Iowa Core Curriculum

Senate File 588

Iowa Department of Education
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Des Moines, Iowa 50319-0146

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Introduction

In addition to expanding and extending the high school Iowa Core Curriculum in literacy, mathematics, and science, Senate File 588 required the Iowa Department of Education (DE) to develop a report assessing the following:

- Readiness of school district's to adopt and support the Iowa Core Curriculum,
- Professional development needs,
- Technical assistance needs, and
- Barriers to full adoption.

To generate the data necessary for the report, the DE engaged the Surveys of Enacted Curriculum (SEC), a set of data collection tools developed by the Council of Chief State School Officers (CCSSO). The SEC survey instruments and resulting data provide an objective method to analyze the degree of alignment between current instruction, state standards and benchmarks, written curriculum, and delivered curriculum. The DE's intent was to use the results as a way of assessing the alignment between current curriculum content and practices in literacy, mathematics, and science and the Iowa Core Curriculum.

In the spring and fall of 2007, the DE asked high school language arts and reading, mathematics, and science teachers from 61 high schools to complete the online surveys. Schools were selected for participation in such a way to allow the DE to generalize the findings across all Iowa high schools. Schools selected ranged in size from some of Iowa's smallest to the largest, included both rural and urban settings, and were distributed geographically across the state. Nearly 30 percent of those high schools identified by the DE for participation chose not to participate even though the DE provided limited financial incentives to participating schools and teachers. A total of 610 Iowa teachers participated in the teacher data collection effort that included 198 mathematics teachers, 173 science teachers, and 239 language arts and reading teachers.

In May 2007, the DE supported SEC developers in identifying descriptions of the Iowa Core Curriculum in literacy, mathematics, and science. Teams consisting of four experts in each content area collaborated in providing the coding that would allow survey findings to be used to determine alignment to the Iowa Core Curriculum.

Findings

Readiness of School Districts to Adopt the Iowa Core Curriculum

The cumulative results of the survey suggest that Iowa high schools are well positioned to provide their students the opportunity to learn the content of the Iowa Core Curriculum in the literacy, mathematics, and science. In all three content areas, the alignment of instruction of Iowa teachers to the Iowa Core Curriculum was stronger than that of a comparable group of teachers from the multiple states that engaged the SEC. Content alignment appears to be the strongest in the area of science and weakest in the area of mathematics. While overall alignment appears favorable, a review of individual teachers' responses shows significant variation among teachers, particularly in science and literacy. This indicates a lack of alignment between some individual district standards and benchmarks, and curriculum, and select provisions of the Iowa Core Curriculum.

Content in Iowa Literacy Classrooms
The study reveals that high school language arts and reading instruction in Iowa can be characterized as emphasizing the content area of comprehension more than any other single content area. Two other areas with noticeable emphasis in instruction are vocabulary and writing. The Iowa Core Curriculum, while emphasizing reading and writing, also emphasizes speaking, listening, and viewing. These areas of emphasis are not reflected in the current content of instruction in Iowa high school language arts classrooms. Iowa teachers reported spending approximately 6 percent of their instructional time on listening and viewing and another 6 percent on speaking and presenting.

Content in Science Classrooms
Four content areas indicate relative strong emphasis, based upon the analysis of teachers' responses: nature of science, measurement in science, components for living systems, and properties of matter. In addition to emphasizing these four areas, the Iowa Core Curriculum also emphasizes science and technology, and science, health, and the environment. The division of how time is spent in instruction also provided points worthy of future study. Two examples are listed below:

- A review of the Iowa Core Curriculum in science would suggest that up to 18 percent of instructional time be spent on the content area of nature of science. Iowa teachers indicated they currently spend eight percent of their time on this content area.
- While the analysis of the Iowa Core Curriculum suggests that teachers dedicate approximately 8 percent of their instructional time to ecology, Iowa teachers' responses indicate they spend approximately 4 percent of their time in that area.

Content in Mathematics Classrooms
The mathematics instructional program, based upon teachers' responses, reveals a strong emphasis of instruction time in developing procedural knowledge in the areas of number sense, basic algebra, and geometric concepts. The Iowa Core Curriculum in mathematics also emphasizes basic algebra and geometric concepts while suggesting much less emphasis on number sense. Also emphasized in the Iowa Core Curriculum are the content areas of probability, analysis, and special topics – such as logic, networks, permutations and combinations, among others. Time on topic analysis reveals a clear tendency for Iowa teachers to emphasize number sense, operations, and Measurement at much higher levels than indicated in the Iowa Core Curriculum.

Across all three content areas, a review of the cognitive demands Iowa teachers reported placing on students showed much more emphasis on memorize/recall and much less emphasis on analyze information and make connections/apply than would be recommended by the developers of the Iowa Core Curriculum.

