COMMUNITY COLLEGE RESEARCH CENTER
CCRC BRIEF
NUMBER 53 APRIL 2011

Facilitating Student Learning Through Contextualization

Dolores Perin

Skills in reading, writing, and mathematics are key to academic learning but are conventionally taught separately from the discipline areas to which they must be applied. For example, students may be taught writing skills in the morning in an English course and then be expected to apply them to writing an essay in a history class in the afternoon. Several problems arise with this structure. First, students do not necessarily transfer their morning writing skills to the afternoon history assignment. Second, students may not be motivated to learn writing skills in the English class because they do not consider such skills to be relevant to their personal goals (Cavazos, Johnson, & Sparrow, 2010). Third, weaknesses in essay-writing skills may not be addressed by the afternoon content-area teacher, who aims to teach subject knowledge rather than basic skills (Fisher & Ivy, 2005).

These problems have serious implications for the academic trajectory of the many underprepared students who enter postsecondary education. Despite the allocation of considerable resources to developmental education, many students in college-credit courses display continuing difficulties in applying these foundational skills to the learning of subject matter (Perin & Charron, 2006). One way to address this issue is through *contextualization*, or the teaching of basic skills in the context of disciplinary topic areas.

The contextualization of basic skills is defined here as an instructional approach that creates explicit connections between the teaching of reading, writing, or math on the one hand and instruction in a discipline area on the other, as, for example, when writing skills are taught with direct reference to topics covered in a history class.

Based on a longer review that considers the hypothesis that low-skilled students can learn more effectively and advance to college-level programs more readily through contextualization of basic skills instruction, this Brief presents two major forms of contextualization and explores possible mechanisms by which they may benefit students. Evidence for the effectiveness of contextualization is then summarized in order to determine what is known about possible advantages for low-skilled students. The Brief ends by discussing practical implications and future directions for research on the relation between contextualization and academic outcomes for low-skilled college students.

Two Forms of Contextualization

Contextualization is implemented in two distinct forms: *contextualized* and *integrated* instruction. This distinction has not been made explicitly in previous literature, but it is an important one because each form involves different teaching staff and instructional emphases. To maintain consistency with previous literature, the umbrella term "contextualization" is used here to refer collectively to both forms of instruction.

Contextualized basic skills instruction involves the teaching of academic skills against a backdrop of specific subject matter to which such skills need to be applied, and is taught by reading, writing, and math instructors. The primary instructional objective is to teach academic skills rather than the subject matter. Generally, the same skills found in conventional developmental or other academic skills classes are taught, but they are presented in the context of content from current or future disciplinary courses. For example, instruction in an English class on procedures for writing a persuasive essay might use topics being taught in a concurrent history class (De La Paz, 2005). Also, since many community college students aspire to allied health degrees but have difficulty with the reading demands of required biology classes, developmental reading instructors can utilize content taken directly from the textbooks used in those courses in order to teach reading comprehension strategies (Perin & Hare, 2010).

Integrated basic skills instruction is the incorporation of reading, writing, or math instruction into the teaching of content. Integrated instruction is taught by discipline-area instructors, with the academic skills serving as a means of developing critical thinking about disciplinary content (Pearson, Moje, & Greenleaf, 2010). For example, a high school science teacher may teach students how to write an argument showing why evidence supports one conclusion rather than another on a scientific issue (Krajcik & Sutherland, 2010). Integrated instruction may also be used when a content instructor observes that many students are having difficulty with the basic skills needed to learn the material.

Commonalities. Both contextualized and integrated instruction are a departure from traditional basic skills instruction, where reading, writing, and math are taught in the abstract, with little or no reference to authentic applications (Johnson, 2002; Jurmo, 2004). Because instruction must be customized for specific contexts, both approaches may require considerable effort on the part of instructors. However, given the high incidence of difficulty with basic academic skills among many college students in the United States (Bailey, Jeong, & Cho, 2010; Grigg, Donahue, & Dion, 2007; Salahu-Din, Persky, & Miller, 2008), it is important to find instructional methods that

can promote improved outcomes. Both forms of contextualization seem to be a promising direction for this purpose.

