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On the Cover

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Established in 1907, the College of Education at Ohio State University historically has been a major center of teacher preparation in Ohio and a recognized leader in the areas of educational research and technology, policy making and public service, and curriculum. With a 2002 US News and World report ranking of eleventh in the nation, both the college's programs and faculty consistently are among the very best nationally, making it one of the top colleges of education in the country. Of course, excellence in academic programs is supported by excellence in both faculty and students. Many of the College's faculty members have garnered international, national or state awards.

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Emotion and Meaning-Making: Affordances in the Classroom

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Abstract

It is well known that emotion plays a significant role in the learning process. In this study, we describe affect/emotion incidents as part of students' personal knowledge construction efforts in three sixth grade classrooms. These affect/emotion responses are identified by word choice, topic, punctuation, or description. The role of each classroom as it served as an affordance for affect/emotion knowledge construction efforts is also discussed. We posit that the role of dialog and activity choice, which traditionally lie within the hands of the teacher, serve as the primary affordances through which students are provided opportunity to use affect/emotion responses in their classroom learning.

Introduction

It is well known that emotion plays a significant role in the process of learning (DeCatanzaro, 1999) and the meaning individuals make of experience. It serves as a natural motivator to acquire information, seek understanding of one's environment, and make sense of experience. In this study, we describe the incidents of students' links to prior experience and seek to understand what elements of three instructional environments served as affordances for student knowledge construction that includes emotional and/or affective components. First, we provide a brief theoretical background and describe the larger study from which the current study is derived.

Background

Emotion has been shown to link behavior to experience in models of operant conditioning where emotions have been trained to evoke responses to stimuli that did not originally elicit them (Estes and Skinner, 1941). More recently, the field of cognition and learning has begun to consider the relevance of emotion as a modality through which individuals build knowledge. Knowledge can be built and recalled based on emotional relevance, or association, as well as cognitive association (Lakoff and Johnson, 1999; Wicklegren, 1997). In this, a sensory *or* cognitive event can trigger knowledge through emotional relevance to the stimulating event. For example, a recollection of a tornado may be prompted by a discussion of weather or a discussion of scary experiences. Lubert and Getz (1999) describe an emotional resonance mechanism that accounts for the activation of experiences related emotionally that may not be directly related as would be for cognitive activation (i.e., spreading activation). In this, a particular emotion associated with an experience "resonates" when recalled. This resonance causes sympathetic vibrations to similar emotions, thus activating other experiences that, on the surface, may not seem related to the first experience. Emotional resonance provides increased opportunities for linking prior experience with current.

To further explore this fusion of cognition and emotion, we draw on the field of semiotics. The study of signs and their use provides an explanation of the meaning-making process. Perhaps too simplistically, a sign is something that stands for something else (an object, but again, this is very basic). This sign only exists through an interpretant—or the meaning that an individual develops to the sign relationship. There is a trichotomic relationship among the three elements: object, sign, and interpretant. Essentially, the sign comes to represent the meaning that has been developed by a particular individual in a given context. As meaning is made, the potential exists for continuous generation of more signs, thus providing for on-going meaning-making (or unlimited semiosis as it is called) (Peirce, 1985). This theory allows us to consider how different modalities, in particular emotion, provide an impetus for this meaning-making process.

In this meaning-making process, we consider the role of emotion as an affordance in the classrooms—environments that, we hope, foster meaning-making. Affordances are those items in an environment (e.g., concepts, ideas, emotions, objects) that enable individuals to learn about something larger than the items in the environment itself (Gibson, 1996). Thus, affordances "are qualities of systems that can support interactions and therefore present possible interactions for an individual to participate in" (Greeno, 1998). Learning environments, as we describe here, include social and emotional, as well as physical environments. Thus, affordances may exist in any of these venues.

In particular, we consider the affordances available through the classroom dialog and the role of the teacher in that dialogic process. Dialog has been shown to be an affordance commonly appropriated by children as they learn the cultural norms and moral system of an environment, particularly in classrooms (Burbules, 1993; Noddings, 1994). Burbelous points out that Bakhtin noted that language itself, as dialog, is more than many people expressing many points of view. It is heteroglossia, an inherent condition of spoken language, which is non-consensual, and multi-voiced

as it serves to create various meanings among the society in which it functions. Thus different individuals, even upon hearing the same information presented, will perceive the information uniquely (i.e., a sign develops). Further, in that communication process these variations are represented by inequality in the notoriety, attention, and centralized acceptance of certain voices over others. While personal interpretations remain, there is also a process wherein common understandings are created. In that process, the more powerful voices in a community significantly impact the rules that govern how that community or environment functions. We consider the classroom as such an environment and the teacher as a potentially powerful voice.

For this study, the three participating classrooms were initially described in terms of learner-centeredness as determined by student perceptions of the classroom. Learner-centered instruction is distinguished from teacher-centered instruction by nature of the teacher-student relationship. In a teacher-centered model of instruction, the teacher's role is seen as imparting knowledge to students and instruction proceeds from the teacher's point of view (Wagner and McCombs, 1995). In this framework there is the assumption that the teacher needs to do things to and for the learner; i.e., the teacher should engineer conditions outside the learner to accomplish desired outcomes. Thus, the teacher decides for the learner what is required from outside by defining characteristics of instruction, curriculum, assessment, and management (Wagner and McCombs, 1995). Therefore, we believe that the teacher's perception has a significantly more powerful voice in the environment.

Learner-centered instruction (LCI), in contrast to teacher-centered instruction, provides opportunities for learners to draw on their own experiences and interpretations (McCombs, 1997; Wagner and McCombs, 1995), thus the students' perceptions is given a contributing voice. LCI focuses on individual learners, their heredity, experiences, perspectives, backgrounds, talents, interests, capacities, and needs (McCombs, 1997). LCI proposes that teachers need to understand the learner's reality and must support capacities already existing in the learner to accomplish desired learning outcomes. Learning goals are then achieved by active collaboration between the teacher and learners who together determine what learning means and how it can be enhanced within each individual learner by drawing on the learner's own unique talents, capacities, and experiences. The teacher-student relationship is restructured to focus on learning from the students' perspective.

The findings reported in this paper stem from a larger study (Schuh, 2000) describing how students integrated their prior knowledge and experience with the new information and learning opportunities to which they were exposed in their classrooms. The classrooms differed in degree of learner-centeredness. In that study, use of prior experience and knowledge was operationalized as knowledge construction links, those identified incidents where learners brought forth personal, and often tangential information, within their

current learning in their classrooms. Details about the methodology used for this study are described later in this paper.

These knowledge construction links were further characterized as combinations of cues and trajectories. Cues are stimuli that serve as affordances, prompting students to digress from the topic at hand to a different, but related, topic area or idea and may be perceived as being off-track. Cues can be single or multiple. Ten cue types emerged in the data: Sounds like, Looks like, Feels like, Is a, Same word but different concept, Same concept but different context, Same concept and same context but different content, Same concept and same context with same content, Different concept within same context, Series, and Complex relationships (Schuh, 2000).

Trajectories follow cues. A trajectory is a path, generally a re-presentation or memory, and is described by its nature or type. A trajectory generally included some type of experience (acting experience or specific episodic memory, generalized experience, future experience, and/or operative experience). In addition, the context of the experience, including the characters involved in the experience, was identified (Family, Friends, School, Society, Media). Affect/ emotion, the tenth trajectory type, was assigned to those knowledge construction links that included an indication of emotion or affect. Trajectory types were generally multiple (i.e., more than one type described a trajectory) (Schuh, 2000).

Of the 336 knowledge construction links identified, 134 (40%) included acting experience trajectories and 107 (32%) were related to a school context. In addition, 113 (34%) of the knowledge construction links included some indication of the affect/emotion (A/E) trajectory type, making it the second most common trajectory type in the data (Schuh, 2000). Given the prevalence of the A/E trajectory type in our data and that affect/emotion plays a critical role in the knowledge construction process, we explore this trajectory type and its role in the learners' knowledge construction process.

In this paper we first describe the nature of the A/E trajectory type, providing examples of the number of ways in which it was apparent in the data. Then, we explore how A/E associations serve as an affordance for the students' knowledge construction efforts in these classrooms. Finally, we describe the dialectic affordances that occur within the classrooms.

Methodology

Participants

Three sixth grade classrooms (74 students ages 11-12) participated in the study. These classrooms were selected based on differences in student perceptions of learner-centeredness as measured by the Learner-Centered Battery (McCombs, Lauer, and Peralez, 1997) from a pool of six classrooms from four schools in three mid-western communities. Table 1 provides a summary of these three classrooms.

Table 1
Summary Description of the Three Selected Classrooms.

	The Students in Classroom A	The Students in Classroom B	The Students in Classroom C
Learner-centeredness	least learner-centered	nearly learner-centered	most learner-centered
Number of students	24	24	26
Subject matter unit	Biomes	Roman Empire	Middle Ages
Predominant instructional strategy	small group work and presentations by students	note taking strategies	a variety including literature reading, play writing, craft project
Observation	10 times (1 hour class periods) over 2 week period	8 times (30 minute class periods) over 2 1/2 week period	21 times over 7 week during integrated subject unit
Student interview	10	6	10

Procedure

Data were gathered in the three selected classrooms through observation, student interview, teacher interview, a writing activity, and classroom artifacts. Each classroom was observed during a subject matter unit. Students were selected for semi-structured interviews following observation sessions by one of two selection methods. First, students who shared a comment or question that appeared to draw on prior experience and knowledge were selected for an interview. If no comments were observed during a session, a student was selected randomly. In the open-ended independent writing activity conducted at the end of each unit (for which students had the opportunity to use their textbook or notes as a reference), students were asked to begin their writing with the subject matter topic but were told that they could then follow other connections that came into their minds. The teacher was interviewed following the data collection for his or her classroom.

Analysis

As an instrumental case study, the focus of the analysis was to understand a phenomenon of interest: the use of prior experience and knowledge in students' knowledge construction efforts. In the analysis process, these knowledge construction links were first identified and categorized using cue and trajectory types that emerged in a pilot study conducted the previous year (Schuh, 1998; Schuh, 1999). These cue and trajectory types were expanded and clarified based upon the current data set.

Analysis continued for the current smaller study using a subset of data: those knowledge construction links that included the A/E trajectory type. These data were submitted to further analysis, seeking further descriptions of the particular trajectory type and also the context (environment) in which they were embedded.

Findings

Indicators of Affect/Emotion Trajectories

Although described as a single trajectory type, the A/E trajectory was identified in four ways. First, affect/emotion (A/E) trajectories were readily identified when students used affect words (identified by word). For example,

> I would hate to run 5 miles in gym because the gym teacher is so mean. I am very glad I'm leaving this school because it is so boring. (writing, Classroom A, March 26, 1999)

> I wasn't really here that much over this chapter. I don't think I will do very good on this test. That reminds me of my first little league game. I was so scared at first, but I actually did pretty good. I hope I do as good on the test as in that game. (writing, Classroom B, April 20, 1999)

> The thing about the reports we gave I liked one move but the others I didn't. Also, I liked the ones that did some action instead of just standing there at the podium and reading off of note cards (Classroom A, March 26, 1999).

The second indicator of A/E trajectory in our data was students' describing an emotional topic or experience such as death, illness, etc. (identified by topic). In the following example, the student describes her experience with divorce.

> I just thought about what I was going to do this weekend. Because my parents just got separated so [pause] probably going to go to my dads and I have to go to counseling tomorrow night, for court order stuff (Interview, Classroom A, March 17, 1999)

In the third type, affect/emotion appears without using an affect word. This is communicated through verbal and written punctuation (e.g., using an explanation point or talking louder and faster). In observation and interview data these were captured via researcher description.

This paper is better than school work! That's for sure! (writing, Classroom B, April 20, 1999)

"That ruins the whole book when they are nice to the bad people, like in Cinderella, where they forgive the bad person," Tracy exclaimed about the prediction that was made. (observation, Classroom C, April 15, 1999)

The final indicator of A/E is through a conceptual description (e.g., explaining something so that it implied that they were excited or bored) (by description). Notice in the following example that, although there are no explicit affect words, one comes away with a sense of uneasiness.

. . . this is a test. Everybody is too quiet, pencils tapping. It's weird. . . (writing, Classroom C, May 20, 1999)

Many A/E trajectories were characterized using a number of these indicators. The following two excerpts are A/E by topic and by punctuation.

There was also problems such as (during the Middle Ages) fleas and the cold. Even in castles! I used to let my cat sleep on my bed. She had fleas and they jumped off her. When I slept I would get dozens of flea bites. Never again will she sleep in my room. (writing, Classroom C, May 20, 1999)

At the rate I am going, I won't live to be thirteen! I have been sick with a virus, a cough, a cold, and pink eye in the last week! (writing, Classroom C, May 20, 1999)

In this writing example, A/E by word, topic, and punctuation are included.

I know someone who not only believes in ghosts, but WANTS to be abducted by aliens. She thinks it would be cool to see them, and she thinks Scream was funny (which kind of was if you think about it). It wouldn't have been if the plot was better and the blood more realistic, but when the killer is dragging the bloody and mutilated body, it was obviously a mannequin. Of course if it was real I sure would not be laughing, but that hardly ever happens. All these movies are about serial killers, but there are hardly any in real life. Movies also make it seem like aliens are bad guys and automatically want to kill us. That is why I like the twilight zone episode where aliens come and there is this huge council (to kill or not kill) and earth decides to blow up the spaceship. But then a guy is walking among the debris and finds a piece of paper that says "The cure for cancer is . . . ," and is burned off right there. (writing, Classroom C, May 20, 1999)

There were a variety of ways in which A/E become evident in this data set. However, this analysis process only considered A/E as a trajectory type, i.e., a descriptor of a path that the learner encountered. Questions remained about the expanded role of A/E as a cue and, therefore, affordances.

Affect/Emotion as Affordance

We were interested if these A/E trajectories followed cues that could *also* be characterized as affect/emotion. In this, we believed that the cue itself could serve as an affordance to an A/E trajectory, thereby providing a sign that prompted further meaning-making based upon an emotional component itself. The cues preceding each A/E trajectory were identified and characterized to see if emotion or affect was implicit in the cue itself. In our analysis, we found that not every A/E trajectory was preceded by a cue with A/E. For those that did not, A/E was simply a component of the prior knowledge that had been evoked (i.e., only appeared in the trajectory). In addition, we also found incidents of cues that appeared to be primarily emotional. In one type the cue word itself was an affect word (identify by word). An example of this is the cue "bored."

