

APPLYING SCORM PRINCIPLES TO “LEAVE NO CHILD BEHIND”

Steve Duncan and Marilyn Sheerer
East Carolina University

A major thrust of the current administration is the “No Child Left Behind Act of 2001.” This legislation is directed toward improving the overall educational picture of the United States by focusing on teacher improvement, curriculum enhancement, technology exploitation, and accountability measures. Requirements include providing sub-grants to school districts with low achieving schools that demonstrate the greatest need for the funds and the strongest commitment to meeting school improvement goals (The No Child Left Behind Act, 2001).

While leaders in education are to be commended for the improvements in learning and accountability that have become part of America’s educational landscape, we still face secondary school dropout rates that seem unrealistic for a country that provides free K-12 education for all its citizens. Dropout rates for whites and African-Americans ages 16-24 have declined since 1972, but have remained relatively stable since the early 1990s. The rates for Hispanics (the fastest growing minority) have not declined appreciably and remain higher than those for other racial/ethnic groups

(The Condition of Education). We know that a child “left behind” for whatever reason by the third grade will most likely become an adult left behind, and that adult will bear children who will also be left behind. Further, we know that young adults who do not finish high school are likely to be unemployed and earn less when they are employed than those who completed high school. Additionally, high school dropouts are more likely to receive public assistance than high school graduates who did not go to college. (The Condition of Education)

Along with the problems, both current and projected, of children getting left behind is the growing discontent on the part of parents relative to how our schools are attacking the problems of education. In the six years from 1993 to 1999, the percentage of parents who reported they were “very satisfied” with their child’s school decreased from 56 percent to 53 percent, and African-American children in grades 3-12 were less likely than their white peers to have parents who reported that they were very satisfied with their child’s school, their child’s teachers, the school’s academic

• **Steve Duncan**, Spilman Building Room 205, East Carolina University, Greenville, NC 27858. Telephone: (252) 328-2157. FAX: (252) 328-4010. E-mail: duncans@mail.ecu.edu

The Quarterly Review of Distance Education, Volume 5(1), 2004, pp. 29–35
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ISSN 1528-3518
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standards, and the school's order and discipline (The Condition of Education). Surprisingly, among all racial/ethnic groups in 1999, Hispanic children had the highest percentage of parents who were very satisfied with the four areas assessed. These data seemed odd in the face of statistics that indicate Hispanic dropout rates of 27.8% in the year 2000 (The Condition of Education).

The "No Child Left Behind" movement has once again focused national attention on our public schools and how much more they might be able to accomplish. Discounting the normal arguments of higher pay, better working conditions, and programs to encourage teacher retention, the legislation puts money and emphasis behind dealing with teacher improvement, curriculum improvement, technology improvement, and better accountability. In a pre-visionary look, you might say that if this legislation accomplished all its objectives, no child would be denied the ability to reach success due to limitations in the three areas of concentration (teacher, curriculum, and technology). A viable and constant improvement system of accountability could merge principles of continuous improvement into the movement and, in a spiral nature, educators could fix problems and improve as they proceed, rather than waiting for a number of years to longitudinally review the impact of the selected interventions. Of course, accountability is always a "touchy" subject, and the program must be executed on the principle of comparative advantage (things are comparatively better with the full knowledge that all problems won't be solved) versus the more restrictive principle of prima facie proof, in which essentially all problems are expected to be solved with the selected intervention.

Because throwing money after a problem doesn't always yield the expected results, careful planning must ensue that permeates all layers and players relative to a level of sustained improvement. To simply float a concept of leaving no child behind, and getting the commitment in terms of words and cash from the Congress does in no way ensure that colleges

and universities will embrace the concept and then strive to reach consensus across the higher education community on ways to build a lasting program of continuous improvement. The first piece of a successful continuous improvement process must focus on preparing high quality teachers through a variety of routes. To support these varied approaches to preparation, it may be necessary for colleges and universities to adopt less rigid, less lock-step curriculum and instructional models. Experiences of our own U.S. military holds promise for teacher preparation, particularly for those individuals who may be transitioning into the teaching profession through an alternate route. Since the early 1990s, the military services have spent millions to research, design, develop, and apply a concept called shareable and reusable content. While the official acronym is SCORM (Shareable Content Object Reuse Model), the idea allows that, if properly developed, pieces of a curricular topic could be broken out to be imported and re-used in other presentations. The military found this adaptation necessary because high-quality multimedia instruction was expensive to develop, and therefore needed to be developed only once and re-used in as many applications as possible. This breakthrough was facilitated by vast improvements in digital technology, which allowed for data tagging, storage, and transmission, thus creating learning applications never before envisioned.

