Automated Text-checkers: A Chronology and a Bibliography of Commentary

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Textcheckers—computerized spell-checkers, grammar-checkers, and style-checkers—have been around for three decades. The programs compare words in a textfile against a vocabulary of conventional spellings, generate the rate of passive constructions and raise a red flag if the rate is too high, question clichés or idiomatic expressions, capitalize the next word after a full stop, calculate “readability” formulas, and perform a host of other operations. Currently, integrated into all the popular word-processing and email packages, text-checkers are endemic to digital composing. Usually they function willy nilly, unless the writer has the initiative and know-how to turn them off.

What has been the composition community’s reaction to this now pervasive—some would say invasive—machinery? Individually, the response varies. Bob Broad records one teacher apparently evaluating a student’s spelling errors more harshly because the student’s class met in a computer classroom: “Do they use spell check?” Yet another of his teachers excuses a student who had misspelled a proper name because “the spell-checker’s not going to pick that up, so I gave him a little leeway there” (What We Really Value: Beyond Rubrics in Teaching and Assessing Writing, Utah State University Press, 2003, p. 115). Collectively, it is hard to say how the writing-teacher community has dealt with the encroachment of text-checkers over the years into their evaluation procedures and other teaching practices. There is no substantial review of the literature.

For some baseline information to help answer the question I have put together a chronology of the technology of text-checkers along with a bibliography of substantive commentary on them. I have sorted the history of the technology and the history of the commentary year by year, better to see patterns and interrelationships. My time-line bibliography is intended for the use especially of writing teachers and writing scholars—across the academic disciplines and in the workplace—and is offered with the hope that informed critique of this particular piece of auto-instructional technology will continue.

In gathering and organizing the material, however, I observed three curiosities that I can’t resist passing on. The first has to do with the accuracy of the text-checking programs. Fairly early in their history the imperfect performance of text-checkers was noted (e.g., Frase, 1981; Sommers, 1982). Spell-checkers are more accurate than grammar-checkers, of course. But in either case, the rate of inaccuracy is not minimal. Using student writing, Collins (1989) and Brock (1993) compared non-spelling mistakes detected by the most popular programs (Sensible Grammar, RightWriter, Grammatik, etc.) with those detected by writing teachers, and found machines and teachers identifying the same mistakes less than 10% of the time. It can be argued that the detection of any amount of error in a student’s writing is a bonus for the student, but that disregards the times the programs identify correct forms as incorrect. Typically false positives or “false flags” will make up 30% to 40% of the instances the software will identify as error. What I find remarkable is not the weak performance of the software but the fact that this inaccuracy has been reported for twenty-five years now and little seems to have come of it. Software designers don’t improve their products, and teachers don’t seem to mind students using them. Bruce Wampler, who spent seven years improving his grammar-checker program, Grammatik, before selling it to WordPerfect in 1992, remarked in 2002 that he believed WordPerfect had made no changes in the code since then (Kies 2005). Kathleen Kiefer, who helped develop Writer’s Workbench in
the early 1980s, argues that it is still more accurate than the most recent versions of Microsoft Word (cited in Mike Palmquist, “Tracing the Development of Digital Tools for Writers and Writing Teachers,” forthcoming in Ollie Olviedo, Joyce R. Walker, and Byron Hawk (Eds.), Digital Tools in Composition Studies: Critical Dimensions and Implication, Hampton Press, forthcoming.

