Higher Order Thinking Skills in Editing and Preparing Teaching Materials

Daniel De La Rosa

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Texas A&M University

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The purpose of this article is to explain the higher order thinking skills used in preparing and editing teaching materials for 3rd grade English language learners. My role was to classify and edit questions used in teacher scripts for Project ELLA. Project ELLA was a four year longitudinal study to teach vocabulary to English language learners using a variety of books. The students began in kindergarten, and their progress has been tracked through third grade, with the goal being success in expanding their vocabulary. Each script was comprised of a week's worth of work, each using its own book, and its own vocabulary. According to research by Tim Blair, "As students' vocabulary grows their ability to comprehend what they read grows also; furthermore, as their comprehension capabilities grow so do their abilities to learn the meaning of new words from context" (Blair, Heilman, & Rupley, 2002). The main component of my job was the usage of the Taxonomy of Educational Objectives, or just Bloom's Taxonomy. I believe that using Bloom's Taxonomy allowed us to guide the students into higher order thinking, and at the same time provided structure to the teacher scripts we were working on.

Blooms Taxonomy is a tool used to classify "different objectives and skills that educators set for students" (Taxonomy n.d.). This was developed by Benjamin Bloom in 1956 and it has been used to set standards in the types of questions educators ask. The taxonomy itself is divided into 3 domains; affective, psychomotor, and cognitive. The work I did focused mainly on the cognitive domain, which itself is divided into a six-level hierarchy. The first level is knowledge, which is "the behavior expected of a student in a recall situation" (Bloom, 1956). Comprehension is when the student can recount the basic material that is taught to them and

make use of the knowledge they acquired. Application is the "rule to apply something that requires "comprehension" of the material, theory, principle, or abstraction applied" (1956). Analysis is the "breakdown of material into its constituent parts and detection of the relationships of the parts and of the way they are organized" (1956). Synthesis is when students put together material and parts to form a whole. Finally is evaluation, which is "making judgments about the value, for some purpose of ideas, works, solutions, methods, material, etc." (1956). In order to keep this task simple we paired them, leaving us with three categories (knowledge/comprehension, application/analysis, and evaluation/synthesis). The goal was to ensure that the children got the instruction that enabled them to think in a higher order process. Lorin Anderson, a Professor in the Department of Educational Leadership and Policies at the University of South Carolina said, "However in 1963 Bloom himself referred to the Analysis, Synthesis, and Evaluation levels of the Taxonomy as involving "higher mental processes" (1994). Now the challenging part would be restructuring the given questions into higher order, and making sure all project requirements are met.

I would begin by going through the unrevised teacher script once and selecting all the questions asked, but would exclude all questions regarding vocabulary words because they didn't require much thinking. Once all questions are gathered they are classified and counted. Once we had a total, there were several calculations that needed to be made in order to have the students achieve higher order thinking. Every script we worked on had its own set of questions. We required a certain percentage goal for each category pair. We needed 40% of the questions to be "knowledge/comprehension", 35% to be "application/analysis", and 25% to be "synthesis/evaluation". We would take the total number of questions asked from within the script and divide them by our expected percentage. This was decided by Dr. Beverly Irby as she

stated in a phone interview, “I looked at the literature and at our desired outcome percentages. Now we wanted to form and control the student’s outcome from outcome backwards to practice,” (B. Irby, personal communication, June 11, 2008). While this was the goal for all of our scripts, I had to revise the questions to fit the calculations. According to research done by Bloom “frequently as much as 90% of the instructional time was spent at this level, with very little time spent on the higher mental processes that would enable students to apply their knowledge creatively,” (1956). This is the situation that we had to work with. Our unrevised scripts usually consisted of 9 to 11 questions, with the majority being “knowledge/comprehension” type questions. I used a diagram from an educational website, which had various examples of the different types of questions that fit in with each category. I would rephrase questions to make sure all percentage requirements were met. For the excess “knowledge/comprehension” questions, I would usually keep the concept of the question, and restructure them to make them higher order. The final versions of the scripts would either have the perfect percentages or they would be off by one question. This process as a whole was not time consuming at all, and it was rewarding to know I did my part in helping English language learners become literate. Aside from the script, there would also be daily writing activities, daily vocabulary reviews, a weekly writing prompt, and a weekly assessment to ensure that the vocabulary was used and understood. With this type of vocabulary instruction, literacy is possible.

Project ELLA was an effective program because it involved pre-planned planning, the students learning process monitored closely with frequent assessments, and it determined what would be done daily throughout the entire week. According to Bloom, “teaching methods which emphasize efficient one-way communication (e.g., lectures) are more useful in helping students

acquire lower-order objectives, while those which emphasize two-way communication either among students themselves (e.g., cooperative learning) or between students and teachers (e.g., discussion) are most useful in helping students achieve higher order objectives," (1956). The scripts allowed there to be dialogue between teachers and students, while at the same time; the students were asked higher level questions. With the help of Bloom's Taxonomy, I was able to make sure the students had the opportunity to think beyond their capabilities and make sure that the script met its requirements. While Bloom does have his critics, he has had a "strong effect on evaluation and a minimal influence on curriculum," (Marzano, 2007). This makes sense because I would evaluate all the questions after they were planned, not prior to the planning. The goal now is to use this kind of program in more locations to ensure that all English language learners learn vocabulary in a structured setting, while at the same time getting exposed to higher level questions.

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