Our group did a game show so that the kids watching us wouldn't get bored. A lot of times class is always boring. (writing, Classroom A, March 36, 1999)

In this example, the student initially describes the presentation that had recently been completed for the biomes unit in science class. His group didn't want the other students to be bored. This affect word (bored) was the cue that prompted a trajectory where he further described the classroom as being boring. The student continues talking about aspects of the class and what made it boring (beyond their current biome presentations). In fact, this student provides a metacognitive analysis of this stating, "we lose interest and its harder to learn." Thus, the emotional environment of the classroom as reflected through this cue is not an affordance for learning. However, it is a cue for meaning-making. Unfortunately, it is perhaps not the meaning that we would hope a student makes of the classroom experience.

We believe that the second cue type is best captured through a semiotic description. From this perspective, a cue itself is a sign (identify by interpretation). The cue, as an uninterpreted object, is not considered as affect/emotion (e.g., a tornado), but for a particular individual, the cue serves as a sign that is interpreted. That interpretation carries meaning. In our analysis, we concluded that the meaning was in large part, emotional.

In the following example, a student describes tornados and references the feeling of fear she associates with this topic based on prior experience. Then, she continues with another prior experience, also related to her feelings of fear.

When I was little I always got afraid if there was one [tornado]. I still feel that way some time because, I don't what to get hurt some happen to me. Which I remember last year I was in the hospital because I got very sick and I had to have surgery. but I knew I would never get hurt or sick

again and that was a promise to me to never do or get it again (writing, Classroom A, March 26, 1999)

Thus, the cue would be considered an affordance to A/E relevant knowing because of the particular meaning it holds for this individual, and thus, the cue is considered to have an A/E component in this case. The object is more than an object (a tornado, which she first mentions as an aspect of a biome she describes). It exists for this learner as a sign and thus provides her own personal meaning. But to know this, we need to look beyond the mere term (or its typically "objective" description) and consider how this individual responded to the term. Thus, A/E becomes an affordance in a learner's knowledge construction efforts. The meaning is larger than the incidents in the environment imply.

Given our understanding of A/E as an affordance in the students' knowledge construction efforts, we considered what characteristics of the three different classroom environments also served as potential affordances that fostered use of A/E. Given the role of emotion in learning, this seems to be an important aspect to consider in learning environments.

Classroom as Affordance

Of the 113 identified incidents of A/E trajectory types, only 12 (11%) of those occurred overtly in the classroom (i.e., identified through observation). Twelve A/E trajectories were also identified in the interview process. The majority (89 incidents, 79%) of the affect/emotion trajectory types occurred in the writing activity. We were curious about the context in which the overt A/E comments were embedded, particularly the teachers' response to the incident.

Overt affect/emotion trajectory types only occurred in two of the three classrooms: the least and the most learner-centered. The least learner-centered classroom (Classroom A), was actually teacher-centered in that the teacher was an information provider or specifier of appropriate information. Learning, as indicated by the students' actions, was finding information and pursuing performance goals, with content learning reserved for the review and a recall and recognition test at the end of the unit. There was open dialog in the classroom about the learning activity, but it was very convergent generally in that there was rarely discussion of the content. And, the dialog was closed to some students. The teacher modeled few knowledge construction links. In this classroom, where the learning activities focused around development of small group presentations on the biomes, all A/E trajectories identified during observation occurred when the students were working in small groups—unmediated by the teacher (Schuh, 2000).

The nearly learner-centered classroom (Classroom B) was also teacher-centered with textbook as single information source and teacher as model and moderator of how to extract the correct information. The instructional strategy left little room for divergent dialog or unauthorized information as the students sought information from their text to copy into their notes. The teacher, who was warm and encouraging to the students, shared his own knowledge construction links; these were generally links about good study skills rather than content. Learning in this classroom was conceptualized as the process of retrieving correct information from the source and then producing it later through recall and recognition. However, in this classroom, there were no A/E trajectories identified in the observation data. Generally, in this classroom, students censored the links that they shared. The norms of the classroom, communicated by both the teacher and students in interviews, had established that it was not appropriate to go "off-track" (Schuh, 2000).

The most learner-centered classroom (Classroom C) fostered a knowledge construction process that used individual prior experience and knowledge of the students and the teacher. In this classroom, the teacher was a facilitator, placing much of the responsibility of teaching on the students. Learning was understanding information that came from a variety of sources, that was challenged and then synthesized. Learning was also sharing of these syntheses so others could understand as well. Dialog was open and divergent, acceptance for a variety of ideas and linking efforts, including the teacher modeling a variety of links. In addition, integration of prior experience and knowledge emerged through design in that the teacher provided relevant experiences for students. In the most learner-centered classroom, all except one of the seven A/E links were in small group discussion of literature books that the students were reading on the Middle Ages. Although the teacher moderated the group discussion, she did not direct the content of the discussions following a structured agenda, but rather, facilitated the discussion by using the students' comments to highlight main points of the content (Schuh, 2000).

The manner in which the teachers responded to students' knowledge construction links provides an indicator of the degree to which a student may feel safe in sharing a personal knowledge construction link, and in particular one that has an A/E component. One example of this affordance for expression of student voice is through the teacher's response.

Following the link. In the initial analysis of the knowledge construction links, the reaction following the link was characterized. Although reactions to each link were not captured because of the noise and the fast pace of the discussion in the classroom, five categories of response to overt trajectories emerged. The link was 1) treated as an error (should not have been shared at that time or at all), 2) ignored, 3) acknowledged (a brief statement that was an appropriate comment in some way), 4) respected and validated (accepted as a meaningful part of the conversation), or 5) integrated (used to build further understanding of the issues and ideas, as in theory building). Because the teacher was not involved in the small group discussions in Classroom A, there were no teacher reactions to the comments. In the Classroom C none of these A/E trajectories were considered errors. Although some of the A/E trajectories may have been ignored (or the response not captured), when the teacher

responded, the response acknowledged the comment, but not necessarily its affective nature. For example, a student in Classroom C read her reaction to a Middle Ages novel and covered her face with her notebook in embarrassment when she read that Jesus was the Son of God. The teacher supported the student's comment, stating that it was her [the student's] opinion and that's what she had been asked to write.

In another example, this teacher strongly supported a student's affective statement. The topic of the comment was lost in the background noise of the classroom. The girl had stated what she was "really interested" in the book, and then added the following disclaimer, "but that has nothing to do with anything," discounting her own comment. The teacher supported and encouraged her interest stating "but it has everything to do with everything."

In many of the A/E trajectories that first occurred in observation, it was not clear that they were A/E based on this observation data alone. Only with expanded description through student interview did A/E become apparent.

Affect not evident. Emerging from the analysis of this small set of overt A/E trajectories was the lack of evidence in the observation data alone for this type of characterization. For a majority of these examples, the A/E characteristic only became apparent during the student interview following the observation. For example, students in Classroom C were discussing an historical fiction book set in the Middle Ages. One girl offered a prediction about what would happen in the book. "That ruins the whole book when they are nice to the bad people, like in Cinderella, where they forgive the bad person," Tracy exclaimed about the prediction that was made. (observation, Classroom C, April 15, 1999).

Tracy was chosen for an interview based upon her Cinderella comment, an example of a knowledge construction link where she drew upon her prior experience and knowledge to build the analogy. In her interview there is more evidence for this trajectory to include an A/E trajectory type.

"I don't know. When I'm in literature I just try to think of other things because lots of the sheets she gives us says try to think of other experiences that match with the book and, um, we were just making predictions, and we were saying, 'Oh, the uncle is going to come crawling back to Evan when he learns to read.' And that's sort of like Cinderella, and well, I said that Evan was going to forgive him and that's sort of like Cinderella forgiving her evil step sisters." She continued, "You know I've related a lot of them to Disney movies, and everybody, sort of like, makes fun of me and stuff, but,"

"How come?" I interject.

"It's just sort of Disney movies, you know," she explained.

"I like Disney movies," I said perhaps leading her.

"I like them, but I don't really watch them anymore because, I don't know, I usually watch comedies or something and um, and those just have a lot of things in them and they're a lot of experiences in different movies that relate to books. Personally, I like the books better than the movies that are made from them."

"I think a lot of people end up saying that."

"Yeah, my favorite book is *Jane Eyre* and I watched the movie, I didn't really like the movie that much," Tracy said. (Tracy, age 11, interview, Classroom C, April 15, 1999)

In her interview, there are a number of indicators that this is A/E trajectory that was not apparent in the classroom. Tracy liked Disney movies (identify by word). In addition (and perhaps more important), people made fun of her now for watching them (identify by topic or description). Her comment to the class about Cinderella was a very risky statement on her part. In addition, the student who spoke prior to Tracy provided a cue for Tracy's link. This girl had predicted a happy ending with the bad person being forgiven—an A/E cue by word and interpretation.

In an April 29, 1999 observation, Nicole shared her reaction to a different Middle Ages novel. The students were to write a reaction and dialog from the perspective of a pilgrim on the journey with the book characters. Nicole referred to the bible saying that "doesn't it say something about not hating each other. If she [the girl in the book] was a person living today I think she would definitely travel around the world."

In the interview, Nicole provides a much more involved description about her writing when asked what had made her think of that comparison in the first place.

"I don't know, I was just, 'cause I, I don't know you just, oh boy, um, well you can tell that Eleanor was tense about it and she had been told stories that the Moors were evil and they carried knives in their pants and so, and by the report I did, Ferdinand wanted to start the cleansing of Spain and so the Moors weren't particularly happy with the Christians and the Christians were weren't [she corrected herself] particularly happy with the Moors and so I put, I thought it was different that Eleanor really didn't hate the Moors. I mean, if it were me, I'd be scared to death, running off, 'Oh my God, he's got a knife, he's going to kill me' [she said in a higher voice] but Eleanor was just so calm and, and then it occurred to me that she can't really hate him can she, 'well why couldn't she hate him?' 'Oh, duh, she's Christian.' You can't really hate anyone even though

people say you really do hate them." (Nicole, age 12, interview, April 29, 1999)

In this added description the A/E component of Nicole's literature assignment becomes more apparent. It includes A/E by topic and by punctuation.

In the least learner-centered classroom (Classroom A) students in the saltwater biome group were seeking to understand the depth and size of the ocean so that they could share the information in the required presentation in which they would teach their classmates about their biome. Boats were discussed (cued by a picture of a tanker in an encyclopedia) and the Titanic in particular (being something at the bottom of the ocean). In the students' discussion, these were largely void of obvious affect. However, in the interview, the A/E component was identified by topic (i.e., pain).

> "Yeah, I was talking about the oil tankers. We were trying to figure out how many gallons of oil were pumped out every year and I said, we could also list different kinds of oil tankers and boats that are in the ocean. Just as, I don't know, I had an idea," he trailed off sounding somewhat apologetic. . . . "Well, 'cause most, well we're looking through the encyclopedia and we saw that it was showing oil, that most of the oil was on, in the ocean. So, I said we ought to list, or see if we can find how many gallons, or whatever, are pumped out each year or something. We looked through it and we actually found it. I guess we just, because it, basically it maybe an important resource from the ocean, it's just one of those things," he explained.

> "What do you know about oil tankers and stuff?" I asked.

> "Let's see, they're very big, of course. Most of them, or some of them, never mind, I won't even say that, some of them get caught up or they wreck, but um, they have lots of people on them. They drill into the ocean surface, people can get hurt on them sometimes, maybe from the oil. That's all." (William, age 12, interview, Classroom A, March 16, 1999)

Further, in William's writing he commented on his interest in the movie *Titanic*, including his favorite part where a guy hit the propeller (identify by topic).

In these and other examples, it was not evident through observation alone that the information expressed by the learner had an A/E component. Unfortunately, a brief overt statement is often the only information that the teacher has to rely on and, as a result, the meaning that a student takes from the classroom experience is only partially known to the teacher. Given the few number of overt A/E incidents that occurred in the classroom it would seem that the classrooms do not provide affordances for the use of these potentially meaningful components to the learning process.

Further, when they did occur, the information provided by the student was often limited and not readily identified as A/E so that a teacher may use it to foster further understanding. However, we found that the writing examples of the students were richer in the A/E trajectory (79% of the A/E trajectory types).

Learning Activities to Foster A/E Related Meaning-Making

Given the richness of the writing data, as well as the opportunities for dialog within the classrooms that served (or did not serve) as affordances for the use of A/E trajectory, a variety of activities and assignments implemented in a learning environment may offer affordances to prompt learners to share meaning that is linked with A/E components, thereby increasing meaning-making itself. For example, the writing activity in this study was very unstructured, thus allowing learners to follow tangential topics or express their personal voice. Although some of these tangents may not have aided in the understanding of a canon of subject domain topics in that the links were far removed and the learners did not juxtapose the information but merely transitioned from one topic to another, the process provides opportunities and permission for learners to express A/E links and can provide an opportunity for sharing their personal meaning. This type of open-ended activity communicates to the student that his or her personal voice is of value to the community.

Activities such as assignments that provide for perspective taking as implemented in the most learner-centered classroom, journal writing (which also occurred in this classroom), as well as small group discussion among students, and student focused dialog as facilitated by a teacher also provided these opportunities. Thus, a focus on learner-centeredness to allow for the students' experiences, perspectives, backgrounds, etc. (that will include affect/emotion components) and open activities that allow expression of these are critical. Further, these activities need to provide an opportunity for students to take risks without repercussion—particularly considering the personal voice may be a vulnerable voice.

These activities do more than allow students to express or explore their personal links and associations, they also create an environment that values and utilizes that information in creating meaning. When this occurs, student perception gains power as part of the classroom environment. We believe that these instructional strategies can be affordances for learners to share their understanding based upon prior experience that also allows affect and emotion to have a role in that meaning-making process.