The comments by Wampler and Kiefer connect with a second curiosity, which involves what might be called the commodification of the technology. Roughly the text-checking capability moved from a mainframe “general inquirer” method with an embedded vocabulary and text processed via punchcards (1950’s-1960’s); to line-editors still connected to mainframe computers processing fixed-line text connected to a typewriter, a TV screen, or CRT display (1970’s); to stand-alone programs that could analyze text via external disks connected to a personal computer (1980’s); to bonus features of word-processing software packages that could be installed and activated if one wished to vet a text (1990’s); to default features of word-processing programs that run constantly (“auto-correct”) unless the user chooses to de-activate them (mid-1990’s). In short the commodity has moved from self-controlled to automatic, from manifest to hidden. The curiosity is that scholars researching text-checkers seem to have bought into this process of commodity naturalization. The bulk of their critique has focused on the earlier stand-alone programs with little of it investigating the later integrated word-processing packages. Wampler himself notes the decline in critique, and argues that the decision to use a plug-in product was an “active choice,” and that “since grammar checking has become a standard feature of word-processing, this self-filtering is gone” (Wampler 1995). The opposite could be argued, however. Maybe users did not lose some control of text-checking but gained it. With the integrated word-processing software, writers could apply text-checking on the fly, whenever in the act of composing they wanted it. Early on the crucial shift was expressed in Bryan Pfaffenberger’s piece for Research in Word Processing Newsletter, “Integrated Word Processing: Has it Arrived?” (1987), in which he fantasized his “exemplary writing tool: the green box on your screen is not merely a space in which to write; it’s also a gateway to a world of writing accessories, all of which are available at a keystroke,” including “a context-sensitive style guide.” Five years later, in 1992, he had his exemplary tool when Microsoft Word 5.0 included a grammar-checker. Many users quickly learned not to install it since occupied about half of the program’s memory partition, but industry soon solved that problem with improved memory chips. More and more the capability was built into the users’ own machines. Critique of the programs may have faded the more they were “owned” by their purchasers.

Whatever the causes, they are related to the third curiosity, which is the overall decline of scholarship on text-checkers in the last ten years. I don’t pretend that the following bibliography is complete, but I searched rather evenly over the years. Beginning with 1980 (the year after the release of WordStar as the first word-processing software including a spell-checker) and proceeding by two-year increments, here are the number of items.

<table>
<thead>
<tr>
<th>Years</th>
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<td>1980-1981</td>
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The same phenomenon has been documented in studies of word-processing in general, by Bernard Susser (*Computers and Composition* 15.3, 1998, pp. 347-372). Perhaps we are looking at a particular combustion when technology and writing research meet that might be called the “novelty effect.” The plug-in text-checker programs that dominated the market in the 1980’s were more of a breakthrough technology than were the later integrated programs, most of which were just the old stand-alone programs with minor code changes (e.g., Grammatik built into WordPerfect, Correct Grammar into WordStar).

Or maybe we are looking at a commodification of scholarship that parallels the commodification of technology. A new technology often peaks early with number of launched products and then gradually decreases in volume as the few successful products take over the market; so in scholarship an early flurry of pieces is followed by a decline in production as scholars can find less new to say and only a few old pieces are perpetuated through reprints and citations. Let’s hope not. Maybe all we are seeing is teachers losing interest in an aspect of teaching composition, attention to surface features, that more and more they have come to feel is secondary and that they are happy to turn over to mechanical household aids. Then the question is whether teachers are aware of how poorly the machines are doing the chores or how the students are getting along with the hired help.

In terms of scholarly understanding the bottom line is that there is much still to uncover, as a few recent analyses have brilliantly shown (e.g., McGee & Ericsson 2002, Haist 2004, Kies 2005). May the following bibliography do its small part in encouraging more of the same.

As for the parameters of the bibliography, I have focused rather tightly on hardware and software that supports spell-, grammar-, and style-checking. I do not include computerization of readability formulas, which forms part of many text-checking packages but which technologically and instructionally follows a somewhat different history. Nor do I include much commentary that deals with the development of editing and formatting software for publishing, which often contained grammar and spell-checking components; or with programmed autotutorial instruction (“teaching machines”), which typically dwelt heavily on grammar; or with the CAI interactive tutorial composing programs (TICCIT, WANDAH, HOMER, WORDSWORTH, SEEN, and a host of others), most of which included text-checking capability or links to it. Finally I have, reluctantly, omitted the scholarship on text-checking with special populations, for instance the fascinating work done on hardware and software for the visually handicapped, or for students learning English as a second language (e.g., Cornelia Tschichold, “Grammar checking for CALL: Strategies for Improving Foreign Language Grammar Checkers,” in Cameron, Ed., *CALL: Media, Design and Applications*, 1999, Swets & Zeitlinger, pp. 203-222). Nor have I included the excellent work on accuracy of text-checkers in languages other than English (e.g., Jack Burston, “A Comparative Evaluation of French Grammar Checkers,” *Calico Journal* 13.2/3 (1995), 104-111). Largely I have also excluded the growing literature—because it is a growing technology—on automated grading or scoring of student writing. That material will be found in a bibliography of its own, appearing in *Machine Scoring of Student Essays: Truth and Consequences*, edited by Patricia Ericsson and myself, in press at Utah State University Press. Finally, I should note that I have mostly omitted mere notices or descriptions of new technology.

