Editorial: The Components of Authentic Learning

Audrey C. Rule
State University of New York at Oswego

This editorial reports the results of a qualitative analysis of a selection of recent journal articles addressing authentic learning in different contexts, identifying overarching themes to guide teachers and potential authors of future articles for this journal. The four recognized themes are; real-world problems that engage learners in the work of professionals; inquiry activities that practice thinking skills and metacognition; discourse among a community of learners; and student empowerment through choice. Examples of authentic learning in articles from this issue are also discussed.

Keywords: Authentic learning, inquiry, real-world problems, community of learners, student choice.

Although the term, "authentic learning" is relatively recent, the idea of learning in contexts that promote real-life applications of knowledge extend backward two decades. Resnick's (1987) bridging apprenticeships connected theoretical learning in the classroom to application of knowledge in the work environment. Also, Collins's (1988, p.2) idea of situated learning: "learning knowledge and skills in contexts that reflect the way the knowledge will be useful in real life" also addressed knowledge applied in authentic contexts.

Many recent instructional theories focus on authentic tasks that help learners integrate needed knowledge, skills and attitudes, coordinate individual skills that comprise a complex task, and transfer their school learning to life or work settings. Approaches that focus on such authentic tasks include project-based learning, the case method, problem-based learning, cognitive apprenticeship (Collins, Brown, & Newman, 1989), situated learning, constructive learning environments (Jonassen, 1999), collaborative problem solving (Nelson, 1999), and goal-based scenarios (Schank, Berman, & MacPerson, 1999).

In this article, I have reviewed a broad selection of recent articles chosen by faculty members in the School of Education at my institution that represent to them authentic learning and best practice in the various subject areas and fields of education in which they teach. Main ideas from these selections were identified and organized into four central themes that support authentic learning experiences. These themes answer the question that, as current Editor of the *Journal of Authentic Learning*, I am most-often asked: "What do you mean by authentic learning? What are its components?" Although the term *authentic learning* is broad and has not been applied to a specific instructional model, these four components are found repeatedly, suggesting that they are an integral part of authentic learning experiences.

Authentic Learning Components Identified in the Literature

Until recently, few authors have attempted to define authentic learning and its components. Maina (2004) discussed faculty and graduate student perceptions of the nature of authentic learning, identifying

these elements: activities mimic real world situations, learning takes place in meaningful situations that are extensions of the learner's world, and the learner is at the center of instruction.

Renzulli, Gentry, and Reis (2004) identified four criteria for authentic learning through investigation of real-life problems. The first criterion was students investigate a real-life problem with a personal frame of reference that involves an emotional commitment within the student in addition to a cognitive interest. Second, the problem needed to be open-ended without prescribed strategies for its solution. Third, students were motivated to devise solutions that change people's actions, beliefs, or attitudes. Finally, the problem targeted a real audience beyond the classroom. In such authentic learning situations, the student was the inquirer, rather than a lesson learner undergoing a training exercise and the teacher was a mentor and resource procurer rather than a disseminator of knowledge.

Callison and Lamb (2004) reported that in the area of information inquiry, authentic learning occurred at the intersection of workplace information problems, personal information needs, and academic information problems or tasks. They identified these seven signs of authentic learning: student-centered learning, accessing of multiple resources beyond the school, students as scientific apprentices, the opportunity to gather original data, lifelong learning beyond the assignment, authentic assessment of process, product and performance, and team collaboration.

Method

This editorial is based on a qualitative analysis of 45 journal articles that faculty members in the School of Education at SUNY-Oswego submitted as being examples of authentic learning in their disciplines. In general, most faculty members submitted one article, although those who regularly teach in two subject areas, sometimes submitted two articles. The author read all the articles, identifying the main ideas concerning what exemplified authentic learning in the context of the discipline. These ideas were then organized into several overarching themes that repeatedly occurred. In the next sections, the four themes are identified and each theme is examined with examples from various areas of education.