To be ultimately successful, colleges of education must be willing to examine, adapt, and adopt successful lessons learned relative to extending teacher training programs, regardless of the source of experience. While many colleges of education would never think of looking at military instructional practices for value, there are mounds of conclusive data as to successful performances taught to all levels of military students. Much has already been learned from the military from their years of experience in technology-based instructional presentation. Teachers will need to graduate with new and different skills, made possible by the technological advancements in teaching.

The days of the overhead projector should be long gone and replaced with more than Power-Point presentations. Teacher candidates need to be introduced early-on to the possibilities inherent in teaching technology. The SCORM applications have matured through the Advanced Distributed Learning (ADL) Initiative, which started in 1997 as a program emanating from the Office of the Science Advisor to the President of the United States. The ADL purpose was to ensure access to high-quality education and training materials that could be tailored to individual learner needs and made available whenever and wherever they were required. (ADL Overview, www.adlnet.org, 2002). ADL was sponsored by the Office of the Secretary of Defense and is a collaborative effort between government, industry, and academia, in order to allow interoperability of learning tools and course content on a global scale. SCORM evolved out of this initiative and defines the interrelationships of course components, data models, and protocols so that learning content objects are sharable across systems that conform within the same model.

The College of Education at East Carolina University has already chosen to utilize a model similar to SCORM to address the mandates of No Child Left Behind, as well as those of the North Carolina State Department of Public Instruction. According to the regulations, teachers in grades K-8 must have 3 continuing education units (CEUs) in reading for license renewal. To help address this need, the faculty developed a series of reading modules that are delivered online. Each module represents one CEU of work. Several modules are already available, and ultimately the faculty will present a menu of modules representing many topics in reading for many grade levels. Teachers will select those modules that meet their professional needs and interests. With each topic there is an application component. Therefore, teachers receive the necessary information and are required to apply what they have learned by returning documentation to that effect. The online modules are readily

available to all teachers at any location. The future of teacher lifelong learning and preparation, along with the requirement for additional CEU work, will further necessitate applications of technology to save the learner's valuable time.

The East Carolina University (ECU) example is the kind of focused professional development that No Child Left Behind calls for. Further examination of the modules being developed lets one readily see how such specifically designed curricular segments have the potential to meet teacher knowledge requirements exactly where they are:

- Word Study for Grades K-5
- Using Seminars with Young Adult Literature
- The Basics of Literature Circles
- Content Area Literacy: Vocabulary Development
- Content Literacy: Comprehension Development

Another aspect of the development of the modules represents a partnership effort by university faculty and public school personnel. Each module has been developed by pairing one university faculty member and one public school faculty member. In most cases, the module will be delivered by a public school person and will be available anytime, anywhere.

The ADL initiative has co-laboratories to assist module developers. The co-lab dedicated to academic advancement is in Madison, Wisconsin, and has faculty expertise that has tremendous knowledge across subject areas in research and assessment, and undergraduate and graduate students interested in the technologies. This valuable source of expertise should be used to try out and share success as all schools throughout the nation start on the trek of improving the overall quality of student achievement through multiple means. (Academic ADL Co-Lab, www.adlnet.org, 2002)

By approaching the "No Child Left Behind" teaching requirements with the value

gained from years of research and application of SCORM principles, teachers will be able to assist learners by providing them with the finest and proven educational modules developed by some of America's master teachers. Technology improvements will allow teachers to make the written word come alive through a variety of teaching applications, thus adding greatly to the comprehension and relevance demands of learners. No longer will teachers have to rely predominately on presenting instructional material in a "one size fits all" mode during one-chance classroom delivery experiences. No longer will teachers have to labor in the dark to find the link to a particular student's comprehension level and, most importantly, as the quality of training modules increase, one should expect a corresponding increase in the number of students who attain objectives once denied due to curricular limitations. Schools that were once limited in resources and quality teachers due to lower tax bases or isolated locations will have teachers who can access quality instructional materials on the other end of a computer search. In-service teachers finding themselves with a different student challenge will have possible solutions available electronically through multimedia scenarios and examples.