Conclusion

In this paper we discuss indicators of affect/emotion as appeared in our data, and describe use of cues and trajectories, and note the important role of the teacher in creating an environment which can serve easily as an affordance to A/E

avenues. Of interest were trajectories initially identified as A/E. These were identified by: 1) choice of words (e.g., I like, I hate, I love); 2) topics that were considered emotional (e.g., death, illness, self-esteem or worth); 3) punctuation (e.g., ! or voice inflection), or 4) description (e.g., describing happiness, sadness, fear, anger, etc. without using the affect words). Often, A/E trajectories contained more than one of these identifiers. The cues were further considered to see if they themselves were also A/E in nature. Although not all A/E trajectories were preceded by A/E cues, two types of A/E cues were identified: 1) by word (e.g., like, boring) and 2) by interpretation or sign (i.e., by a personal interpretation of a seemingly non-A/E cue that recasts it as A/E for that particular learner). Thus, in this second cue type, the A/E cue is an affordance for meaning-making.

One goal of this paper was to create a dialog about the importance of these A/E affordances in the learning process. Although this study focused on only three classrooms, it is clear that the prior experiences on which these students drew in their learning contains A/E cues and trajectories. However, we wish to clarify the avenues through which these affective and emotional characteristics appear in this data are not necessarily assumed to be pure avenues. In other words, the cues and trajectories themselves may not be the things that facilitate a learning process that embraces the role and necessity of affect in learning. However, after reviewing the incidents of A/E components in the classroom environments in which they were identified, we believe that creating a safe environment where students are invited and encouraged to enhance their meaning-making through their own affective/emotional process is a critical component. It seems that we are more adept at creating intellectually and physically safe environments for learners than emotionally safe environments if the lack of affective cues and trajectories in the classrooms is an indication. To address this issue, we believe that the next step is to identify existing instructional environments that foster A/E affordances in the classroom so that they can provide models from which more general guidelines may be drawn.

To further develop dialog on this issue, we also see a need to increase teacher awareness that A/E cues and trajectories exist in the learning environment, are a primary part of students' personal meaning-making, and greatly impact what and how students learn. This may easily be accomplished by individual or groups of teachers audio or video taping their classrooms and reviewing the tapes with an ear towards identifying A/E cues and trajectories in the classroom dialog and activities. Then, reflecting on the cues and trajectories and how they relate to their own students' learning. In addition, we recommend that teachers reflect on their own personal relationships with the subject matter content. Teachers articulating personal A/E trajectories that are linked with the subject matter content via cues add richness to the learning experience of their students. These examples not only provide models of A/E trajectories that may prompt

students own personal trajectories, but also indicates that the environment is safe for these types of interactions.

In addition, there needs to be a concern on the part of educators for those environments that do not foster this interaction. In other words, what if a teacher video tapes his or her classroom and it seems that there are no A/E trajectories that are allowed to be followed? If this phenomenon should be naturally occurring the meaning-making process, then identification of what is constraining these efforts is worth while as well as considering the implications that this constraint may have on the learning process. What is replacing this natural A/E aspect of learning and does that replacement foster a safe environment for learners?

Finally, we considered the classroom environment in which these cues emerged and whether that environment itself was an affordance for the particular type of trajectory used in a meaning-making process. In this, the most learner-centered classroom, although having the most general support for fostering the use of prior experience and knowledge as evidenced through overt knowledge construction links (Schuh, 2000), did not seem to foster the use of A/E links. Although the few links that were offered were accepted, it was often not possible to identify these as A/E links based on the students' brief comments in the class alone. Thus, knowing if the meaning a learner is making has an A/E component that could be fostered to develop a richer understanding in content learning is not apparent to the teacher. Therefore, further study of the classroom culture may be warranted.

However, based on the number of A/E trajectories that occurred in the writing activity, we speculate that activities with open structure—such as journal writing, perspective papers, and open dialog among students, may increase the affordances for use of affect/emotion components of prior as well as current experience, to support learning.

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Integrating Writing To Improve Math Achievement

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Introduction

Can writing be used as a learning tool for students to improve math scores? As teachers of writing, we were aware of the impact that writing has on learning in the language arts field, but wondered whether the same would be true in other curricular areas. With increasing public pressure for accountability, strategies for improving student achievement in the core academic areas of reading, writing, mathematics, and science is critical. Especially in the areas of math and science where American students seem to fall behind the expectations of society, collaboration across curricular areas might be beneficial.

In states like Ohio, where state mandated competency tests are given, many teachers, schools, and districts feel the pressure to improve academic achievement in the assessed academic areas—Writing, Reading, Math, Citizenship, and Science. The Ohio Proficiency Test scores are used to rate the academic achievement of schools on the state mandated "School Report Card" issued to the public reporting the level of school and district success. Each school is rated "Effective," "Needs Continuous Improvement," "Academic Watch," or "Academic Emergency." In one area of the state, Southwest Ohio, only two public schools of the 59 in seven counties met standards for fourth grade math achievement according to the June 1998 "Report Card" issued by the Ohio Department of Education. As a general rule, the strongest single area of the "Report Card" is writing, while one of the weakest areas is math. Based on this, the question emerged: Could the use of writing, a stronger area of achievement, be used to improve math skills, the weakest area of achievement?

Background

In 1982, James Berlin examined some of the oldest teaching and learning theories known, including those of Aristotle and Plato. There are currently multiple theories of using writing as a tool for learning. The basic theories of Piaget and Vygotsky seemed to be the foundation for many of them. One of the most quoted contemporary "gurus" of writing is Janet Emig (1977) who describes writing as uniquely corresponding to powerful learning strategies. Of the four language processes (listening, talking, reading and writing), listening and reading are *receptive* functions, while speaking and writing are *productive* functions. Emig draws from many others, including Vygotsky, (1962) who stated that written speech is a separate linguistic function, differing from spoken language both in its structure and functioning. Bruner (1971) building on Vygotsky suggested three major ways with which "actuality" is represented and dealt: (1) enactive—learning by doing; (2) iconic—learning through images; and (3) representational or symbolic—learning by restatements. That is, "in enactive learning, the hand predominates; in iconic, the eye; and, in symbolic, the brain." Based on these theories, Emig (1977) suggested that since most learning occurs when it is re-enforced, then writing involving hand, eye, and brain marks a uniquely powerful mode for learning. Perhaps her most important argument for writing as a learning strategy/mode, however, was that writing is self-rhythmed—and that "one writes best as one learns best, at one's own pace . . . Writing can sponsor learning because it can match its pace" (12). Emig concluded by stating that writing is epigenetic, that is, it allows you to "see your thinking."

William F. Irmscher's (1979) clarified, supported, and reinforced the previous theorists by supporting the idea of writing producing "articulation of thought" because "it prods us to be explicit" and. "...places on us the ultimate demand for precise and accurate expression" (p.5). By suggesting that getting information is often acquiring unrelated facts, and that we cannot use unrelated facts not anchored to anything else also supports writing as a learning tool.

Archambeault (1991) lamented that many teachers, especially in math classrooms, reject the idea of writing across the curriculum. She states that since contemporary learning theory supports the use of writing as a cognitive tool to enhance retention and assist students to more completely understand abstract concepts it is unfortunate that most mathematics teachers fail to use writing. She focused on two specific aspects of learning theory which support writing as a tool for learning. First, the purposeful construction of mental connections between new and previous information and the active processing of the material. Having students write about content material is supported by these two theories, since writing requires a high level of information processing. Unless they are merely copying verbatim, they are translating information into their own words, making connections with previous information, and forming new contexts. "Writing is also the visualization of content material. The learner is not only making connections, but creating new connections while developing a personal organizational schema" (p. 3).

Detoye (1986) defined metacognition as "thinking about thinking" (p. 39). She recognized two types of metacognitive thoughts during learning and transfer: thoughts about what

an individual knows, and thoughts about how one learns. She contended that writing is an easy and effective way to develop these skills. "Transfer of learning means simply that experience of performance on one task influences performance on some subsequent task" (p. 39). She suggested that transfer is not dependent on a simple formula, but rather by creative synthesis; further, language was the medium through which knowledge could be transferred from one situation to another, and are enhanced by the processing of information through an internal language. "Writing to learn is expressive, reflexive writing that occurs when one's mind *is engaged in choosing* words to express meaning. Writing to learn is learning to think on paper" (p.43).

Clark (1984), noting the need to improve writing in schools suggested that if teachers assign writing to reinforce the content, writing then becomes a natural part of the learning process. As students us writing to solve real learning problems, they will naturally improve writing skills as well. For reasons such as these, NCTE (National Council of Teachers of English, 1983) affirmed the position that students should write frequently in every course as a way of learning the subject matter and of sharpening their writing skills. Clark (1984) defined expressive writing as writing to figure things out, and an efficient tool for learning and thinking about content.

Applications of Writing to Improve Math Learning

A study conducted by Monroe and Pendergrass (1997), compared the effects of two models of vocabulary instruction: a definition only method (copy the definition from the dictionary and memorize it), and an integrated method combining a Concept Definition (CD) graphic organizer (which resembles a pre-writing web) with the Frayer model discussion model that builds on schema (Reutzel and Cooter, 1996). The combination of the CD and the Frayer model allowed for both oral and written discussion to take place during math instruction. The results showed that the CD-Frayer model was effective in increasing student use of math vocabulary.

Ehrich (1991) believed that students must have tools to promote the cognitive process, and that these tools should allow for communication of ideas from teacher to student, student to teacher, and student to self. Writing, she found, was one such tool. During her four-year research, she implemented five types of journal writing in her math classes. The first was process writing where students wrote in response to mathematical situations. The second was writing and cognitive dissonance, allowing students to begin to know what they know and believe by writing justifications for their answers. Third was writing for affirmation, for which students wrote about problems that they had already answered correctly. The fourth was writing and exploration that gave students the opportunity to solve unfamiliar problems by wandering freely to explore what they think and why. The fifth, Erich calls "aha" writing that allows ideas and concepts to appear spontaneously. Erich found writing promoted

and supported cognitive processing by providing opportunities for diverse thinking.

In a study by Bell and Bell (1985) it was demonstrated that writing positively impacted student progress in problem solving. Using pretests and post-tests, two comparable Year 9 math classes were instructed in the same material. One class was taught using the traditional teacher-centered chalk-talk method. The other combined that method with structured expository writing. Students who found a specific problem easy would include in the process writing why they found it easy. For students who found it difficult, it became an opportunity to pinpoint the point of confusion. Four weeks after the study began, post-tests showed that the students using expository writing had better problem-solving skills. Miller (1992) documented how similar student writing also benefitted teachers by revealing how "first-year algebra students comprehended or misconstrued specific concepts and algorithms" (p. 3).

In response to resistance to writing across the curriculum, Kurfiss (1985) offered two alternative foundational propositions: (1) writing can help students learn and think about content in any discipline, and (2) writing used for learning does not require explicit *teaching* of writing, only *use* of writing. She also cited a study reported by Newell (1984) that college students who wrote short thought-question essays about content material demonstrated a more integrated concept of material and more complex and varied thought processes, including hypothesizing and evaluating.

Perhaps one of the more impressive studies was one conducted by Evans (1984) in which she examined the effect of writing in math class with 5th graders. In this quasi-experimental study, Evans used two fifth grade classes: one was instructed in math employing three types of writing and the other instructed using no additional writing. The initial class profiles, based on CTBS scores were the Test group (22 students) scored 55% in Computation and 54.2% in Total Math, while the Control group (23 students) scored 71.1% in Computation and 75.4% in Total Math.

The first type of writing done by the test group were explanations of how to do something (process writing) (Evans, 1984). The second type was definitions (creating their own) and the third type was "troubleshooting" where student had to explain specific errors on homework or quizzes which Evans found most enlightening because it informed her (teacher) who needed what help. The results indicated a significant difference in the performance for both multiplication and geometry tasks between the test and control groups. For both, the test group outperformed the control group and in observing individual scores, Evans found that students with the lowest pretest scores in the test group made the most gains.

Methodology

This study was designed to determine if writing, an identified stronger area of achievement on state-wide assess-

ments, could be used to improve math, the weakest area of achievement on state-wide assessments. The purpose of this study was to determine whether summary, process, and analytical writing helped students better comprehend the concepts and procedures of high school geometry. The hypothesis that guided this study was that, even without assessment or instruction of writing skills, a systematic and regular use of writing during the math instruction of high school geometry, would result in increased math achievement as compared to the math achievement of students enrolled in the same course that receive the same instruction without the integration of such writing.

Population and sample

The population was high school (grades 9-12) students enrolled in mathematics courses. For this study, a convenience sample was drawn from a suburban Midwest high school, the only high school serving the district. The district serves one municipality and parts of another small city and a township. The ethnic composition of the school is 92% white, 5% black, 2% Asian and less than 1% American Indian, Hispanic, and multi-racial combined. The attainment of Bachelors Degrees or higher among all residents of the three municipalities is less than 25%. The median income of all households in the three municipalities is $31,114.

Two heterogeneous geometry classes of 21 and 22 students were selected for use in this study. Students enrolled in each section were randomly assigned. The classes were then randomly assigned to treatment groups. Course of study and material covered were the same in each section. Each had both genders, multiple grade and ability levels, and were taught by the same 14-year veteran teacher. Prior to the study, each class had completed approximately 75 per cent of the course curriculum. The classes met for 90 minutes per day, five days a week. The time period of the study was four weeks.

Design

This quasi-experimental study involved random selection of one class as the experimental group in which the only independent variable introduced was the use of the writing process by students. Students in the experimental group were given identical notebooks to use as journals. In these spiral-bound journals, the experimental group responded to the math instruction in three types of writing. During the four week study, students were asked to record three types of writing in their journals: 1) to summarize in their own words any instructional lecture given by the teacher; 2) to write a step-by-step process how to solve each of two example problems before attempting to actually solve them; and 3) to write an explanation/analysis of why they missed problems on homework, quizzes and tests. Using written summary of the instructional lecture was selected so that students would have to immediately recall, process, interpret, and paraphrase the new information received. The use of process writing to describe the step-by-step solution of sample problems was chosen to allow for the transfer and application of that new

information. The written analysis of missed problems was implemented to point out areas (to both student and teacher) needing further clarification. This study did not address the variable of students' writing skills. There was no assessment of existing skills or instruction in summary, process, or analytical writing per se. The students were told simply to "Write a paragraph which summarizes today's lecture/ . . . describes step by step the process you will use to solve the sample problems/or . . . tells why you missed each problem." The control group proceeded with the previously established classroom and instructional procedures and routines typical of a math class.