Results and Discussion

The four themes supporting authentic learning, identified through the content analysis of forty-five articles describing authentic learning in different disciplines are: 1) the activity involves real-world problems that mimic the work of professionals in the discipline with presentation of findings to audiences beyond the classroom; 2) open-ended inquiry, thinking skills, and metacognition are addressed; 3) students engage in discourse and social learning in a community of learners; and 4) students are empowered through choice to direct their own learning in relevant project work.

Authentic Learning Involves Problems Rooted in the Real World

As Maina (2004) and Renzulli et al. (2004) indicated, authentic tasks target a real problem with the possibility of having an impact on people outside of the students involved in the investigation. This audience beyond the classroom changes the problem from an "exercise" to something more important, allowing students to become emotional stakeholders in the problem. Callison and Lamb's (2004) idea of accessing resources beyond the school

supports the concept of inquiry into real-world problems that reach beyond the classroom.

Science instruction should involve authentic tasks that address real-world problems encountered by scientists, allowing students to investigate problems in their own lives and communities. This may be accomplished when students collect water quality data from local streams or describe and measure characteristics of local soils, entering the information online for the use of scientists (GLOBE, 2006) or when students discover an environmental problem in the community and take steps to solve it. Likewise, learning experiences that employ technology to solve real-world problems of interest to the learner with an audience beyond the classroom allow learners to construct conditionalized knowledge (MacEntee & Wells, 2005).

The concept of *critical literacy* forms a bridge between literacy, real world social justice issues, and social studies. Critical literacy practices enlighten the reader of the multiple perspectives and ulterior designs of texts and how these writings may be challenged (Luke & Freebody, 1997). Critical literacy activities examine multiple perspectives, find one's authentic voice, recognize social barriers, cross borders of separation, help regain one's identity, and listen and respond to the call of service (Cairdiello, 2004).

Model lessons that address authentic learning in social studies include an interdisciplinary unit of study on archaeology (Eisenwine, 2003) and high school students' analysis of primary documents related to the Pledge of Allegiance (Pezone and students, 2002).

Real-world connections to learning are important because authentic pedagogy of both instruction and assessment tasks is a strong predictor of student achievement (Newman & Associate, 1996). These authentic assessment tasks require students to organize information, consider alternative perspectives, work with significant concepts, develop written communication, connect to the world beyond the classroom and display knowledge to an audience other than the teacher (Avery, Freeman, Grustafson, Coler, Hardy, Bargainer, and Jones, 2001).

Literacy resources may be connected to real life by expanding them beyond texts to such sources as bus schedules, maps, diaries, and interviews with people to allow multiple perspectives and full engagement with activities presenting pertinent skills in context to support lifelong learning rather than superficial or passive learning (Bergeron & Rudenga, 1996).

Authentic Learning through Inquiry and Thinking Skills

Besides providing authentic contexts for learning, students must exercise higher levels of thinking as they learn. This occurs as scientists conduct their work and should also be applied to students learning science. Science is advanced through experimental and theoretical inquiry in which investigators engage in asking questions, conducting studies, drawing conclusions, revising theories, and communicating results to others; therefore, science teaching and learning should reflect the scientific process of knowledge construction. Inductive teaching strategies for many fields of endeavor in which students learn through discovery include: inquiry training, concept attainment, the learning cycle, concept formation, unguided inquiry, and cooperative learning (Guillaume, 2004). Therefore, as Renzulli et al. (2004) and Callison and Lamb (2004) indicated earlier, authentic learning in science must involve true inquiry.

Similarly, authentic learning in mathematics must occur through discovery, inquiry and induction. Traditional

mathematics problems presented to students have merely required students to apply a known procedure, minimizing the need for interpretation. In contrast, authentic mathematical tasks provide realistic and complex mathematical data, address a wide range of background knowledge and skills, and often require solvers to use different representations in their solutions (Forman and Steen, 2000; National Council of Teachers of Mathematics (NCTM), 2000). Examples of such rich problems are *model-eliciting problems* (Lesh, Hoover, Hole, Kelly, & Post, 1999) that adhere to the following principles: personal meaningfulness to students; construction, refinement, or extension of a model; self-evaluation; documentation of mathematical thinking; useful prototype for other structurally similar problems; and generalization to a broader range of situations.

