Writing Across the Pharmacy Curriculum: An Annotated Bibliography

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If writing only allowed us to record our thoughts permanently and externally so we can critically examine them, writing would be an essential component of an education designed to prepare professional pharmacists with the reasoning skills they need to effect positive patient outcomes. Writing, however, offers much more than a convenient vantage point from which to view the thinking process. In the complex process of shuttling between thinking and transcribing thought, between continually writing/encoding and reading/decoding, between placing old information in close proximity to new information, writing helps to create knowledge. Listening, and to a lesser extent, reading, are, in and of themselves, cognitive processes sufficient for learning relatively uncomplicated information presented as binary sets–yes/no, correct/incorrect–and for situations involving relatively simple choices. Listening and reading, however, offer little for learning and developing the cognitive processes and intellectual agility involved in making decisions based on the evaluation of the appropriateness of any available course of action. Doing something with that information, in this case, writing as part of the learning process, provides a catalyst and a conduit for developing higher-order cognitive processes. Writing should be an essential and central part of learning complex concepts and of putting the resulting gains into action in the undeniably complex, multimodal contexts of professional pharmacy practice.

Based in part on this realization, pharmacy education has re-

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newed its interest in the potential that writing holds across the pharmacy curriculum to help students learn the knowledge and problem-solving processes required of pharmacy practitioners operating within the pharmaceutical care model. Writing provides students with opportunities to develop and hone the higher-order thinking and communication skills they will need to work effectively with diverse patient groups in diverse practice settings. Yet, for all the deeply-held convictions and commitments pharmacy educators hold toward writing's educational value, integrating more and educationally-meaningful writing experiences into traditional pharmacy courses is a daunting task. Few precedents exist.*

Additionally, many apparent barriers exist, and stakeholders ask many questions about the deterrents they perceive to including more writing in pharmacy education. Many pharmacy educators ask, "How can a pharmacy professor teach students to write?" Many curriculum committees ask, "How do we make time for writing in an already cramped curriculum?" Many pharmacy students ask, "As a pharmacist, when do I need to write?" Of these, few are as pervasive or as pernicious and emotionally charged as the issue of grading written work. As an issue, grading writing inevitably brings to the surface a retinue of related concerns about subjectivity, work load, professors' lack of training, and viability of the skill to pharmacy practice. Thankfully, that reality is changing.

While the existing literature about integrating writing into the pharmacy curriculum is limited–albeit growing–there exists a comparatively large literature on the topic in closely-related disciplines

*Several colleges of pharmacy are developing writing-across-the-curriculum initiatives. The St. Louis College of Pharmacy and the Medical University of South Carolina have started Writing Centers to support their pedagogical efforts and the University of Toledo College of Pharmacy works closely with the University Writing Center to develop a more writing-intensive pharmacy curriculum. Of these, the St. Louis College of Pharmacy's efforts are probably the most tightly connected, building on a writing-across-the curriculum program that includes the participation of courses in all six years of the curriculum, in addition to a two-course Writing-Emphasis (WE) elective requirement. Current electives include such Liberal Arts WE electives as "The Cold War" and "Science and The Media" and Professional WE electives such as "Dermatological Therapeutics," "Introductory Clinical Clerkship," "Current Topics in Infectious Diseases," and "Current Topics in Neurology, Psychiatry, and Geriatrics."

that is useful in helping pharmacy educators affect the types of extensive pedagogical change–especially in the areas of developing students' higher-order critical thinking skills and problem-solving strategies, their communication skills, and in developing lifelong learning habits called for by the American Association of Colleges of Pharmacy Committee to Implement Change in Pharmaceutical Education.* Specifically, this literature provides an assortment of sample course structures, sample assignments, model outcomes, in- and out-of class activities, grading advice, and model criteria that modified, fit the pharmacy curriculum's unique needs.

