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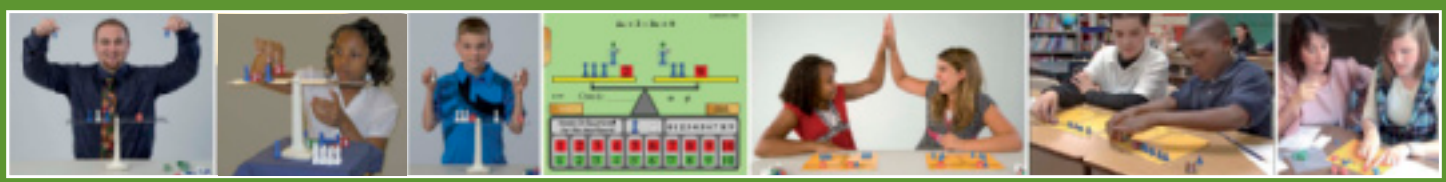

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Conrado L. Gómez and Terri L. Kurz

Using Bloom's Taxonomy with English Language Learners

English language learners (ELLs) at the preproduction phase, or initial phase, of language proficiency have limited oral English language skills; however, they do not lack cognitive abilities (de Jong and Harper 2005). On the contrary, most ELLs possess previous language and academic experiences. They can understand and articulate through nonverbal means (such as by drawing pictures) much more than they can demonstrate through speaking. Because many teachers may not fully understand the relationship between cognitive ability and language proficiency, they fail to challenge ELLs with higher-level activities (de Jong and Derrick-Mescua 2003).

To demonstrate how teachers can plan and conduct instruction that focuses on higher-level-thinking skills, a group of twenty-three teachers received instruction in the phases of language proficiency (Brown 1973) that are supported by Bloom's taxonomy (Bloom 1956). Initially, the group received guidance on how to recognize the language skills that ELLs possess at different phases of proficiency (see **table 1**).

After the teachers demonstrated a working knowledge of these phases (Brown 1973), they were asked to design mathematics activities for ELLs at the five different phases of language proficiency. The intent was to help teachers recognize differences in the activities that target each phase. After designing their five mathematics items, teachers were asked to determine the level of Bloom's taxonomy for each item. **Table 2** depicts the distribution of items as related to this taxonomy.

A pattern was prevalent; it showed that ELLs at the preproduction stage were almost exclusively asked to conduct activities at Bloom's recall level, as predicted by de Jong and Harper (2005). Conversely, ELLs at the intermediate fluency and advanced fluency stages were assigned higher-level activities. The results as well as discussions indicated that teachers believed they needed to wait until ELLs had at least an intermediate

Edited by **Hamp Sherard**, hamp.sherard@furman.edu, Furman University, Greenville, SC 29613. This department explores a single, well-developed idea comprising a few pages only. Send submissions to this department by accessing **mtms.msubmit.net**.

level of language proficiency before asking questions that promote critical thinking. However, although it is possible to reduce the linguistic demands of students while still encouraging deeper thinking (Echevarría, Vogt, and Short 2008), it requires teachers to consciously plan and incorporate meaningful activities.

It is crucial that teachers present activities strategically to reduce the linguistic demands that would be made on students at the preproduction level. Teachers need to provide plenty of contextual clues to connect words with objects, pictures or illustrations, and movement. Furthermore, effective ELL teachers speak at standard speed; use gestures, movement, and facial expressions; use shorter, simpler sentences; employ *realia* (replicas of the actual object or item being discussed), modeling, wait time, and a total physical response; and bring into play a slew of techniques to make

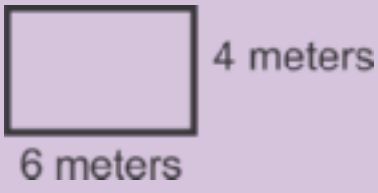
Table 1 These language levels provide guidance on how to pinpoint skills that an English language learner might possess (Brown 1973).

Stages of Language Proficiency	Student Language Abilities
Preproduction	Points to objects, acts, nods, or uses gestures; says yes or no; speaks with hesitation
Early production	Produces one- or two-word phrases; answers with yes or no; uses short repetitive language patterns
Speech emergence	Engages in basic dialogue; uses three or more words and short phrases; responds using simple sentences
Intermediate fluency	Uses complex statements; states opinions and original thoughts; asks questions; interacts in more lengthy conversations; asks for clarification
Advanced fluency	Able to use content area vocabulary; converses fluently; understands classroom experiences; argues and defends perspectives; makes sense of print across various sources; writes organized and fluent essays; expands cultural and background knowledge

Table 2 After designing lessons for ELLs at each phase of language development, the teachers associated the lessons with various levels of Bloom's taxonomy.

Phases of Language Acquisition	Taxonomy Levels of Educational Objectives					
	Recall	Comprehension	Application	Analysis	Synthesis	Evaluation
Preproduction	XXXXX XXXXX XXXXX XXX	X	X			
Early production	XXXX	XXXXX XXXXX XXXXX	X	X		
Speech emergence	XX	XXXX XXXX	XXX XXXX	XXXXX	X	
Intermediate fluency			XXXX XXXX	XXX XXX	XXXX XXXXX	
Advanced fluency			X	XXXXX	XXXXX	XXXXX XXXXX

Fig. 1 This figure was developed to support this recall question: What is the area of this shape?



instruction comprehensible. These effective ELL strategies, along with modifications made to each activity, increase the chances of success for these students.