Underlying Mechanisms

The connection of basic skills instruction to applications and life goals is consistent with constructivism, which places students' interests and needs at the center of education (Dewey, 1966; Dowden, 2007). The theoretical literature suggests that both cognitive and affective mechanisms underlie the expected improvement in learning outcomes.

From a cognitive perspective, contextualization is thought to promote transfer of learning and improve the retention of information. However, knowing when and where one should apply a previously-learned skill requires metacognitive and self-regulation abilities that low-skilled students may lack. Linking basic skills in developmental education instruction directly to authentic content-area applications that students will encounter in a disciplinary course may increase the likelihood of transfer of skill to that particular setting. It has been suggested that by using authentic academic texts as part of academic assistance services, low-skilled students become more active learners and are then more inclined to use their skills in college courses (Simpson & Nist, 2002).

Barnett and Ceci (2002) proposed that the extent of transfer of skill varies according to the type of skill being targeted, how transfer is measured, the demands placed on memory of the skill to be transferred, and the distance between learning and transfer. According to this framework, the distance between original learning and eventual transfer can be measured in terms of the similarity of the two domains, as well as the physical, temporal, functional, and social contexts, and the modality for expressing transfer (modality refers to the setting in which the transferred skills are applied, such as the use of skills learned in a math class when completing a task assigned in an accounting class).

In addition to the cognitive mechanism of transfer of learning, the possible benefits of contextualization may be explained by the affective mechanism of intrinsic motivation, where a learner is drawn to engage in a task because it is perceived as interesting, enjoyable, and/or useful (L. Baker & Wigfield, 1999; Becker, McElvany, & Kortenbruck, 2010; Ryan & Deci, 2000). Low motivation can occur when students do not realize that their academic skills are not at college standard; they may therefore resist the need to sit yet again in classrooms that teach basic skills. Further, they may have competing job and family responsibilities (Caverly, Nicholson, & Radcliffe, 2004; Kozeracki, 2005). Connecting developmental reading, writing, and math instruction directly to the content courses students must pass in order to earn a postsecondary credential may improve intrinsic motivation to learn the skills.

Evidence on Contextualization

The literature was searched for evidence on the contextualization of basic skills instruction. Because there were few studies with college samples, research from elementary and secondary education was included as well. Studies were selected if they contextualized basic skills instruction and used quantitative measures of student academic outcomes. Twenty-seven studies were found, 17 on contextualized instruction, nine on integrated instruction, and one on both contextualized and integrated instruction.

Quantitative studies of *contextualized instruction* were conducted with college academic programs (six studies), adult basic education (six studies), K-12 academic education (four studies), and elementary education (one study), but no studies were found for this form of contextualization with college or high school career and technical education (CTE) students. Four of the 10 studies on *integrated instruction* were with CTE programs, and the other six studies were with academic programs in elementary and secondary education.

Many of the studies had methodological weaknesses that limited the conclusions about the effectiveness of contextualization. The studies that offered the best evidence are summarized below. A detailed breakdown of findings is discussed in the full review.

Summary of the Evidence

All of the outcomes of contextualization for basic skills achievement were positive, although there was minor variation in outcomes for particular subskills. For example, in a college CTE study integrating writing instruction in a business course (Cox, Bobrowski, & Spector, 2004), students improved their ability to write a business abstract but not to express business concepts in their own words. However, despite this, there is a trend in the research toward positive findings for basic academic skills, but not always disciplinary knowledge, for both contextualized and integrated instruction.