The annotated bibliography that follows provides an introductory overview of many of the materials available about creating more opportunities for students to use writing across the curriculum. Special attention is given to items which focus on this process within the context of the science curriculum. While it is not exhaustive, the bibliography attempts to present books, chapters, and articles from across the available literature that meet the following criteria: The materials (a) are seminal in their original contexts, (b) are particularly innovative, or (c) focus on issues directly or tangentially related to changes in pharmacy education.

These materials are presented in two main sections. The first section, "Writing Across the Curriculum," contains the following subcategories: books and articles about incorporating writing within the pharmacy curriculum; books and articles of general interest about writing across the curriculum in postsecondary settings; articles about incorporating writing specifically into biology and chemistry classes. These entries are not exhaustive. Rather, they offer pharmacy educators a condensed and convenient place to begin reading, thinking, talking, and, possibly even writing about integrating writing into traditional content courses in order to further develop their students' abilities. As such, these entries should be sampled and then used as a springboard for further inquiry.

Incorporating writing across the pharmacy curriculum requires that faculty devote time to reading and responding to students'

*The most compelling discussion of the need to change pharmacy education is found in the Commission's "Background Paper II: Entry-level, Curricular Outcomes, Curricular Content and Educational Process," Am J Pharm Educ, 1993; 57:377-85.

texts. For many faculty this prospect is one fraught with tensions linked closely to issues of grading. The second section, "Holistic Scoring," provides an introductory discussion about evaluation and assessment which attempts to allay suspicions of subjectivity and lack of expertise related to grading. It does so by focusing on holistic scoring, one of many alternatives to traditional marginal and end-of-text comments and grading. Holistic scoring is an evaluation methodology that provides rapid and reliable assessment of student writing based on clearly defined criteria, and is similar to primary-trait evaluation systems familiar to many pharmacy educators. The books and articles included were selected because they are particularly useful in addressing the many questions concerning evaluation and assessment that inevitably accompany discussions about integrating writing into traditional content courses. Again, these selections are not exhaustive, and serve best as a broad-based introduction to this method of assessing written work.

WRITING ACROSS THE CURRICULUM

Pharmacy

Books

Holiday-Goodman M, Lively BT, eds. Writing across the curriculum for colleges of pharmacy. Toledo: University of Toledo College of Pharmacy; 1992.

The outgrowth of a GAPS project, this book is the best place in the current literature to begin reading about the unique learning opportunities writing offers students within the pharmacy curriculum. The first three chapters provide a thorough, yet accessible, overview of the concerns–theoretical and practical–facing pharmacy educators as they attempt to educate students within the model of pharmaceutical care. Chapters 4 and 5 describe ongoing university-wide and pharmacy-specific efforts to enact writing as a central educational tool across the University of Toledo's curriculum. Chapter 6 presents the results of a study to determine what benefits

accrue to students in courses employing writing as a learning tool with further material provided in the appendix. Chapter 7 provides connected readings and Chapter 8 contains a wide-ranging annotated bibliography.

Articles

Colatrella C, Lapetina J, Najarian V. Teaching writing as a liberal art. Freshm Engl News. 1989; 18(1):23-6.

Looking specifically at curricular revision at Albany College of Pharmacy, the authors explain how a concerted effort throughout the curriculum to teach and to reinforce the development of writing skills works to improve student educational outcomes. The authors argue that these outcomes are essential to the development of competent practitioners.

Dolinsky D, Barush L, Mermelstein P et al. Student design and evaluation of written patient medication information. Am J Pharm Educ. 1983; 47:123-6.

This article reports the results of a project designed to increase students' understanding of the complexities involved in creating effective patient medication information and their ability to create such documents. Included is an overview of the project, results, evaluation criteria, and additional resources.

Henderson ML. Types of classroom tests: essay tests and oral exams. Am J Pharm Educ. 1984; 48:290-2.

Henderson provides a concise overview of issues to consider when designing effective and reliable essay and oral examinations. Additionally, there is an overview of options available for evaluating essay exams with increased levels of reliability. As a first foray into the topic of evaluating written work, this article is useful.