In the field of literacy education, expert readers employ similar thought processes: using prior knowledge to set reading goals, thinking strategically, following intentions to the end of a passage, monitoring comprehension, and reflecting on the author's purpose (Block, 2004). Teachers, therefore, must model these thinking processes to assist less-able readers (Israel, 2002; Pressley & Afflerbach, 1995). Effective think-alouds by the teachers can increase students' comprehension, vocabulary, decoding, and fluency and have these components: overview of text, identification of important information, connection to author's big idea, activation of related prior knowledge, putting oneself in the book, revising prior ideas and predicting, noticing the author's writing style, determining word meanings, asking questions, recognizing novelty, relating the book to one's life and anticipating use of new knowledge (Block and Israel, 2004).

Elementary teachers can motivate students by relaying their passion for literature, providing exciting alternatives to traditional book reports, finding relevant books, bringing in guest speakers, and enlisting family support, while secondary teachers should take time for read aloud, mentor students, give choices, and promote reading as recreation (Powell-Brown, 2004).

In the same way, metacognition – thinking about one's own thinking – can provide effective self-assessment in vocational education (Scott, 2000) in which students determine the limits of their knowledge (Fogarty, 1994) and assess their personal responsibilities along with attitudes toward goals of the work (Burke, 1994). Research shows students who were exposed to metacognitive instruction with cooperative learning outperformed counterparts who had no metacognitive instruction (Kramarski, Mevarech, & Arami, 2002).

Art education can foster healthier lifestyles when students use thinking skills to deconstruct the visual and textual information in media ads (Chung, 2005). Correspondingly effective technology instruction applies "technology to develop students' higher order skills and creativity" (International Society for Technology in Education (ISTE), 2002, Standard III C).

These latter examples of higher-order and metacognitive thinking occurring in literacy, vocational education, and art education show the necessity of authentic learning experiences allowing the learner to take the role of the inquirer who thinks critically and creatively.

Authentic Learning Occurs through Discourse among a Community of Learners

The learning community in authentic learning has several aspects. One part is the group of learners who work together to unravel the problem. Another aspect is the

community setting in which the project is based. For education students, this community is encountered during field experiences and involves facets such as diversity of language, culture, and social mores. A wider community is the professional community of investigators related to the discipline of the investigation.

Vygotsky (1978 [seminal work]) emphasized a sociocultural perspective in which students use language and social discourse to make sense of the world. Interaction and discussion of ideas with partners when guidelines are given (e.g., describing observations clearly, reasoning about causes and effects, posing precise questions, formulating hypotheses, critically examining competing explanations, and summarizing results) during science inquiry activities provide a scaffold for the development of reasoning and scientific understanding (Mercer, Dawes, Wegeriff, & Sams, 2004). Science investigations should link students to scientists through data sharing, critiquing, and direct communication, and involve the argumentative processes scientists use to achieve common understandings (Lee & Songer, 2003).

Computer-supported collaborative learning communities investigating model-eliciting problems help students pose and explore conjectures, understand mathematical concepts, and improve mathematical models (Nason & Woodruff).

For preservice teachers to make meaningful changes in assessment beliefs and practice, they need classroom and practicum opportunities to apply their new understandings about dynamic assessment as part of a culture of learning with explicit assessment criteria, student self-assessment and evaluation of teaching (Shepard, 2000). The higher the level of authentic learning that focuses on higher levels of thinking, disciplined in-depth inquiry, substantive discourse, and connections to the real world, the higher the level of all students' performance regardless of achievement level or demographic characteristics (Avery, 1999; Newman & Associates, 1996). Practicum experiences allow preservice teachers to experience and learn to pose worthwhile mathematical tasks that require students to reason, communicate, represent, problem solve, and make mathematical connections (Crespo, 2003; NCTM, 2000). Multiculturalism can be brought to mathematics class in many interesting ways such as exploring numbers in other languages, symbols of ancient societies, games of skill and chance from around the world, and the geometry of different house styles (Zaslavsky, 1994).