Instrumentation

In preparation for the study, the classroom math teacher was given these instructions: "Following each lecture for the introduction of new material, have students write a paragraph summarizing, in their own words, the main points of the lecture. Prior to beginning homework assignments, have students write a paragraph describing the step-by-step process used to solve a sample problem. For problems missed on assignments, quizzes or tests, have students select representative problems and write an explanation/analysis of why they missed that problem." For this study, the teacher was asked to check that students were writing in their journals, for math/concept accuracy, but not for writing conventions. Students received no extra credit for keeping the journals.

The same teacher-created pretests and post-tests were used with both classes for each chapter. Chapter 11 covered the concept of area and Chapter 12 covered the concept of volume. The teacher had used these tests in previous years with similar students to assess knowledge, comprehension and application of the concepts. The teacher allowed students in the experimental group three to five minutes following instruction to write the entries in the journals. The type of writing was dependent on the day's activities; that is, they did summary writing if the teacher lectured, process writing if they were attempting to solve practice problems, and analysis writing after correcting homework or a quiz. During that time, she would check only to see that students were writing in their journals, answering questions and clarifying as needed. She did not read each journal entry, but at times would randomly check and read entries as she walked about the room as students were writing. Students in the control group were given this time (an additional 3-5 minutes) to work on practice problems related to the concepts taught.

Results

Because pretests and post-tests were used in existing, randomly chosen groups, analysis of covariance (ANCOVA) was used for data analysis to adjust for initial differences and compare adjusted scores. The probability level of .05 was selected for use in the study. Separate ANCOVAs were utilized for each chapter taught during the study.

Table 1

Group		Post-test Chapter 11	Pretest Chapter 11
A	Mean	18.1875	3.4375
	N	16	16
	Std. Deviation	7.5031	4.1788
	Minimum	3.00	.00
	Maximum	28.00	17.00
B	Mean	17.7778	4.2778
	N	18	18
	Std. Deviation	6.1219	5.3005
	Minimum	6.00	.00
	Maximum	28.00	23.00
Total	Mean	17.9706	3.8824
	N	34	34
	Std. Deviation	6.7036	4.7531
	Minimum	6.00	.00
	Maximum	28.00	23.00

Initial descriptive statistics indicated that scores for Chapter 11 pretests were lower for the experimental group (A) than those of the control group (B). Table 1 shows the mean for the chapter 11 pretest for the experimental group was 3.4375 and the standard deviation was 4.1788. The minimum score was 0.00 and the maximum 17.00. The control group on the same test scored a mean of 4.2778 and standard deviation of 5.3005, with minimum and maximum scores of 0.00 and 23.00, respectively.

Post-test scores for Chapter 11 show the experimental group (A) had a mean of 18.1875, standard deviation of 7.5031, minimum score of 3.00 and maximum score of 28.00, while the control group had a mean of 17.7778, a standard deviation of 7.5031, minimum score of 6.00 and maximum score of 28.00. Overall, the post-test scores for the experimental group (A) were higher than the control group (B).

Using the post-test for Chapter 11 as the dependent variable, the results of the ANCOVA are shown in Table 2.

Table 2

Source	df	Mean Square	F
Model	3	3800.722	111.066
PRETEST	1	420.715	12.294
GROUP	2	2295.945	67.093
Error	31	34.220	
Total	34		

$R^2 = .915$ (Adjusted $R^2 = .907$)

The F statistic of 67.093 exceeds the predetermined probability level of .05 ($p<.001$). Also, the adjusted $R^2 = .907$ shows that 91% of the difference in post-test scores are explained by the treatment (grouping). The null hypothesis using Chapter 11 pre-post-tests is rejected; therefore, students who receive math instruction which includes writing as a part of the regular instruction show greater achievement in the given area than students who receive the same instruction without the integration of writing.

Initial descriptive statistics indicate that scores for Chapter 12 pretests are lower for the experimental group than those of the control group. Table 3 shows the mean for the Chapter 12 pretest for the experimental group was 17.6111 and the standard deviation was 13.0165. The minimum score was 0.00 and the maximum 48.00. The control group on the same test scored a mean of 17.8947 and standard deviation of 19.3876, with minimum and maximum scores of 0.00 and 67.00, respectively.

Table 3

Group		Post-test Chapter 12	Pretest Chapter 12
A	Mean	56.2222	17.6111
	N	18	18
	Std. Deviation	31.9263	13.0165
	Minimum	7.00	.00
	Maximum	96.00	48.00
B	Mean	55.4000	17.8947
	N	20	19
	Std. Deviation	25.6380	19.3876
	Minimum	7.00	.00
	Maximum	98.00	67.00
Total	Mean	55.7895	17.7568
	N	38	37
	Std. Deviation	28.4217	16.3697
	Minimum	7.00	.00
	Maximum	98.00	67.00

Post-test scores for Chapter 12 show the experimental group (A) had a mean of 56.2222, standard deviation of 31.9863, minimum score of 7.00 and maximum score of 96.00, while the control group had a mean of 55.40000, a standard deviation of 25.6380, minimum score of 7.00 and maximum score of 98.00. Overall, the post-test scores for the experimental group (A) were higher than the control group (B).

Using the post-test for Chapter 12 as the dependent variable, the results of the ANCOVA are shown in Table 4. The F statistic of 68.784 exceeds the predetermined probability level of .05 ($p<.001$). Also, the adjusted $R^2 = .846$ shows that 85% of the difference in post-test scores are explained by the treatment (grouping). The null hypothesis using Chapter 12 pre-post-tests is rejected; therefore, students who receive math instruction which includes writing as a part of the regular instruction show greater achievement in the given area than students who receive the same instruction without the integration of writing.

Table 4

Source	df	Mean Square	F
Model	3	42143.453	68.784
PRETEST	1	8371.155	13.663
GROUP	2	13360.213	21.806
Error	34	612.695	
Total	37		

$R^2 = .859$ (Adjusted $R^2 = .846$)

Based on the results of this study, it can be concluded that the null hypothesis, the systematic and regular use of writing during the math instruction of high school geometry students will have no effect on their math achievement, is rejected. Students who receive math instruction that includes writing as a part of the regular instruction show greater achievement in the given area than students who receive the same instruction without the integration of writing.

Discussion

"A chain is only as strong as its weakest link" is an old adage. If American education were analogous with a chain, then, in fact, that weakest link would be math. State mandated assessments such as the Ohio Proficiency Tests reflect this notion. But it goes beyond one state. The Third International Math and Science Study (TIMSS) indicates the same. ("Pursuing Excellence," 1997). TIMSS is a 1995 assessment of the math and science performance of over 500,000 students in 41 countries at three different grade levels. This study showed that fourth grade students in the United States perform only slightly above the international average in math and science. More discouragingly, the TIMSS indicated that there is a drop from slightly above average at fourth grade to below average in both subjects in eighth grade and, at twelfth grade, U.S. students scored at or near the bottom in both subjects. (Jones, 1998). The study viewed the findings with regards to four topics: (1) curriculum and learning expectations; (2) teaching; (3) teachers' lives; and (4) students' lives. The U.S. Department of Education (1997) stated, "In the global economy of the Information Age, students will need to master the basic and advanced mathematics" (p. 5). It further states that students taking algebra, geometry, and other advanced courses in high school are more likely to go to college regardless of the income levels of the families. In the same publication, other findings indicated that 90% of new jobs created will require more than high school level math, while also showing that one of three job applicants currently lack math skills required for a job.

The TIMSS no doubt tugs at the pride of America. It should be regarded as a national embarrassment. Even more alarming, it is an indicator that we as a nation are looking at a generation who are deficient in the skill (math) that could effect our economy (production and work force), technology (development and implementation), and society (education and life-style).

Whether out of pride or practicality, schools are attempting to address the problem. In Ohio, like other states, schools are adjusting curricula to meet higher academic expectations in math as well as the other core areas. At least one district in Ohio proclaimed a district-wide "Year of Math Emphasis" in which each discipline was expected to increase achievement in its area as well as support math achievement with interdisciplinary references (Campbell, personal communication, August 24, 1998).

The TIMSS evaluation would suggest that we need to look at why our students are being outperformed by like students in other countries. As schools, we have control over the factors the TIMSS addresses. One factor—teaching—is addressed through this study. The cognitive processes used in writing to support concept learning facilitates students' use of critical thinking. The current study examined how writing effected students' ability to construct their own meaning from the math studied.

The results of this study indicated that the mere integration of journal writing to the instruction of geometry produced highly significant increases in the level of achievement of target concepts. It required no expensive materials, books, equipment, programs, or teacher training. It required no special student instruction. It simply took an existing skill (writing), at whatever level, and applied it as a tool for learning geometry. Many would agree that writing, whether notes from a lecture or a shopping list, aids in recall and memorization. But, the writing implemented for this study differed from standard note-taking. Words can be copied (from a visual aid or from a lecture verbatim) without comprehension or processing. The summary writing, process writing, and analysis writing implemented for this study used Bruner's (1971) three major ways to represent and deal with actuality: (1) enactive—learn by doing; (2) iconic - learn by depiction in an image; and (3) representational or symbolic - learn by restatement. Also Bruner's view that "if the most efficacious learning occurs when learning is re-enforced, then writing through its inherent re-enforcing cycle involving hand, eye, and brain marks a uniquely powerful multi-representational mode for learning" is supported by this study.

In this study, students had to intake information, process it, and restate it in their own words. They had to employ writing as Irmscher (1979) noted as "articulation of thought" because "it prods us to be explicit" and "...places on us the ultimate demand for precise and accurate expression" (p.5). They couldn't sleep, daydream, or ignore what they didn't understand, or assume they understood what they didn't. They couldn't allow the information to remain a vague, formless concept. The summary and restatement of the lecture forced them to form a sharp, focused concept or, made them (and/or the teacher) aware that the concept was not understood and that help was needed. This was an early indicator that allowed for almost immediate intervention. The process writing used for application of sample problems allowed students to apply the new information in an organized, logical, step-by-step manner. This helped them to think about *process* rather than hurrying through to reach p*roduct*. Again, this was an indicator that allowed for early intervention. And the written analysis of missed problems allowed students to identify problem areas on their own. Was the problem a *calculation* error or a *process* error? The analysis was yet another means for students to clarify and verify the material/concepts before moving on.

The results of this study supports initiation of other studies to replicate these findings not only in high school geom-

etry, but in other areas of math, as well as other content disciplines and with other age levels. If writing supported student learning in geometry class, it is reasonable that the same would apply in most areas of learning. In fact, the idea for this particular study followed an assignment given by this researcher to students in a high school developmental writing course. The students were asked to write a *process paper* about using the *writing process*. They had to actually implement what they were writing about (pre-writing, drafting, revising, editing, and publishing), which served to reinforce, to make connections, and to clarify (to student and teacher) strengths and weaknesses regarding what was understood and mastered as well as what was not.

Future investigations may look at the effect of writing process instruction for both teachers and students on the achievement in the specific course/subject areas to which it was applied. It would also be interesting to determine if the increased writing in other content disciplines (as instructed) would increase the quality of the writing generally.

In states where high stakes assessment in areas like math are required and where the school districts and teachers are increasingly accountable for results, the conclusions from this study should stand out. Clearly, this strategy is one that teacher preparation should address with its prospective teachers and it is one that all districts and classroom teachers can readily apply.

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Jeremy Finn, will focus his Keynote Address on the state of research on class size and the widespread application of research findings to practice. He will overview research on class size and pupils' academic achievement and behavior, describe *how and why* the research has affected practices in American schools, and the limitations of this body of research. He will also examine the ways in which the research has been *misapplied* in many settings and the forces that underlie the misuse of sound research findings.

Dr. Jeremy D. Finn, Professor of Education at State University of New York at Buffalo has taught at the Ontario Institute for Studies in Education and Stanford University and has held research fellowships at the International Association for the Evaluation of Educational Achievement (IEA), National Research Council (NRC), Educational Testing Service (ETS), and the National Center for Education Statistics (NCES). His research has focused on issues of educational equity including studies of gender differences in educational outcomes, students at risk and student resilience, gender and racial/ethnic differences in course-taking patterns, and class size. He was external evaluator of Tennessee's extensive class-size experiment, Project STAR, since its inception in 1985. His research on the long-term impacts of small classes continues, following the STAR participants through high school and beyond.

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➢ What can we do to make a difference?

Dr. John McIntyre

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Dr. McIntyre is a past president of the Association of Teacher Educators and recently received the association's Distinguished Member Award. He also is a past-member of the Board of Examiners of the National Council for the Accreditation of Teacher Education. His research interests include design and practice in teacher education, supervision, teacher development and gifted education. He has received the Distinguished Research Award from the Association of Teacher Educators and has been named one of 70 Outstanding Leaders in Teacher Education. Dr. McIntyre is the recipient of numerous grants and has published widely in the area of teacher education. Currently, he has just completed a six-year term as co-editor of the Research in Teacher Education Yearbook series published by Corwin Press. Dr. McIntyre has spent over twenty years at Southern Illinois University, where he is a professor in the Department of Curriculum and Instruction. While at SIUC, he has served as a coordinator of a teacher education center, Director of the College of Education's Teaching Skills Laboratory, Director of Professional Education Experiences, Acting Associate Dean for Academic Affairs, and is currently the Associate Dean for Teacher Education and School Partnerships.

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Addressing Christianity in American History: Are Textbooks Improving?

Michael H. Romanowski
Ohio Northern University

Textbooks are powerful educational tools that undoubtedly provide students with an understanding of America history. The course textbook outlines the historical path that the teacher and students will share by defining for them what knowledge would seem to be of most importance. Consequently, the version of U. S. history that students have the opportunity to learn is largely shaped by the selected textbook.

When using textbooks, teachers and students encounter a version of history that is filtered by the author's view of the world. This is unavoidable because textbooks are written from a point of view, from within a world view defined by its author: A view that represents what the author wants to be true, what counts as a fact, what is normal, what is reasonable and what is good (Nord, 1995). Textbook authors make judgments about what knowledge should be included and excluded and how particular episodes in history should be summarized. During this process, "textbooks assign positive or negative interpretations to particular events, thereby asserting their set of values" (Romanowski, 1996, p. 170). What authors want the "textbook to create for the student is not an accurate account of the past, but a mere impression which will be consistent with their own beliefs" (Bryan, 1985, p. 9). More important, these impressions have power because, as stated by FitzGerald (1979, p.18):

> what sticks to the memory from those textbooks is not any particular series of facts but an atmosphere, an impression, a tone. And this impression may be all the more influential just because one cannot remember the facts and the arguments that created it.

