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AUTHOR Steinley, Gary; Reisetter, Marcy; Penrod, Kathryn; Haar, Jean; Ellingson, Janna

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ABSTRACT

Model-Based Instruction (MBI) plays a significant role in the undergraduate teacher education program at South Dakota State University. Integrated into the program 8 years ago, the understandings and applications of MBI have evolved into a powerful and comprehensive framework that leads to rich and varied instruction with students directly in the center of the learning process. This paper presents an overview of MBI as the concept has evolved at South Dakota State University, then discusses four different applications from the perspective of various active users of MBI: (1) organizing a teacher education program around MBI, (2) student teacher supervision and staff development from an MBI framework, (3) using MBI for lesson and unit development, and (4) using MBI as a frame for reflection and self-study. The paper concludes that MBI is a framework around which students' new and disparate knowledge can be organized and brought into the decision-making process. It suggests that if MBI is going to be comprehensive and powerful, this knowledge must be consonant with all the concepts and relationships of the MBI framework. (Contains 17 references.) (SM)

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Model-Based Instruction:  
Theory and Application in a  
Teacher Education Program

Presented as a Symposium at the  
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Gary Steinley, Professor, South Dakota State University, Brookings, SD

Marcy Reisetter, Assistant Research Professor, University of Nebraska, Lincoln

Kathryn Penrod, Associate Professor, South Dakota State University, Brookings, SD

Jean Haar, Secondary Principal, Deuel School District, Clear Lake, SD

Janna Ellingson, Secondary Teacher, Flandreau High School, Flandreau, SD

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## Abstract

Model-Based Instruction (MBI) plays a significant role in the undergraduate teacher education program at South Dakota State University. Integrated into the program eight years ago, the understandings and applications of MBI have evolved into a powerful and comprehensive framework that leads to rich and varied instruction with students directly in the center of the learning process. This symposium will begin with an overview of MBI as the concept has evolved at SDSU; then four different applications will be discussed: (1) organizing a teacher education program around MBI, (2) student teacher supervision and staff development from an MBI framework, (3) using MBI for lesson and unit development, (4) using MBI as a frame for reflection and self-study. Each of these will be discussed from the perspective of the person or persons making the applications.

## Model-Based Instruction: Theory and Application in a Teacher Education Program

In our teacher education program, we're driven by the same imperative that drives teacher education programs across the country--the integration of theory and practice. We believe that teachers need this integrated understanding, which we envision as a cognitive framework consisting of a unified and coherent structure of ideas about teaching and learning, and that it must satisfy several criteria. It must serve as a basis for beginning teachers by providing them with systematic routines that allow lessons to flow (Lienhardt & Greeno, 1986) and be theoretically powerful enough to inform teacher decision-making (Grossman, 1990; McDiaramid, Ball & Anderson, 1989). It must be flexible enough to guide teachers' professional growth and allow the analysis and integration of new ideas (Lienhardt & Greeno, 1986); and finally it must bring together learning theory and practice in coherent patterns and routines so that teachers can adapt instruction to meet specific goals for a variety of learners (Borko & Putnam, 1996; McDiarmid, et al, 1989). However creation of such a framework is a complicated process. It has been difficult for teacher educators to make theory meaningful for beginning teachers and to specifically clarify how research on learning supports particular instructional patterns (Calderhead, 1996; Shuell, 1996; Wubbles, 1992). Our goal was to create a framework that would lead to an integrated understanding of teaching and learning for teachers at all levels and with varying amounts of experience. This framework, we thought, would be the broad answer to what Doyle and Carter saw as the "fundamental debate over what counts as essential knowledge for teaching" (1996, p. 24).

Model-Based Instruction (MBI), as we've come to understand and define it, appears to be such a framework. Eight years ago our College of Education and Counseling restructured its undergraduate teacher education program around three professional semesters. As part of this restructuring process, MBI was integrated

into the curriculum as something we did and something we taught, and it has remained evolving, we think, into a more powerful and comprehensive framework for planning and evaluating all classroom instruction. We think it serves as the kind of interconnected theory implied by Wideen, Mayer-Smith, and Moon in their critical analysis of research on learning to teach (1998), a theory that is able to accommodate ever more complex levels of expertise and experience--from pre-service teachers through all levels of teaching experience and background, including teacher educators.

The general purpose of this symposium is to share that MBI framework. We will begin with an overview of MBI as the concept has evolved in our college; then four different applications will be discussed, each told by an active user of MBI: (1) A faculty member in an undergraduate teacher education will first discuss how MBI was at the center of her department's reorganizing into three professional semesters. [To be accurate, she's a former faculty member, employed now as a research coordinator at the University of Nebraska.] (2) Student teacher supervision from an MBI framework and staff development about MBI will be discussed respectively by a College of Education and Counseling faculty member and a high school principal. (3) A high school English teacher will report on her use of MBI as a basis for lesson and unit development in all of her classes. (4) Another faculty member from the college will discuss her use of MBI as a frame for reflection and self-study. We will conclude by returning again to MBI as a coherent and comprehensive framework.

### Conceptual Overview

We've found that when other professionals hear the term Model-Based Instruction, they most commonly associate it with instructional models such as those popularized by Joyce, Weil, and others. But as we've come to define it, the word model in MBI refers to two different knowledge bases and two different, but complementary aspects of instruction.

First, model does refer to instructional models like those found in the three

current major model-based textbooks: Joyce and Weil's Models of Teaching (1996), Eggen and Kauchak's Strategies for Teachers: Teaching Content and Thinking Skills (1996), and Gunter, Estes, and Schwab's Instruction: A Models Approach (1995). Indeed, the fact that these books are in their fifth, third, and second editions respectively offers some explanation as to why MBI is typically associated with "using models." Models provide teachers with blueprints for organizing strategies and activities into meaningful lessons; and, judging by their continued presence on the educational scene, teachers find them appealing.