Today's teachers must "be students of human behavior, social events and their causes, and the characteristics of the citizens they serve" (Blair & Jones, 1998, p. 77). During practicum experiences, preservice teachers must become involved in the local placement community to glean understandings not available in college classrooms (Brown & Kysilka, 2002). A focus on both professional (e. g., classroom discipline, pupils, curriculum, school culture) and cultural topics (e.g., pupil's living conditions, cross-cultural communication, historical understanding) helps novice educators see the multiple realities of a classroom and its community setting (Stachowski & Frey, 2003).

Cognitive apprenticeships in vocational technology involve experts in modeling the strategies and procedures needed for problem solving to coached novices in a constructivist setting (Farmer, Buckmaster, & LeGrand, 1992). Community apprenticeships in art can provide practical learning that differs from traditional classroom learning, involving higher order thinking, diverse modes of thought, manipulation of concrete objects, autonomy,

problem formation, multiple strategies for solutions, incorporation of the environment, cognitive teamwork and understanding of social relations of the workplace (Bailey, Hughes, and Moore, 2004; Charland, 2005). Collaboration between novice art educators and community members can achieve more learning outcomes and bring richness to the projects (Rutherford, 2005).

Effective research-based strategies make inclusion of students with disabilities receive the support they need within the general education classroom. These conditions and strategies include teacher commitment and availability of both general and special education teachers to students with agreement of them on the language and concepts for the lesson. Collaboration of student and teacher with instructional conversation and directive questioning, differentiated instruction with student input, and use of conceptual anchors provide a shared experience and framework on which to build. The addition of cooperative learning emphasizes instructional conversations and responsibility for mutual learning (Bucalos & Lingo, 2005).

The community of learners who scaffold learning for each other during discussions along with the audience beyond those learners who set the context for the problem both form important components of authentic learning experiences.

Learners are Empowered through Authentic Learning

Renzulli et al. (2004) stated that the problem must have a personal frame of reference and be open-ended. This cannot happen without student choice in defining the problem and selecting the path of its solution. Similarly, Maina (2004) and Callison and Lamb (2004) identified authentic learning activities as being student centered.

Authentic literacy tasks address purpose, choice, audience, resources, and relevance (Bergeron & Rudenga, 1996). Such literacy projects need to be embedded in relevant experience focused on communication of meaning rather than evaluation and tasks must allow student choice for empowerment and motivation, including choice of audience for the work.

In the field of health promotion and wellness, educators provide information in a caring and trusting relationship so that individuals may make informed choices (Brouse & Basch, 2004; Peterson, Cooper, & Laird, 2001). Choice also occurs when students make their own interpretations of literature and art, using these to analyze how lifestyle affects their health (Brouse, 2005).

Similarly, the International Society for Technology in Education (2002) standards for teachers asks that teachers "use technology to support learner-centered strategies that address the diverse needs of students" (Standard III B).

Research related to effective instructional practice emphasizes the need for greater personalization and individualization of instruction (Carroll, 1994) because learning is an individual experience. Instruction can be personalized by starting with where the learner is in relation to knowledge of the topic, providing choice of a rich variety of pathways, providing multiple instruction approaches, and empowering students to make decisions, self-asses, and reflect (Kellouth, 2003).

Summary

The foregoing review of the literature supports authentic learning environments that engage students in real-world inquiry problems involving higher order thinking skills with an authentic audience beyond the classroom. Relevance and choice in the project, along with

discourse within a community of learners empowers students to increase their knowledge. Practica and apprenticeships provide important opportunities for interacting with the wider community and reflection upon experiences, thereby solidifying new understandings.

Authentic Learning in this Issue of the Journal

In the first article of this issue, Philip Griswold (2006) discusses how a graduate course for principal certification was restructured to make the experience more authentic with data-driven problem-based learning. Graduate students enrolled in the course found that a principal's decisions were more effective when based on data from clearly defined questions. The collaboration between the course instructor, graduate students, and partner schools provided a community of learners who tackled current problems from the school settings. Graduate students were empowered to define questions related to school issues and engaged in inquiry as they investigated data using newly acquired skills with software tools.