History textbooks can create lasting influence on the way students view the world because most high school students base their understandings of the world on impressions. These impressions are attained "more or less unconsciously from meshing of schooling and life experiences, and our understanding of some aspect of life—of history, for example—is likely to be almost entirely from a few courses in school, from a few textbooks" (Nord, 1995, p. 138). Consequently, textbook impressions become a vital part of the learning process.

Regarding school knowledge, textbooks are often at the center of controversy. In particular, religion's place within the U. S. history curriculum and textbooks is often hotly debated. For more than a decade, religious conservatives have protested that they are victims of public school discrimination. They argue that within their children's textbooks, religion is disregarded while ethnicity, disability and

sexual orientation move to the forefront. Their fear is that schools are blotting out religion from history by denying students the opportunity to learn about America's religious heritage and how religion is an important dimension of human societies (Sewall, 1995b).

There have been various studies that examine religion in U. S. history textbooks. FitzGerald's (1979) analysis of twentieth-century American history textbooks, illustrates that religion virtually disappeared from textbooks. Textbooks became silent on religion and the perspective put forth was a "secular view of society, in which Americans had no particular qualities but only their citizenship. . . the earlier nineteenth-century texts had defined the American identity by religion; the twentieth-century texts would define it by race and culture" (p. 76).

Bryan (1985) concluded that all but one of the more than twenty history textbooks examined must be "judged incompetent" in their treatment of religion "under even the most rudimentary standards of historical scholarship." Students reading these texts will most likely come to the conclusion that religion has had no historical presence in American since 1700. Bryan argues that textbook authors present a pervasive theme which portrays the impact of religion in U. S. history as insignificant, and if it has any influence, the influence has been negative. The analysis points out that textbooks treatment of religion includes factual errors, is incomplete, and religion is portrayed as having no historical presence in America. Even the modest attention given to religion results in misrepresentation and oversimplification.

One of the more well-known studies of U. S. history textbooks is Vitz's (1986) analysis which is often hailed by Christian conservatives for documenting what is described as an anti-Protestant liberal bias in U. S. history textbooks. Vitz argues that textbooks fail to acknowledge, "much less emphasize, the great religious energy and creativity of the United States" (p. 56). Vitz describes how history textbooks neglect and distort the role of religion in U. S. history. According to Vitz, religion is portrayed as old fashion and the few contemporary references are slanted toward minority religions. Although textbooks acknowledge the importance of religion in other cultures, its significance in the United States is neglected.

Smith (1988) examined high school history textbooks adopted for use in the state of Alabama. He identified developments in U. S. history in which religion played a decisive role and examined the manner in which textbooks dealt with these events. His conclusions are that

these books fall far below the standard of American historical scholarship by ignoring or distorting the place of religion in American history. Where they do mention religious forces, the facts to which they allude are so incomplete or so warped that they deny students the access to what the great majority of historical scholars think is true (178)

Smith further argued that this disregard of the "facts about religion and its influence on social, economic, and political movements is indeed offensive to numerous groups of present-day religious believers whose youngsters attend the public schools of Alabama" (p. 178).

Nord's (1990) study concludes that history textbooks fall short in conveying the importance of religion in human life. He argues that even the accounts of religion that appear in the textbooks are often weak in scholarship. Furthermore, "the philosophical framework of interpretation employed by textbook authors is arguably hostile to traditional religious ways of understanding history" (p. 250).

Finally, Sewall (1995a) and the American Textbook Council examined the way that nineteen leading secondary-level civics and history textbooks dealt with religion. Their findings demonstrate that most U. S. and world history textbooks cover major religious movements and events more thoroughly than they did ten years ago. However, in spite of this expanded coverage, there were still inadequate explanations regarding religion in history textbooks and authors were flawed by interpreting the past by contemporary standards.

Conservative criticisms may not be completely accurate because the textbooks of the 1990s provide little evidence that religion is completely excluded. Sewall (1995b) argues that "the public perception—often cited by those on the Christian right—that religion is omitted from U. S. and world history textbooks is simply out-of-date. . . Even a cursory glance at today's history textbooks shows that the texts cover Christianity and other world religions more completely than in the past" (Sewall, 1995b, p. 32-33). Any examination of current high school history textbooks demonstrates that Carter's born-again faith, and the political presence of Robertson and Falwell have made their way onto the pages of most American history textbooks.

For whatever reasons, authors have elected to include Christianity and the Religious Right within their presentation of U. S. history, but authors still have biases, and in this case, they are seen in the impressions the authors communicate. Therefore, the purpose of this study is to systematically examine the content of secondary U. S. history textbooks in order to evaluate the impressions that authors construct as they portray Christianity in contemporary U. S. history. There are few, if any, studies that provide this type of analysis. Therefore, this study breaks ground by providing an in-depth examination and discussion of the impressions that might be shaping the way students understand and view the role of contemporary Christianity and related top-

ics such as President Carter's born-again faith, televangelism, and the political presence of the Religious Right. I began by asking the following research questions:

> What impressions do textbooks create regarding Christianity and related topics in contemporary U. S. history?

> Are textbooks improving in their portrayal of Christianity as they describe contemporary historical episodes?

Data Collection and Analysis

For this study, I examined the content of ten of the nation's most widely used secondary U. S. history textbooks.[1] These textbooks were selected based on information supplied by the Texas Education Agency (Textbook Adoption list) and the American Textbook Council (For a list of textbooks use in the study conducted by the American Textbooks Council see Sewall, 1995a, p. 24). The sample represents the U. S. history textbooks used in most American public high schools and for most students, these textbooks are likely to be the major, if not the only, source of information regarding United States history.

The content areas to be analyzed were any references to Christianity and the Religious Right in contemporary American history (events occurring post World War II). I have chosen this time period for two reasons. First, based on a preliminary examination of the textbooks, the authors deal with Christianity mostly from the Carter presidency to present, hence the limited focus on contemporary history. Second, it can be argued that post World War II is the beginning of modern day evangelism and the emergence of political groups such as the Religious Right. Because of the emergence of these groups onto the political scene and the textbooks' emphasis on the political aspects of history, there are more incidents where a case might be made for the relevance of religion in the post World War II time period.

I initially examined five textbooks and found that authors addressed Christianity in contemporary U. S. history. Because I wanted to further understand the role Christianity and the Religious Right play in American history, I read *With God on Our Side: The Rise of the Religious Right in America* (Martin 1996). In addition, I viewed a videotape series by the same author that is used on campus in a religion and U. S. history class. I also read numerous articles regarding religion, U. S. history and textbooks.

I began the analysis by examining passages that addressed Religion or Christianity in contemporary American history. I then coded the data and began to analyze them from various perspectives. Various themes began to emerge. For example when discussing the Religious Right and television evangelism, several textbooks limited their focus centering only on the political activity of these groups. Seldom did authors address the spiritual and religious aspects of these

groups. Hence, the category religion reduce to political issues evolved and slowly developed.

Pertinent excerpts were then coded and placed into appropriate categories. These were then compared and contrasted with the various textbooks. In addition, any evidence contrary to a particular category was noted and presented within the findings. Berkin, Brinkley, Carson, Cherny, Divine, Foner, Morris, Wheeler, and Wood (1995) and Boyer (1995) often provided exceptions to the various categories. For example while other textbooks examined separated private faith and public behavior, these two textbooks provide opportunities for students to see the relationship. Then relevant literature was added to help contrast or support each category.

These findings were interpreted attempting to link all categories to the original questions proposed. In this case, how do the findings of each category answer the questions What impressions do textbooks leave regarding Christianity in contemporary U. S. history? and Are these textbooks improving regarding their portrayal of Christianity? These question serve as the center for the interpretation.

The summary of this analysis describes the general thematic approaches used by textbooks to discuss Christianity and the Religious Right in contemporary U. S. history. It is neither my purpose to make a full assessment of the positives and negatives of each textbook cited nor to examine the portrayal of all religions mentioned in the selected textbooks. Rather my intention is to review the way textbooks create particular impressions regarding Christianity that students have the opportunity to learn. However, there are limitations.

Limitations of this Study

The major criticism of any content analysis is the acceptance of research based on the examination of textbook narratives removed from the context within which it is used. The analysis cannot assume that the knowledge represented in textbooks is actually taught and/or learned by students. We must acknowledge that student interaction with the textbook is never unmediated, but rather the various instructional practices and classroom relations control the context in which the textbook is read and interpreted. Teachers mediate and transform text material when they employ it in their classroom. In addition, students bring their own class, race, gender, and individual backgrounds, including religious beliefs, to the classroom which prevents us from assuming that they all learn exactly the same thing in the same class or from what they read in the same history textbook. However, Gilbert (1989) argues that

> the analysis of text can point to potential, even likely, outcomes in classroom use of text, but it can never conclude with confidence that the ideological import of a text as interpreted by the researcher will be similarly realized in the discourse of the classroom (p. 68).

Still, it is important to remember that textbooks are major factors that influence readers, the issues and topics discussed in class and the very questions raised in classroom discussions. Furthermore, textbooks play a key role in shaping decisions concerning curriculum. This multiple role of the textbook makes the text an important discursive framework in need of critical examination.

Findings

In this study, I found that conservative criticisms that American history textbooks erase Christianity from American history are inaccurate. Nine of the ten textbooks I examined include Christianity in the discussion of contemporary U. S. history (Divine 1994 is the only textbook silent on religion). Although textbooks differ in their portrayals of the role of Christianity in U. S. history and religion's role in human life, textbook authors are beginning to respond to conservative pressures.

The findings from this study are presented on a continuum. First, I address and criticize textbooks that provide readers with simplistic and inadequate portrayals of religion. Then I discuss textbooks that address the particular historical event and the role of Christianity in greater detail. Finally, I focus on textbooks that provide readers with a more in-depth understanding of the role of religion. The following categories and discussion illustrate the shortcomings and reveals any improvements.

The Relationship of Private Faith and Public Behavior

Often times, when textbooks mention religion, that is exactly what the authors do. They simply mention religion. But religion plays a significant role in our public and private lives. This category demonstrates the ways textbooks portray the influence of individual's faith on their public life. In particular, the manner in which textbooks portray President Carter's faith is addressed.

When it comes to the role of religion in American history, one can easy pretend that religion is only a matter of private taste with little relevance to public behavior. But any reading of history proves that we cannot simply avoid religion and faith. Religion and faith are always a part of U. S. history simply because these play a significant role in the motivations and actions of people. More important, "the history of the United States cannot be properly taught without frequent discussion of religious ideas, events, people, and themes" (Haynes, 1993, p. 256). Furthermore, such a neglect sends students the "patently false and dangerously misleading message that religions operate only on the margins of human life and are essentially irrelevant to human history and society" (Haynes, 1990, p. 277).

How is concept of religion significant to the discussion of U. S. history textbooks? Hunter (1991) argues that

politics is, in large part, an expression of culture (competing values and ideals and, often, interests based in values). At the heart of culture, though, is religion, or systems of faith. And at the heart of religion are its claims to truth about the world (p. 57).

Throughout history, individuals have been guided by their faith and religion where "faith is the source of our most deeply held ideals of right and wrong, good and bad, just and unjust" (Hunter, 1991, p. 58-59). Religion has such a powerful influence on American history and culture it is essential to include religion in the curriculum (Nord and Haynes, 1998). Furthermore, "without close attention to Protestant Christianity it is impossible to make sense of our past" (Smith, 1984, p. 554).

President Carter's Faith and Motivations

Regarding secondary U. S. history textbooks, authors address the relationship between religion and historical events in varying degrees. First, several textbooks make little effort to highlight the relationship between religions and historical events. Instead, religion is simply "tacked on" to the historical episode creating the impression that religion and faith have little to do with the development of U. S. history. Furthermore this "mentioning" process portrays religion as having little relevance to significant historical events and that religion should be understood as a private matter.

For example, textbooks address Jimmy Carter's Christian convictions and describe him as a born-again Baptist (DiBacco, 1997), a man of strong religious beliefs (Bragdon, 1992), a born-again Christian and a member of the Baptist church (Boorstin, 1996), a deeply religious man (Berkin, et al., 1995) and a man "who publicly affirmed his religious convictions" (Garraty, 1994). Despite making reference to Carter's religious beliefs, these specific textbooks never provide opportunities for students to make the essential connection between Carter's Christian faith and his political, social, and economic decisions and policies. The tendency of these textbooks is to use throwaway sentences that simply introduce and mention the idea of religion but fail to demonstrate or even hint at the relationship between private and public conduct and decision making. The degree to which religion shaped Carter's thoughts and actions is omitted.

Whatever the reason for making this reference to Carter's faith, there is little discussion regarding Carter's Christian beliefs and the implications to the presidency.[2] This is demonstrated by four textbooks when they discuss Carter's statement that he "would never lie to the U. S. public." Carter's claims of honesty are raised by authors but there is a limited attempt to inform readers about reasons why Carter may be honest. In addition, the relationship between Carter's Christian faith and character that underlies his personal conduct and, in turn, his political conduct is never suggested. In this particular example, the reason for Carter's honesty

could be twofold. It could be that Carter's honesty was rooted in his Christian beliefs or, as these textbooks argue, Carter's honesty was politically motivated in an attempt to change the negative image of government. Certainly it is possible that Carter's honesty was politically motivated in order to break free of Watergate, the Nixon administration and the overall distrust of government by the American people. However although both reasons for Carter's motivations are possible, these authors choose to dismiss any religious influences for his actions. The question that surfaces is should textbooks provide religious meaning to Carter's claim of honesty because they label Carter as a devoted religious man?

Other textbooks that move Carter's faith and religion outside the private and into the public sphere demonstrating the relationship between an individual's beliefs and actions. For example, Cayton (1995) addresses the private faith-public behavior relationship. The text states

Carter's deeply felt religious faith dominated his view of the world and led to considerable curiosity and questioning from reporters. He was a born-again Baptist who noted that his life had been "shaped by the church." He relied on the Bible and read it daily--often in Spanish to improve his skills with the language. His faith he believed would keep him from taking on "the same frame of mind that Nixon and Johnson did--lying, cheating, and distorting the truth (p. 786).

