Getting integrated real-world mathematics ideas is as simple as reading the MORNING PAPER

newVOICES

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provides numerous

suggestions as to

how the newspaper

can be used in

mathematical

lesson planning.

Short of mathematics lesson ideas? Looking for a real-life situation for students to develop a variety of mathematical skills? Searching for an effortless summary of ideas available right at your fingertips? You would much rather read the newspaper than search textbooks for lesson ideas? If so, you do not need to look any further than the morning paper for an extensive variety of mathematics ideas that can successfully be incorporated in the mathematics curriculum. All you need is the morning newspaper (and a cup of coffee to help get you started!).

There is great variety in the numerous mathematical lesson ideas that can arise from browsing through the newspaper. Since they depict recent, topical material that is constantly changing, newspapers provide an endless supply of new ideas with each new day. All of my suggestions are, therefore, linked to purposeful real-world events and practises drawn directly from newspapers.

The *South Australian Curriculum Standards and Accountability Framework (SACSA)* (DETE, 2001, p. 31) acknowledge that students' learning occurs best when:

- learning is purposeful and connected to meaningful contexts through extended and deep tasks in which they discover, construct or use knowledge;
- there is constant interplay between experience and meaning;
- they make deep conceptual connections, across the curriculum, that enhance their sense of purpose and meaning, and enable them to solve relevant problems;
- they experience new and creative ways of making connections across concepts and processes, between

their inner and outer worlds, and across multiple perspectives;

- they are active in making meaning about major social and learning transitions between and beyond the curriculum bands.

Linking mathematical learning to the newspaper is, therefore, a worthwhile concept, which creates an interesting, well-integrated, meaningful and hands-on focus for contextual mathematics learning for students. Reys, Lindquist, Lambdin, Smith and Suydam (2001) reinforce the importance of involving students in rich learning situations. They state that

> interesting problems are more stimulating and effective in promoting mathematics. Often, these situations are driven by real-world applications that involve, connect, integrate, and use many different mathematical concepts and skills. (p. 29)

Integrated units such as this based on the newspaper, are therefore likely to both appeal to students and enhance their learning experience.

This article provides a number of flexible lesson ideas, most of which do not require extensive planning, organisation or resources besides the newspaper. Activities can effectively be adapted to appeal to the particular interests and skill levels of the students in the class.

I have divided the possible lesson activities into sections under the appropriate headings of the newspaper. The majority of the activities that I describe are best suited to upper primary students, although most can easily be adapted to suit other year levels.

Newspaper articles

Lessons can be based on current issues in the media. Since the news depicted in newspapers is current and significant, students are likely to see a clear purpose for learning mathematics in the real world and in their own lives.

There is a limitless supply of ways that mathematics is integrated into topical news stories — you just have to search for them. Worded mathematics computation questions can be based on current news events and stories, such as relating to current farming issues, recent sports events, wage rises, job cuts, government elections, celebrity awards nights, extended trading hours, ANYTHING! It depends on what is in the news at the time and what particularly interests students. Mathematics concepts can be related to almost any topic, and

although sometimes not immediately obvious, with a little thought the numerous links and connections become apparent.

Articles often rely on statistics and surveys, such as public opinions on debatable issues, the prevalence of teenagers taking drugs, achievements of Year 12 students, and the age of people getting married. Students can use the data provided to order in a table and plot on an appropriate graph to depict, interpret and compare results.

Business

Since the business pages consist largely of statistics, this section provides many opportunities for mathematics concepts to be taught, practised and developed. Students can study and interpret the graphs and tables, and then use the statistics to create their own. They can interpret and redraw the relatively unclear shares and dollar graphs so that they are enlarged, better labelled, more concise and therefore more understandable.

Comparisons can be made between the Australian dollar and the currencies of other countries, which can then be graphed, used to form calculations, and converted into amounts all in one currency. Such problems could include;

- Convert these amounts from Australian dollars into yen using the following statistics:
  AU$ = 74.50 yen
  AU$ = 0.67 US$
  AU$ = 40.42 pence
  AU$ = 0.585 euro
  If I had $10.50 in Australian dollars, how much would this amount to in euros?
- Graph the fluctuating Australian dollar, share prices or price of gold/oil over a week.

Puzzle pages

The puzzle pages of the newspaper generally involve mathematical patterning and geometric reasoning. Word puzzles often rely on finding or forming patterns, while logic puzzles, magic squares and colouring-in patterned pictures also incorporate mathematical concepts. Below are two examples of puzzles that link to mathematics.

- In 5 steps change the word 'BAKE' one letter at a time to form the word 'TELL'.
- The letters A, B, C, D and E stand for different numbers from 1 to 5. The totals of the rows and columns are shown. What are the values of the letters A, B, C, D and E?

E	D	C	10
A	B	D	7
B	C	A	10
8	8	11	

(From *The Courier,* 2003, p. 19)

Sports pages

Perhaps the easiest and most obvious section to adapt mathematics lessons to suit is in the sports pages. All of the curriculum strands can be covered by focussing on sport, which makes studying the sports pages of the newspaper such a worthwhile idea.