Nineteen graduate students and a professor in a graduate research course authored the second article of this issue (Ayotte et. al, 2006). The paper presents an analysis of authentic learning activities given as culminating research topic presentations. Six themes of cognitive involvement that promoted active learning by the audience were identified. The structure of this assignment allowed graduate students to chose their topics and create a short activity to involve their peers with its most salient aspects. Publication of the article provided a real-world audience for their work.

In the third article, Stoddard, Braun, Dukes, Koorland, and Hewitt (2006) discuss the results of a pilot investigation in using cases to teach preservice teachers about expectations of professional behavior. These students read, discussed, used a rubric to rate, and authored new cases of preservice teachers' behaviors in school settings. The preservice teachers found that analysis of true cases and generation of their own helped them clarify their understandings of professional behavior expectations.

Hallagan, Carlson, Finnegan, Nylen, and Sochia (2006) document, in their content analysis of algebra articles published over three and a half decades, the changing nature of algebra instruction from being driven by cognitive science theories to constructivism.

The articles in this issue reflect the four components of authentic learning in different ways, providing rich settings for the application of authentic learning. I invite readers to examine their teaching and learning situations and to identify more ways authentic learning is implemented. I hope to receive manuscripts from you in the near future.

References

Avery, P. G. (1999). Authentic assessment and instruction, *Social Education, 65*(6). 366-373.

Avery, P.G., Freeman, C., Gustafson, K., Coler, J., Hardy, R., Bargainer, G., & Jones, A. (2001). Linking authentic instruction to students' achievement: Using peer coaching. Evaluation report. Minneapolis Public Schools 2001 social studies best practices grant. Available: http://education.umn.edu/CAREI/Reports/summary.html

Ayotte, A., Duncan, B., Fasulo, J., Hahn, C., Hudson, S., Hunt, T., Irizarry, N., Perry, A., Schlegel, T., Searle, T., Searles-Fairey, S., Rule, A. C., Segar, C., Springer, R., Stilwell, S., Thibado, N., Vernold, S., Wolowik, H., & Wooding, A. (2006). Authentic interactive

presentations in a graduate education research class. *Journal of Authentic Learning, 3*(1), 27-47.

Bailey, T. R., Hughes, K. L., & Moore, D. T. (2004). *Working knowledge: Work-based learning and educational reform.* New York: RoutledgeFalmer.

Bergeron, B. S., & Rudenga, E. A. (1996). Seeking authenticity: What is "real" about thematic literacy instruction? *The Reading Teacher, 49*(7), 544-551.

Blair, T. R., & Jones, D. L. (1998). *Preparing for student teaching in a pluralistic classroom*. Boston: Allyn & Bacon.

Block, C. C. (2004). *Teaching comprehension: The comprehension process approach.* Boston: Allyn & Bacon.

Block, C. C., & Israel, S. E. (2004). The ABCs of performing highly effective think-alouds. *The Reading Teacher, 58*(2),154-167.

Brouse, C. H. (2005) Authentic learning in a health and wellness class through the writings of Thoreau. *Journal of Authentic Learning, 2*(1), 89-97.

Brouse , C. H., & Basch, C. E. (2004). The philosophy of John Dewey: How it can be applied to health education to increase colorectal cancer screening. *Journal of Authentic Learning, 1*1), 10-20.

Brown, S. C., & Kysilka, M. L. (2002). *Applying multicultural and global concepts in the classroom and beyond*. Boston: Allyn & Bacon.

Bucalos, A. B., & Lingo, A. D. (2005). Filling the potholes in the road to inclusion: Successful research-based strategies for intermediate and middle school students with mild disabilities. *Teaching Exceptional Children Plus, 1*(4), Article 1.

Burke, K. (1994). *The mindful school: How to assess authentic learning.*(2nd edition). Palantine, IL: IRI/Skylight publishing.

Callison, D., & Lamb, A. (2004). Key words in instruction: Authentic learning. *School Library Media Activities Monthly, 21*(4), 34-39.