However, in our version of MBI, the word model also refers to learning models, especially (in our case) constructivist models and the theory/research base which supports them. Research and theory surrounding constructivist and related views of learning dominates the current educational milieu, but it would be illuminating here to cite three sources that, early on in our restructuring, were especially influential in shaping the learning model underlying our version of MBI. Two stand out because they broke from traditional educational psychology categories and pulled learning closer to teaching--Linda Anderson's chapter on learners and learning in AACTE's Knowledge Base for the Beginning Teacher (1989) and the learning principles synthesized by APA and McRel in collaborative Learning-centered Psychological Principles: Guidelines for School Redesign and Reform (January, 1993). In addition, various models of content reading and learning were influential because reading researchers seem, at least within our ranks, to have a head start on the study of meaning construction. In fact, specific three-part models, such as Estes and Vaughan's "Anticipation-Information Search-Reflective Reaction" model (1985), were particularly influential and became the prototypes for the three component model of human learning--contexting, comprehending, and learning--which we use as another, more fundamental, blueprint for organizing activities into lessons.

Thus, as we use it, the word model in MBI refers to two knowledge bases.

They're brought together in our version of MBI through the complementary concepts of deep structure and surface structure, concepts borrowed, rather loosely, from linguistics. From this perspective, the same stretch of instruction, such as a lesson or a unit, can be considered in terms of both its deep and surface structure. Indeed a basic premise of this MBI is that, for rich and varied instruction, every stretch of instruction must be. Focusing on the deep structure foregrounds content goals and the extent to which a lesson (or longer stretch of instruction) is rich enough to take students through contexting, comprehending, and learning to accomplish those goals. Focusing on surface brings non-content goals to the forefront and uses the steps of a particular teaching model (such as Concept Attainment) as a frame for evaluating the lesson's appropriateness for a given context. Taken together, as deep and surface structure must be, they provide a powerful framework for planning and evaluating all classroom instruction.

However, MBI did not arrive in our program in this form. Eight years ago, as we were working with public school teachers to restructure our undergraduate teacher education program, we integrated a variety of instructional models into our curriculum. Practicing teachers liked the models because they considered them "valid" in two somewhat contradictory ways. On one hand, models were considered valid because they provided descriptions of what teachers thought was going on in "real" classrooms. Comments such as "models give names to what we already do" reflected this position. On the other hand, they saw models as the ideal—not ivory tower idealism, but valid representations of where teachers (and teacher candidates) should be aiming. This position was represented by comments such as "we don't always have time to organize our lessons this well, but we try" or "this is what teaching should be like." In short, they considered models valid because, as one teacher put it, they "fit" their world and they provided realistic "targets."

This dualistic take on what constitutes a valid instructional framework—it must fit the workaday world of teachers and, at the same time, it must provide a

realistic target for improvement--has stuck with us. It has served as a measure against which our concept of MBI has been tested and modified in a continuous effort to help our students learn and practice with truly generative knowledge that will matter in their teaching. In retrospect, it seems this social construction of a concept has gone through three stages of concept development and is now in its fourth.

### Stage 1

In the early days of our program, most interpreted MBI to mean something like "teaching lessons based on instructional models." However, over time this definition failed both criteria of the validity test. It didn't fit because a lot went on in classrooms that didn't match the blueprints outlined by Joyce, Weil, and others. In fact, most of what went on in classrooms didn't match these schemes. Moreover, this definition provided an unrealistic target. Even though model-based lessons were still an ideal supported by our center teachers, it appeared this was a relatively unattainable goal. It was apparently impossible, even for experienced teachers, to regularly use models as a basis for planning and teaching all of their lessons.

### Stage 2

What emerged to resolve this conflict was a more formal recognition of what was already commonly known and said: in real teaching models get changed around a lot; they get "transformed." To exploit this phenomenon we invented a taxonomy of transformations. For example, models get "combined," steps get "deleted," one model gets "embedded" in another, a lesson more or less based on a model can be "stretched" over several days or "stacked" with other lessons, and so on. This taxonomy--if the structure and vocabulary could be taken as a heuristic and not a rigid classification system--was liberating. The fit was better and the target was more realistic.

For example, our students would visit a civics class on Thursday and find students working the whole hour in groups or individually writing reports or



watching a video. For the “stage 1” thinkers, this would not be MBI, but the “stage 2” students would know better. They’d realize that they were only seeing one or two activities in a lesson that had been stretched over several days. Or stage 2 thinkers might watch a teacher deliver an interactive lecture on Realism on Monday, Impressionism on Tuesday, and Cubism on Wednesday and know that three partial lessons were being stacked to give students information needed for in-depth activities (let’s say on Thursday, Friday, and Monday) demanding synthesis and application in a variety of contexts. In short, the concept of transformations led to a more comprehensive framework that fit better what was really happening in classes, and the target was more realistic. Gone was the restrictive misconception that MBI meant that lessons always be taught “purely” following steps outlined in an education text, and gone too was the more pernicious “one model-based lesson per class period” misconception, a view that left teachers and students numbed at the prospect of planning thirty or so full model-based lessons every week.

### Stage 3

What remained, though, was a pervasive sense that activities in good lessons—even when they couldn’t be partitioned around the steps of a model, transformed or otherwise—were organized around a fundamental and essential structure that led to learning. This structure came to be known as the deep structure and, eventually, consisting of the three components of contexting, comprehending, and learning. It stood in contrast with surface structure which was defined as how the activities of a lesson were organized around models and transformations. The essence (but not the vocabulary) of deep and surface structures were in fact present in our earliest version of MBI. But, as students and teachers constructed their understandings of MBI, this essential duality was glossed over for a more “surface structure” understanding.

As before, this process of resolving a conceptual conflict led to a more valid concept of MBI. In brief, there was consensus that the essence of good lessons

depends upon certain existing knowledge being activated (contexting) and somehow being changed (learning), and somewhere in between there is a learner trying to make sense out of things (comprehending). This fits. Lessons that work have these three components. And it's a realistic target. In addition, there was consensus that there are many ways to accomplish the same content goals; and, given the diverse students and situations that are part of a teacher's world, teachers need to know these ways. There are also other things that teachers want to accomplish beyond content goals. They want their students to become better decision-makers, for example, or to learn to work with others, or to become more independent, or learn self-management skills, and so on. In short, good teaching wasn't just a matter of deep structure. Surface structure choices were likewise a necessary concern of teachers.