Another excellent example of modularized curriculum and distance delivery is the professional development content being delivered online to alternate route licensure students. In the summer of 2003, the ECU College of Education, using e-learning resources from the Office of the President of the University of North Carolina System, supported a tenured faculty member, three master teachers from the public schools, and an instructional designer to create modules for those people who wished to transition into teaching through an alternate route. On July 1, the team had a complete five-module online course to prepare new teachers for entry into the public school classroom. The modules are designed to provide basic information on a number of topics so that these individuals can more readily

adapt to the expectations of the schools in which they will be employed.

The modules comprising the three-credit course for alternate route teachers are as follows:

1. How does the school system work?
2. Who are the students?
3. What do we teach?
4. How do we manage the classroom?
5. What should I expect next?

A number of support pieces are built into the online course: a video to introduce the class, available on CD or Blackboard; an introduction-of-the-faculty video; an introductory session on using the technology; and a resource disk that contains many contacts and information points.

A significant aspect of the course is to allow students to show competency on a module through an exam. Thus, one student may have to take two of the modular units, while others may take all five. Again, in this case, the master teachers will be the faculty of record for these modules. Consequently, the true field-based experts will provide the necessary knowledge and skills to teach in today's classrooms.

This possibility of quality instructional content available to America's teachers anywhere and anytime is not without its growing pains. Dodani, in his article "The Dark Side of Object Learning: Learning Objects," stated that learning object development is, at best, in its infancy state, and still needs substantial work to make it effective. Dodani cites some of the many existing repositories of learning content, many of which are freely available, but notes that they are accessed as complete courses, versus the learning object expectation inherent in the SCORM movement. This does not suggest that teachers cannot download classes from MERLOT (www.merlot.org, 2003), or ESCOT (www.escot.org, 2001), or the Department of Education's project (GEM) (www.geminfo.org, 2003) and potentially find a lesson, or piece of a lesson, of value. How-

ever, Dodani is right when he speaks of the myths of learning objects in the sense that it will take a sophisticated teacher to assemble the right set of curricular offerings relative to a child's learning style. Content can be developed, as evidenced by the offerings currently online or available on CD. However, finding the time to "chop and crop" the content to adapt it to the individual learner will require teachers who are trained differently, as well as more time for planning.

The "No Child Left Behind" act provides set-aside monies to states for professional development and technical assistance. Curricular implications in this act include providing preschool-age children with high quality oral language and literature rich environments, the provision for activities and instructional materials that are based on scientifically-based reading research, and the integration of instructional materials, activities, tools, and measures into the programs offered (No Child Left Behind Act). With the infusion of significant federal dollars into this legislation, it would be shortsighted not to require the development of materials in such a way as to share them across the entire national teaching picture in an anytime/anywhere application scheme.

Teachers are certainly going to be the centerpiece of the improvements needed to assist all children. Colleges of education will become co-equals in adapting the preparatory curricular changes needed to graduate teachers able to not only use the tools of lesson design and production given a SCORM-like pool of instructional material from which to extract content, but to feel comfortable authoring and contributing items to the overall object pool as well. This again will require organizational changes in the way school systems handle teachers. Teachers report that if they participate in more than eight hours of professional development activity in a single area of development per year they are more likely than teachers who participate one to eight hours to use that professional experience to improve their teaching "a lot." However, most teachers participate in such activity only one to eight

hours (The Condition of Education 2002). In 2000, 99 percent of public school teachers participated in a least one professional development activity but, of selected activities, teachers most commonly attended those addressing state or district curriculum and performance standards (The Condition of Education).

The need to use computer applications to garner enhanced utilities from the growing pool of multimedia teaching materials will also change the role and responsibility of America's colleges of education. Even though we would like to think that teachers represent America's "best and brightest," evidence doesn't support this thesis. Studies by Ballou, Ehrenberg and Brewer, and Ferguson and Ladd between 1994 and 1996, as cited in the *Conditions of Education 2002*, concluded that students learn more from teachers with strong academic skills, versus teachers with weak academic skills; however, studies of teachers' academic qualifications revealed that college graduates with the lowest college entrance examination (SAT, ACT) scores are more inclined to become K-12 teachers than those with the highest scores. Among graduates who became teachers, those who scored in the bottom quartile were more likely than those in the top quartile to have taught only in elementary school, only in public schools, and in schools where 50 percent or more of children were eligible for free or reduced price lunch. Those who scored in the top quartile were more likely than those in the bottom quartile to have taught only in secondary schools as well as only in private schools (The Condition of Education). So, the teacher target population that will be charged with implementing the "No Child Left Behind" legislation is documented to be college students with lower college entrance examination scores. Additionally, data describing teachers entering the profession between 1992-93 found that, by 1997, 84.6 percent of graduates from the lowest quartile were still in the classroom as compared to only 69.4 percent who scored in the top quartile (The Condition of Education).