There are 336 items. The first, up to about 1970, are here just to indicate a few precursors to the composing and instructional text-checking technology that came later. I have appended a few search terms to each entry, but please do not trust them too much. Here are some non-intuitive search terms.
accuracy: testing of the degree to which text-checking programs succeed in detecting solecisms and ignoring non-solecisms

basic: study involving remedial writing courses
computer-analysis: computerized analysis of text for diagnostic purposes, including checking of spelling, grammar, or style (terms which overlap, of course)
data: study extracting factual information that would allow for replication of the study
instruction: scholarship addressing the teaching of writing anywhere
machine-scoring: computerized analysis of text to give it an evaluative score or grade

record-keeping: computer software that assists information recording, such as grades, attendance, or summed points.
school: study involving grade-school, middle-school, or high-school instruction (the default is post-secondary instruction)

I want to acknowledge the feedback I generously received on this manuscript from Gail Hawisher, Glenn Blalock, and especially Mike Palmquist, who sent me a pre-publication copy of his encyclopedic “Tracing the Development of Digital Tools for Writers and Writing Teachers” (forthcoming), from which I borrowed a few bibliographic items. I’m fully responsible for the opinions above and the facts below, along with any hitches and glitches that MS Word did not catch.

<table>
<thead>
<tr>
<th>Year</th>
<th>Hardware support</th>
<th>Software application</th>
<th>Journals</th>
<th>Literature</th>
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| 1960-1965 | The standard technique is running punch cards in batch mode through a mainframe machine. Text analysis relies mainly on word and phrase matching and frequency counts. In 1960 Digital Equipment develops the PDP-1, the first minicomputer with | Application of computers to the humanities (especially anthropology, linguistics, literature, and history) has been under way for several decades. For composition instruction, lock-step grammar and spelling programs are being developed to be used in “teaching machines” such as the Dukane Redi-Tutor, which was a frame-controlled film projector. Early | | • Reitman, Walter R. (1962). Computer models of psychological processes and some implication for the theory and practice of writing. In Steinberg, Erwin Ray (Ed.), Needed research in the teaching of English: Proceedings of a Project English research conference, May 5-7, 1962; Washington, D. C.: U. S. Department of Health, Education, and Welfare, Office of Education. Pp. 98-106. *machine-scoring, CAI, computer-analysis*
• Engelstrom, John; James Whittaker. (1963. Improving students’ spelling through automated teaching. Psychological Reports 2, pp. 125-126. *programmed, teaching machine*
• Rowland, Devra. (1964). Decade in the life of a programmer. College Comosition and Communication 15.2, pp. 90-96. *porogrammed, basic, teaching machine, computer-analysis* |
keyboard and monitor. IBM’s magnetic tape Selectric typewriter was marketed in 1964, allowing users to edit recorded text or erase it and start over. The first local area network (LAN) established, at Rank Xerox Palo Alto Research Center programs were IBM’s Teaching Machine Project (eventually installed at Stanford University and 29 other sites), and the University of Illinois’s PLATO (Programmed Logic for Automatic Teaching Operations).

1966-1967 Hewlett-Packard introduces a general purpose computer that supports BASIC, FORTRAN, and other computer languages. Standard text manipulation is still fixed 64-character line editing (no wrap-around)

1968 Douglas Engelbart shows full-screen word processing


and the mouse at the Fall Joint Computer Conference in San Francisco—for word processing the first step away from the line editors

1969 Data General markets Nova, the first 16-bit mini-computer. IBM produces MagCards for their typewriters, holding about a page of text, a precursor to the floppy disk. First ARPANET network established between UCLA, Stanford, UC Santa Barbara, and the University of Utah

1970-1971 Intel introduces the RAM chip, computer storage that can be randomly accessed Wang is one of the first to buy the Intel chip, and introduces their 1200 Word Processing System the next year.


and written to as well as read from Autotutorial programs in spelling, grammar, and punctuation, TICCIT (Time-shared, Interactive, Computer-Controlled Information Television) developed at Brigham Young University (1970-1975)

1972 “Fourth generation” computers with circuits of 500 or more transistors in a chip—the hardware essential for the microcomputer. Wang, VYDEC, and Lexitron produce floppy diskettes, holding more than 200 pages of text.