#### Stage 4

As might be expected, the seeds of change are already within the stage 3 version of MBI. For one thing, the concept of transformations begins to break down the line between lessons and units since it allows, for example, instruction spread over several days with several sub-lessons embedded within it, to still be called a lesson. In addition, the concepts of deep and surface structure disturb the stability even further. Focusing on the deep structure, asking is a lesson "rich enough?" always leads to the answer "it depends." The learning component of a single physics lesson on levers, for example, may seem woefully inadequate unless viewed in the context of other lessons where leverage will be returned to and reapplied in different situations. In other words, to be understood and evaluated (and planned) lessons must be seen in a hierarchy of contexts, and this hierarchical view of instruction naturally leads to the consideration of longer stretches of instruction such as units.

In summary, MBI is now a more valid concept in our program than it was eight years ago. There's no mystery about this process. This developing fourth stage

will likely coalesce and, subject to repeated tests of validity, give way to a fifth. This is how ideas are constructed within a professional community, and our only real danger is that MBI (or what may replace it) become reified through pride or ignorance.

### Applications

It's convenient to refer to MBI as a concept because that provides an avenue for describing the social and individual construction of the concept as well as the inevitable differences that exist among individuals. We also refer to MBI, or at least the concept of MBI that we're trying to help our students construct, as "generative knowledge" along the lines of Resnick and Klopfer (1989) or "working knowledge" as Kennedy used the term (1983). Both of these refer to the kind of knowledge which is used by (in this case) professionals in their day to day job-related thinking as they plan, make decisions, solve problems, and so on. If we're successful in our program, MBI becomes generative knowledge for our students (as well as all of us who teach in this program, both on campus and in the field).

What follows are four sub-sections, each reported by different users, each describing one of his or her uses of MBI. For these tellers, MBI is generative knowledge.

#### MBI in the Undergraduate Curriculum

*Told by a former faculty member in our undergraduate teacher education program.*

In the undergraduate program, students study MBI during three different "Professional Semesters," which are composed of integrated and frequently blocked classes of progressively more complex MBI content.

Professional Semester I. In Professional Semester I, students begin their study of the theoretical frame of MBI, a cognitive/constructivist view of learning that emphasizes (1) knowledge about how learners take in and make sense of information and (2) knowledge about how individual contexts, such as differences in culture,

socioeconomic status, motivational styles, and language preferences influence that process.

Here, students are introduced to the concept of deep structure as a frame for understanding the learning process by focusing on the three major components of Deep Structure.

--Contexting. Students learn the importance of establishing a frame for learning by activating prior knowledge and making relevant connections, based on their assessment of class and individual needs.

--Comprehending. Students learn that the delivery of the content, regardless of the nature of the instructional model chosen, must be provided in a manner that is organized, coherent, and provides for learner construction of knowledge, and

--Learning. Students in PS I understand real learning involves activities that allow learners to work with ideas; a lesson has not addressed all components of deep structure until students are given the time to organize and apply content in their own ways, to make knowledge and class content personal and relevant for their own purposes

In PS 1, students also learn that a variety of surface structures (models and transformations) can be used to address the deep structure needs described above. They create one lesson using the related concepts of deep and surface.

In addition, they learn our differentiation between the surface structure components of models and activities. In our conception, models are major frames and blueprints that must operate with the Contexting, Comprehending, Learning frame; these models have sequential steps that assure facilitation of cognitive processes. Activities are tasks or events that may be used within any model in order to accomplish the individual steps of the model. There are, for example, a number of possible ways to context, that is, to activate relevant schema in order to prepare the student to learn new content. A teacher may decide to use student

brainstorming to generate relevant preexisting contexts. He or she may decide to have students discuss a scenario, read a poem, listen to music, play a game, write and pair-share, or do a sorting task for the same purpose. Models all contain the deep structure components in prescribed steps, and activities are the means to accomplish those steps.

Professional Semester II. The content developed above is enriched throughout PS II. Students learn more about the theory base of deep structure through perspectives added or enriched including information processing, developmental theory, connectionist and cognitivist theory, motivation theory, and individual differences.

As students enrich their understandings of deep structure, they learn a variety of surface structure models and activities in order to systematically link deep structure concepts to surface structure models. They learn that different goals for learning imply different teacher's choices. In addition, they consider a variety of goals, including content goals as declarative and procedural, higher order thinking, motivation, self regulation, and classroom management.

As an example, students learn that a good lecture of reasonable length may be the best way to convey new information and to establish a basis for later learning. Schema theory is used to support the use of advance organizers, and information processing to explain the use of carefully selected and focused pauses when students learn the Lecture model. Students also learn that when teachers want students to learn to consider a variety of perspectives and understand a variety of points of view in order to form their own opinions, a discussion model is most appropriate. Linked with the discussion model is a theoretical focus on Vygotsky, motivation theory, and effective interaction skills.

To organize their decision-making, students use the "Syntax Sheets" that we have created for each model. These forms show surface structure and the necessary links to deep structure. The emphasis on the major component of Contexting,

Comprehending, and Learning link the two columns since these terms describe both the effective framework for student processing and the nature of the choices teachers must make in all models in order to facilitate the process.

From the beginning of their work in PS II, students learn to evaluate the deep structure and surface structures of their lesson with two questions. To analyze the quality of their deep structure view, they consider whether the lesson is "rich enough" to contribute to learning. That is, whether the lesson designed is likely to effectively establish a context for the lesson, coherent enough to lead to clear comprehension of the content, and meaningful enough to lead to individual construction of knowledge.

Surface structure is evaluated by analyzing the lesson to determine whether it is varied "enough and appropriately" to meet individual needs. Students continue to explore individual differences in prior knowledge, culture, interests, motivation, ability, etc., and to design lessons that address the needs of the group as well as individuals. Students reflect on their lessons to determine whether there are enough interesting and well-sequenced activities to engage all learners.

