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Ensuring Preservice Teachers' Readiness to Teach Standards-Based Curricula

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Abstract

This article will describe processes used by a middle grades teacher education professor in a first semester senior middle grades teacher education class to increase preservice teachers' knowledge of discipline-specific content and the North Carolina Standard Course of Study (SCOS). Through this instruction, preservice teachers gain higher levels of confidence and competence in their content areas in preparation for teacher internships and student teaching.

Processes used in the course, Middle Grades Curriculum, Instruction, and Assessment, to increase preservice teachers' content and SCOS knowledge proficiencies include vertical mapping of SCOS standards, calibration of SCOS with middle level core content textbooks, and horizontal mapping of curriculum across core content areas. Preservice teachers use knowledge gained through mapping and calibration processes by applying their content knowledge and understandings of curriculum design through the development of an interdisciplinary unit. Later in the semester, they develop and implement a

weeklong unit during their internships. Development of these curriculum and instructional materials and units fosters a higher level of confidence in preservice teachers' knowledge of content and standards, as well as knowledge of their application in teaching units.

Middle Grades Curriculum, Instruction, and Assessment

At Appalachian State University, middle grades teacher education faculty work hard to ensure preservice teachers are prepared to teach young adolescents. During the last year the middle grades faculty worked feverishly towards "revisioning" our program, and found that the fresh view of how we prepare future teachers opened the door to important developments. One such area is in the "Block II" course, Curriculum, Instruction, and Assessment. Block II occurs in the first semester of the senior year, and for most students immediately precedes student teaching. This course includes ten weeks of course work, class meetings, instruction, and preparation for a five-week teacher internship. During the ten weeks of class time, preservice teachers also take

several other content and methods classes. All Block II courses meet for the first ten weeks of the semester. During the remaining five weeks, preservice teachers have full-day experiences in public schools as interns for teachers in their content disciplines. During their internships, preservice teachers design and implement a 5 – 7 day unit in at least one class, typically in the third or fourth week. The unit, called the Impact on Student Learning Project I, is designed to give preservice teachers an opportunity to design, implement, analyze, and assess a teaching unit to a group of young adolescents.

In preparing preservice teachers to be ready to teach content, I recognized that their knowledge of content was very “uneven.” Preservice teachers have some choices in the courses they take in each of their two content areas. Although program faculty have worked with faculty in departments across campus (e.g., history, English, biology) to select courses that will provide important foundational knowledge for teaching, the twenty-four hours required for each concentration is insufficient to prepare teacher candidates for the breadth and depth of content they are required to teach. Completing the courses required for a concentration does not guarantee that teacher candidates will be prepared to teach every concept included in the North Carolina’s SCOS for the middle grades. Students in internships often discover that content they are expected to know and be able to teach is not included in their content coursework.

Powell (2005) indicates that state standards are the most significant influence regarding what is taught or learned in classrooms. Standard 3 of the National Middle School Association’s (NMSA) Performance-Based Standards for Initial Middle Level Teacher Preparation (n.d.) states that “Middle level teacher candidates

[should] understand the major concepts, principles, theories, standards, and research related to middle level curriculum and assessment, and they [should] use this knowledge in their practice.” This standard supports the view that preservice teachers must be well prepared to teach content. Jackson and Davis (2000) state that middle grades teachers should “teach a curriculum grounded in rigorous, public standards for what students should know and be able to do” (p.23). Schmoker (2006), in discussing ways to elevate student achievement in schools, states, “...if teachers can lay out a sound...set of standards and can then guarantee...that these standards actually are taught, we can raise levels of achievement immensely”(p. 36). One way for preservice teachers to be well prepared to know and teach standards is to compare their content knowledge with the North Carolina SCOS to develop a sense of what they do and do not know. The idea of helping them determine *both* what they *do* and *do not* know is based on my belief that preservice teachers must understand their own content strengths and shortcomings for two important purposes: (a) in the face of expectations from schools, they will be able to teach standards-based curriculum; and (b) when they recognize their own content knowledge gaps, they will be able to find resources quickly.

To meet teacher candidate needs, I revised my syllabus for the course, Middle Grades Curriculum, Instruction, and Assessment, to include specific work designed to develop preservice teachers’ knowledge and understandings of the following: (a) vertical curriculum mapping: the progressions of content knowledge within a discipline from one grade level to the next; (b) horizontal curriculum mapping: connections between and among the core content areas in the same grade level; (c) gaps in knowledge of their content areas; (d)

gaps in coverage of SCOS in state-adopted grade level texts (calibrating SCOS with core content texts)’ and (e) how to deliver content knowledge to middle school students.

Curriculum Mapping

Because I taught all students in my Block II class during their Block I experience in a course entitled, Middle Grades Education, I was aware of their level of understanding of best practices regarding middle schools and young adolescent learners. The Middle Grades Curriculum, Instruction, and Assessment course in Block II is where applying that knowledge to teaching content to young adolescents comes alive – and becomes of consequence to them, as they teach students every day for five weeks and as they prepare for the fifteen-week student teaching semester.