One of the assumptions underlying integrated instruction is that when basic skills instruction is incorporated in disciplinary instruction, ability in both academic skills and content knowledge should increase. However, of the five studies of integrated instruction that measured outcomes on knowledge development in a content area, two found no improvement in content knowledge (Parr, Edward, & Leising, 2008; Stone et al., 2006). Both of these studies embedded math in occupational courses in high school CTE. Since strong claims are made for the advantages of combining literacy with subject area instruction, these mixed findings are disappointing and warrant further research.

When we embarked on this review, we were particularly interested in how contextualization might promote better outcomes among low-skilled college students. However, only two studies, Wisely (2009) and Jenkins, Zeidenberg, and Kienzl (2009), provided data on college advancement. Wisely (2009) found that participation in contextualization was associated with the completion of developmental education courses and the speed of entry into, the performance in, and the completion of college level courses. However, these positive effects were limited to non-white students; no effects for contextualization were found for white students. Jenkins et al. (2009) found that adult education students who attended occupational classes that integrated basic skills instruction were more likely than adult education students who either did or did not enroll in a traditional occupational course to take subsequent credit-bearing courses, earn credits toward a college credential, persist to the next college year, as well as show greater gain in basic skills. Given college

practitioners' enthusiasm about the value of contextualization (E. Baker, Hope, & Karandjeff, 2009), it is unfortunate that more evidence is not available.

Trends in the Research

While the studies identified in the review provide preliminary support for the efficacy of contextualization, conclusions are tentative at present because of the shortage of rigorous studies with academically underprepared students in college or with adult basic education programs. As mentioned earlier, research with K-12 samples was included in the review since there was relatively little information on the use of contextualization with college students. Outcome measures for almost all of these studies focused exclusively on, and found gains for, specific basic skills outcomes.

It should also be noted that most of the studies in the review compared contextualization to a business-as-usual comparison group; while this is a good start, more definitive conclusions can only be made when contextualization is compared to other interventions in addition to conventional instruction, so that results can be attributed to contextualization itself and not to other dimensions of the research such as novelty or the added attention that may be given to participants in a treatment.

While the lack of rigorous research suggests that it is premature to invest substantial funds in a contextualization intervention at this time, it would be worthwhile to mount a rigorous research and development effort to gather information about the potential efficacy of this approach, specifically with low-skilled adult learners, whether in community college degree and certificate programs or in adult basic education programs.

A topic that has not been addressed in studying the effects of contextualization on transfer of learning is possible interactions between student ability, student motivation, type of skill to be learned, and amount of contextualization. Thus, in future research, moderators of the possible effects of contextualization should be identified. Other suggested areas of research include inquiry on the relation between the contextualization of basic skills instruction and subsequent course work, on the issue of dosage of contextualization, and on the nature of the dependent variable used in studies of contextualization.

Practical Implications

Moving toward the greater use of contextualization will depend on practical conditions internal to colleges. Most important are instructors' willingness to modify their instruction and colleges' ability to provide incentives and support for this change. Many developmental education instructors are not highly aware of the day-to-day reading and writing requirements that students find so difficult in college-credit disciplinary courses. Further, many instructors are strongly committed to the generic, decontextualized instruction in reading, writing, and math that predominates in developmental education (Grubb, 1999). Disciplinary instructors may be equally unwilling to consider contextualization because they feel that basic skills instruction is beyond their range of responsibility and/or competence (Marri et al., in press; McDermott, 2010). Strong college leaders will need to provide ongoing direction and support for either version of contextualization.

The following summary of recommendations may support the implementation of contextualization for low-achieving students in a college setting:

1. Create conditions for interdisciplinary collaboration so that basic skills and content area instructors can familiarize each other with their curricula, assessment approaches, standards, and teaching techniques. Interdisciplinary collaboration will facilitate teaching students reading, writing, or math skills that are directly applicable to the subject areas they are learning.
2. Provide ongoing professional development to initiate and support contextualization with tangible implementation targets. Professional development should utilize evidence-based professional development methods, and common cross-discipline agreement should be established about the desired learning outcomes for contextualization and the means for achieving them. Follow-up activities and supportive monitoring should be provided after the conclusion of formal training sessions to maintain instructors' interest in and ability to contextualize or integrate basic skills instruction.
3. Develop assessment procedures that incorporate both basic skills and content area knowledge to evaluate the effects of contextualization.
4. As the basis of contextualization of basic skills instruction in community colleges, select discipline-area courses that are needed for graduation by large numbers of students but that also have high failure rates. Introductory science courses may be a useful place to start since these courses display high failure rates and because descriptive and quantitative studies are available on the contextualization of basic skills instruction in science content.
5. When contextualized courses are established, collect outcome data for examination by instructors and administrators alike. Both instructors and administrators should be made aware of both short- and longer-term outcomes; evaluating contextualization in this way will indicate whether the effort is worthwhile and may point to the need to modify teaching techniques.

Among the many different innovations underway that attempt to promote the learning of low-skilled college students (Perin & Charron, 2006), contextualization seems to have the strongest theoretical base and perhaps the strongest empirical support. Both contextualized and integrated instruction are supported by quantitative studies that include control or comparison groups. However, the studies also indicate that considerable effort is needed to implement contextualization because instructors need to learn from each other and collaborate across disciplines, a practice that is not common in college settings. Furthermore, there is very little information on costs or on what would be needed to scale up contextualization. Nevertheless, the available evidence, taken in combination with practitioners' considerable enthusiasm for contextualization, suggests that this approach may be helpful in improving the outcomes of academically underprepared college students.

References

Bailey, T., Jeong, D. W., & Cho, S.-W. (2010). Referral, enrollment, and completion in developmental education sequences in community colleges. *Economics of Education Review, 29*, 255–270.

Baker, E. D., Hope, L., & Karandjeff, K. (2009). *Contextualized teaching and learning: A faculty primer*. Sacramento, CA: The Research and Planning Group for California Community Colleges, Center for Student Success. Retrieved from http://www.careerladdersproject.org/docs/CTL.pdf

Baker, L., & Wigfield, A. (1999). Dimensions of children's motivation for reading and their relations to reading activity and reading achievement. *Reading Research Quarterly, 34*(4), 452–477.

Barnett, S. M., & Ceci, S. J. (2002). When and where do we apply what we learn? A taxonomy for far transfer. *Psychological Bulletin, 128*(4), 612–637.

Becker, M., McElvany, N., & Kortenbruck, M. (2010). Intrinsic and extrinsic reading motivation as predictors of reading literacy: A longitudinal study. *Journal of Educational Psychology, 102*(4), 773–785.

Cavazos, J. Jr., Johnson, M. B., & Sparrow, G. S. (2010). Overcoming personal and academic challenges: Perspectives from Latina/o college students. *Journal of Hispanic Higher Education, 9*(4), 304–316.

Caverly, D. C., Nicholson, S. A., & Radcliffe, R. (2004). The effectiveness of strategic instruction for college developmental readers. *Journal of College Reading and Learning, 35*(1), 25–49.

Cox, P. L., Bobrowski, P. E., & Spector, M. (2004). Gateway to business: An innovative approach to integrating writing into the first-year business curriculum. *Journal of Management Education, 28*(1), 62–87.

De La Paz, S. (2005). Effects of historical reasoning instruction and writing strategy mastery in culturally and academically diverse middle school classrooms. *Journal of Educational Psychology, 97*(2), 139–156.

Dewey, J. (1966). *Democracy and education*. New York, NY: The Free Press.

Dowden, T. (2007). Relevant, challenging, integrative and exploratory curriculum design: Perspectives from theory and practice for middle level schooling in Australia. *Australian Educational Researcher, 34*(2), 51–71.

Fisher, D., & Ivy, G. (2005). Literacy and language as learning in content-area classes: A departure from "every teacher a teacher of reading." *Action in Teacher Education, 27*(2), 3–11.