Hobson EH, Schafermeyer KW. Writing and critical thinking: writing-to-learn in large classes. Am J Pharm Educ. 1994; 58:423-7.

This article discusses the incorporation of writing activities within a required third-year pharmacy management course. It presents an argument for the need to incorporate writing into large classes, types of assignments given, rationale for their use, assessment methods used, and student reactions to the course.

> Holiday-Goodman M, Lively BT, Nemire R et al. Development of a teaching module on written and verbal communication skills. Am J Pharm Educ. 1994; 58:257-61.

This article is important. It offers one of the best formal evaluations to date of the effectiveness of incorporating writing activities into the professional curriculum on students' abilities to meet educational outcomes related to higher-order language use. The results demonstrate that students who engage course material using Language-for-Learning strategies perform significantly better in four dimensions of language use–writing, verbal skills, idea formulation, audience identification–than students who do not.

> Ranelli PL. Using student-written book reviews as a teaching tool. J Pharm Teach. 1991; 2(4):45-52.

Ranelli discusses ways to use written book reviews as a means of enhancing students' learning in an elective undergraduate course, "Social Aspects of Pharmacy Practice." Included in the article are: an overview of the assignment, a discussion of how to integrate such an assignment into the course, review guidelines, advice on how to discuss and grade the reviews, and student response to the assignment.

General Interest

Books

> Anson C, Graham J, Jolliffe D et al. Scenarios for teaching writing: contexts for discussion and reflective practice. Urbana, IL: National Council of Teachers of English in cooperation with the Alliance for Undergraduate Education; 1993.

As a starting point for thinking about developing assignments that require writing, this book is good. The chapters focusing on creating effective writing assignments, responding to student writing, and course design are immediately applicable.

> Belanoff P, Dickson M, eds. Portfolios: process and product. Portsmouth, NH: Boynton/Cook; 1991.

This book discusses how portfolios of students' writing are efficient, reliable, and effective evaluation tools in classrooms across the curriculum.

> Capossela TL, ed. The critical writing workshop: designing writing assignments to foster critical thinking. Portsmouth, NH: Boynton/Cook; 1993.

Of the 12 chapters in this collection, five are particularly relevant to AACP-endorsed educational outcomes: Chapter 1, "What is Critical Thinking;" Chapter 4, "Using William Perry's Scheme to Encourage Critical Writing;" Chapter 5, "Sequencing Writing Assignments to Foster Critical Thinking;" Chapter 7, "A Dialogue Across the Disciplines: Two Voices on Problem Solving;" and Chapter 9, "Collaborative Learning and Critical Thinking."

> Fulwiler T, Young A, eds. Programs that work: models and methods for writing across the curriculum. Portsmouth, NH: Boynton/Cook; 1990.

The contributors describe in detail successful writing across the curriculum programs at fourteen colleges and universities across the nation. This book is especially valuable because each chapter is written by a team representing many disciplines. The range of courses and assignments discussed is impressive, although this book is not as easy to pick through for particular disciplines as it should be. The lack of an index is its major shortcoming.

> Fulwiler T, ed. The journal book. Upper Montclair, NJ: Boynton/Cook; 1987.

Of the 42 essays in this compendious tome, the 12 in Part III, "Journals and the Arts and Humanities," and the 9 in Section IV,

"Journals and the Quantitative Disciplines" offer the most for both six-year and two-four year pharmacy schools. Section IV offers immediately applicable suggestions for courses that include such disciplines as physics, chemistry, and mathematics.

Harris M. Teaching one-to-one: the writing conference. Urbana, IL: National Council of Teachers of English; 1986.

Harris offers advice on talking effectively to writers about their texts and about the benefits that accrue to student writers from consultation with teachers, peers, and others about the writing projects they undertake.

McLeod SH, Soven M, eds. Writing across the curriculum: a guide to developing programs. Newbury Park, CA: Sage; 1992.

This book's ten chapters focus primarily on administrative and institutional issues related to implementing Writing in the Disciplines programs. Of particular interest for pharmacy faculty is chapter seven, "WAC and General Education Courses," by Christopher Thaiss, discussing the development of Writing in the Disciplines programs within overall educational missions.