This excerpt alleviates the previous limitation by addressing how Carter's Christian faith served as the basis for his honesty because the textbook shows the relationship of Christian faith and personal character traits such as lying. But the authors end their discussion here. Even though the text states that "Carter's deeply religious faith dominated his view of the world," there is no attempt to explain how religious faith can shape the way Carter sees the world or how his view of the world directly impacts public policy and foreign affairs. The text excludes any significant or in-depth discussion regarding the possible ways that Christianity might play a role in shaping specific political decisions.

Textbooks by Berkin, et al., (1995) and Boyer (1995) move the discussion further than the previous textbooks by providing readers with a more complete account that introduces and highlights the relationship between Carter's religion and his role as president. Berkin, et al., (1995) writes

A deeply religious man, he rejected what he considered the amoral character of the Nixon-Kissinger foreign policy. Carter attempted to introduce moral principles to the conduct of world affairs and above all to make respect for human rights the cornerstone of American policy (p. 916).

The opportunity to understand the role religion plays in the development of Carter's foreign policy is provided for readers. By stating that Carter was a religious man and that he attempted to introduce moral principles into foreign policy, one can assume that most readers will make the inference that

these moral principles are based upon his religious convictions. Boyer (1995) directly addresses this concern when he states "[H]e promised never to lie to the American people and openly noted that he was a born-again Christian whose religious ethics strongly shaped his political actions. "You can't divorce religious beliefs and public service" (p. 911). Not only does this statement draw attention to the relationship between religion and public conduct but it provides teachers with opportunities to raise the important role religion plays in history and contemporary society.

Textbook authors can certainly choose to explain Carter's policies as president from strictly a political perspective without crediting them to religious inspiration. But as argued earlier, neglecting discussion of religion's role in American history gives students an incomplete picture and tells them that religion is irrelevant to politics, history and society. Furthermore by simply mentioning religion, textbooks do little in regards to providing students with an additional way of seeing and understanding history and the history individuals involved in making U. S. history. Although the textbooks examined may not present an extensive explanation of the complex relationship between Carter's religion and public behavior, two textbooks provide somewhat adequate discussions and this in turn provides opportunities for teachers to raise this important relationship with students, if they choose to do so.

While it is difficult to fully comprehend the relationship between one's religion, beliefs and their public behavior, the role that religion plays can and should still be addressed. If our goal as teachers and schools is to develop in our students an understanding of U. S. history, they must learn a good deal about religion. Furthermore, this discussion concerning religion and public behavior becomes vitally important as students in American history classrooms reflect on issues like the Clinton impeachment and address a cultural climate that argues that one's private life can be indeed separated with public life behavior and performance.

Religion Reduced to Political Issues

Textbooks not only fail to develop religion and faith as the basis for political actions, but the authors seldom discuss the underlying beliefs that form various groups' political agendas. The following discussion describes how textbooks treat politically active religious groups and ministries and how the underlying beliefs of these groups are often dismissed by textbooks.

It is important to recognize that when textbooks are written, "whatever stories the historian chooses to tell are open to various interpretations; they are understood differently from within different world views" (Nord, 1995, p. 142). It is often the case that when addressing Christianity, most contemporary historians use secular categories to construct their narratives, ignoring or excluding religious considerations. "But surely a liberally educated person ought to know that there are claims for religious meaning in his-

tory that a secular approach cannot convey" (Nord and Haynes, 1998, p.80). Often textbooks present historical events as being separate from any religious connection or influence. When religion is addressed, it "is almost always presented as a political or social entity, rarely as an intellectual or moral force with individual and public consequences" (Sewall 1995a, p. 16). Because the political perspective is the only view presented by the textbook, readers are encouraged to consider religion as strictly a political force not a system of belief that directly informs and influences historical events.

The Religious Right and Political Issues

Some textbooks make little effort to discuss the underlying beliefs that various political positions are built upon. The Religious Right serves as a striking example of how textbooks portray the relationship between religion and politics. For example, Cayton (1995) discusses the Religious Right's concern for restoring Christian values to society with the following excerpt

Some groups in the conservative movement wanted to restore what they considered Christian values to society. They objected to attitudes and ways of behaving that had become more widely accepted in the 1970's, including sexual freedom, legalized abortion, "Women's Lib," some forms of rock music, and the movement for gay and lesbian rights (p. 811).

Although a relatively accurate portrayal of the political positions of the Religious Right, the text reduces the Christian faith and values to purely objections to legalized abortion, women's rights, rock music and gay rights. From a limited political perspective, this description is correct but the deeper underlying religious beliefs that deal with issues of life, death and lifestyles are ignored. For the Religious Right, these political positions are not their Christian values or beliefs but rather these positions are rooted in an interpretation of Christian Biblical scriptures. When Scripture is applied to contemporary society, the results emerge as the political positions of the Religious Right. Readers are given the impression that political positions are the same as the Christian values or possibly the actual Christian values. What is missing here is the religious significance embedded in these political positions.

Furthermore, the Religious Right are not the only individuals who espouse these views. There are others within American society that would favor these political positions and quite possibly base their views on a completely different religious, ideological, or belief system. By interpreting the Christian conservative movement from exclusively a political perspective, textbooks fail to provide readers with the underlying religious beliefs that are the basis for these political positions. Yet we know that religion and faith are always a part of U. S. history since these play a significant role in the motivations and actions of people. The actions of individuals and groups throughout history were guided

by their faith, religion, belief systems or interests, and it is necessary to understand these presuppositions in order to develop a complex understanding of American history.

Television Evangelism, Religion and Political Issues

A more prominent example of reducing religion to political issues and avoiding basic beliefs that support the views is how textbook authors deal with television evangelism. Seven out of the ten textbooks surveyed at least mention contemporary televangelists—including Billy Graham (although most textbooks limit discussion to Falwell and the Religious Right). For example, Cayton (1995) provides a photograph of Jimmy Swaggert, Bible in hand with the following caption: "Jimmy Swaggert, known for his charismatic preaching, was one of several Christian evangelists who used television to promote the conservative agenda" (811). The text further elaborates under the heading Conservatives Find Effective Tactics. "In the format that became know as televangelism, they appealed to viewers to contribute money to their campaign against sin. Televangelists delivered fervent sermons on specific political issues and used money they raised to back candidates" (Cayton, 1995, p. 811-812). Certainly there is some truth and accuracy in this account. Televangelists often use the pulpit to address political issues. Furthermore, their followers financially back particular candidates through organizations such as the Moral Majority. Some even misuse their funds. But there is more to television evangelism than money, politics and scandals. The author chooses "to tell the story from a secular rather than a religious frame of reference; he is telling us that what is important, indeed what is true, is a sequence of secular, political events with no obvious religious significance" (Nord, 1995, p. 143). There is no effort to explore the religious dynamic of televangelism.

From this limited viewpoint, televangelism is reduced to simply a tactic to promote the conservative political agenda and televangelists are individuals who "launch a moral crusade for conservative values and against such issues as the Equal Right Amendment, sex education in public schools, pornography, and drugs (Bragdon, 1992, p. 1045). These authors clearly ignore the spiritual or religious perspective of most televangelism, which is the conversion of individuals to Christianity and helping Christians mature in their faith. This limited focus on the political and the omission of the religious aspects of Christian evangelism prevents readers from moving beyond the political viewpoint of religion. It hinders students from grasping the more complex understanding of the purposes of evangelism and the impact religion has on individuals' lives, public behavior, and the political life of the country. By implication, the foremost purpose of televangelism is political activism, thereby reducing faith and religion to politics.

Identifying the Role Religion Plays in Politics

There are several textbooks that expand their coverage and provide readers with evidence that indicates the basis for these political positions. Nash (1997) writes

By the middle of the 1970s, as many as 70 million Americans identified themselves as born-again. . . Like conservatives, they were morally opposed to drugs, pornography, and abortion. They firmly rejected liberal social policies and strongly favored free enterprise and a foreign policy backed up by a strong military. . . Through Reagan, the evangelicals believed, biblical principles could become law (Nash, 1997, p. 857).

Nash continues the emphasis on the political aspects of historical events. However, there is some evidence that suggests that there are underlying beliefs that guide these political stances. The text states, "the evangelicals believed, biblical principles could become law." This provides an opportunity for both students and teachers to question and develop the idea that beliefs, ideologies, and values are embedded in laws and policies and that these serve particular interests and need to be revealed and analyzed.

Despite this statement, the text does little to develop the basis of the beliefs of 70 million Americans who, as Nash states, identified themselves as born-again. Because the text claims that there are 70 million born-again Christians in the United States, it seems reasonable that the author would provide some space for the discussion of why and how these political positions were developed and how they apply to the political sphere.

Berkin, et al., (1995) do a better job of portraying the Religious Right by providing students with some historical background. The textbook incorporates the spiritual aspect of evangelism by introducing Billy Graham's main goal to spread the Christian message and gain converts. The account goes on to discuss how Christian revivalism became tied to a strong social and cultural conservatism and how many evangelical leaders were becoming active in political as well as religious matters. The text states that "some evangelical Christians (including Carter) used their faith to justify commitments to social justice and peace" (Berkin, et al., p. 971). The authors put forth the idea that there is a link between religious beliefs and political causes. The text discusses how Christianity became tied to conservative political groups and how organizations like the Moral Majority evolved. In addition, authors continue by listing the conservative causes that the Moral Majority and other evangelical organizations promoted.

Certainly when textbooks address the New Right and Moral Majority, the political positions should be addressed. But without ever developing the basis for these positions, it limits the impact of faith and religion on the development of these positions. More important, students possibly learn that all of history should be interpreted only with a political perspective because this is predominantly what they experience as they read and work with most of their U. S. history textbooks.

Vague and Inadequate Explanation Regarding Religion

When textbooks only provide the political perspective and omit possible religious viewpoints, students develop a

limited understanding of historical events. The student's ability to develop complex understandings of history is further hindered when textbooks provide insufficient explanations of religion and the explanations are unquestionably accepted as truth.

Textbooks can be thought of "as collection of statements that make authoritative knowledge claims" (Cherryholmes, 1988, p. 51). The text presents meanings and conclusions as fixed, complete, and beyond criticism. Knowledge, concepts, and ideas that are often abstract and problematic are treated as concrete, real, and easily understood. It is often the case that textbooks fail to provide adequate information regarding certain theological concepts or authors make authoritative knowledge claims that are beyond questioning. This makes it nearly impossible for students to evaluate textbook claims. Instead, readers assume that the textbook is true and that it corresponds with the way things are. What impressions are created for readers if textbooks provide inadequate definitions and explanation of religion and theological concepts?

First, some textbooks create a perception that religion is anti-modern. For example, Garraty (1994) writes "He [Carter] symbolized the reawakening of an American religious spirit, especially among conservative Protestants. Despite radical movements and unprecedented scientific breakthroughs, the tide of popular religion had continued to rise" (p. 1107). By implication, the authors put forth the idea that Christians (conservative Protestants) are profoundly anti-modern and that their faith and beliefs are incompatible with science and radical movements. The text makes an authoritative knowledge claim where the meaning is fixed and presented as fact. Based on this statement, it is possible that readers will infer that people who hold to a conservative Protestant faith are individuals who fail to understand or even intellectually consider the role science and technology play in the development of knowledge and understanding. Not only is specific information omitted regarding which radical movements and unprecedented scientific breakthroughs, but also religion is never presented as a motivating intellectual force in a scientific world. Furthermore, what are these radical movements and unprecedented scientific breakthroughs that conservative Protestants have dismissed? Why are these radical movements and unprecedented scientific breakthroughs incompatible with Christianity? In this case, the reader is given "the false impression that religion is something that used to matter a long time ago but no longer makes much difference in the lives of modern people" (Nord and Haynes, 1998, p. 90). More important, the impression created by this excerpt could possibly develop in readers new stereotypes or reinforce commonly held stereotypes such as Christians are anti-intellectuals who oppose science and modernity and cling to an irrational faith

These vague and inadequate explanations continue when two textbooks address televangelism, link the ministries to political issues, and begin to introduce the scandals of the 1980s. Bragdon (1992) and Garraty (1994) devote space to present the televangelism scandals of Bakker and Swaggart. Garraty (1994) writes

> The Reverend Jimmy Swaggart, for example, was said to have more than 2 million followers. (In the 1980s, however, some of the most popular of these preachers would be convicted of misusing money they had collected. Others would be exposed for committing scandalous personal behavior. By 1990, the movement would experience a decline) (p. 1107).

Overall, the coverage of televangelism is limited and the inadequate information possibly misleads students. The excerpt creates an impression that suggests that there was a lot of scandalous behavior and that this is a common occurrence for religious broadcasting. Although there were scandals with Jimmy Swaggart and Jim Bakker's PTL ministry, the text possibly leads students to believe that there are "others" or possibly many leaders of television ministries that committed scandalous personal behavior.

Furthermore, the textbook suggests that "the movement" experienced a decline. This was the case for Swaggart's television ministry, but Christianity in the U. S. certainly was not stalled out but rather emerge through different groups and movements. Although, beliefs and perspectives of leaders for equality and civil rights for minorities are often developed and explained in the context of the political sphere, televangelism is reduced to political activity and scandals. The underlying beliefs and how these play out in the world of politics is seldom addressed.

Textbooks and Theological Concepts

This leads to the issue of how textbooks handle complex theological issues. For example, seven textbooks introduce the term "born-again Christian" to describe President Carter's faith and to provide background for the religious right. These textbooks use the term in the following manner: a "born-again" Christian and member of the Baptist church (Boorstin, 1996, p. 881); these "born-again" Americans spread the experience, publicly and privately (Garraty, 1994, p. 1107); a "born-again" Baptist (DiBacco, 1997, p. 606); a 'born-again" Baptist, who noted his life had been "shaped in the church" (Cayton, 1995, p.786); a born-again Christian whose religious ethics strongly shaped his political actions (Boyer, 1995, p. 911); and when President Carter proclaimed himself "born-again" he spotlighted a major trend in American culture (Nash, 1997, p. 857). In addition, several authors provide readers with estimated numbers of Born-again Christian in American. DiBacco (1997) writes "In 1963 about one-fourth of Americans described themselves as "born-again" Christians. By 1980 that percentage had almost doubled" (p. 621). Also, Nash (1997) claims that by the mid 1970s, there were 70 millions Americans who claimed to be Born-again Christians.