Early in the course, preservice teachers engage in a review of, and discussions about relevant, challenging, integrative, and exploratory middle grades curriculum. Subsequently, preservice teachers are involved in learning what instruction in a middle school should look like, followed by preliminary introduction and discussion of effective interdisciplinary unit planning.

Following a review of appropriate middle grades curriculum (relevant, challenging, integrative, and exploratory), and an introduction to interdisciplinary unit planning, preservice teachers begin the processes of intensive curriculum study and alignment. First, they vertically map SCOS content for three grade levels – the grade level in which they will complete their internships as well as the grades directly preceding and following. Next, they horizontally map SCOS across content areas

with an interdisciplinary team of peers focused on one grade level.

Finally, they calibrate their respective SCOS with state-adopted textbooks for the content area and grade level in which they will be completing their individual internships.

Curriculum mapping processes described in this article are based on the work of Heidi Hayes Jacobs (1997) and curriculum mapping efforts developed and implemented during my tenure as a principal at W. C. Sullivan Middle School in Rock Hill, SC. Because of achievement gap concerns and our recognition that teachers generally lacked a high level of knowledge and understanding of the state’s curriculum standards, the administrative team at Sullivan, led by Instructional Coach, Ms. Chris S. McLean, developed tools similar to those described in this article to overcome those shortcomings. Additionally, many preservice teachers serving as interns and student teachers at our school were involved in our curriculum mapping activities. They frequently commented that they experienced growth in content knowledge and understanding through these processes.

In developing vertical curriculum maps of the NCSCOS for grades six, seven, and eight in language arts, math, science, and social studies in my class, preservice teachers are organized into content area teams. I provide a curriculum mapping guide with instructions during the first class in this unit (see Appendix, Curriculum Mapping Guide), demonstrate the vertical mapping process, and offer examples of previous preservice teachers’ maps. Students bring copies of the SCOS for grades six through eight for the content area in which they will conduct their five-week internships. I provide continued instruction and guidance as needed as preservice teachers work on laptop computers to

develop curriculum maps during class time. Collaboration is permitted and encouraged, and the majority of the work is completed in class, promoting the sharing of ideas and thoughts.

I discuss and provide handouts from Anderson and Krathwohl's revised Bloom's Taxonomy (2001), and discuss the use of specific verbs in the standards. Preservice teachers are to make connections between the verbs used in the standards and where they fit on the new Bloom's taxonomy, to give an idea of the difficulty level of the standards and what students will be expected to accomplish to demonstrate proficiency.

Textbook Standards Calibration

Once preservice teachers have completed vertical mapping, they examine textbooks used in their internship schools and begin the work of textbook standards calibration – that is, they work through the text to determine if each standard is addressed, where it is addressed, and to what degree it is addressed (the adequacy of coverage based on knowledge and assessment requirements in the NCSCOS). They insert textbook page numbers on their completed vertical curriculum maps to note where standards are covered. Preservice teachers soon become quite engaged as they learn many standards are *not* addressed at all in texts. It is, in fact, quite surprising to see their results with each of the texts. Because the process is lengthy and involved, and time is limited, preservice teachers are expected to calibrate curriculum with texts only in one content area and grade level. However, calibrating texts in this context raises teacher candidates' awareness of the limitations of many state-adopted texts. As they transition to student and then career teaching, they will be better equipped to

choose appropriate texts and resources for their students.

Value Gained

These two processes, vertical curriculum mapping and curriculum standards calibration serve several important functions. Preservice teachers gain a clear understanding of *every* content standard they may teach in one subject. This understanding allows them to assess their own knowledge of the standards, and raises their awareness of areas in which they will need to get further training or information. Additionally, they gain confidence in their knowledge and understanding of what they will be expected to teach once they begin their internships and begin planning the instructional units they will teach and assess.

When asked whether she found curriculum mapping useful once she engaged in her five-week internship, preservice teacher, *Rebecca* stated, "Knowing where [students] had to go in math seemed more important than where they came from, but it was good knowing what they were supposed to know when they came to the seventh grade." *Katie*, when asked the same question, said, "I think looking at the verbs; when you look at that, it tells you what they have to do with it, so you know how to teach it." Beyond the obvious benefits to preservice teachers, I take copies of curriculum maps to meetings with teachers in schools to demonstrate how students are being prepared to come into their classrooms. Mentor teachers are quite impressed with this work – and several teachers have asked for copies of the curriculum maps.

Horizontal Mapping and Developing Interdisciplinary Units

The process of horizontal mapping (for our class purposes) involves grouping preservice teachers across content areas and guiding them to examine grade level curricular connections. This process is conducted as the final step in curriculum mapping, and as the final preparation for designing Integrated, Interdisciplinary Teaching units. Preservice teachers are organized into teams by grade level, and divided (as much as possible) so that each team is made up of two to four content areas. The teams carefully study and compare their curriculum maps and chart anything they can find which may be a connection between and among content areas. Following this activity, preservice teachers are engaged in additional discussion regarding the Integrated, Interdisciplinary Teaching unit, along with a review of the unit rubric. Students then go about the work of putting together their units and presentations. Not surprisingly, I have noted stronger interdisciplinary connections in these units since the addition of curriculum mapping and calibration activities, and involved preservice teachers have demonstrated a higher level of understanding of processes for integrating curriculum. Specifically, students are better able to connect and use standards across the content areas in the development of their units. Additionally, they develop unit summative assessments more clearly aligned with levels of learning indicated by standards.