Newkirk T, ed. Nuts and bolts: a practical guide to teaching college composition. Portsmouth, NH: Boynton/Cook; 1993.

Although the intended audience for this collection is teachers of first-year writing courses, it offers much to other audiences. Chapter 2, "Conference and Workshops: Conversations on Writing in Process;" Chapter 5, "Teaching the Research Paper;" and Chapter 7, "Evaluation as Acts of Reading, Response, and Reflection," are particularly valuable for teachers who incorporate writing into courses across the curriculum.

Young A, Fulwiler T, eds. Writing across the disciplines: research into practice. Upper Montclair, NJ: Boynton/Cook; 1986.

Young and Fulwiler divide the 18 chapters into four sections: "Writing Across the Disciplines: Community and Purpose;"

"Evaluation: Assumptions and Discoveries;" "Research on Writing and Learning;" and "Writing in the Disciplines: Problems and Perspectives." Each section contains chapters relevant to the educational objectives endorsed by AACP. The evaluation chapters discuss longitudinal studies of change in student apprehension about writing and of assessment of writing skills. The chapters on incorporating writing into biology, psychology, and mathematics courses are quite useful.

Articles

Brillhart LV, Debs MB. Teaching writing–a scientist's responsibility. J Coll Sci Teach. 1981; 10:303-4.

Appealing to all lab sciences, Brillhart and Debs present a rationale and instructions for a series of lab reports designed to allow novice students to become familiar with and more proficient at developing communicatively sophisticated lab reports.

Cherif AH. Instructional strategies that never fail us: bringing students' creativity into the science curriculum. J Coll Sci Teach. 1994; 24:55-8.

Grounding his discussion in classroom strategies that transcend particular scientific disciplines, Cherif describes nine categories of activities–some spanning the entire semester; some taking less than one class period to complete–that engage students actively in studying science. The nine categories include: "Savings Account"–a full-semester, self-directed exploration project; "Free Classroom Creative Assignment"–a full-semester interpretive/creative assignment; "High Standard Term Paper"–a full-semester project to write an "A" scientific paper; "Collective Writing"–a multiweek group writing project on a controversial and timely topic; "Scientific Interview Reenactment"–an in-class activity using published interviews; "Letters to the Editor"–a two-week, two-person debate based on a journal article and a critical letter to the editor it evoked; "Question Development"–an out-of-class activity in which students create study questions based on predetermined format; "Collaborative Study"–a three-member, in-class group activity requir-

ing the group to come to consensus on answers to a set of questions; and "Creative Semester-Long Project"–an individual, peer- and instructor-assessed required project. Also included is a list of interviews (with complete citations) that model the Scientific Interview Reenactment project.

> Madigan C. Writing across the curriculum resources in science and mathematics: a selected, annotated bibliography. J Coll Sci Teach. 1987; 16:250-3.

Although a bit old, Madigan's efforts provide a sample of the literature on writing strategies for the science lab and classroom. The annotations are thoughtfully written.

> Science Writing. Teach Writ Mag. 1988; 19(5).

A special issue of this journal, the five feature articles focus on writing and science. They include: "Visual and Objective Observation" by Dale Worsley, "Science Writing: Questions and Answers" by Bernadette Mayer and Dale Worsley, "Science Writing Experiments" by Bernadette Mayer, "Science and Poetry Writing" by Carol Peck, and "A Brief Science/Writing Bibliography" by Bernadette Mayer and Dale Worsley. Worth a browse.

> Worrell JH. Creating excitement in the chemistry classroom: active learning strategies. J Chem Educ. 1992; 69:913-4.

Worrell foregrounds this article by reporting on the University of South Florida's addition of a one-hour "Participation Session" to its existing general chemistry course. Neither a traditional recitation nor quiz session, this hour engages students in higher-order thinking through active inquiry, cooperative learning, and peer teaching activities. The bulk of the article describes one activity successfully adapted to this instructional environment, a double replacement reaction producing a precipitate.