Bell Laboratories (A&T) is developing their UNIX operating system to support word processing


1973 Don Lancaster devises the TV Typewriter, which uses memory boards to store 512 characters; a cassette tape provides storage of

around 90 pages. The Alto workstation, with a bit-mapped video screen, is created at Xerox Palo Alto Research Center. Service, ED 074 152. computer-analysis, FORTRAN

1974-1975

The first two personal computers marketed: Micro Computer Machines’s MCM/70 and MITS’s Altair 8080 (with LED panel and extension cards for keyboard and screen)

Hewlett-Packard designs the Instructional Dialogue Facility for their 2000/F Computer System, with revising and contextual word-search capabilities

First issue of Creative Computing


1976

Apple Computer markets Apple I. Zilog releases the Z80 chip, an 8-bit microprocessor that was the underpinning of the personal and desktop computing for the next decade

Michael Shrayer writes Electric Pencil, considered by some to be the first personal-computer word processing program


1977

Three more personal computers

Commodore’s PET; Tandy’s TRS-80; and Apple II with a floppy disk drive and color graphics marketed:

1978

Tandy improves the TRS-80 with Microsoft operating system to 32 KB of RAM, with floppy disk and printer. IBM advertises its Personal Computer. BITNET protocol set for email by Yale and City University of New York.

1979

IBM begins work on their own personal computer, to compete with Apple, Tandy, and Commodore—work that would lead to the IBM PC. Micropro International releases WordStar, commercially the most successful word-processing software for several years. It offers an add-on spell-checking program called

first shipped in 1981

SpellStar. Lorinda Cherry and Doug McIlroy at Bell Laboratories, consulting with style-analyst William Versterman of Rutgers University, continue to work with the UNIX operating system, developing “style” and “diction” functions. At IBM, George Heidorn and others begin work on EPISTLE, an on-line text-editing program later expanded with a style- and grammar-checker by Karen Jensen and Yael Ravin and marketed as Critique.

8-10 October, 1979. New York: Institute of Electrical and Electronic Engineers. experiment, ETUDE, composing, data


1980

Commodore’s VIC-20 released, with cassette storage and a TV screen for a monitor. IBM hires Microsoft to write the operating system for their PC. Usenet in operation at the University of

WordPerfect is shipped for Data General minicomputers ($5,500 per copy), and WordPro for Commodores. Bell Labs releases UNIX 4.1BSD with “style” and “diction” functions. At MIT, Richard Ilson and Michael Good are designing ETUDE, an interactive editing and


1981 Sinclair’s ZX81 released, a home computer with a cheap membrane keyboard, output to the TV set, and storage on an ordinary audio tape recorder. First portable computer released, the Osborne 1, weighing almost 24 pounds. Xerox introduces its Star Workstation, with a bit-mapped display on a monitor, icons, mouse, and ethernet.

IBM markets their PC with Microsoft-DOS operating system; with it was available a spell-checker, a plug-in package. LifeTree Software is founded and begins work on Correct Grammar, a stand-alone which will earn $4,000,000 in 1990. In collaboration with Kate Kiefer and Charles Smith at Colorado State University, Nina Macdonald, Lorinda Cherry, and other UNIX people at Bell Laboratories continue work that will eventuate with Writer’s

North Carolina at Chapel Hill and Duke University formatting program

• Good, Michael. (1981). ETUDE and the folklore of user
Workbench interface design. SIGPLAN Notices 16.6, pp. 34-43.


WordPerfect—originally written by Satellite Software for minicomputers—is released in DOS format.