After engaging in the processes of mapping curriculum vertically, calibrating curriculum standards with texts, mapping curriculum horizontally across the content areas, and creating and planning a

comprehensive interdisciplinary unit, preservice teachers are prepared to go to their internship schools and put their knowledge to work in the middle school setting.

Perhaps most importantly, preservice teachers feel more confident in their understanding of content as they work with students in their respective schools. With the many concerns they have going into schools to work in classrooms with real students, they can have some level of self-assurance about their readiness to plan and present meaningful content.

References

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Appendix

Vertical Curriculum Mapping Guide

Subject area: _____

Grade level : _____

Mapping Curriculum Standards

1. Find North Carolina Standard Course of Study (SCoS) on the NC Department of Education website. Download a copy of standards for your content area(s).
 - A. The standard course of study has competency goals and objectives.
 - B. Science has some planning matrices which can be really helpful.

2. First determine whether your content area has content or process standards, or both.
 - A. To see if it is **content** you need to ask whether a specific idea has to be taught (i.e.: determine how convection and radiation transfer energy), or
 - B. Whether it is a **process** (i.e.: calculate the perimeter of a polygon). Sometimes, it is both (i.e.: create maps, charts, graphs, databases, and models as tools to illustrate information about different people, places and regions in South America and Europe.)

3. Once you have determined whether the standard is process or content, you will look at your standards vertically. Usually, as you work through grade levels you will that:
 - A. With process standards the taxonomic level of the verbs will become increasingly more sophisticated (i.e.: from *identify* to *analyze*).
 - B. Content standards grow in depth of the content (might only identify a few major points in lower grades, then in upper grades have to identify either more major points or more in depth).

Do your content area competency goals require process ability, content knowledge or are they a combination of the two? _____

For each objective, list its verb, the “what” and the “about” – remembering that some objectives have more than one verb. The important issue here is that you get a sense of the taxonomic levels of verbs used in the standards. (These should be the verbs you use when teaching this content, as these same verbs will be those used on EOGs.)

Using the chart format below, fill in SCOS information as indicated:

Standard # P/C: List the number of the standard from the SCOS, and “P” if process

standard, “C” if content standard.

Verb/Bloom’s Level: Write the verb(s) used in the standard and determine the taxonomic level on the New Bloom’s Taxonomy. List the level as 1 – 6 (1 = remembering, 6 = creating.)

What: Write a short description of the topic of the standard.

About: Write a short description of what students are to do with the standard.

Text Pages: List pages in the content/grade textbook(s) where the standard is addressed

Example: NC SCOS 6th Gr. Language Arts Competency Goal 2.01. Explore informational materials that are read, heard, and/or viewed by:

- monitoring comprehension for understanding of what is read, heard and/or viewed.
- studying the characteristics of informational works.

Standard # (P or C)	Verb	What	About	Text Pages
2.01(P)	Explore (3)		Informational materials	
	Monitoring (2)	Comprehension		
	Studying (4)	Characteristics	Informational works	

Example: NC SCOS 6th Gr. Science Competency Goal 5.03. Relate the influence of the sun and the moon's orbit to the gravitational effects produced on Earth.

Standard # (P or C)	Verb/Bloom’s Level	What	About	
5.03 ©	Relate (4)	Influence of sun and moon’s orbit	Gravitational effects produced on Earth	

Once you have mapped grades 6-8 standards from the NC SCOS for your content area,, you can look for vertical and horizontal alignment in the “what section” or in the “about” section (when informational texts show up). Once you have correlated them, look to see if the verb has changed as the standard progressed through grade levels.

(Adapted from C. McLean, personal communication, September 12, 2009.)

Robert Heath, Ph. D., is Assistant Professor in the Department of Curriculum and Instruction at Appalachian State University. He served as a high school and middle school English/language arts and social studies teacher for six years in South Carolina, then as a middle school assistant principal and principal for twenty-two years. For the last seven years he served as principal of a Professional Development School in Rock Hill, SC, associated with Winthrop University. In 1999 he earned his Doctorate in Educational Leadership and Policies from the University of SC, and subsequently served as an adjunct professor in educational leadership at the University of SC and Winthrop University. Dr. Heath has served as president of the SC Middle School Association and SC Association of Middle Level Principals, and currently serves on editorial boards for National Association of Secondary School Principals Bulletin and National Association of Elementary School Principals publications. He is nationally certified as a principal mentor by NAESP. He was named a National Distinguished Principal and SC Middle Level Principal of the Year. His research interests include the development of teacher leadership through learning communities, and the creation of a climate of continuous improvement in schools to close the achievement gap and improve student performance.