Five basic models--demonstration, lecture, reading, discussion, and discovery--are presented as both "pure" and "transformed." Students come to understand that real-life lessons are typically transformed. A lecture, for example, might be stretched over two or more days with extensive lecture pauses; a discovery lesson may be stacked at the beginning of a reading lessons and serve as its contexting phase; and so on.

Students also learn other models (variously labeled "alternative" or "dessert" models by center teachers) including the Inquiry, Synectics, Cognitive Conflict, Vocabulary, and Jurisprudential models. Related theory is taught with each of these models as well. For example, our Cognitive Conflict model is based on misconception research, and students study creativity literature when they learn the Synectics model.

The clinical and field component of PS II are extensive. On campus, students learn about the models and then teach each of the basic five in a peer micro-teaching lab where a graduate assistant or faculty member evaluates their application of the model and makes suggestions. Each student is also assigned to a half day in an area school with teachers who know and demonstrate these models in their teaching. The students then reteach the lesson in the field, observed by the field teacher and a faculty representative who is also assigned to the school.

However, the focus of the clinical and field components go beyond lesson planning and applications of models. Students are also required to complete theory-based learner observations in which they focus on elements such as information processing, individual differences, motivation, and management. Their observations form the basis of lab group discussions and further modifications of plans to meet the needs of the specific classroom

Professional Semester III. PS III, which includes blocked courses on assessment, special needs, foundations, and student teaching, expands and enriches students' understanding of MBI. The frames that were used to plan individual lessons in PSII are applied to unit planning. Emphasis is on creating a sequence of lessons that maintain a rich deep structure and a surface structure that is appropriately varied for the a particular context and whatever set of content and non-content goals governs the unit. At the end of PS III class work, students complete ten weeks of student teaching. Student teaching provides an opportunity for students to practice with and refine their understanding of MBI especially as it is reflected in their unit. Our major concern is that the framework of MBI becomes a way for our students to look at the whole of teaching and learning. With that issue in mind, we are studying different ways to examine student teaching experiences through the lens of MBI.

MBI as a Frame for Supervising Student Teachers and Staff Development

*Told by a student teacher supervisor from the College of Education and*



*Counseling and a principal in a nearby high school:*

Staff development and student teacher supervision are not necessarily bedfellows, but they do have some common characteristics and one in particular brings them together in this symposium--they both should be non-threatening ways to help professionals (and pre-professionals) grow. Moreover, they're together in this symposium because two of us, a university student teacher supervisor and a high school principal, collaborated in our approach to facilitating this growth process from an MBI perspective. In brief, we put together a set of questions which we thought captured the major concepts of MBI, then we used these as guides in discussions with student teachers and staff members. The purpose of the discussions was to analyze and evaluate their teaching from an MBI perspective; but, especially for the teachers and the new staff members, the questions and discussions were also vehicles for learning more about MBI.

What follows in the two sub-sections below is the story of each, the supervisor and the principal, as they experimented with using MBI as a vehicle for teacher growth. The third sub-section contains a set of questions like those used by the two in their staff development and student teaching.

The supervisor's story. For lack of a better term, I will call the first year (Spring semester, 1998) the "20 Questions Approach" to student teacher supervision. The name came from the list of questions the principal and I had put together. The questions, based on tenets of MBI, were designed to be used as a format for discussions with student teachers and practicing teachers about the teaching and learning going on in their classrooms. They were not intended for evaluation as much as vehicles for improving classroom instruction through reflection and collegial discussions between practicing professionals. The first twelve questions focused on lessons, progressing from questions about the deep structure of lessons to their surface structure and from analysis to evaluation. The last eight questions directed attention to the deep and surface structure of units. Question #3, for



example, reads "How are the activities of your lesson organized around the three components of contexting, comprehending, and learning?" Though arranged in what we considered a logical sequence, we both recognized the questions were more interactive and dynamic.

As might be expected, things did not happen exactly as I planned when I began using these questions with my student teachers. Many of the discrepancies between what I expected and what happened were procedural, especially the time problem. It took more on-site time than I expected so, at the least, there had to be fewer questions and/or they had to be better organized for more efficient discussions.

But there were also what might be called "cognitive discrepancies." Even though all students had gone through the same training, each had constructed a different concept of MBI through participation in our program. For example, for one student, deep structure was what MBI was all about. The rest, the surface structure (such as organizing a lecture lesson around the Mastery Lecture Model) was "busywork." Another student was the virtual opposite of this one, being able to talk at length about how her lessons were based on different models, how some were transformed, blended, etc. But--when it came to matters of how deeply students were, for example, processing ideas in the learning component of her lesson--her eloquence diminished considerably. The third and fourth students were alike in that I could put neither at the extremes (deep structure only or surface structure only) and both were highly sensitive to the need for their students to not only learn well, but learn something worth learning. For the woman, this meant a constant search for valuable overarching goals in biology that could provide a context for the activities of her lessons. For the man, who had a better sense of the social and personal value of his subject, this translated into an on-going struggle to provide enough practice and deep processing of ideas so they could really construct goal-related generative knowledge. For both of them, MBI was first about the goals of teaching, then about the deep structure to accomplish those goals, then, maybe,

about how different surface structure models and transformations could lead different learners to those goals.

What's important (in this symposium) about these different concepts and values is that each person brought them to our discussion sessions and used them as the filters through which they understood, interpreted, evaluated, and remembered their teaching and our discussions about their teaching. There's nothing surprising about this, of course, especially when interpreted from any kind of cognitive or constructivist perspective. But it certainly complicates the supervision process. Part of my job as a supervisor was to use the questions to help students improve their instruction. Part was also to help them construct what we considered a more comprehensive and useful concept of MBI for their future teaching. Flexibility not established routines (which the questions could come to represent) was needed to make progress on both of these functions.

