

TEACH THE
AUSTRALIAN CURRICULUM:
MATHEMATICS
WITH THE **Wii**

Engage Your F-8 Students
through Gaming Technology



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Changing Our Collective Outlook

“It’s okay if maths isn’t your best subject. I was never any good at it either. ...”

A parent intends to comfort her child. Perhaps you have heard something like this before. A student struggles to the point of frustration in mathematics, but is not handed the tools to achieve academic success. Rather, failure is chalked up to a perceived genetic predisposition and a defeated attitude becomes the convenient coping mechanism. Parents aren’t the only guilty party in this case. Many teachers have been known to make similar remarks. How we follow up these statements is what shapes the learner and their disposition, isn’t it?

I was never any good at it either until ...

... my teacher taught me a different way to think about fractions.

... my mum helped me to understand how division is used in real life.

... I figured out that I was only working a process and not truly thinking about the numbers. Multiplication doesn't have to be confusing; it's just a faster way of adding over and over again.

Content and Proficiency Strands

Australia’s mathematics curriculum defines what students should understand and be able to do in their study of maths, and is designed in such a way that the students’ mathematical aptitude is developed throughout their schooling and becomes increasingly refined. In order to evaluate student understanding of maths, we ask teachers to assess what students understand. Thus the question, “What does mathematical understanding look like?” comes to the forefront of educators’ minds. Students need to justify why a particular mathematical statement is true, or determine from where a mathematical rule or procedure might come. While some students may be able to solve a problem procedurally, many struggle with a response if asked why procedures work. Students who can explain a procedure understand the mathematics in greater depth, and may have a better opportunity to succeed at a related, but less-familiar task. Mathematical understanding and procedural skill are both important, and each can be assessed as students engage in lesson sparks.

The Australian Curriculum: Mathematics is based on three content strands and four proficiency strands. These content strands – Number and Algebra; Measurement and Geometry; and Statistics and Probability – describe the learning areas to be taught.

The proficiency strands describe how content is explored or developed in classrooms. “They provide the language to build in the developmental aspects of the learning of mathematics and have been incorporated into the content descriptions of the three content strands” (<http://www.australiancurriculum.edu.au/mathematics/content-structure>). These proficiency strands are Understanding, Fluency, Problem Solving, and Reasoning.

The content and proficiency strands are explained in this chapter. These have appear on the Australian Curriculum’s website, and can be found at: [www.australiancurriculum.edu.au /mathematics/Organisation](http://www.australiancurriculum.edu.au/mathematics/Organisation).

Which Wii Game?

The lesson sparks for F.1–5.3 use Wii Sports and Wii Sports Resort. In addition to these games, the lesson sparks for Year 1–3 and Year 6–8 use the Wii Fit Plus or Wii Fit U. As shown in Table 4.1, the lesson sparks suggested for Early Secondary students (ages 12–14 or higher-performing younger students) call for Wii Sports Resort and Wii Fit only.

At the time of revising the Wii Fit U is the latest version of Wii Fit, and is only compatible with the Wii U. The previous version, Wii Fit Plus, is compatible with both the Wii and the Wii U consoles, however, it has limited availability in Australia. Please note that two games mentioned in this book, Tightrope Walk and Penguin Slide, appear only on the Wii Fit Plus (not Wii Fit U).

TABLE 4.1 Which Wii Game You'll Need by Year

Game	Early Primary		Mid-Late Primary				Early Secondary		
	F	1	2	3	4	5	6	7	8
Wii Sports	✓	✓	✓	✓	✓	✓			
Wii Sports Resort	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wii Fit Plus/Wii Fit U		✓	✓	✓			✓	✓	✓

What Gear?

Table 4.2 shows the basic gear you will need for the lesson sparks. When playing multiplayer games, you will need additional controllers. Note that although it is possible to play Wii Sports and Wii Fit Plus with a standard Wii controller, the MotionPlus controller is required to play Wii Sports Resort. You will need at least two MotionPlus controllers to support multiplayer games. Chapter 5

3.4

Heads Up – Soccer

Game Used

Wii Fit U/Wii Fit Plus Balance Games: Soccer Heading

Australian Curriculum: Mathematics

Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems (ACMNA053).

Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation (ACMNA055).

Description of Lesson/Activities

Students alternate generating scores by heading the ball. As players take their turns, have the spectators record the scores as addition equations. For example, Player A scores ___ and Player B scores ___, so $__ + __ = ?$ After students find the sum of two scores, ask them to find the difference. As students work, ask them questions such as, “If you rounded the two scores to the nearest 100, what would be their sum (or difference)?” or “Is that score closer to 0, 500 or 1000?” or “What would I need to add to that number to get a sum of 1000?” Ask students to share their strategies for solving the problems.

Year 4 Lesson Sparks (Ages 9–10)

4.1

Wii Control Our Multiplying

Game Used

Wii Sports Baseball (Training): Swing Control

Australian Curriculum: Mathematics

Recall multiplication facts up to 10×10 and related division facts (ACMNA075).

Year 7 Lesson Sparks (Ages 12–13 and GT Ages 9 and Up)

7.1

Wii Tilt into Improper Fractions

Game Used

Wii Fit U/Wii Fit Plus Training Plus: Tilt City

Australian Curriculum: Mathematics

Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153).

Description of Lesson/Activities

Divide the class into three teams and assign each team a colour (yellow, red or blue). Tell students that for the remainder of class this is their team colour and encourage them to cheer for their team. Have a student volunteer demonstrate the game, and draw students' attention to the large marbles that fall during the round. Students will determine what fraction of marbles are scored for a given colour. Provide each student with materials to write with and select a student to play the first round. While this student plays, the class should tally how many large marbles matching their colour appear and, of those marbles, how many the player scores. (Note: There are five large marbles for each round in the Beginner level. The colour of these marbles, however, is random.) After the end of the first round, have students each determine the fraction of marbles scored for their given colour. Have a new student play a second round while the class keeps score. After students rewrite the new score as a fraction, ask the class to add the fractions from both rounds together to determine the fraction for both rounds combined. To provide an additional challenge, have students play at a more difficult level. While students play, ask the class, "What would the fraction look like if the player scored all of the marbles for a given colour? None of the marbles?"

Allocate Monies from a Supplemental Budget

Does your school sponsor a book fair or other fundraiser? Do you have input on what purchases are made through the school's technology budget? Is there funding for instructional materials? While cash flow to purchase materials and technologies is likely to be limited, those making budget decisions consistently look for purchases that will have the greatest effect in the school. Presenting a new technology tool such as the Wii, with the impact it could have on supporting instruction in a wide number of classrooms throughout the building, may be just the kind of investment they are seeking.

Inquire about Corporate Donations

Companies like to donate to schools. It is an easy way for them to demonstrate their support of education and it creates great public relations for the company. Corporate interest in philanthropic endeavours can certainly benefit you and your school. Why not seek out a donation of a Wii console from a local business, especially one that has an employee with a student at your school? View the company's charity policies online or visit the office and speak to a representative or store manager about donations and what steps you may need to take to get going on the right path.

Apply for a Grant

There are so many opportunities for writing grants. Some companies hold an annual grant competition to encourage educators who are excited about what they do and who bring unique learning opportunities into their classroom. These companies focus resources on education programs and partnerships, especially in the science, technology, engineering and mathematics (STEM) areas. Supporting STEM initiatives is critical for their business and for national competitiveness, so they embrace programs that they think will help build a diverse employee pipeline.

APPENDIX

A

Correlation of Wii Lesson Sparks and The Australian Curriculum: Mathematics

The correlation between the Australian Curriculum: Mathematics and the 44 lesson sparks in this book are summarised in Tables A.1–A.9.

TABLE A.1 Correlation of Lesson Sparks Foundation level and
The Australian Curriculum: Mathematics

Year Level	Content Description	Lesson Sparks
Foundation	Number and Algebra – Number and place value	
	Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond (ACMNA002)	F.1
	Compare, order and make correspondences between collections, initially to 20, and explain reasoning (ACMNA289)	F.3
	Measurement and Geometry – Location and transformation	
	Describe position and movement (ACMMG10)	F.2