With these ideas in mind, teachers were asked to redesign the item for the preproduction phase at the recall level and move it along Bloom's continuum. They designed five activities, one per level. An area example follows, revealing how teachers moved the item through Bloom's taxonomy for ELLs at the preproduction level (see **fig. 1**).

The original activity was at the recall level. The teachers presented a diagram and a question and asked students:

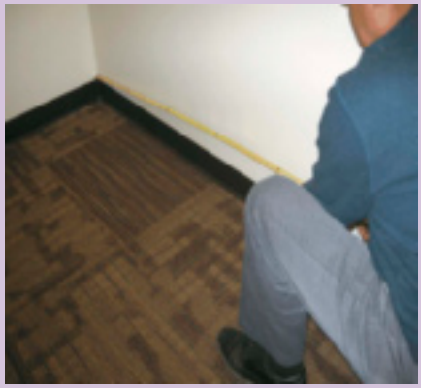
> What is the area of a rectangle measuring 4 feet by 6 feet?

After the discussion, the teachers decided to change the units to meters, since this unit of measurement would probably be more relevant to ELLs. This subtle adjustment allowed ELLs to work with measurements they were probably more familiar with. (This accommodation permeates the other described activities, as well.)

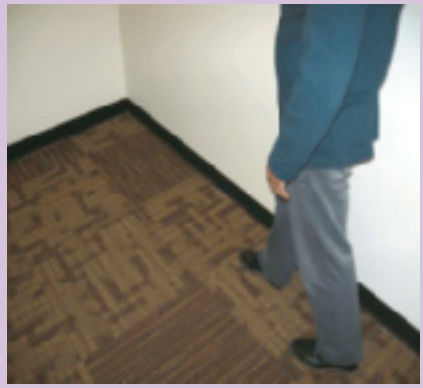
To address comprehension, the teachers asked the ELLs to investigate different problems of area using different units. These questions were asked:

- What is the area of a floor measuring 20 meters by 16.5 meters?
- What is the area of a countertop measuring 515 centimeters by 323 centimeters?

Fig. 2 Using different units of measure to determine the area of the room is an activity at the synthesis stage of Blooms taxonomy.



(a)
Measuring tape: A standard unit of measure



(b)
Footsteps: A nonstandard unit of measure

The teachers indicated that this activity would reduce the need to understand language by using visuals (such as the floor and a countertop) to help ELLs examine area.

To tackle relating this knowledge to a real-world application, teachers created another problem involving tile.

> A square meter of floor tile costs about $8.50 (including tax). How much would it cost to tile a floor measuring 4 meters by 6 meters?

This mathematical idea set in a real-world context allowed ELLs to connect to the mathematics at hand.

To relate analysis, the teachers developed an activity asking the ELLs to determine how many different floors can be created with an area of 48 square meters. Square flats were suggested to support the activity because they provided a way to support communication of ideas and solutions without the need to verbalize extensively. To solve the problem, ELLs were able to create the different floors and model them for the teacher.

To focus on synthesis, the teachers decided to give ELLs a real ceramic tile and asked them to determine how many tiles would be needed to cover the classroom floor.

> If tiles cost $2.00 each, how much would all the tiles cost? If you were a contractor bidding the job of tiling the classroom (supplies and labor), how much would you charge?

The realia used in this example provided the ELLs with a context to apply the mathematics, reducing dependence on language to understand and explain the activity.

To evaluate the students, the teacher asked them to assess the effectiveness and mathematical accuracy of two methods of determining the area of a room. The students were given two photographs. In the first (see **fig. 2a**), a person is finding the dimensions of a room using a measuring tape marked in feet and inches. **Figure 2b** shows a person using footsteps instead of the standard measurement for feet to find the dimensions. The ELLs were asked

to find the area of their classroom using both methods, compare the two methods, and decide which method was more accurate and why.

This study indicated that it was possible for teachers to adjust and expand mathematical activities to better meet the needs of ELLs by progressing through Bloom's taxonomy. Since it was not a natural progression, it must be addressed to help teachers recognize the limitations they are putting on ELLs. Teachers fail to recognize that students who lack language knowledge are still capable of cognitively appropriate activities that allow them to explore mathematical ideas.

It takes conscientious curriculum planning to go beyond English language capabilities and design activities that progress to deeper knowledge (Echevarría, Vogt, and Short 2008). The activities described can address this problem and allow teachers to guide ELLs beyond the level of recall by making simple adjustments to the mathematical activities. In so doing, these activities will allow ELLs to achieve at a more significant level.

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Conrado L. Gómez, conrado.gomez@asu.edu, teaches Structured English Immersion courses at Arizona State University's Polytechnic campus in Mesa. His main interest is in incorporating the use of manipulatives as well as hands-on experiences so as to make content comprehensible for English language learners. **Terri L. Kurz,** terri.kurz@asu.edu, teaches mathematics methodology at Arizona State University.