As a result of the time problem and this need for a more flexible structure responsive to individual differences, I restructured my fall 1998 student teacher supervision. I switched to a "nine-question" approach which was characterized by fewer and better organized questions, and I prepared myself to be more responsive to individual differences. In addition, before they went out, I spent more time interviewing each student individually to better understand his or her concept of MBI; and, in fact, all of them--fresh out of their third professional semester--sounded very much alike. They could talk the talk.

It probably goes without saying that significant differences appeared fairly early into the student teaching experience--but also very significant similarities. One student couldn't, as they say, walk the walk. Once he began actually teaching, any serious structure of MBI concepts quickly disappeared from the cognitive framework he used to plan and/or evaluate lessons. MBI was replaced by a concern for his popularity with students and an overriding confidence that lessons are best organized "naturally," that is, however the book has put things together. MBI, the

banner which he had been carrying only a few short weeks earlier, gave way to daily concerns about what to do next; and my attempts to accomplish the two supervisory functions (mentioned above) constantly missed the mark.

In contrast, two of the student teachers had much in common. They both had deep commitments to seeing real conceptual change in their students; and, as a result, they focused most heavily on the deep structure of their teaching, paying special attention to the learning component of their lessons. There were several consequences of this focus. For one thing, they relied heavily on something we've labeled a "stacking" transformation, that is, stacking lessons over days several then concluding them with one grand learning component (such as a project or lengthy in-class simulation). The purpose of this learning component was to let their students once again use the ideas in some kind of situation involving some kinds of higher level activities such as problem solving, decision making, synthesizing, and so on. Another consequence, for one of the two students was that he tended to under plan the comprehending component of his lessons. It was as if he was so anxious for his students to think with the new ideas he was teaching that he shorted the time and cognitive activity it took to understand them well in the first place. Another consequence for both was that surface structure concerns tended to get shortchanged. This was never deliberate; but as time would make its demands, these two would worry about, for example, how they could get students to process deeply their lecture concepts. But their worrying might be at the expense of any deliberations about whether a discovery lesson would provide needed and appropriate variety for this particular context.

I learned much from these three people, but most relevant to this symposium is how supervision has to be even more individualized than I had thought before. It's not just a matter of knowing more about the schema they're beginning with but also knowing better the ones they're really using while they teach. Once known, the role (or at least one significant role) of the supervisor becomes clear. Part of my

job with the pair was to keep them listening to themselves. They were asking the right questions and operating from the right framework. I just needed them to use more of what was there. But my chore with the other was considerably different. He had to hear something or somebody else; and, given the framework he had for listening, that was nearly impossible.

The principal's story. I've used three different approaches to helping my staff learn more about MBI. The first took place in 1995 through a year-long workshop. Participants volunteered, but graduate credit provided an extra motivator, and the majority of the high school staff took advantage of this professional growth opportunity. Teachers met once a month, taught by one faculty member from SDSU and two center teachers in a school using MBI. They learned different instructional models and their underlying theories. In between meetings the teachers, in teams of two or three, practiced models and kept journals reflecting on their teaching and model usage. This workshop provided teachers with a basic foundation and reflection process that addressed the teaching and learning occurring in their classrooms. It also provided teachers with an opportunity to reflect on their teaching--something that previously was not occurring in a collaborative manner.

During the 1997-1998 school year, another approach was implemented involving MBI. In connection with a Rural Challenge grant that emphasizes developing strong school-community ties connected to student learning, much discussion centered around (1) how to develop and implement curriculum that was more than an add-on project and that focused on student learning and (2) how to determine what was a beneficial curriculum change versus just making a change to establish a school-community connection. Staff members wanted all activities to be deep learning experiences rather than activities that were helpful for the community but were of minimal significance to the specifics of discipline oriented curriculum. Staff development time was again utilized to address these issues. With direction and guidance provided by one of SDSU's campus teachers, the staff

discussed and developed processes for implementation that addressed the deep structure of MBI lessons in connection with this fairly new experience of identifying and working more closely with the community.

My third approach, and the one that will be the focus of this symposium, centered around discussion questions as a tool for individual professional growth. As a building administrator, I am continually concerned about providing staff with the appropriate tools for improving classroom instruction. By utilizing a framework developed by one of the campus teachers, I have a workable process for guided discussions with individual staff members. During the 1997-98 school year, these discussions centered around two components of MBI--the deep structure of a lesson or a unit and the surface structure. As a pilot process, I began by working with one beginning teacher and one veteran teacher to review their teaching and planning to improve classroom instruction. Initially, we read and discussed the process provided by the campus teacher. This was followed by discussing key questions for deep structure teaching. So far in the 1998-99 school year, I have been working with five staff members, three with previous experience and two just beginning their teaching careers. The focus has been on the deep structure components of the process largely for the sake of the new teachers, but each teacher does write a journal response to questions about both the deep and surface structure. We meet on a monthly basis to discuss what they've written about their lessons, usually beginning with the three components of the deep structure and moving to other areas and concerns in their lessons. This process has provided these staff members with the time to develop a collegial bond and to focus on student learning.

If the process progresses in a timely manner, further plans are to establish collaborative teams of two or three teachers to continue with the necessary conversations and processes to strengthen their own teaching. In general, I believe working with staff members to develop a strong comprehension of teaching at a deep structure level will strengthen teaching and learning. Once teaching at a deep

structure has occurred, the framework of surface structure will be addressed. Together the two structures will provide a complete analysis and evaluation of lessons for teachers.

The questions. Listed below is a set of questions very similar to what the principal and supervisor used (and are using). It shares characteristics common in all versions of these questions especially their organization around the structure of MBI as taught at our college. From that framework, the structure of questions below is perfectly logical. They focus first on lessons then units, first on deep structure then surface structure, first on description and analysis, then evaluation and improvement.

Deep Structure of Lessons

1. Lesson Goals (Content Goals) What are the content goals of this lesson? That is, what content-related knowledge should students construct as a result of this lesson, and what should they be able to do with it?
2. Evaluating Lesson Goals Are the goals worthwhile?
3. Lesson Organization How are the activities of the lesson organized around the three components of contexting, comprehending, and learning?
4. Evaluating Lesson Organization Component by component is this lesson rich enough to help all students context, comprehend, and finally learn the content goals?