Carroll, J. M. (1994). The Copernican plan evaluated. *Phi Delta Kappan, 76*(2), 105-113.

Ciardiello, A. V. (2004). Democracy's young heroes: An instructional model of critical literacy practices. *The Reading Teacher, 58*(2), 138-147.

Charland, W. (2005). The youth arts apprenticeship movement: A new twist on an historical practice. *Journal of Art Education,58*(5), 39-47.

Chung, S. K. (2005). Media/visual literacy art education: Cigarette ad deconstruction. *Journal of Art Education, 58*(3), 19-24.

Collins, A. (1988). *Cognitive apprenticeship and instructional technology* (Technical report no. 6899). Cambridge, MA: BBN Labs, Inc.

Collins, A., Brown, J. S., & Newman, S. E. (1989). Cognitive apprenticeship: Teaching the craft of reading, writing, and mathematics. In L. B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 453-493). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Crespo, S. (2003). Learning to pose mathematical problems: Exploring changes in preservice teachers' practices. *Educational Studies in Mathematics, 52*, 243-270.

Eisenwine, M. J. (2003). Archaeology in the seventh grade: An interdisciplinary unit of study. *Middle Level Learning, 16*, M3 - M11.

Farmer, J. A., Jr., Buckmaster, A., & LeGrand, B. (1992). Cognitive apprenticeship. *New Directions in Adult and Continuing Education, 55*, 41-49.

Fogarty, R. (1994). *The mindful school: How to teach for metacognitive reflection.* Palatine, IL: IRI/ Skylight Publishing.

Forman, S. L., & Steen, L. A. (2000). Beyond eighth grade: Functional mathematics for life and work. Yearbook (National Council of Teachers of Mathematics). 2000, 127-57.

GLOBE, 2006, What is the GLOBE Program? Retrieved June 29, 2006, from http://www.globe.gov/fsl/html/aboutglobe.cgi?intro&lang=en&nav=1

Guillaume, A. (2004). K-12 classroom teaching. (2nd ed.). Upper Saddle River, NJ: Pearson Education Inc.

Griswold, P. A. (2006). Authentic learning in educational leadership: Aspiring principals helping schools analyze student data. *Journal of Authentic Learning, 3*(1), 11-26.

Hallagan, J. E., Carlson, L. F., Finnegan, B., Nylen, D., & Sochia, S. (2006). The influence of learning theories on the teaching and learning of algebra. *Journal of Authentic Learning, 3*(1), 60-69.

International Society for Technology in Education. (2002). *National Educational Technology Standards for Teachers - Preparing Teachers to Use Technology*. Eugene, OR: author.

Israel, S. E. (2002). *Understanding strategy utilization during reading comprehension: Relations between text type and reading levels using verbal protocols.* Unpublished doctoral dissertation, Teachers College, Ball State University, Muncie, IN.

Jonassen, D. H. (1999). Designing constructivist learning environments. In C. M. Reigeluth (Ed.), *Instructional design theories and models: A new paradigm of instructional theory*(Vol. 2, pp. 371-396). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Kellouth, R. (2003). *A resource guide for teaching.* (4th ed.). Upper Saddle River, NJ: Pearson Education Inc.

Kramarski, B., Mevarech, Z. R., & Arami, M. (2002). The effects of metacognitive instruction on solving mathematical authentic tasks. *Educational Studies in Mathematics, 49*(2), 225-250.

Lee, H., & Songer, N. B. (2003). Making Authentic science accessible to students. *International Journal of Science Teaching, 25*(8), 923-948.

Lesh, R., Hoover, M., Hole, B., Kelly, A., & Post, T. (2000). Principles for developing thought-revealing activities for students and teachers. In R. Lesh & A. Kelly (Eds.), *Handbook of research design in mathematics and science education.* Hillsdale, NJ: Lawrence Erlbaum.

Luke, A., & Freebody, P. (1997). Shaping the social practices of reading. In S. Muspratt, A. Luke, & P. Freebody (Eds.), *Constructing critical literacies: Teaching and learning textual practice*(pp. 185-225). Cresskill, NJ: Hampton Press.

