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Science and Social Studies: The Forgotten Content

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Science and Social Studies: The Forgotten Content

A Senior Thesis Submitted to
the Western Kentucky University
Honors Program
By
Samantha L. Slaughter
Fall 2007

Approved By:

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It has often been stated by elders within a community that the basis for their academic careers was the three R's: "reading, riting, and rithmetic." They claim that these were the basic content areas covered and most people upon hearing this laugh and think about how this shows their age. Many would be surprised, and even ashamed, to realize that in today's global society of scientific and technological advances these are still the core content areas covered in present day elementary classrooms.

Because of the emphasis that most teachers and school administrators place on math and reading, little time is devoted to other vital subjects such as science and social students. In the experience of the observer these content areas are generally only covered when time permits. Some teachers who have a particular affinity for a given subject area may be more conscious of covering it on a regular basis. And such subjects are definitely covered in years that standardized testing occurs. And they are often covered if a teacher has a particular interest in the topic area. Therefore, students in today's classrooms are not receiving the social studies and science content knowledge and skills that they need to compete in an ever increasingly global society.

According to the National Assessment of Educational Progress (NAEP) report Mullis, Owen, and Phillips state that "... only small proportions of students appear to develop specialized knowledge needed to address science-based problems, and the pattern of falling behind begins in elementary school." Students who reported more opportunities to study key topics and ideas in core subjects made higher scores on the NAEP tests of achievement. Further, students who reported an early start in studying core subjects, through substantial exposure to these content

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areas in elementary school, tended to perform better in the NAEP surveys. (Patrick, 1991, p.1)

Teachers complain that they have so much content they are required to cover that it is impossible for them to cover these content areas as well as all other content. Teachers claim that they were not trained in these content areas and do not feel comfortable teaching them. They will argue that if students cannot perform well in math and reading there is little likelihood of them performing well in science and social studies. Many primary teachers believe they must focus on these skills and ignore all others. It is unfortunate that these teachers believe such myths and children today are suffering just as the elders in our communities are suffering now.

Teachers do not need to continue this practice of content selection. Through proper planning, integration, and professional development it is possible for teachers to successfully incorporate *daily* science and social studies core content into the classroom. This method of teaching (i.e., including all content areas) will result in better prepared students who can succeed and compete in a global world.

Many countries in the world spend more time teaching science than the United States. As reported in the Educational Digest of Statistics (2006), the average fourth grade student in the United States spends approximately eight percent of instructional time engaged in science content. In many schools, students must spend a total of three hours or more on reading alone. That is approximately 43 percent of a seven hour school day (EDS, 2006). Given this context, it is no wonder that students are struggling in science. Perhaps, a solution to this dilemma is proper planning and integration.

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When planning how to use instructional time, teachers must look at the state standards or core content. They must discover what objectives are to be taught and organize those standards in a curriculum map. Using a tool such as a curriculum map will help the teacher see the big, year-long picture. He/she will know when each topic will be taught and it will be much easier to identify the possibilities of integrating social studies and/or science in the daily curriculum. Appendix A contains an example of a curriculum map in which the required Kentucky standards are appropriately distributed within a school year for the kindergarten grade level.

This curriculum map was created using Kentucky's Core Content for Assessment Guide 4.1 and by examining curriculum maps from high scoring elementary schools. In an effort to unify material across the curriculum, broad based umbrella concepts such as relationships or change were used for planning. All content chosen for the quarter relates to the unifying umbrella concept, aside from mathematics. The math content area is scaffolded for kindergarteners and would have been developmentally inappropriate to teach in a different order. For example, fact families, a mathematics topic, is important to discuss around the time that addition and subtraction are covered. In the curriculum map, these topics have been placed under the umbrella concept "purpose." Thus, the topic of Fact Families should also be included under the concept "purpose." This allows the scaffolding to remain consistent, even though it would have made more sense out of context to put the topic under the concept "patterns." The organization for the mathematics core content was modeled after a document from Briarwood Elementary School (2006) which received top scores within its school district.