Surface Structure of Lessons

5. Lesson Goals (Non-Content Goals) What are the non-content goals behind this lesson?
6. Evaluating Lesson Goals Are the goals worthwhile?
7. Lesson Organization What model or models (and/or transformations) were used to organize activities in this lesson?

8. Lesson Evaluation Looking at this lesson--the model it's based on, any transformations, and the activities used for the steps of the model-- is it rich enough and appropriately varied to accomplish both the intended content and non-content goals in this particular context?

9. Student Assessment How will student achievement of content and non-content goals be assessed? Are the assessment methods valid and appropriate?

Deep and Surface Structure of Units

10. Identifying and Evaluating Goals What are the content and non-content goals which unify this block of instruction? Are they worthwhile?

11. Identifying and Evaluating Unit Deep Structure Looking back (or ahead) at the unit, what parts of it give the students direct practice and real involvement with using the ideas in a variety of contexts related to the unit content goals? Are they rich enough to lead to goal-related conceptual change?

12. Identifying and Evaluating Units Surface Structure Looking back (or ahead) at the unit, how much and what kind of variety is provided by the different models, transformations, activities, and strategies used? Are the choices adequate and appropriate for the particular context and non-content goals?

13. Student Assessment How are unit goals assessed? Do the assessment procedures provide a valid account of students' construction and ability to use goal-related knowledge?

It must be added that, regardless of how logical and orderly these questions might appear (at least in their match with the structure of ideas constituting MBI), it's also true that they are cyclical and interactive, especially when used to guide a discussion. That is, just as one question leads logically to the next, it's also the case



that some questions will lead back to questions already covered and that some questions can't be fully answered until the next question is addressed. In addition, even though the questions are grouped under the two major categories of lessons and units, it's also true that discussions move beyond individual lessons very early in the process. Similarly, questions of deep structure always press on surface structure and anybody talking about surface structure will surely have to keep deep structure in mind as well. In short, the questions are both linear and circular and discussions have to be conducted with that same kind of responsive to the moment.

### MBI and the Classroom Teacher

*Told by a high school English teacher from one of the Center Schools that support our program.*

Improving student teaching, staff development, and evaluation--all are greatly impacted by the application of Model-Based Instruction, but this list falls short. MBI also bolsters the work of the veteran teacher by providing a flexible framework for developing effective units and meaningful lessons. My association with the South Dakota State University Teacher Education Program as a center teacher has provided this powerful professional development. The use of MBI In planning constructs an effective teaching and active learning scenario.

Unfortunately, my early years as a center teacher in the SDSU Teacher Education Program reflected a different scene. When scheduled to be observed by a teaching candidate, I quickly prepared a lesson that followed the MBI prescribed format, and my class and I "performed" the lesson for our guest. These lessons, however, lacked depth and vitality. I found that by going through the motions none of us realized the best of what the MBI program had to offer.

Seeing the possibilities of MBI and determined to revitalize my instruction, I chose my personal teaching goal for the new school year: the adoption of MBI as the foundation of my unit and lesson planning. Cognizant of the time demands, I focused on one class the first year with plans to rework the curriculum for my other



classes as time permitted. I then embarked on one of the most exciting years of my teaching career.

To begin my MBI mission, I reviewed the goals for Flandreau High School graduates, for the English department, and for the class. With these in mind and the class content at my fingertips, I outlined the content and goals that could be targets for the unity of study. Then planning for individual lessons began.

To create a lesson rich in content and thinking, as well as skill practice, I gleaned information, ideas, and suggestions from many different textbooks and sources. With this brainstorming list at hand, I identified goals both cognitive and affective, that could be supported. I then reviewed the various models available to me and chose the model that best fit the identified goals. Using the blueprint for the chosen model, I mapped out activities that supported the goals established earlier. These carefully chosen activities not only ensure that the students are engaged actively in learning, but that they also progress through the stages contexting, comprehending, and learning. After review, reflection, and revisions, the lesson, rich in deep and surface structure, came off the drawing board and into the classroom.

These MBI lessons afford many advantages for the instructor as well as the student. First, the models provide a realistic framework for students and teachers to construct meaning, or learning. Over the years many colleagues claim that MBI gives verbiage to what they already do. This observation is true, but Model-Based Instruction generates many more benefits. MBI provides the vehicle for instruction to go beyond the cataloging of content. It enhances learning by allowing for the acquisition of skills, such as communication, thinking, technological, and teamwork. It also provides the opportunity for students to construct ideas, attitudes, beliefs, and behaviors--all important to the overarching task of schools, to build an educated citizenry.

In addition, MBI allows teachers to create lessons that bring relevance to the

content, even though students often fail to appreciate the value of the content alone, most students readily recognize the importance of the skill building that is embedded in the activities. The exploration of ideas and attitudes found in the learning component of the models allows for personal introspection and class discussions which involve students actively in construction of their knowledge. As students identify the acquisition of important skills and the understanding of life's lessons, they also find validity in their learning, and their teacher will no longer hear the plaintive cry, "why do we have to know this?" MBI provides the blueprint to use content to teach skills, attitudes, and life lessons, and this learning brings relevance to each lesson.

Another advantage of MBI is the flexibility of the lessons. Any lesson can be changed by reordering or deleting steps, by stretching a lesson over several days, by substituting one part of the model for another, or by embedding a whole model within another. With this freedom, one can build the appropriate lesson structure to meet the needs of the class and accomplish the goals of the lesson.

Model-Based Instruction provides an additional type of freedom. The MBI lessons are structured to allow the instructor to choose activities to process the new information and connect to the old. These activities are limited only by the teacher's creativity and resources. The freedom of choice afforded by the MBI lesson structure allows for a great variety even with the same model.

My practice of providing personal copies of the complete lesson to students yields yet another benefit. Because the students have their own copies of the lesson, they are able to analyze the goals, see the progression of the learning, take discussion or lecture notes and evaluate the learning. In addition, a student who is absent, can work independently on the lesson to discover what was missed.