MacEntee, V.M., & Wells, S. J. (2005). The use of technology to facilitate authentic learning. Proceedings of the 2005 Informing Science and iT Education Joint Conference, Flagstaff, Arizona, USA, June 16-19.

Maina, F. W. (2004). Authentic learning: Perspectives from contemporary educators. *Journal of Authentic Learning, 1*(1), 1-8.

Mercer, N., Dawes, L., Wegerif, R., & Sams, C. (2004). Reasoning as a scientist: Ways of helping children to use language to learn science. *British Educational Research Journal, 30*(3), 359-377.

Nason, R., & Woodruff, E. (2003). Fostering authentic, sustained, and progressive mathematical knowledge-building activity in computer-supported collaborative learning (CSCL) communities. *Journal of Computers in Mathematics and Science Teaching, 22*(4), 345-363.

National Council of Teachers of Mathematics. (2000). Principles and standards for school mathematics. Reston, VA: Author.

Nelson, L. M. (1999). Collaborative problem solving. In C. M. Reigeluth (Ed.) *Instructional design theories and models: A new paradigm of instructional theory* (Vol. 2, pp. 241-267). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Newmann, F. M., & Associates. (1996). *Authentic achievement: Restructuring schools for intellectual quality.* San Francisco, CA: Jossey-Bass Publishers.

Peterson, F. L, Cooper, R. J., & Laird, J. M. (2001). Enhancing teacher health literacy in school health promotion: A

vision for a new millennium. *Journal of School Health, 71*(4), 138-144.

Pezone, M., & Students at Law, Government and Community Service Magnet School. (2002). Defending First Amendment rights in school. Social Science Docket, 2, 15-19.

Pressley, M., & Afflerbach, P. (1995). *Verbal protocols of reading: The nature of constructively responsive reading.* Hillsdale, NJ: Erlbaum.

Powell-Brown, A. (2004). Can you be a teacher of literacy if you don't love to read? *Journal of Adolescent & Adult Literacy, 47*(4), 284-288.

Renzulli, J. S., Gentry, M., & Reis, S. M. (2004). A time and a place for authentic learning. *Educational Leadership, 62*(1), 73-77.

Resnick, L. B. (1987). Learning in school and out. *Educational Researcher, 16*(9), 13-20.

Rutherford, J. W. (2005). An interdisciplinary collaborative experiment in art education: Architects meet arts administrators. *Journal of Art Education, 58*(4), 13-19.

Scott, J. (2000). Authentic assessment tools. In R. L. Custer (Ed.), J. W. Schell, B. McAlister, J. Scott, & M. Hoepfl. *Using authentic assessment in vocational education*. Information Series No. 381 (pp. 40-55). Eric Document Reproduction Service No. Ed 440 293.

Shank, R. C., Berman, T. R., & MacPerson, K. A. (1999). Learning by doing. In C. M. Reigeluth (Ed.), *Instructional design theories and models: A new paradigm of instructional theory* (Vol 2, pp. 161-181). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Shepard, L. A. (2000). The role of assessment in a learning culture. *Educational Researcher, 29*(7), 4-14.

Stachowski, L. L., & Frey, C. J. (2003). Lessons learned in Navajoland: Student teachers reflect on professional and cultural learning in reservation schools and communities. *Action in Teacher Education, 25*(3), 38-47.

Stoddard, K., Braun, B., Dukes, L., Koorland, M. A., & Hewitt, M. (2006). Professional behavior assessment: Building and measuring professionalism in preservice teachers. *Journal of Authentic Learning, 3*(1), 48-59.

Vygotsky, L. S. (1978). *Mind in society: The development of higher physiological processes.* Cambridge, MA: Harvard University Press.

Zaslavsky, C. (1994). Bringing the world into the math class. In L. C. Bigelow, L. Christensen, S. Karp, B. Miner, & B. Peterson (Eds.). *Rethinking our classrooms* (pp.76-78). Milwaukee, WI: Rethinking Schools, Ltd.