

Supporting EAL students in maths

Some students from refugee backgrounds have had little or no previous schooling, or have had significant interruptions to their learning. Because mathematics builds on previous learning, a student who has had disrupted schooling may have missed key concepts.

Even if their education has been consistent, students who are learning English as an Additional Language (EAL) may find it challenging to develop their maths skills while simultaneously learning English. Maths topics may have been taught in a different order from the Australian curriculum and different methods of teaching may have been used. Students accustomed to a formal classroom approach, with an emphasis on memorising facts, may have difficulties adjusting to the more informal Australian classroom, which focuses more on learning through discussion, activities and paired or group work.

Particularly in the earlier years of schooling, English is used extensively in exploring mathematics. It is important for students from EAL backgrounds to be supported both to understand the general English used in maths classrooms as well as the specific mathematical vocabulary. Some aspects of English used in mathematics can be confusing for EAL students. Here are some examples:

- Words used in maths may sound the same as other words but have a different meaning, for instance, sum and some.
- Words may have different meaning in general use and specific mathematical use, for instance; difference, even, mean. It is important to understand the context of the word.
- English has spelling and usage irregularities. For example four and forty or the use of 'half' when other fraction denominators use numbers such as 'sixth and seventh'.
- Many countries use the comma rather than the full-stop to denote the decimal point.
- The language used to describe mathematical signs, such as + and = can vary. For example, 'equal' can also be said as 'total', 'is', 'are', 'will be' or 'gives'.
- Abbreviations, such as those used in measurement (cm, m, km, mL, L), may not be familiar.

Despite these issues, maths can be a positive experience for EAL students. As maths is not as language-dependent as other areas of the curriculum, it can provide opportunities for success while their English language skills are still developing. Working one-to-one or in small groups with a tutor can enhance students' engagement with and enjoyment of mathematics.

Tutor strategies

Clarify the English language used

Allow the student sufficient time to read and understand maths problems. Provide opportunities for the student to ask questions and clarify any terms they do not understand. It can be useful to compile a list of difficult English words together and discuss their meanings. Be sure to check the student understands as they may not feel confident to ask questions.

Create opportunities for success

Always start off with something the student can do, so they experience success. As you get to know the student, you may be able to make use of their cultural experiences to make maths relevant for them. When working through maths problems, you can use examples that relate to their interests and strengths. Where possible, give students the opportunity to show their knowledge in ways that do not require language, for example, demonstrating visually or by moving objects.

Using the real-life context of life in Australia can be useful for EAL students, but make sure you are not creating additional difficulties by introducing culturally unfamiliar terms or concepts.

Break questions down

Break problems into their component parts.

Allow time to talk about the vocabulary, both general and mathematics-specific. Clarify any language that is confusing.

Use different ways to explain and solve problems

If the student is having difficulty understanding, try another way of explaining.

There may be more than one method for solving a maths problem and students may have learnt a different method in their previous schooling. If you are using different methods, ensure you communicate with your coordinator / the teacher.

Teach the concept, not just the steps

If the student has their textbook, make use of that to explain new concepts. A maths dictionary can also be useful. If the student has missed some schooling, you may need to go back and revise concepts taught earlier in the curriculum.

Incorporating use of EAL students' first language has been shown to make maths more accessible for EAL learners. Asking the student, "What is the word for this in your language?" may help them to understand the concept. Grouping students with other speakers from their language may support their learning. Try using an interactive activity to help students explore a topic together. For instance, students can write or draw what they already know about a topic on butchers' paper, discussing in their first language, then in English.

Use visual aids

Students may benefit from visual aids or demonstration using objects. A physical model of the concept may be useful. Have a chart or sheet with the key terms and link to visual resources during sessions.

Use games and make it fun

There are many maths games available to help engage students. Card games introduce an element of competition that can be highly motivating. The Victorian Education Department website has a range of games and activities that can be downloaded free or used on the computer.

Build the information gradually.

Don't overwhelm the student. Limit the number of new concepts introduced at one time and move from concrete to abstract. Go back and revise concepts if needed.

Seeking help

If you are not confident with maths, seek help. Talk to your coordinator. They may be able to make contact with the student's maths teacher to gain a better understanding of specific requirements. With more senior levels, support what is taught by the teacher, using the textbook.

Tutors play an important role in supporting EAL students to develop their skills in mathematics. Students will have different strengths, interests and knowledge from their cultural background that you can harness to help learning. Supporting the student's development of mathematical English will assist them to participate more fully in maths into the future.

Always talk to your coordinator if you need further support or information.

Resources

There are many resources that can be used to assist with maths. Your homework club may have a range of games and activities. Some may also have access to online tutoring services which can assist with specific issues. Local libraries and schools can also be good sources of information.

Some useful websites are listed below.

Mathematical Association Victoria

Resources, information and support. If your organisation is a member, MAV has a wide range of maths activities and resources, both free and for purchase.

<http://www.mav.vic.edu.au/>

Victorian Department of Education and Training

Languages and Multicultural Education Resource Centre

<http://www.education.vic.gov.au/school/teachers/support/pages/lmerc.aspx>

Information on maths curriculum including ideas for activities and games.

<http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/pages/mathcontin.aspx>

Issues for EAL students learning maths, suggested strategies.

http://www.acara.edu.au/verve/_resources/EALD_Learning_Area_Annotations_Maths_Revised_February_2014.pdf