

Texas Math Sign Language Dictionary

(a note from Johnett Scogin, TSD, August 6, 2008)

Description:

The Texas Math Sign Language Dictionary (TMSLD) project was created as a resource for parents and professionals working to support deaf and hard-of-hearing children in a variety of educational settings across the state of Texas.

Teams of content area teachers and curriculum specialists developed a core list of academic terms necessary for progress in the Texas state curriculum (Texas Essential Knowledge and Skills). These teams worked to identify signs that most accurately represented the academic terms, and to create short, student-friendly explanations for them.

The content area teams were responsible for creating the explanations and determining how they would be signed in ASL. A deaf education teacher who is an expert in Signing Exact English (SEE) assisted with the SEE sign selections. A variety of fluent sign models performed for the actual film clips available on the website.

Rationale:

It is a well-known fact that the size and complexity of a child's vocabulary has a direct correlation to his or her success in school (Baumann, Kame'enui, and Ash, 2003). Children who complete grade two with the lowest vocabularies tend to be the same children who have the most difficulty at grade five and beyond (Biemiller, 2004). The achievement gap for students often continues to widen, since in order to read, understand, and learn from more challenging texts, children's knowledge, language, and vocabulary must expand as well (Chall, Snow, *et al.*, 1982).

There are a variety of reasons why a child may not enter school with a strong vocabulary. Research indicates that a child's early environment can have a huge effect on language development (Hart and Risley, 1995). Many children also come to school learning English as a second language and, unless specifically addressed, this can make it more difficult for bilingual children to attain the same skills with academic language as their English-only peers (Marzano and Pickering, 2005).

For a child born deaf or hard of hearing, these difficulties are often multiplied. Deaf and hard of hearing children typically don't perform as well as their hearing peers on measures of language or achievement (Traxler, 2000). Deaf children who have full access to language from an early age are more likely to perform successfully in academic tasks (Ritter-Brinton and Stewart, 1992), but even children with rich vocabularies and varied background experiences may still have gaps in their academic language that need to be filled in.

Building Academic Vocabulary

The idea for this project owes much to the work of Robert Marzano and Debra Pickering, whose book, Building Academic Vocabulary: A Teacher's Guide (©2005, ASCD) outlines a recommended process for identifying a common list of terms to be taught at certain times in a child's educational career in a variety of content areas. To the extent appropriate, we have followed Marzano and Pickering's recommendations in planning to create our own academic vocabulary list based on the Texas state curriculum, the Texas Essential Knowledge and Skills (TEKS). (For a complete listing of the TEKS, go to: <http://www.tea.state.tx.us/teks>.)

While we intend to expand the TMSLD Project to other content areas, the committee began the process with Mathematics. Each core content area of the TEKS is in the process of realignment and revision. Mathematics was the first area to complete this review process, and the revised Mathematics TEKS have been in place in Texas classrooms since the fall of 2007. In addition, math textbook adoptions were recently completed for all grade levels (Elementary in 2007-08; Secondary in 2006-07), making this content area one that will remain unchanged for several years to come.

The Process

A committee of qualified math educators was chosen who had knowledge of the TEKS at a variety of grade levels. These teachers used a variety of resources to select terms they deemed of critical importance at their grade level or grade span.

Some of the resources included:

- Mathematics TEKS documents
- General academic vocabulary lists provided by Marzano and Pickering
- Various other academic word lists developed by Texas school districts and Education Service Centers
- Mathematics textbooks currently in use at TSD
- Math TAKS resources including released tests and TAKS information booklets

The teachers examined each of these lists and documents and were asked to rank-order terms by level of importance. Words that were assigned the highest levels of priority were the ones selected for each grade list. The committee reviewed the lists to ensure that the terms were not repeated, that they spiraled in difficulty, and that they accurately reflected grade level standards.

To be sure, other words not chosen for the final list are still important concepts. The teachers were asked to judge based on two questions:

- Is this a word the child is expected to know and use at this grade level?
- Does a child need to understand this word in order to achieve grade level expectations and expand learning at higher grade levels?

It became important to make this distinction because many of the terms on the lists were words or concepts that the teacher might need to know, but might not be necessary for the

child to use. In other cases words that didn't appear in any of the resources seemed so important for basic understanding that they were added to our final core vocabulary lists.

After the words were selected and agreed upon, teachers created a short "kid-friendly" explanation that could be used to introduce each term. These explanations were not to be written as "dictionary definitions", but rather in language that a parent or teacher might use the first time a word was taught. Again, teachers used a variety of quality resources, including textbook glossaries, educational websites, and their own vast experience to create these explanations. The current TMSLD website only displays a select few of these "kid-friendly" explanations and we hope to add more in the future.

It is important for parents and educators to remember that these explanations are to serve as starting points for understanding, and not as representations of everything a child might need to know about a word. These academic terms are so central to instruction that the child will encounter them over and over, and each experience will provide a little more information about the full "meaning" of the word. For more information about why using child-friendly language is so important to vocabulary development, see Marzano and Pickering Chapter 3 (pp. 14-38) and [Bringing Words to Life: Robust Vocabulary Instruction](#) (©2002, Beck, McKeown, and Kucan) Chapter 3 (pp. 31-46).

The Signs

The committee of teachers chosen to work on this project included both Deaf and hearing teachers, all of whom are fluent users of ASL. However, even native ASL signers are not born knowing the signs for highly technical vocabulary used in specific content areas. Again, a variety of resources and websites were employed to check the validity of the signs chosen. Where there was no sign known to be in common use, fingerspelling was used.

Each teacher used a laptop computer with a built-in webcam to create "rough draft" videos of each term and explanation signed in ASL. These videos were used by the sign models who signed them for the website.

A similar process was used for the SEE signs. The SEE signs are labeled according to their source. Signs labeled "SEE Book" are taken from [Signing Exact English](#), (G.Gustason and E. Zawolkow, 1993, Modern Signs Press, La Alamos, CA, www.modernsignspress.com). Most of the SEE signs in this dictionary are taken from this book and this was the preferred source. Signs labeled "Local" were taken from a database of SEE signs collected by Region XIII staff from a number of SEE programs in Texas. For more information on this database contact Holly Norman-Warren, Austin, Texas, holly.warren-norman@esc13.txed.net.

Using TMSLD. Project Materials:

Materials posted on the TMSLD website are available for use by teachers and other

interested parties to use. Users are encouraged to be creative in their use of the project materials, however, here a few suggested uses or activities:

- Search the website for individual terms as needed when studying or completing homework.
- Download several files. Have children practice writing the terms as they play them.
- Download individual video files to embed in other software files such as PowerPoint or Keynote.
- After viewing a video file, have the child write a simple definition in his or her own words.