Certainly the introduction of the term born-again by authors is important in order to develop Carter's religious

background. Although it seems essential to at least define the term, most textbooks never provide a definition or discussion regarding what actually is a born-again Christian. Although it is common for these textbooks to define, either by way of the glossary or in context, concepts like fascism, feminism, human rights, nihilism, liberation theology, neoconservatism, and capitalism, just to name a few, only one of these textbooks allocates space to the definition of born-again Christian. Berkin, et al., (1995) defines born-again Christians: "born-again Christians—people who had experienced a conversion and formed what they called a direct personal relationship with Jesus Christ" (p. 971). When textbooks omit an explanation, definition or some additional discussion regarding the meaning of the theological term born-again, authors leave students to draw upon their own experiences to assign meaning to the term. As we know, student experiences at times may be limited and composed of stereotypes and misinformation.

Another theological term that is introduced by textbooks but also is often inadequately define is fundamentalism. The term fundamentalism is very complex and is loaded with preconceived ideas. Even within the Christian community, fundamentalism has multiple and complex meanings. When textbooks use fundamentalism, most authors either fail to adequately define fundamentalism or remain simplistic in the definition they do provide. For example, Boyer (1995) defines the moral majority as "a fundamentalist Christian organization founded in 1978." The use of the term is not accompanied by neither a definition nor an explanation of the concept of fundamentalism. Readers are left to fill in the missing information regarding what is Christian fundamentalism and what might be the basic beliefs of a fundamentalist Christian organization. Oftentimes, this missing information is supplied with students' preconceived ideas of fundamentalist Christians. The same textbook uses the term fundamentalism in an earlier discussion when addressing the assassination of Sadat. "In 1981, members of an Islamic fundamentalist group within the Egyptian army assassinated Sadat while he was reviewing a military parade" (p. 916). If students have no knowledge of how to define Christian fundamentalism, they might believe that all fundamentalists resort to forms of terrorism.

At times, textbooks attempt to define fundamentalism. Garraty (1994) states "fundamentalists believed that the King James translation of the Bible was God's truth. They took its words literally" (p. 868). Although the text raises an important point regarding fundamentalism, the definition is flawed. First, the sweeping claim that all fundamentalists believe the King James Bible is God's truth is simply inaccurate. Second, the text simplifies Biblical interpretation by limiting it to the literal translation of the scriptures. Again, few Christians accept the entire Bible in a completely literal sense, and the main issue for fundamentalists is the inerrancy of the Bible or the infallibility of Scriptures. Because textbook publishers are under considerable and constant pressure to include more information in their books, particular theological terms are often mentioned but seldom developed in any detail (Apple and Christian-Smith, 1991). With an eye toward inclusion, many of the textbooks briefly summarize complex theology which render the passages on religion difficult to understand (Sewall 1995a).

The Language of Textbooks

An important point when discussing textbooks is the language that authors use when discussing particular historical episodes and the impressions that it creates upon readers. Axtell (1987) states

> Most of the words and terms we use in history and everyday speech are like mental depth charges. When heard or read, they quickly sink into our consciousness and explode, sending of cognitive shrapnel in all directions. On the surface they may look harmless enough, or resemble something equally benign. But as they descend and detonate, their resonant power is unleashed, showering our understanding with fragments of accumulated meaning and association (p. 10).

More important, textbooks are framed in a form that is associated with neutral objectivity which leads students, and many teachers, to trust textbooks believing that they are true and objective, especially since they have obtained scholarly and governmental stamps of approval.

Often authors portray religion as old fashion; this might convey the impression that religion is something useful in the past but not in the present. Nash (1997) describes what the religious right wanted from Reagan by using the phrase "to restore the old fashion virtues of the heartland"(p. 857). Boorstin (1996) implicitly selects the term "old" when the text states "while some people were turning away from old values, Fundamentalists spoke out for them" (p. 765).

In American culture the term "old" or "old-fashioned" conveys a negative image that downplays the importance of traditional or conservative perspectives. The phrase "old fashioned virtues" puts forth the impression that the values and beliefs of Christians, especially the Christian Right, are out-of-date and useless in a progressive modern information society. The overall impression is that present-day knowledge and perspectives prove more valuable than traditional wisdom of the past and that only Fundamentalists would support the dead hand of tradition.

Discussion

There are many arguments that can be developed regarding reasons for how and why religion is portrayed in textbooks. However, one of the most convincing is made by Nord (1995) who argues that these are "secular textbooks; they are written by secular intellectuals and published by secular publishers, both of whom are committed to spreading secular ways of understanding the world" (Nord, 1995, p. 157). He continues by pointing out that "religion is often

written off by scholars as respectable pursuits and most scholars never set foot on holy ground. Indeed, secular ways of thinking are so deeply embedded in the academic disciplines that religious alternatives cannot be taken seriously" (Nord, 1995, p. 158). Furthermore, textbook authors' understanding of the discipline limits the arguments and leaves no room for a religious perspective.

Nevertheless, the textbooks of the 1990s have increased the amount of space devoted to the discussion of Christianity in contemporary U. S. history. Also, there is evidence that several textbooks (Berkin, et al.,1995, and Boyer, 1995), at times, improved their portrayal of the role of Christianity in contemporary U. S. history. Despite this improvement, the majority of textbooks' discussion of Christianity in contemporary American history still has shortcomings. These include a failure to demonstrate the relationship of faith and religion to individual motivation and actions; providing inadequate explanations of important terms which distort students' understanding of Christianity and related issues; and using language that contains negative connotations when describing Christianity. All of these limitations provide an inaccurate and incomplete picture of Christianity and further support the acquisition that the most textbooks still do not take religion seriously. This prompts me to make several suggestions for publishers and teachers.

Suggestions

Most textbooks pay little attention to what many educators throughout the United States acknowledge, that is that the history of our country cannot be properly taught without detailed and frequent discussion of religious ideas, events, and themes. As stated by Romanowski and Talbert (2000), religion is found embedded in the

> motivations for exploration, for persecution as well as peace-making, and for political actions. Rather than fearing a religious presence in our schools, we need to reach out and embrace the religious dimensions of history and thereby enrich our understanding of humankind (p. 136)

The majority of students who read these books quite possibly never understand the role religion has played in both the public and private lives of people.

Currently, growing numbers of educators throughout the United States recognize that the study of religion in social studies , literature and other area is an essential part of a complete education. Haynes (1991) argues that

> teaching about religion is important and necessary if public schools are to provide students with a complete education. Much of history , art, music, literature, and contemporary life is unintelligible without an understanding of the major religious ideas and influences that have shaped history and culture throughout the world (p. 1).

As we know, religion is already a part of history. It is interwoven into the actions and motivations of individuals throughout history, and it is vital to study in order to gain a more comprehensive understanding of American history. Rather than fearing a religious presence in our school, teachers and publishers need to reach out and embrace the religious dimensions of history which, in turn, enriches students' understandings of historical events (Romanowski and Talbert, 2000). However, if the majority of U. S. history textbooks shortchange or omit the role of religion in American history, so will most teachers.

Suggestions for Publishers

Textbooks publishers need to continue to improve both the breadth and depth of their coverage of the role of religion in U. S. history, especially focusing on religion as the basis for the motivations and actions of people. Textbooks could possibly develop more fully the role of religion with the use of chapter summary exercises, discussion questions, and other thinking activities. In addition, publishers could provide teachers with primary sources and supplemental readings that introduce students to the role religion plays in individual lives and how this shapes and influences the political, social, and economic aspects of our country.

Suggestions for Teachers

Teachers must become knowledgeable about the role religion has played in American society and begin to find meaningful ways to integrate this knowledge into social studies classrooms. Romanowski and Talbert (2000) suggest several ways that teachers can use this knowledge. These include;

· to identify historical time periods or movement where religious influences are key factors and use documents that communicate to students an understanding of the role and influences of religion on American history and culture

· to provide students with opportunities to analyze the underpinning beliefs supporting the political and social positions of major religious groups in order to enable students to develop an understanding of how religious beliefs shape political and social life.

· to critically question the place of religion in American life and how religion and faith have shaped American culture and daily life.

· to examine the faith and beliefs of individuals in U. S. history and how these influenced their actions and decisions (pp. 136-137).

This will require teachers to locate sources outside the textbook that provide these opportunities. These include the use of multiple readings, preferably primary sources, that introduce students to more than the political aspects of history and offer a religious or spiritual perspective. This would

encourage students to critically think about the many possible interpretations and perspectives of American history that are often outside their classroom textbook.

But teachers should not limit the development of this type of critical thinking to religion. Rather, teachers need to provide opportunities for students to develop an understanding that a textbook's interpretation of an event is not value-free but only one of the many possible perspectives. Therefore teachers need to teach students the meaning of a "frame of reference" and be capable of uncovering the various perspectives that play a major role in deciding, selecting, and organizing the information that makes up their American history textbooks. Loewen (1995) suggests that teachers challenge textbook doctrine and deal with textbooks in a more critical manner by putting five questions to work:

1. Why was a particular event written about?

2. Whose viewpoint is presented, whose omitted and whose interests are served?

3. Is the account believable?

4. Is the account backed up by other sources?

5. How is one suppose to feel about the America that has been presented?

These questions will provide opportunities for students to become conscious of the many ways of looking at the world. Until then, they are passive victims of the meanings imposed by textbooks.

Finally, teacher education programs and college history departments must began to take religion and faith seriously. Teacher education program should offer students a course on religion and education (Nord and Haynes, 1998). The course content should address the role religion plays in human life, in particular its present and historical role in education and should comprehensively address church and state issues, a concept misunderstood by numerous educators. In addition, history departments should offer courses in religion and American history that provide future teachers with frameworks that can be used to understand the relationship of religion to their particular subjects and disciplines (Nord and Haynes 1998).

In closing, the inclusion of the role of religion into the American history classroom will certainly not solve the many problems in public education. Depending on how the study about religion takes place, it can however serve as a stimulant for intellectual and moral thought regarding what is important in life and how our beliefs shape our life, relationships, and our public and private actions. As educators reflect upon these ideas, they will discover more possibilities about how curriculum can provide social and intellectual experiences for students to use in constructing a moral sense of purpose to guide their live—but this can be accomplished only when schools are willing to engage the religious dimensions of life.

Endnotes

[1] The U. S. history textbooks surveyed included: Carol Berkin., Alan Brinkley, Clayborne Carson, Robert Cherny, Robert Divine, Eric Foner, Jeffery Morris, Arthur Wheeler, and Leonard Wood, *American Voices*. Glenview, IL: Scott Foresman and Company, 1995; Daniel Boorstin, and Brooks Kelley, *A History of the United States*. Upper Saddle River, NJ: Prentice Hall, 1996; Paul Boyer, *Todd and Curti's the American Nation*. Orlando, FL: Holt, Rinehart, and Winston, 1995; Henry Bragdon, Samuel McCutchen, and Donald Ritchie, *History of a Free Nation*. Westerville, OH: Glencoe/Macmillian/McGraw-Hill, 1992; Andrew Cayton, Elisabeth Perry, and Allan Winkler, *America: Pathways to the Present*. Englewood, Cliffs, NJ: Prentice Hall, 1995; Thomas DiBacco, Lorna Mason, and Christian Appy, *History of the United States*. Evanston, IL: McDougal Littell, 1997; Robert Divine, T. H. Breen, George Fredrickson, and Hal Williams, *America: The People and the Dream*. Glenview, IL: Scott Foresman and Company, 1994; James W. Davidson and Mark H. Lytle, *The United States: A History of the Republic*. Englewood Cliffs, NJ, 1990; John Garraty, *The Story of America*. Orlando, FL: Holt, Rinehart, and Winston, 1994; Gary Nash, *American Odyssey: The United States in the Twentieth Century*. New York: Glencoe/McGraw-Hill, 1997.

[2] An important note to make is that even though many other presidents such as Nixon (Quaker roots), Reagan, and Clinton have claimed to be men of faith and religion, these textbooks never mention a personal religion when addressing these other presidents. Only Carter is described in detail regarding his religious claims.

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A Comparative Analysis of the Academic Performances of Elementary Education Preprofessionals, as Disclosed by Four Methods of Assessment

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Abstract

Concentrating on a sample from an elementary education department of a state university, this study compared these students' mean departmental score on the Total SAT I with the mean total SAT I score of the national population, as well as the mean Total SAT I score of the national population of their area of certification. Also, comparisons were made between the sample's mean scores obtained on each of the three PRAXIS II sections, and the mean scores of the national population. Then, correlations were made among the sample's Total SAT I mean score, QPA, Measurements, Assessment and Evaluation course grade, and mean scores on each of the three PRAXIS II sections, resulting in 15 significant correlations. Results indicate that the sample's Total SAT I mean score is significantly lower than that of the national population. With respect to the Communication Skills mean score of the PRAXIS II, this sample scored significantly below its respective national population. On the General Knowledge Skills section of the PRAXIS II, the sample's mean score is significantly lower than that of its respective national populations. Regarding the mean score obtained on the Principles of Learning and Teaching Skills section of the PRAXIS II, there is no significant difference between the mean score of the elementary education department sample and that of its national population.

Introduction

For the past three decades, America's public system of education has been the target of an accelerating barrage of criticism, which continues in its momentum. For example, Governor Bush of Texas declared that "American education is in a recession." Moreover, such criticism is resounded in a pungent cadre of books (e.g., *The Schools We Need and Why We Don't Have Them; The Conspiracy of Ignorance: The Failure of American Public Schools*; *Left Back: A Century of Failed School Reforms*, etc.), unified in its depiction of an entrapment of the public schools in a vortex of ineptness.

The failure of the ambitious "President's Committee's America 2000" vow that the students of our nation would lead their international peers in mathematics and science achievement by the beginning of the 21st Century, as reported by the Third International Mathematics and Science Study (TIMSS), has heightened the public's criticism of its schools. Hence, the Glenn Commission's report "Before It's Too Late: A Report to the Nation from the National Commission on Mathematics and Science Teaching for the 21st Century" cites pronounced deficiencies in the preparation of America's teachers, echoing the NCATE suggestion of a partial reliance on national tests for gauging and subsequently improving the professional preparation of our future teachers (Basinger, 2000).

In response, this study is a diagnostic effort to determine the academic strengths and weaknesses of both the stu-
dents and the certification program of an eastern state university's elementary education department. Hopefully, such a diagnosis will result in an enhancement of academic performance, as well as program quality in other elementary education departments.