Even though MBI unit and lesson planning has many advantages, an apparent disadvantage is incontrovertible. A successful implementation of this program for the classroom teacher requires a considerable amount of time.

Hopefully, I can soften this offense with some personal reflections. While designing each lesson, I felt exhilarated by the improvements made in each lesson and looked forward with great anticipation to the opportunity to teach it to my students. In addition, knowing that these lesson planning efforts make a positive impact on students and their learning is a satisfaction that compensates for the time and work involved. Indeed, this excitement for and satisfaction in a job well done is repayment enough for the time spent in preparation.

At the same time, being prepared for school with a well-planned lesson worked as a great stress reliever. This comfort is still present today because now I need only to review and refine the lessons to be ready to teach. Since many of the lessons stretch over two or three days, the preparation of one lesson provides many days of security.

Model-Based Instruction offers both the structure and the freedom to make learning meaningful for students and teaching exciting for teachers. Even though creating a lesson is an investment of time, that investment will pay great dividends as the lesson fully accomplishes its cognitive and affective goals, as well retaining its validity with occasional refinement. And what a relief it is to never hear, "Why do we have to know this?"

### Self Study and Reflection

*Told by a faculty member of the College of Education and Counseling.*

As a member of the SDSU teacher education faculty eager to have a identifiable impact on future classrooms, I have always been very concerned about not only what I teach future teachers but also how I teach them. I believe schools can be better for more learners, and as a teacher educator I am in a key position to make a worthwhile difference in public school teaching and learning. I believe that my work should be evaluated and critiqued to assure that what happens in my classroom is effective and efficient in terms of preparing future teachers. In a university setting there are only a few ways to effectively critique my work as a

teacher. Self-study is one way to review and analyze my techniques and accomplishments.

I needed a logical strategy to critique my work and guide my self-study as one who helped future teachers construct their personal instructional planning and delivery skills. Teachers, administrators, and colleagues have identified MBI as a tool for evaluating and critiquing instruction in public school classrooms and validated it as a tool for preparing pre-service teachers. Therefore my logical choice was the use of MBI as a framework for personal reflection and analysis of my own work as a teacher educator.

Throughout my self-study I have identified guiding questions for my reflection and self-study, I have captured critical incidents related to those questions, and I have noted consequences based on analysis of those critical incidents. In the process I have critiqued MBI as a valid tool for teaching future teachers. Since I am not doing this in a vacuum, I have the benefit of practicing teachers and future teachers contributing to the analysis of my own teaching and the validity of our socially constructed concept called MBI.

The self-study portion of this paper will be arranged in sections with each including a key question, a selected critical incident, and an identified consequence described. This report of one selected critical incident and some specific consequences are incomplete snapshots of my use of MBI as a tool for self-reflection and self-study; however, it does provide a glimpse of how MBI is used in terms of personally critiquing my own teaching.

The first question I asked was "How does deep structure influence my teaching on a day by day basis?" One critical incident is a lesson I was planning related to educational law. I had many ideas and lots of information which related to this topic. A page was full of notes, ideas, facts, brochure titles, activities I might incorporate, names of people who could help, and details of potential issues. The material seemed endless, the allocated class time short, the issue critical, and the

students restless. I remember thinking *MBI will guide me here*. I divided the page into three sections: one for contexting, one for comprehending, and one for learning. I wrote two key major content goals on the top of the page and shuffled, sifted, pruned, prioritized and connected each activity with a content goal. I thought, is this rich, is it related, will I be using what the students know, will they be comprehending, will they be able to tie this to their work in schools? I put contexting, comprehending and learning sections on my planning page and tied various activities to each section. This process led me to a very successful and interesting lesson for the students. This incident reminded me that I use key content goals and deep structure; the three stages (contexting, comprehending, and learning) as a natural and on-going part of my planning process. Deep structure concepts are helpful when I am planning unfamiliar content as well as when I am planning my favorite content.

The second question is "How does surface structure impact my teaching?" I think of three things when I think of surface structure. I think of other goals, varied activities, instructional models and their transformations. These parts of surface structure are very interwoven yet they each need attention and are inadequate without the deep structure. A critical incident that I have noted regarding the use of surface structure in my classroom is one time I found myself reaching for a planning and observation form to sketch out my lesson. I thought I am role modeling the use of instructional model planning. I actually do this rather often. The planning and observation forms are guide sheets which have steps of models identified. However on this one day I noted with particular interest how inadequate yet helpful this form was. It didn't have a place to clearly list other goals (thinking, nurturant, motivation), let alone content goals, it didn't have the flexibility to show transformations, it did have great key words to guide a quality lesson, it did force me to remember deep structure, and it did help me organize my multitude of instructional ideas, and it didn't take long to fill out. But immediately I started

thinking about how and when I communicate these issues to my students. I began to identify a need to work with the pre-service teachers regarding the use of the forms in their future teaching. I know the forms are helpful, yet fraught with inadequacy. Students need to know this too, thus students and I are discovering appropriate uses of the planning and observation forms. We appreciate their validity, usefulness and their limits. This helps us talk about the complexities of teaching, the overlap of deep and surface structure, and the role of planning in quality instruction.

The third question is directly related to the surface structure question. "Can I display my lesson plans and use of MBI adequately so that students know I plan and teach as I ask them to do?" I have written and typed out several single day lesson plans. Students can follow my sequence and activities; they can identify surface and deep structure. They appreciate the example and tell me the authentic samples are useful. However a particular day (critical incident) which I vividly remember is when one student said, "The lesson plans are great for one to three days, but why do you expect us to do planning forms and general lesson plans all the time? You don't always do them." I thought to myself that I do think about my lessons in terms of MBI. Those times I've prepared formal plans to hand out in class, I usually think of my lesson first in the car, then I sketch it on scrap paper, then I rearrange it, organize it in a more formal way, type it, then I proof it before I copy it and hand it out in class. I soon realized the process of preparing public lesson plans takes a great deal of time and the last two steps are "busywork." The concept of publicly displaying teaching plans and making them formal became an issue of concern for me. I forced myself to justify and understand my expectations for students compared to my expectation for self. I became more sensitive to the students' belief that some of what we were doing was certainly tedious and seems like busywork. After all the last two times through the lesson plan it didn't get conceptually that much better. The consequence is that I am more sensitive, flexible, and committed to the essence

of my expectations.