1982

Compaq offers their Compaq Portable. Sinclair ZX Spectrum, and Commodore 64 is released in DOS format.
released at much cheaper prices. First true laptop is marketed, the GRiD Compass 1101, with clamshell design (it sold for $10,000 and was used mainly by the military)
1983 Apple, IBM, and Xerox introduce personal computers with graphical user interface (icons and pop-up menus), disk drive, and printer. Apple’s Lisa has a Volkswriter and WordPlus-PC, both word-processing software, are available for the IBM PC. Weber State College collaborates with Automated Language Processing Systems to develop The first professional journals for writing teachers dealing with computers are launched: Research in Word Processing

Educational Research and Development, Los Alamitos, California, April 22-23, 1982); Los Alamitos, CA: SWRL Educational Research and Development, pp. 75-81. CAI, microcomputer, student opinion, error, style-checker, spelling, sentence-combining, computer-analysis


1983 Apple, IBM, and Xerox introduce personal computers with graphical user interface (icons and pop-up menus), disk drive, and printer. Apple’s Lisa has a Volkswriter and WordPlus-PC, both word-processing software, are available for the IBM PC. Weber State College collaborates with Automated Language Processing Systems to develop The first professional journals for writing teachers dealing with computers are launched: Research in Word Processing


• Bean, John C. (1983). Computerized word-processing as an aid to revision. College Composition and Communication 34.2, pp. 146-148. revising, computer, word-processing,
detached keyboard and mouse. Various laptops introduced: The Gavilan, the Kyotronic 85, and Sharp’s PC-5000 develop a text-analysis program, ALPS, for their writing program; it includes a readability analysis and style chart. Newsletter (edited by Bradford A. Morgan) and Computers and Composition (edited by Cynthia L. Selfe and Kathleen E. Kiefer)—along with PC World and PC Week

Workbench, software-design, computer-analysis

• Marcus, Stephen. (1983). Real-time gadgets with feedback: Special effects in computer-assisted instruction. The Writing Instructor 02.4, pp. 156-164. computer-analysis, CAI, practice, feedback, style-checker, invisible writing


• Tracey, Richard. (1983). The word processor and the writing process. Teaching English in the Two-Year College 09.1. word-processing, instruction, two-year college, grammar-checker, revising

Hewlett-Packard releases their LaserJet printer. First internet TCP/IP system functioning as a university network built by the National Science Foundation. Apple Macintosh marketed at $2,500, with monitor and mouse and full graphical user interface—first a 128 KB version and then, 8 months later, a 512 KB one

MacWrite comes with the new Apple Macintoshes. Microsoft Word 1.0 issued, with no spell-checker or grammar-checker

style-checker, peer commenting, instruction


• Johnson, Mildred I.; Karen Sterkel. (1984). Writing with the computer brings positive results. Business Education Forum 38.5. computer-analysis, student-opinion, survey, data, business communication, revising


• Nancarrow, Paula Reed; Donald Ross; Lilian Bridwell-


concerning the influence of control on the effectiveness of CALL [computer-assisted language learning]. CALICO Journal 02.1, pp. 28-33, 48. ESL, computer-analysis, error, accuracy, needs analysis, data


1985

CD-ROM technology by Philips and Sony. Commodore’s Amiga home computer arrives with a multitasking operating system. Introduction of Adobe’s PostScript, a page description language for printers.

Microsoft Windows OS issued, with user interface similar to Macintoshes. WordStar and WordPerfect are available now with spell-checkers. Some stand-alone spell-checking programs available this year (or within one or two years) are Spellex, Spellbinder, Spelling Sentry, AutoSpell, WordSpring, SpellMagic, QuickSpell, and Spell Catcher (originally named First issues of MacWorld: The Macintosh Magazine, as well as the Journal of Educational Computing Research and Computers in Human Behavior)


Thunder!). Bruce Wampler co-founds Reference Software International and begins work on Grammatik, grammar-checking software. ALPS released for the Macintosh as MacProof, a plug-in without the readability diagnosis but with Usage, Grammar, Structure, and Spelling functions.
02.3, pp. 8-9. computer-analysis, software, proposed bibliography


- Rosenbaum, Nina J. (1985). Issues and problems with research involving word processing: A teacher's experience. Collegiate Microcomputer 03.4, pp. 357-363. word-processing, computer-analysis, revising, editing, feedback


- Stibravy, John A.; Chuck Beck. (1985). Errors caused by the use of word processing in reports by beginning technical writing students. Research in Word Processing Newsletter 03.4, pp. 9-11. computer-analysis, error count, data frequency, word-processing, technical writing, accuracy

Apple releases the Macintosh Plus, with 4 MB of RAM. In England the Amstrad PC 1512 proved an affordable and user-friendly home computer. Microsoft Word 3.0 marketed, with a spell-checker and a thesaurus. Batteries Included releases PaperClip II, a low-cost word-processing package for Commodore 64, with spell-checker. There are now on the market many word-processing packages: WordPerfect, WordStar, OfficeWriter, First issue of The Computer-Assisted Composition Journal (edited by Lynn Veach Sadler), IBM launches PC Magazine.