Biology

Articles

> Ambron J. Writing to improve learning in biology. J Coll Sci Teach. 1987; 16:263-6.

Ambron discusses how journal entries and microthemes can be used in the introductory cell biology course to help students relate to the classroom material and to their own experience and so to understand it better. Includes sample assignments.

Colley AP. Writing in science–an innovation. Am Biol Teach. 1980; 42:534-6.

Colley argues that science teachers should alter their existing courses along the following lines: replace multiple-choice examinations with essay exams; replace term papers with shorter, more focused papers; reduce use of questions keyed to textbooks.

House K. Improving student writing in biology. Am Biol Teach. 1983; 45: 267-70.

House argues that lab reports and review papers are useful tools not only for evaluating student knowledge but student interest and self-motivated inquiry. As part of the argument, House also discusses how services offered by the school's writing center were integrated into the course.

Reynolds FE, Pickett I. Read! think! write!: the reading response journal in the biology classroom. Am Biol Teach. 1989; 51:435-7.

The authors discuss a project in which students in an honors biology course were assigned to read a nonfiction science book as part of the course's requirements. As part of the assignment, students recorded reactions to their reading in a reading log and, building from this material, wrote a formal response to the text. Includes assignment sample and evaluation criteria.

TePaske ER. Writing in biology: one way to improve analytical thinking. Am Biol Teach. 1982; 44:98-99.

Working from the thesis that "biology teachers must require students to demonstrate their understanding of science ideas, concepts, points of view, and/or controversies through writing," TePaske

presents three case-driven assignments that require students to write and think critically.

Trombulak S, Sheldon S. The real value of writing to learning in biology. J Coll Sci Teach. 1989; 18:384-6.

The authors report the results of a study testing whether or not integrating writing into freshman-level biology and sophomore-level vertebrate biology courses improved learning. In addition to discussing their findings, Trombulak and Sheldon discuss the role students' attitudes play in the effectiveness of the teaching method.

Chemistry

Articles

Bailey RA, Geisler C. An approach to improving communication skills in a laboratory setting: the use of writing consultants. J Chem Educ. 1991; 68:150-2.

Bailey and Geisler present an overview of Rensselaer Polytechnic Institute's "writing intensive" requirement and the steps taken in the chemistry laboratory program to stress to the Institute's chemistry majors the importance of strong communication skills in the study of science. In particular, the authors describe a collaborative effort in which graduate students from the Department of Language, Literature, and Communication serve as "writing consultants" to students in the sophomore- and junior-level chemistry laboratory sequence. These consultants work with students and faculty throughout the semester as students write a series of reports on chemical experiments.

Beall, H. In-class writing in general chemistry: a tool for increasing comprehension and communication. J Chem Educ. 1991; 68:148-9.

Beall discusses the rationale behind and the mechanism employed to incorporate frequent writing-to-learn experiences in the introductory chemistry sequence at Worcester Polytechnic Institute. Four-

teen five-minute in-class writing assignments were included among the term's forty lectures, usually during the middle of a class period. Beall includes several prompts used and sample responses. Additionally, he includes the results of a survey of student reaction to these assignments.

> Beall H. Literature reading and out-of-class essay writing in general chemistry. J Chem Educ. 1993; 70:10-11.

To close the distance between students' preconceptions about the nature of chemistry courses and their professors' opposing beliefs, the chemistry faculty at Worcester Polytechnic Institute introduced literature readings and essay assignments into Chemistry 1010 and 1020. These assignments require students to read short but challenging excerpts from the literature and to respond in writing to questions relating to that reading. Beall includes an overview of the criteria by which these essays are evaluated, and of faculty and student reaction to this type of assignment in chemistry courses.

> Beall H, Trimbur J. Writing as a tool for teaching chemistry: report on the WPI conference. J Chem Educ. 1993; 70:478-9.

