Educational Psychology*, 97(1), 43-54. Retrieved Sunday, October 1, 2006 from the Academic Search Premier database.
- Schultz, M. (2006, October, 24). NCTE's position unchanged: Isolated grammar drills do not produce good writers. The National Council of English Teachers. Retrieved Thursday, October 26, 2006, from <http://www.ncte.org/about/press/rel/125932.htm>
- Tallal P, Miller SL, Bedi G, Byma G, Wang X, Nagarajan SS, Schreiner C, Jenkins WM, Merzenich MM (1996). Language comprehension in language-learning impaired children improved with acoustically modified speech. *Science* 271:81-84.
- Turner, S. & Pearson, D. (1999). Fast ForWord language intervention program: Four case studies. *Texas Journal of Audiology and Speech Pathology*, Retrieved Thursday, October 19, 2006, from http://www.scilearn.com/results/science/articles/main=abstract10_1
- Scientific Learning. (2006, February). What is Fast ForWord?
- Weaver, C. (1996). *Teaching grammar in context*. Portsmouth, NH: Boynton/Cook Publishers.
- Vavra, E. (1996). On not teaching grammar. *English Journal*, 85(7), 32-36.