Subjects

The subjects were those elementary education majors who had taken at least one part of the PRAXIS II between October 1, 1998, and September 30, 1999, and whose SAT I scores are on file within the University, an eastern public and comprehensive university with an enrollment of approximately 7800.

Methodology

Academic performance was assessed according to students' mean: Total SAT I score; quality point average (QPA); PRAXIS II scores; and grade obtained in the Measurement and Assessment course. These three areas were selected because performance in each is either a direct or indirect prerequisite criterion for teacher certification. Moreover, significant relationships have been disclosed between the SAT I and PRAXIS scores of preprofessionals (Latham, Gitomer, and Ziomek,1999), and between SAT I scores and grade point averages (Bridgeman, 1999).

Additionally, the study compared the sample's mean departmental score on the Total SAT I with the mean total

SAT I score of the national population. Also, correlations were calculated between each of the sample's three mean PRAXIS II scores and those of the national population. Then, correlations were computed among the departmental: Total SAT I mean score; QPA; Measurement and Assessment course grade; mean scores on each of the three PRAXIS II sections.

As prerequisite for inclusion in the study, certain predetermined documentation had to have been available for each student. Specifically, the student must have taken at least one part of the PRAXIS II between October 1, 1998, and September 30, 1999, and have his/her SAT scores on file within the University. Since this university does not have the SAT scores for all of its students, e.g., transfer students, such students were excluded from the study, thus decreasing the sample size. Furthermore, sample sizes decreased when the three sections of the PRAXIS II were factored into a correlation, thus effecting change in both the means and the standard deviations.

SAT I—Results

The Total SAT I mean score of the elementary education sample is 898 (SD = 137), while the Total of the national population is 1017 (SD = 209). A *t*-test, computed to determine the presence of a significant difference between two mean scores, disclosed a significant difference (t = -8.24, p < .01), thus concluding that the Total mean score of the elementary education sample was significantly lower than that of the national sample (see Table 1). This, however, is not unusual in that there is a tendency for elementary education majors to score comparatively lower on the SAT I than most other majors (ETS, 1999a). In efforts to position the sample's national standing on the Total SAT I, a z-score was computed. The computed z-score of B0.569 indicates that, on average, a member of this sample is approximately at the 28th percentile of the national population (see Table 2).

Table 1
Descriptive Statistics for Departmental SAT I Score

Department/Sample	M	SD	t
Elementary Education	898	137	-8.24**

** p < .01, two tailed

Table 2
Descriptive Statistics for Departmental SAT I Relative Standing

Department/Sample	z-score	Percentile Rank
Elementary Education	-0.569	28th

PRAXIS II—Results

Communication Skills. As depicted in Table 3, comparative statistical analyses were performed to determine the pres-

ence of a significant difference between the elementary education sample's mean Communication Skills achievement score (n = 51) and that of the national population (N = 32,987). The Mean Communication Skills achievement score for members of the elementary education sample is 655.57 (SD = 6.75), while the mean national score is 659.80 (SD = 10). A z-test revealed a significant difference (z = -3.02; p < .01) between the two means, thus disclosing that the mean Communication Skills achievement score of the elementary education sample is significantly lower than the national mean score. Moreover, a z-score was computed to determine the elementary education sample's national standing on the PRAXIS II: Communications Skills. The result of the computation is a -0.423, indicating that, on average, a member of this sample is approximately at the 33rd percentile of the national population (see Table 4).

General Knowledge. As depicted in Table 3, comparative statistical analyses were performed to determine the presence of a significant difference between the elementary education sample's mean General Knowledge achievement score (n = 51) and that of the national population (N = 34,744). The mean general knowledge achievement score for the SRU elementary education sample is 653.22 (SD = 7.35), while the mean national score is 657.00 (SD = 10.40). A z-test revealed a significant difference (z = -2.59; p < .01) between the two means, thus disclosing that the mean General Knowledge achievement score of the elementary education sample is significantly lower than the mean score of the national population. Moreover, a z-score was computed to determine the elementary education sample's national standing on the PRAXIS II: General Knowledge. The result of the computation is a -0.360, indicating that, on average, a member of the elementary education sample is approximately at the 36th percentile of the national population (see Table 4).

Principles of Learning and Teaching Grades K - 6. As depicted in Table 3, comparative statistical analyses were performed to determine the presence of a significant difference between the elementary education sample's Principles of Learning and Teaching Grades K–6 mean achievement score (n = 51) and that of the national population (N = 21,064). The mean Principles of Learning and Teaching Grades K–6 achievement score for of the elementary education sample is 171.61 (SD = 8.57), while the mean national score is 171.80 (SD = 12.20). A *z*-test did not reveal a significant difference (z = -0.192; p > .05) between the two means, thus disclosing that the mean Principles of Learning and Teaching Grades K–6 achievement score of the elementary education sample is not significantly lower than the mean score of the national population. Moreover, a z-score was computed to determine the elementary education sample's national standing on the PRAXIS II: Principles of Learning and Teaching Grades K–6. The result of the computation is a -0.02, indicating that, on average, a member of the elementary education sample is approximately at the 49th percentile of the national population (see Table 4).

Table 3
Descriptive Statistics for PRAXIS II Test Results

Test Type	M	SD$_{sample}$	z-test
Communications Skills	655.57	6.75	-3.02**
General Knowledge Skills Scores	653.22	7.35	-2.59**
Principles of Learning & Teaching	171.61	8.57	-0.19

** $p < .01$, two tailed
 * $p < .05$, two tailed

Table 4
Relative Standing for PRAXIS II Test Results

Test Type	z-score	Percentile Rank
Communications Skills Relative Standings	-0.423	33rd
General Knowledge Relative Standings	-0.360	36th
Principles of Learning & Teaching Skills	-0.020	49th

Relationships Among the Total SAT I, QPA, Measurement, Assessment and Evaluation Course Grade, and the Three PRAXIS II Sections

This analysis measured the strength and directions of correlations among the Total SAT I mean score; mean QPA; Measurement and Assessment mean course grade; and mean scores on each of the three PRAXIS II sections (see Table 5). Interestingly, significant positive relationships were found among each of the six assessment variables.

The mean Total SAT I score of this sample is 898 (SD = 137) and the mean QPA for the sample is 3.245 (SD = .309), thus resulting in a significant positive relationship, r = .44, n = 51, p < .01, two tails. This correlation is virtually identical to the .44 correlation that Bridgeman, et al., (1999) found between the mean Total SAT I scores and freshman grade point averages within institutions of higher learning whose freshman (N = 48,039) obtained a mean Total SAT I score that was below 1049. Again, the mean Total SAT I score for the elementary sample is 898, which is definitely below the 1049 specified by Bridgeman and his associates (1999). Moreover, the correlations between the mean Total SAT I

Table 5
Intercorrelations Among the Six Areas of Departmental Academic Assessments

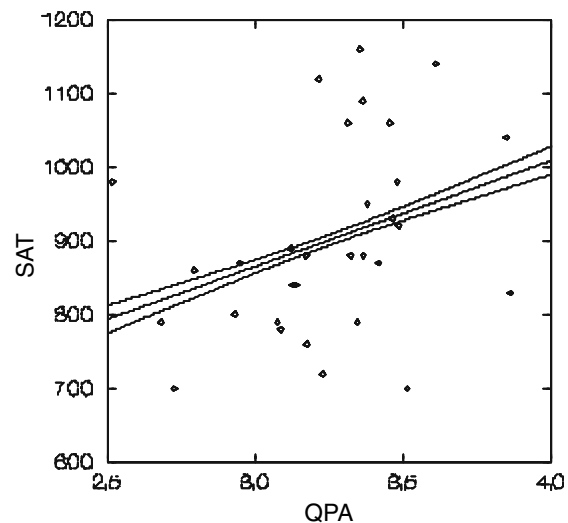| Subscale	1	2	3	4	5	6
Sample (n = 51)						
1. Communication Skills	—	.34**	.47**	.57**	.43**	.52**
2. Ed. Measurements Grade		—	.32*	.34**	.65**	.52**
3. General Knowledge			—	.52**	.36**	.68**
Principles of L & T Skills				—	.35**	.47**
QPA					—	.44**
SAT I						—

** $p < .01$, two tailed
 * $p < .05$, two tailed

Figure 1. Relationship Between the Elementary Education Total SAT I and QPA

score and each of the PRAXIS II sections were significantly positive (see Figure 1), thus concurring with the findings of Latham, et al., (1999).

As reflected in Table 5, all of the correlations were significantly and positively related, even though the three PRAXIS II sections, the QPA, and the Measurements and Assessment course grade are assessments of achievement, while the Total SAT I may be considered a measure of prediction. Hence, in this case, there seems to be a significantly positive relationship between measured potential and achievement (see Figure 2).
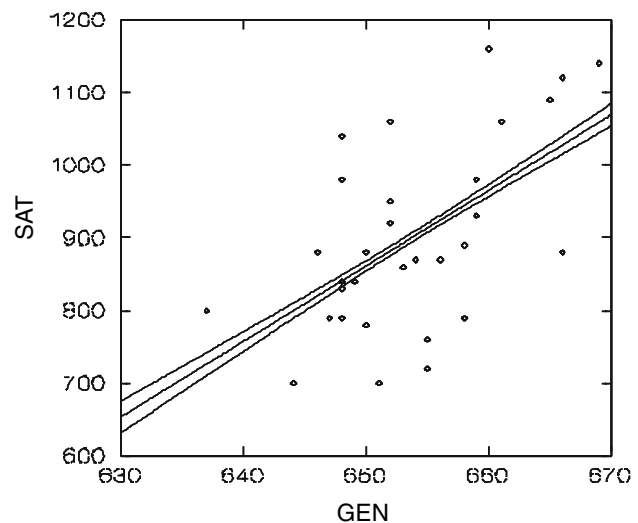

Figure 2. Relationship Between the Elementary Education Total SAT I and the PRAXIS II: General Knowledge

The mean grade obtained by the elementary education sample in the Measurement and Assessment course is 2.471 (SD = 0.784), and the mean Total SAT I score for this sample is 898 (SD = 137), thus resulting in a significant correlation, r = .52, n = 51, p < .01, two tails (see Figure 3). Moreover, this .52 correlation exceeds even the SAT I predictive valid-

ity coefficient of .44 provided by Bridgeman, et al., (1999) in their meticulous report to the College Board. Additionally, the mean Measurement and Assessment course grade and the mean QPA of the elementary sample are also significantly related, $r = .65$, $n = 51$, $p < .01$, two tails. However, it should be understood that this high correlation of .65 reflects a relationship involving the sample's University QPA rather than the Department QPA, which is considerably higher. Nonetheless, the elementary education sample's mean grade in the Measurement and Assessment course is significantly and positively related to each of the three mean PRAXIS II scores, thus demonstrating a significant association with each area of assessment included in the study. Hence, in light of these significant relationships, it is difficult to understand the reasoning underlying maneuvers to replace such courses with those that are virtually qualitative and alternatively-oriented in their approach to assessment.
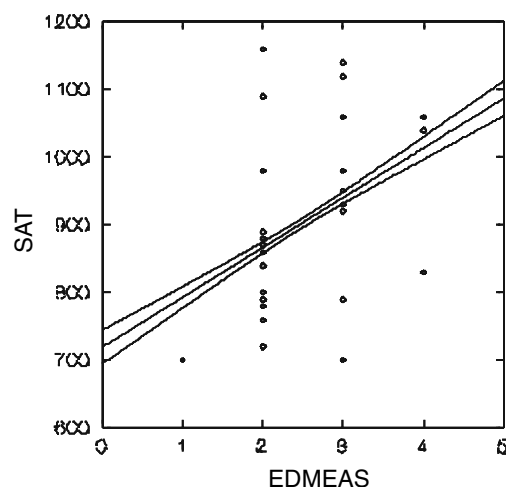

Figure 3. Relationship Between the Elementary Education Total SAT I and the Departmental Measurement, & Assessment and Evaluation Course Grade

Summary and Discussion

Total SAT I mean score of the elementary education sample is significantly lower than that of the national population. Additionally, a z-score indicates that, on average, an elementary subject is approximately at the 28th percentile of the national population. Nevertheless, there are significant correlations among all of the variables within the elementary education sample, resulting in 15 significant correlations. Thus, significant correlations are present among and between all standardized measures of assessment (SAT I, General Knowledge, Communications Skills, and Principles of Learning and Teaching Skills) and instructor-determined assessments (university QPA and Measurement and Assessment course grade). Such correlations also indicate a significant relationship between predicted and obtained academic achievement.

It appears that the reported significances between standardized measures of academic aptitude and achievement indicate a need for inter-program comparisons, in that such juxtapositions provide a comparative baseline for assessing the strengths and weaknesses of professional preparatory programs. Moreover, including midpoint components such as the mean Measurements and Assessments course grade and the university QPA, as suggested by the recent NCATE 2000 Unit Standards (NCATE, 2000), allows for a comparison between standardized and instructor-determined assessments, thus presenting a rough estimate of the concurrent validities of the assessment components. Additionally, computing departmental effect sizes not only discloses a department's relative standing within its commensurate national population, but it also illuminates the meaningfulness of the required scores for state licensure, as demonstrated by the minimal PRAXIS II scores required for licensure in the state in which this study was conducted. Specifically, the required 646 for the Communication Skills section places an individual in the 8.38th percentile; the mandatory score of 644 for the General Knowledge section positions the examinee in the 10.56th percentile; and the minimal 167 for the Principles of Teaching and Learning Skills demands that the preprofessional rank only in the 36th percentile. Such cutoff scores are, by no means, unreasonably high.

It is the opinion here that virtually any education department would do well to examine the relationship among its students' performances: (1) on standardized measures of academic aptitude and achievement (2) on standardized and instructor-determined assessments; (3) as compared to their respective national populations.

Nevertheless, the question remains as to whether there is a relationship between academic achievement and effective teaching. Some researchers indicate that there is (Gross, 1999; Ravitch, 2000; Hirsch, 1996). Yet, there are those who insist that good grades and high standardized test scores do not necessarily make for effective teaching, continuing that there are many poor teachers who have high grades and high standardized test scores. This is true to some extent, but low grades certainly do not guarantee successful teaching! Hence, the probality factor demands that school systems first consider those preprofessionals with higher grades and higher scores on their licensure examinations.

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