Grigg, W., Donahue, P., & Dion, G. (2007). *The nation's report card: 12th grade reading and mathematics 2005* (NCES 2007-468). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics.

Grubb, W. N. (with Worthen, H., Byrd, B., Webb, E., Badway, N., Case, C., . . . Villeneuve, J. C.). (1999). *Honored but invisible: An inside look at teaching in community colleges*. New York, NY: Routledge.

Jenkins, D., Zeidenberg, M., & Kienzl, G. S. (2009). *Educational outcomes of I-BEST, Washington State Community and Technical College System's Integrated Basic Education and Skills Training Program: Findings from a multivariate analysis* (CCRC Working Paper No. 16). New York, NY: Columbia University, Teachers College, Community College Research Center.

Johnson, E. B. (2002). *Contextual teaching and learning: What it is and why it's here to stay*. Thousand Oaks, CA: Corwin Press.

Jurmo, P. (2004). Workplace literacy education: Definitions, purposes, and approaches. *Focus on Basics, 7*(B), 22–26.

Kozeracki, C. (2005). Preparing faculty to meet the needs of developmental students. *New Directions for Community Colleges, 129*, 39–49.

Krajcik, J. S., & Sutherland, L. M. (2010). Supporting students in developing literacy in science. *Science, 328*(5977), 456–459.

Marri, A. R., Perin, D., Crocco, M. S., Riccio, J. F., Rivet, A. R., & Chase, B. J. (in press). Content-driven literacy: One approach to urban secondary teacher education. *The New Educator*.

McDermott, M. (2010). More than writing-to-learn: Using multimodal writing tasks in the science classroom. *The Science Teacher, 77*(1), 32–36.

Parr, B. A., Edwards, M. C., & Leising, J. G. (2008). Does a curriculum integration intervention to improve the mathematics achievement of students diminish their acquisition of technical competence? An experimental study in agricultural mechanics. *Journal of Agricultural Education, 49*(1), 61–71.

Pearson, P. D., Moje, E., & Greenleaf, C. (2010). Literacy and science: Each in the service of the other. *Science, 328*(5977), 459–463.

Perin, D., & Charron, K. (2006). Lights just click on every day. In T. Bailey & V. S. Morest (Eds.), *Defending the community college equity agenda* (pp. 155–194). Baltimore, MD: Johns Hopkins University Press.

Perin, D., & Hare, R. (2010). *A contextualized reading-writing intervention for community college students* (CCRC Brief No. 44). New York, NY: Columbia University, Teachers College, Community College Research Center.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivation: Classic definitions and new directions. *Contemporary Educational Psychology, 25*(1), 54–67.

Salahu-Din, D., Persky, H., & Miller, J. (2008). *The nation's report card: Writing 2007* (NCES 2008-468). Washington, DC:, U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics.

Simpson, M. L., & Nist, S. L. (2002). Encouraging active reading at the college level. In C. C. Block & M. Pressley (Eds.), *Comprehension instruction: Research-based best practices* (pp. 365–381). New York, NY: Guilford Press.

Wisely, W. C. (2009). *Effectiveness of contextual approaches to developmental math in California community colleges* (Unpublished doctoral dissertation). University of the Pacific, Stockton, CA.

Funding for this research was provided by the Bill & Melinda Gates Foundation. This Brief is based on CCRC Working Paper No. 26, part of the CCRC Assessment of Evidence Series, which is available for download free of charge at http://ccrc.tc.columbia.edu.

Dolores Perin is Professor of Psychology and Education at Teachers College, Columbia University, and a Senior Research Associate at the Community College Research Center, Teachers College, Columbia University.

Community College Research Center
Teachers College, Columbia University
525 West 120th Street, Box 174
New York, New York 10027

Director: Thomas Bailey
Managing Editor: Doug Slater
(212) 678-3091 fax (212) 678-3699

ccrc@columbia.edu
http://ccrc.tc.columbia.edu