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To help teachers understand how and when to implement the curriculum map, a daily schedule or routine is also included in Appendix B which is based on the research of David Sousa. Sousa (1995) proposes that students learn more through shorter lessons and that the brain is able to reset itself for further learning through breaks or digressions in content. The daily schedule includes frequent transitions and breaks to help students reset themselves for further learning. The schedule also integrates Sousa's theory of "primetimes" during a lesson and applies it to a broad scale of an entire day. Sousa explains in his research that there are two times during a lesson that students are paying the most attention, at the beginning and the end. These times are "primetimes" for teaching. During the time in the middle, students are often off topic, daydreaming, or may easily become distracted. Sousa provides different ratios of primetime to downtime according to how long the lesson is. The shorter the lesson the more primetime or time that the students are on task. This daily schedule applies this research to a more broad scale of daily learning. An average of the ratios of primetime to downtime were calculated and used in planning the daily schedule. Ratios of Sousa's previous research are preserved and vital content such as science, social studies, math and reading are all covered during one of the two prime learning times.

The daily schedule and curriculum map provide obvious opportunities for integration among content areas. The schedule demonstrates that not only are social studies and science core content taught daily through direct teaching and discovery based lessons, but the subjects are incorporated into the daily academic and social centers. These centers include hands-on opportunities for students to explore basic science and social studies concepts such as finding places on a map, creating their own map, testing

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for buoyancy, and perhaps even creating a magnet. This process of integration is vital for all classrooms and goes along with good planning. In the curriculum map broad themes or topics are designated for an allotted period of time and which also include real world connections. Themes or topics help students to connect what they are studying in math to what they are studying in reading and science.

One quarter, students may learn about changes. One week of that quarter may be devoted to fall concepts. Students may practice observation and inquiry skills in science as they observe the leaves and apples. Students may use apples as counters in math or learn about the probability that an apple will be red, green, or yellow. In reading, students may discuss Johnny Appleseed or squirrels collecting acorns for the winter. Additional examples of content specific units in which science and social studies topics have been integrated into the remainder of the curriculum are available in Appendix C. In these units integration may be obvious or subtle. The math unit integrates science inquiry and observation skills on the playground while the reading unit focuses on diverse cultures and their locations, a very obvious tie to social studies.

The final excuse that is examined for the absence of science and social studies in the curriculum is that many teachers express concern that they are not familiar enough with the subject matter to teach it. It is unfortunate that elementary teachers are not required to take more content classes in science or social studies. Typically, three to six credit hours in each of these subject areas is all that is required for a Bachelor of Science Degree in Elementary Education. As content generalists, teachers should be given the opportunity to take more classes in these areas to help them feel empowered to truly teach and spread knowledge. However, as unfortunate as the situation may seem, it is

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possible for teachers to gain deeper content knowledge through professional development opportunities.

Many school districts offer and even mandate professional development opportunities throughout the year. Teachers may also find that local universities have specialists who present workshops to train teachers to better educate students in their content area. One example is Dr. Andrew Wulff of Western Kentucky University. Dr. Wulff is a geology professor who frequently holds workshops for both experienced and pre-service teachers. He will offer to visit the teacher's classroom if he/she still does not feel comfortable enough with the material. Professor Wulff is also generous with supplies as he loans rocks and minerals to teachers so that the students may have hands-on experiences.

Other universities are likely to offer experts who are passionate about their subject area and will give of their time to help educators increase their skills. After all, increasing student interest in a field also helps promote the existence of the field and increases the likelihood of more future students to teach. If such a resource is not available, organizations also offer a variety of professional developments in diverse locations. The National Council for the Social Studies (NCSS) devotes an entire section of its website to professional development opportunities. Likewise, the National Science Teachers Association (NSTA) has a section of its website devoted to professional development. The Smithsonian Institution maintains a list of professional development opportunities for every subject area on its website.

Although teachers may claim that they do not have the time or knowledge to teach science and social studies, they have the opportunity to gain the knowledge as well as the

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time through proper planning, integration, and professional development. It is the educator's responsibility to prepare students for a future which will certainly contain global complexities and scientific breakthroughs. If students are not familiar with science concepts or the cultures with which they are working, they will not keep up and they will get left behind. In an increasingly competitive world this could have dire consequences.

On the other hand, if teachers take the time to plan through curriculum mapping and put forth the effort to include science and social studies on a daily basis, students will succeed in the future. Students will be provided with the foundation they need to succeed in middle and high school. They will perhaps score higher on their college entrance exams and as a result be established for a lifetime of learning and success. What teacher, given this prospect of student success would not want to help her students by incorporating all content areas on a daily basis?

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