- Frase, Lawrence T; Mary Diel. (1986). UNIX Writer’s Workbench: Software for streamlined communication.
Microsoft Word, MacWrite, Multimate Advantage, Displaywrite, Samra Word, Professional Write, Webster’s New World Writer, PC-Write

Technological Horizons in Education 14.3, pp. 74-78. 

Gordon, Thomas. (1986). FINAL WORD II: An authoring system for a word-process program. Computers and Composition 03.3, pp. 60-71. software, FINAL WORD II, word-processing, spell-checker, computer-analysis

Hague, Sally A.; George E. Mason. (1986). Using the computer’s readability measure to teach students to revise their writing. Journal of Reading 30.1, pp. 14-17. computer-analysis, style-checker, readability, revising, instruction


Noble, David F. (1986). Word processing as a tool for revision. Research in Word Processing Newsletter 04.7, pp. 6-
16. word-processing, computer-analysis, macro, revising


- Reid, Stephen; Gilbert Findlay. (1986). Writer's Workbench analysis of holistically scored essays. Computers and Composition 03.2. 6-32. computer-analysis, machine-scoring, style-checker, WRITER'S WORKBENCH, holistic, data, evaluation, correlation, essay-length, spelling, readability


the bad, hurting the good. *The Wall Street Journal* (July 7): Section 15, p. 4. *style-checker, grammar-checker, efficiency, accuracy*


1987  Macintosh II and Macintosh SE released, and IBM’s successful PS/2 Systems machines

The new version of Vokswriter Deluxe Plus has spell-check. ButtonWare offers their word-processing program, PC-TYPE, with an integrated style-checker, PC-STYLE (allowing a writer to calculate on the run number of sentences and words, words per sentence, percent of long words or personal words or action verbs, syllables per word, and readability level—all rated from “poor” to “best”). Eric Johnson markets StrongWriter


• Morgan, Bradford A. (1987). From word processing to desktop publishing and CD ROM: A five-year bibliographic
perspective on the impact of computers on writing and research. Research in Word Processing Newsletter 05.5, pp. 2-42. \textit{computer-analysis, word-processing, bibliography, [375+ items]}


- Sunstein, Bonnie; John Dunfey. (1987). A sampling of
software for the writing center. Writing Lab Newsletter 11.5, pp. 2-5. computer-analysis, CAI, software review, HOMER, Sensible Grammar, Grammatik, MacProof, Ghost Writer, MECC Readability


- Di Pasquale, Mauro G. (1988). Improving your writing with style analysis programs. Research in Word Processing Newsletter 06.6, pp. 2-5. computer-analysis, style-checker, review-of-software, Electric Webster, Grammatik II, PC Style

1988  First successful optical chips, which boost processing speed. Spinnaker Software sells Better Working Word Publisher, software aimed at the business world, for the Commodore 64, including a 100,000-word spell-checker. Merle Tenney of Lexpertise Linguistic Software helps develop MacProof for languages other than English
Readability, RightWriter


Notebook [ERIC Document Reproduction Service, ED 312 644]. 


1989  World Wide Web invented by Tim Berners-Lee. Intel releases its 80486 DX, which could run at 25 MHz—later versions would quadruple this performance

Microsoft Word 4.0 introduced, with built-in word count and spell-checker. PenPal and Scribble! are now available for Commodore’s Amiga personal computers, containing 100,000+ vocabularies for spell-checking and 400,000+ thesauri. The grammar-checker Critique is now available for IBM machines, identifying over 150 types of errors and suggestions for better phrasing and including a readability index

First issue of the Journal of Computing in Higher Education

- Greene, Wendy Tibbetts; Lynn Veach Sadler. (1989). Combining software for ease, accuracy, and idea generation. Collegiate Microcomputer 07.2, pp. 127-130. computer-analysis, spell-checker, word-processing, student opinion, teacher opinion, CAI
158. computer-analysis, style-checker, grammar-checker, Professor’s Helper