Professional Development and Technical Assistance Needs

In order to have the Iowa Core Curriculum fully implemented in all high schools by 2010, professional development and technical assistance will be required. The data gathered from this report indicates that professional development and technical assistance must focus on the accomplishment of two goals:

1) The standards and benchmarks and curriculum of all public school districts and accredited nonpublic high schools are aligned to the Iowa Core Curriculum.
2) Instruction in the core content areas of literacy, mathematics, and science aligns with and supports the effective implementation of the Iowa Core Curriculum. (Additional study is needed to address the areas of social studies and 21st century skills.)

In order to attain Goal 1, the DE will need to develop a network of experts to implement a consistent process across all districts and accredited nonpublic high schools to ensure that a comprehensive, thorough review of existing standards and benchmarks and curriculum has been completed, gaps in alignment identified, and plans developed to eliminate existing gaps by 2010. Additional professional development will be needed to give all high schools the ability to conduct this gap analysis, create reports identifying specific gaps, and collaborate with school leadership in developing and implementing effective plans to address existing gaps. The DE has been working with one of the area education agencies (AEAs) to develop a process that will engage districts in a meaningful and thorough process.

To attain Goal 2, the DE will need to develop an audit process that can be conducted in every high school to identify areas of need in instruction related to the Iowa Core Curriculum. The DE is currently in the process of reviewing instructional audit processes that have been successfully implemented in some schools in Iowa (e.g., the process currently used with schools on the Schools In Need of Assistance list) to determine their applicability for the type of audit required to assist school personnel in determining the instructional needs that are specific to their school. Once completed, school personnel will prioritize those needs to develop effective professional development plans.

After audits have been conducted and plans to effectively address needs have been created, the DE will need to support a second phase of professional development to promote and support changes in content and classroom instructional practices. These opportunities would focus on literacy, mathematics, and science, and perhaps social studies and 21st century skills following further study of these areas.

Additional content area-specific possibilities for professional development may include the following:

Literacy

In the content area of literacy, professional development should focus on the following: the writing process, writing applications, listening/viewing, and speaking/presenting. While writing is covered in the schools that were part of this study, much more emphasis needs to be placed on generating, analyzing, and evaluating writing. Additionally, the study found that the teachers may appear to be spending a disproportionate amount of time on phonemic awareness, phonics, and authors' craft. Also, the effectiveness of instruction in vocabulary, fluency, comprehension, and critical reading may also be worthy of review, based on information gleaned from the SEC study.

Mathematics

The study found that in mathematics, emphasis has been placed on number sense, operations, measurement, basic algebra, advanced algebra, and geometric concepts. Instructionally much of what was found focused on the cognitive areas of memorization and procedural knowledge. The Iowa Core Curriculum places less emphasis on number sense, operations, and measurement at the high school level. Rather it requires more emphasis on probability, analysis, and special topics. To aid in the full implementation of model core, it would be necessary to create professional development efforts that emphasize probability, analysis, and concepts contained in special topics.

Science
Professional development in science should focus on ensuring that the areas of science and technology, health and the environment, and ecology are developed. The study illustrates that too much emphasis is being placed on the cognitive demand categories of recall and procedures. Professional development must focus on how to combine these science concepts with the cognitive demands of analysis and application.

Barriers to Full Implementation

Significant barriers to full implementation would include the following:

AEA and School Choice
Since the current implementation strategy for the Iowa Core Curriculum has relied upon the voluntary support of the AEAs and voluntary implementation by districts and schools, the level of support available to schools and schools' subsequent willingness to implement has varied dramatically throughout the state. The number of days of professional development offered in districts to support the Iowa Core Curriculum has ranged from 0-9 days. Consequently, implementation actions have taken place in schools in some regions of the state more than others.

In order to fully implement the Iowa Core Curriculum, the DE will need to work with the AEAs to create a network of support for school districts. This network will need to implement a systemic plan of support to help school districts adopt the Iowa Core Curriculum. Area education agencies have engaged in some of this work on a limited basis. If the Iowa Core Curriculum is mandated or implemented voluntarily by a large percentage of districts, AEAs will need more staff and considerably more training to assist districts as this effort will exceed the capacity of the AEA system.

Personnel and Resource Support for the Iowa Core Curriculum
The DE has been limited in its ability to support full implementation of the Iowa Core Curriculum because of the limited number of personnel who have an in-depth knowledge of the content of the Iowa Core Curriculum and the instruction required to effectively implement the Iowa Core Curriculum content in high school classrooms.

Limited Superficial Analysis as Opposed to Detailed Substantive Analysis
The DE is going to need to support districts in conducting deep, thorough analysis of the content of the Iowa Core Curriculum to accurately align standards and benchmarks. As the DE has collaborated with the limited number of schools who have completed a gap analysis process, the tendency among some has been to do a superficial, generalized review instead of a more in-depth study. The generalized review has not produced the impetus for substantive change in those schools.

Confusing Graduation Requirements with the Iowa Core Curriculum
Several high school educators have made the assumption that the course content covered by the requirement for high school graduation (four years of English and three years of mathematics, science, and social studies) mandated by the 2006 Legislature automatically includes the Iowa Core Curriculum. In many of instances, this clearly is not the case. This will be an area where the DE will need to provide additional clarity in the future.