The authors summarize the Sixth Annual Conference on Chemical Education held at Worcester Polytechnic Institute on March 14, 1992. The conference focused on using writing in high school and college-level chemistry. Particular detail is given to the keynote address, "Writing to Learn Science" by Paul Connolly, and to the two following workshops on using in-class writing assignments (led by Herbert Beall) and out-of-class assignments (led by John Trimbur).

> Beall H, Trimbur J. Writing in chemistry: keys to student underlife. Coll Teach. 1993; 41(2):50-4.

This particularly useful article discusses the same chemistry course described in Beall's 1991 article "In-Class Writing in General Chemistry," but moves beyond the earlier discussion of the expected outcomes of incorporating in-class writing in chemistry courses in order to discuss unexpected outcomes that the writing

activities created. The texts students produce during these writing activities can be read two ways: diagnostically (the traditional approach to in-class writing) and from the students' points of view. It is this second perspective that Beall and Trimbur find exciting and useful because "in-class writings illustrate [students'] understanding of their role in the classroom and their relationship to the instructor, the course, their peers, and their past experience in school." The most important outcome from writing-to-learn activities, they argue, is that they "transform the processes of communication by asking students to write in new ways and faculty to read in new ways."

Cooper MM. Writing: an approach for large-enrollment chemistry courses. J Chem Educ. 1993; 70:476-7.

This article discusses the addition of note-writing activities throughout the semester in introductory chemistry courses with enrollments around 200 students. Cooper provides four sample activities from the course, one of which requires students to perform a written self-assessment of their performance on the previous examination in the course. She also provides sample responses to several of the prompts as well as a brief discussion of the effects this curricular change had on student performance, communication, and satisfaction, and on faculty involvement.

Strauss MJ, Fulwiler T. Interactive writing and learning chemistry. J Coll Sci Teach. 1987; 16:256-62.

Strauss and Fulwiler provide quite possibly the most complete discussion to date of how to incorporate meaningful writing opportunities in large classes on a voluntary basis. They discuss how they use "Exit Boxes" to collect "anything [students] wish to write concerning the course and their experience of it," and the types of responses they generally receive. The examples and the detailed discussion of the implications of each example make the article extremely valuable for chemistry teachers and faculty developers.

Sunderwirth SG. Required writing in freshman chemistry courses. J Chem Educ. 1993; 70:474-5.

Sunderwirth discusses the extensive writing assignments he assigns as part of introductory and general chemistry courses, as well as in a one-semester course for non-majors. He provides a fairly detailed description of the types of questions he assigns and the criteria he uses to evaluate the resulting texts. Also included in the article is an overview of the role that the college's Writing Center plays in the successful completion of the project by many students and some student responses to the presence of writing assignments in chemistry courses.

Viola A, McGuinness P, Donovan TR. The journal approach in the teaching of organic chemistry. J Chem Educ. 1993; 70:544-6.

The authors describe an initial use of journals in an introductory organic chemistry course, and the subsequent incorporation of journals in all sections of the same course and the following organic chemistry course in the two-part sequence. Sample assignments from throughout the semester are presented along with a detailed discussion of how peer readers were directed to respond to their partner's journal entries. The article ends with a discussion of overall positive student response to the use of journals in the classes.

HOLISTIC SCORING

Books

Cooper CR, Odell L. Evaluating writing: describing, measuring, judging. Urbana, IL: National Council of Teachers of English; 1977.

Although dated, Cooper's and Odell's book presents a solid place from which to read about the holistic assessment of writing. The test's first two chapters, "Holistic Evaluation of Writing" and "Primary Trait Scoring," are among the seminal works on the subject. Chapter 6, "Individualized Goal Setting, Self-evaluation, and Peer Evaluation," may be of interest to those teachers who try to incorporate self and peer assessment of writing and other work into their classes.

White EM. Assigning, responding, evaluating: a writing teacher's guide. 2nd ed. New York: St. Martin's Press; 1992.