• Insley, Robert G. (1989). Integrating style analysis software into the basic business communication course. The ABCA Bulletin 52.4, pp. 8-11. business communication, computer, style-checker, computer-analysis, instruction


• Peek, George S.; Tony Eubanks; Claire May; Patsy Heil. (1989). The efficacy of syntax checkers on the quality of accounting students’ writing. Computers and Composition 06.3, pp. 47-62. computer-analysis, style-checker, syntax, data, instructional gain, RightWriter, accounting course

• Richardson, S.; W. Creed; R. Chandler. (1989). CRITIQUE as a teaching tool for writing classes. In International Association for Literary and Linguistic Computing (Ed.), The
dynamic text guide: 9th International Conference on Computers and the Humanities and 16th International Association for Literary and Linguistic Computing conference; Toronto, Canada: University of Toronto, Centre for Computing in the Humanities, pp. 57-58.


1990 Microsoft Windows 3.0 and Macintosh Classic released, both with faster processing speeds

The Classic had a grammar checker but the user had to allocate memory for it. At the University of Utah, Emil Roy compares RightWriter style-analysis to human raters to see if the machine can serve as a writing placement mechanism.
• Hanson, Luett. (1990). Computer-aided remediation for grammar, punctuation. Educator 44.4, pp. 43-49. computer-analysis, style-checker, grammar-checker


• Markel, Mike. (1990). The effect of the word processor and the style checker on revision in technical writing: What do we know, and what do we need to find out? Journal of Technical Writing and Communication 20.4, pp. 329-342. computer-analysis, style-checker, technical communication, revising, review-of-research


• Pennington, Martha C. (1990). An assessment of the use and effectiveness of computer-based text analysis for non-proficient writers (Research report, No. 4); Hong Kong: City Polytechnic of Hong Kong, Department of English. ESL, grammar-checker, style-checker, computer-analysis, ESL, basic

• Schick, James B. (1990). Grammar and style checkers (Part II). History Microcomputer Review 06.1, pp. 35-44. computer-analysis, style-checker, grammar-checker, history


• Tomlinson, David; Harriet Bergmann. (1990). Help for the writing teacher: Analyzing the writing analyzers. Computer-
1991 Linus Torvalds offers free his operating system, Linux


Assisted Composition Journal 04.2, pp. 55-67. computer-analysis, Grammatik, style-checker, RightWriter, accuracy, data


• Hermann, Andrea. (1991). Evaluating computer-supported writing. In Gail E. Hawisher; Cynthia L. Selfe (Eds.), Critical perspectives on computers and computer instruction (pp. 44-69); New York: Teachers College Press. computer-analysis, grammar-check, evaluation

Gail E.; Cynthia L. Selfe (Eds.), Evolving perspectives on computers and composition studies: Questions for the 1990s; Urbana, IL: National Council of Teachers of English, pp. 132-149. computer-analysis, instruction


• Pace, Guy. (1991). Grammar and style checking; or, Strunk and White never had it so good! Text Technology 01, pp. 5-6. computer-analysis, style-checker, RightWriter


• Safi, Quabidur R. (1991). Five programs provide lesson in grammar. PC Week 14, pp. 141-146. computer-analysis, style-checker, grammar-checker, accuracy, data

1992

Microsoft Word 5.0 marketed, with the first integrated grammar-checker. It was not automatically installed, in part because the package was a memory hog. Bruce Wampler sells his Grammatik software to Word Perfect. WordStar 1.5 offers Correct Grammar for Microsoft Windows,

- Hart, Robert L. (1992). An investigation into the effects of computer word processing utilization on the writing skills of students at Gloucester County College. ERIC Document

but machines need an additional 1.6 MB to handle it


• Kiefer, Kate. (1992). Should basic writers use text analysis software? Collegiate Microcomputer 10.4, pp. 204-208. computer-analysis, grammar-checker, basic, Writer’s Workbench, data, student-attitude, style-checker, accuracy


• Pennington, Martha C.; Mark N. Brock. (1992). Process and product approaches to computer-assisted composition. In


• Smith, Jan. (1992). Mark your words with grammar checking software. PC Computing (October), pp. 243-251. computer-analysis, grammar-checker, accuracy, data


1993 Intel Pentium released, achieving new levels of MIPs. World Wide Web becomes public and free and use burgeons.

WordPerfect 5.2 for Windows adds a grammar-checker


especially since commercial providers were allowed to sell their services to individuals.