While colleges and universities are challenged with improving the overall quality of teacher preparation in order to provide the staff that will create the educational conditions to leave no child behind, they must add the new and powerful variable of technology comprehension and use. This will be a big challenge, because in 1999 only 10 percent of public school teachers reported feeling "very well prepared" and an additional 23 percent reported feeling "well prepared" to use computers or the Internet for instruction. The majority (53 percent) reported feeling "somewhat prepared" and 13 percent reported feeling "not prepared at all." Differences in teacher readiness to use computers and the Internet translated into large differences in how often teachers used these technologies. Teachers who reported feeling well prepared or very well prepared were more likely than teachers who reported feeling not at all prepared to use them to create instructional materials (88 percent versus 50 percent), gather information for planning lessons (71 percent versus 28 percent), access research and best practices for teaching (52 percent versus 11 percent), and create multimedia presentations for their classes (55 percent versus 12 percent) (The Condition of Education 2001). The fact that teachers with fewer years of teaching experience feel better prepared to use computers or the internet suggests a positive trend in teacher preparation.

The data certainly raise the challenge that we are asking a lot of the teacher preparation programs at our institutions of higher learning. Programs that are generally dealing with lower quality college students will be asking more of those same students. In addition, universities will be challenged to support school systems with continuing educational support through a virtual instructional capacity, so that teachers can access just-in-time instructional support. This continuous support concept, while a bit futuristic, is consistent with merging the power of technology to impact a constantly changing learning environment.

The need for college-based online support to teachers is amplified by the fact that more than one in three reported lack of release time to learn to use computers or the Internet as a great barrier to improvement (The Condition of Education, 2001).

Before the fourth dimension of the legislation, accountability measure, begins to impact the participants directly, all of the stakeholders in "leaving no child behind" must gather and assess the preparation variables they must consider. If teacher preparation programs are not accessing and retaining the higher-quality students, they have two choices: work on accession strategies, or train those who show up to higher levels of performance. If the latter is the answer, as it has been through multiple renewals of educational emphasis, all who share a common interest in this current theme must decide the best and most lasting approach to change. Other government agencies, like the military, that have developed curriculum should share the skills and lessons learned in the development and storage process. Likewise, those who have been trained to produce tagging, storage, and retrieval procedures for reusable content should be brought to the planning tables. All too often, we find that there are shared interests and sharing possibilities that must be discovered. If discovered, all benefit, but where these lessons go undiscovered we merely replay history and spend a new tax dollar for the same output. SCORM has great possibilities, but to date it has been primarily limited to a military research and application role. Even though ADL has a co-laboratory to review and assess products of academia, that very fact is known to far too few. The collective wisdom of academia, the military, and business will have to be harnessed to have any lasting impact on the problem of "haves" and "have-nots." The interrelationships are far too clear. Colleges and universities prepare the teachers who teach the students. Business and the military employ the outputs of the educational system. When all work together for a better product, and share financial resources and wisdom, the end result can only improve.

If one reviews history only as far back as the Johnson years, without first building the lasting coalitions to sustain the "No Child Left Behind" program, one could almost write the final evaluation report without completing the program. If we recognize that, through strong coalitions, we can improve teacher preparation, improve curricular access, and employ better teaching strategies using current tools, while identifying the new tools necessary, we may once and for all make a "comparatively advantageous" inroad to the educational disparity that has plagued this country since public education became a reality. Moving to a SCORM-supported model in teacher education curricula has the potential to develop clearer, more performance-based curricular components and thus align teacher education curriculum with the needs and challenges of public school teachers. In turn, teacher education curricula and programs will become better grounded with respect to the context in which they will be implemented. The challenge for deans and directors of teacher education programs is to influence faculty to move in directions evidenced in this document so that the mandates and expectations of No Child Left Behind can be fully addressed.

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