Although designed specifically with teachers of writing in mind, this monograph presents the issue of how writing can be assessed–as well as assigned and responded to–in a most accessible manner. Teachers from many disciplines can use this text as both a springboard and a model for integrating writing into courses in such a way as not to create an insurmountable work load. Combing a discussion of the value of integrating portfolios into classes and coupling that with holistic scoring of the submitted writing, White provides a light at the end of the tunnel for teachers who often equate more student writing with more late night grading sessions.

Articles

McAloon A, Robinson GE, eds. Assessing for learning: How do you evaluate problem solving? Arith Teach. 1988; 35(8):49-51.

This brief column discusses a strategy for evaluating students' problem-solving strategies in the context of mathematics classes using a holistic scoring rubric. The article provides examples of student work scored using a holistic rubric, as well as the rubric used by the scorers. The argument is presented that this type of assessment allows students to be rewarded for the effort they put into finding a solution to a problem posed them, rather than having their ability to produce a correct answer count as the only determiner of success.

Madigan RJ, Brosamer JJ. Holistic grading of written work in introductory psychology: reliability, validity, and efficiency. Teach Psychol. 1991; 18:91-4.

Madigan and Brosamer argue that written assignments in large classes can be made practical by the use of holistic scoring. They report on a study conducted in conjunction with large sections of a General Psychology course that looked at adapting holistic scoring to written work that had been graded entirely by teaching assistants.

They conclude that holistic scoring is "a high-quality, low-cost approach to scoring written work in large classes."

Pool C, Bracey GW. Making sense of authentic assessment. Instructor. 1992; 102(4):40-1.

This brief article attempts to answer many of the most commonly asked questions related to the issue of authentic assessment, of which holistic scoring is one of the more prevalent. Among the questions are: "What are the consequences of this assessment?," "Is this assessment fair?," "Does the assessment cover high-quality content?," "Does this assessment assess a task that is cognitively complex?," "Is this assessment meaningful?," and "Is this assessment cost-effective?"

McKendy T. Locally developed writing tests and the validity of holistic scoring. Res Teach Engl. 1992; 26:149-66.

In a discussion that centers around the use of holistically scored writing samples as a means of testing and placement of students, McKendy's article is useful for the caution it encourages when thinking about the uses of, as well as the limits of, holistically scored writing samples. The author stresses the context in which the scoring is performed and for what purposes such scoring is undertaken.

Mishler C, Hogan TP. Holistic scoring of essays: remedy for evaluating the third r. Diagnostique. 1982; 8(1):4-16.

In an article aimed at educators from across the curriculum with an interest in testing methodology, Mishler and Hogan argue that holistic scoring is apparently not only the oldest method of evaluating writing, but its internal flexibility allows it to be used effectively in diverse settings with diverse populations. They also contend that interrater reliability is high which gives holistic scoring credibility with the public. Likewise, the speed of scoring makes it particularly useful for large-scale writing assessments.

Mitchell K, Anderson J. Reliability of holistic scoring for the MCAT essay. Educ Psych Meas. 1986; 46:771-5.

Mitchell and Anderson discuss the administration and the validity of the first phases of the addition of the essay section to the MCAT exam. Because that section of the exam is scored holistically, their discussion of how that section is to be modified for future examinations is useful.

Veal LR, Hudson SA. Direct and indirect measures for large-scale evaluation of writing. Res Teach Engl. 1983; 17:290-6.

This article reports on a study undertaken in Georgia to test the reliability rating and the cost-effectiveness of scoring writing samples using holistic scoring, primary-trait scoring, analytic scoring, and mechanics counts. The authors conclude that holistic scoring is the recommended form of evaluation for large-scale testing because it is valid, reliable, and economical.

White EM. Holisticism. Coll Compos Commun. 1984; 35:400-9.

Presenting both a history of and a philosophical rationale for holistic scoring as a valid assessment methodology, White's essay is framed by his years as Director of the California State University English Equivalency Examination. This introduction and overview offers an extremely readable entrée into the uses of holistic scoring; it does not, however, provide detailed discussions of how holistic scoring sessions work or of the validity of the methodology.