• Pennington, Martha C. (1993). Computer-assisted writing on a principled basis: The case against computer-assisted text analysis for non-proficient writers. Language and Education 07.1, pp. 43-59. computer-analysis, style-checker, grammar-checker, basic writer, accuracy, feedback, revising


1994

- Iomega markets the Zip drive, with 100 MB storage cartridges.
- Netscape Navigator 1.0 released.
- Microsoft Word 6.0 introduces an AutoCorrect function

Compared in Higher Education 05.1, pp. 102-110. computer-analysis, word-processing, basic, instruction, gain, review-of-research


• Rabinovitz, Rubin. (1994). Grammatik 6.0 misses as many errors as it finds. PC Magazine 13.15, pp. 50. computer-analysis, grammar-checker, Grammatik 6, accuracy, data,
1995

Windows 95 issued, incorporating Eric Johnson’s CorrecText; it could run Word 6.0 with AutoCorrect/AutoFormat (squiggly lines arrive!)

PowerEdit, Correct Grammar

• Shanahan, Marilyn; Donna Holmquist. (1994). A comparative study of teaching proofreading and editing skills using the traditional method only versus the traditional method combined with computer-assisted instruction in business communications and reports classes. Delta Pi Epsilon Journal 36.4, pp. 203-214. experiment, grammar-checker, style-checker, error-rate, business communication, data


• Kohut, Gary F.; Kevin J. Gorman. (1995). The effectiveness of


1996

- Netscape Navigator 2.0 released, with JavaScript.
- Toshiba markets their Libretto Notebook, the smallest microcomputer to date

- Andeweg, Bas A.; J. C. de Jong; R. Natadarma. (1996). Improving writing skills through Ganesh. In Rijlaarsdam, Gert; Huub van den Bergh; Michel Couzijn (Eds.), Effective teaching and learning of writing: Current trends in research; Amsterdam: Amsterdam University Press. Pp. 110-123.


- Dale, Robert. (1996). Computer assistance in text creation and editing. In Ronald A. Cole; Mariani, Joseph; Uszkoreit, Hans; Zaenen, Annie; Zue, Victor (Eds.), Survey of the state of the art in human language technology. http://cslu.cse.ogi.edu/HLTsurvey/ch7node7.html#SECTION 75. computer-analysis, editing, CAI, grammar-checker


1997 Deep Blue beats Garry Kasparov at chess

Microsoft Office 97 first introduces its grammar-checker (users quickly discovered that it flagged “grammar checker” as a subject-verb agreement error)

• Dale, Robert; Shona Douglas. (1997). Two investigations into intelligent text processing. In Sharples, Mike; Thea van der Geest (Eds.), The new writing environment: Writers at work in a world of technology; Berlin: Springer-Verlag. Pp. 123-145. machine-scoring, computer-analysis


• McNaughton, David; Charles Hughes; & Nicole Ofiesh. (1997). Proofreading for students with learning disabilities: Integrating computer and strategy use. Learning Disabilities Composition 13, pp. 231-244. computer-analysis, machine-scoring, assessment
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Source</th>
<th>Notes</th>
</tr>
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<tr>
<td>1998</td>
<td>Introduction of the iMac, with no floppy drive. The USB flash drives is invented by IBM, who contracts M-Systems to develop and market it.</td>
<td>Microsoft Word 98 improves its AutoCorrect.</td>
<td></td>
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<tr>
<td></td>
<td>Research and Practice 12, pp. 16-28.</td>
<td>computer-analysis, learning disability, instruction</td>
<td></td>
</tr>
</tbody>
</table>
2000


2001

- Microsoft launches the Tablet PC

- Montgomery, Donna J.; George R. Karlan; Martha Coutinho. (2001). The effectiveness of word processor spell checker programs to produce target words for misspellings generated by students with learning disabilities. JSET E Journal 16.2


program design.


2004


2005