The fourth question is "How do I use the instructional models?" There are two incidents that provide insight to my use of instructional models. First, for a lesson showing students how to develop a curricular unit. I recognized the individual nature of several steps that needed to be completed and I realized that the typical student often mixed these steps up and/or forgot some of them. It occurred to me as I considered these two issues that a demonstration model might be used to show and guide the students through the initial steps of the process. I then used the steps, and repeated sets of steps in the middle of the lesson to show and guide the work of the group of students. The students had all studied the demonstration model, but they represented seven areas of secondary instruction as well as various levels of personal commitment to curricular development. Since I was obviously using the demonstration model, we immediately had a shared language and a procedure to use. The lesson provided a solid basis from which each student could launch the personalized and complex planning of lesson sequencing and development. The initiation of the development of each student's unit was assured and each student had immediate evidence of their personal ability to begin the arduous task of unit development. In each step they could add the needed detail to articulate a well sequenced unit of instruction. MBI again gave me a clear pattern of instructional steps to lead students on a purposeful journey of learning through the completion of a specific pedagogical task.

The second insight I have gained by reflecting on the use of various instructional models is that I usually use the lecture model and my students prefer learning with the discussion and the discovery model. I am intrigued that my favorite way of teaching is not my students' favorite way learning. I wonder about how true this may be for learners in general. This has led me to explore in more detail both the lecture model and the discovery model and my rationale for using each. I have looked for ways to blend these two in overt ways as well as ways to



develop my understanding and illustrations of the discovery model. I have discovered that at least with college students they appreciate the learning responsibility demanded by the discovery model. However I find it tempting to transform the discovery model in sloppy ways and thereby destroy its precise focus. Consequently students easily get by with vague and messy thinking. I believe I must establish a delicate balance between discovery, discussion and lecture models, expert questioning strategies, clearly defined concepts, and specific goals to use this knowledge to create a classroom setting where students are actively engaged and interested in solving problems in ways that will allow them to refine and hone their instructional skills. I have also realized the degree of work required to develop good discovery lessons. Therefore I am trying to identify ways to rethink discovery lessons so that the planning of them and the talking about them can be more natural for me. I believe the more meaningful examples I have as illustrations the more likely I can inspire my student to use discovery effectively. Each semester I have more examples and I find myself analyzing some of my own lessons using a discovery framework. I see parts of a discovery lesson and consider how it could be reshaped to make it a more precise discovery lesson.

The fifth question is "Can I successfully use MBI as part of school reform?" I was invited by one of our collaborating schools to consult with them as they implemented a rural schools reform project based on "community renewal and pedagogy of place." Pedagogy of place refers to using the local community and related resources as a context for lessons and classroom projects with the intent of helping young people appreciate and understand their community better. The local school leadership team who hired me was dedicated to making MBI and the use of deep structure concepts a guiding force in the design and creation of their school reform project. Many of the teachers at the school had a surface structure view of MBI, in that they tried to use instructional models from time to time to enrich specific lesson in their classrooms. As the consultant my goal was to help the faculty



use MBI to focus their use of this school reform activity on deep structure and the relationship of curricular content goals. The use of surface structure was much less important as part of this consulting activity although some of the teachers were eager to make the connection at the instructional model level. These teachers found it exciting to identify the school reform activity as a rich way to enhance their use of instructional models. This activity provided me with an exciting opportunity to explore how MBI is useful as a frame to guide authentic school reform.

I participate in self-reflection and self-study each day and often make typical little changes to refine and hone a lesson. However, my more focused work of studying critical incidents and assuring the consequences of my reflection are consistent with the theoretical tenants of MBI and help me to be more confident that I am teaching and reflecting as I hope my students will. I am reminded more often than not that I teach young people who will undoubtedly be better teachers than I am. They have solid expert knowledge in their own content area and an unending belief in the potential of their future learners. They see the power and logic of MBI. They understand the role of deep and surface structure and know how it will enhance the planning and instruction of quality lessons and units. I am confident that my self-study adds to their opportunity to trust and believe me when I promote the tenants and benefits of MBI.

### Conclusion

Shuell (1996) described an ideal where psychology and methods are closely integrated so that students can “develop and integrate practical and theoretical competencies that cut across all of the courses in a program” (p. 12). Throughout this symposium, we’ve emphasized that MBI has provided us a vehicle for such an integration of theory and practice. We’d like to conclude by commenting on the comprehensive nature of MBI. It’s easy to infer from the phrase “theory and practice” that what’s being integrated is educational psychology with methods; and, in truth, that was our earliest sense of integration. But over time integration has

“cut,” as Shuell put it, “across all courses in a [our] program.” In their coursework, education students meet what can be a smorgasbord of content--subject area knowledge, general knowledge, standard deviation, movements in educational history, wait time, John Dewey, how to construct a valid test, theories of motivation, ideas on managing a classroom, the remarkable diversity among humans, questioning strategies, and so on. Ideally all of this would be integrated into their working knowledge, the readily available knowledge they’d bring to bear on the decisions they make as teachers, their planning, problem solving, indeed all of the day to day thinking that comes with being a teacher. Ideally. But, there’s no shortage of students or teachers who can attest that, for them, the smorgasbord remained just that, a place to pick and choose with most lost or deemed irrelevant to the “real world” of teaching.

At least part of the solution has to be for teacher educators to help students organize this disparate knowledge and provide opportunities for students to reflect on it, evaluate it, integrate it with their own theories and beliefs, and practice using it in realistic and meaningful teaching situations. We see MBI as a framework around which this knowledge can be organized and brought into the decision making process. Indeed, if MBI is going to be as comprehensive and powerful as we think it has the potential to be, this knowledge must finally be consonant with all the concepts and relationships of the MBI framework.

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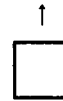
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