Player and team statistics can be used to form real-world addition, subtraction, multiplication and division problems, such as:

- *AFL*: Work out the total scores of each team to find out who won:
  Collingwood: 12 goals 13 points
  Geelong: 13 goals 7 points
  Nathan Buckley had 31 possessions for the game, including 13 handballs. How many kicks must he have had?

- *Basketball:* Lauren Jackson scored 9 points for the half. How many different combinations of 3, 2 and 1 pointers could she have made?

Teachers can form worded mathematics problems based on sports measurements, such as in javelin, high jump, swimming, motor sports, track events, iron men, and yacht races. They can engage students in working out full distances travelled and average speeds, converting from seconds to minutes to hours and from km to m to cm to mm, and vice versa. For example;

- *Motor sports:* Michael Schumacher's total time to complete 68 laps was 1 hour, 43 minutes and 27 seconds. What was his average time per lap? If Schumacher drove 421 km, what is the distance of the track (per lap) in kilometres, metres and centimetres? What was Schumacher's average speed in kilometres per hour, metres per minute, centimetres per second?

(The level of teacher guidance and support would obviously vary depending on the year level taught)

Player and team statistics and sports results can be used to devise real-world problems focussing on percentages, fractions and decimals. Students can use these statistics to make predictions, find averages, devise basic algebraic formulas and to create graphs to explore number relationships.

- *Cricket:* Adam Gilchrist scored 92 of Australia's one-day total of 276 runs, while Andrew Symonds scored 47. Work out each player's score as a percentage, decimal and fraction of the total.

- *Netball:* Draw a graph to represent the following netball results. Select the most appropriate graph, and ensure that it is well labelled.

	Adelaide Thunderbirds	Melbourne Phoenix
1st Quarter	12	12
2nd Quarter	11	12
3rd Quarter	15	10
4th Quarter	13	14
TOTAL	51	48

General sports-related mathematics questions can be formed based on the ideas or information in newspapers:

- Which sports ground maximises space the most: AFL oval, rugby field, boxing ring, wrestling circle? Using a set perimeter, work out which shape has the greatest enclosed area: rectangle, square, oval, octagon, circle, diamond?

TAB guide

Examining the TAB guide can act as an introduction to discussing chance and probability, comprising scrutinising the chances of winning, and studying statistics and ratios. Students can use the betting odds to calculate possible winnings. For example;

- You put $11 on a horse to win who had odds of 1/7.50. What would your total winnings be?

Advertisements

There are many ways that newspaper advertisements can captivatingly be incorporated into mathematics units since they largely feature numbers, prices and percentages.

Any form of advertising commonly relies on percentages to highlight sales. Students can use real-life examples from the paper to use percentage-off sales to work out discount prices.

- Which is the cheaper option: a television that is usually $299 but is advertised at 15 percent off the regular price, OR one that is usually $315 but is advertised as 20 percent off the regular price? What is the sale price of each, and how much money is saved in each case?

Students can study the percentages, tables and graphs used in advertising to identify data manipulation. Are the graphs clearly and correctly drawn and labelled? Are there vital components missing that lead to deception? Students can discuss and interpret graphs used in the media.

Activities can focus on converting rental costs to paying upfront. Students can build on and develop these skills further by converting advertisement prices from amounts per week to amounts per 6 months, 1 year, 5 years, etc.

- Would it be cheaper to pay $4999 upfront for a car or to pay $33 per week for three years? Predict first and then solve.
- An item selling for $21.50 per week would be how much a month? year?

A possible pair or group work activity incorporating advertisements and catalogues in an open-ended exercise is for students to select a limited number of goods to purchase from a selection of advertisements/catalogues using a given budget.

- You have a $20 budget to buy the ingredients to make a given recipe, or $20 to use to buy foods in the most economical way possible.

TV guide

The TV guide can be used to work out the average number of hours of television each student watches a day. This can then be converted into hours per week or year, or into minutes and seconds rather than just in hours. If they watched that many hours each day since they were born how many hours total would they have watched? Students can work out the approximate number of hours watched for each day of the week to form an average, and then total and average the number of hours watched for the whole class per day/week. What is the average number of hours a student in the class watches? Once again graphing could naturally be incorporated.

Weather

The weather page is full of information that can be used by mathematics teachers in an endless variety of ways. They can immerse students in the subject matter by getting them to work out the differences between maximum and minimum temperatures, and between the temperatures in different towns, states, and countries.

There are several ways that students can graph information from the weather page; to do with temperatures, humidity, rainfall, the rising and setting times of the planets, and tide times. An assortment of graphs relate to weather including line, bar, column, point and pie charts, therefore broadening students understandings and use of graphs.

Classifieds

A simple introductory lesson is to get students to compare prices in the classifieds to find the best offers for particular items — for a bed,

computer, stove, etc. Students are, therefore, engaged in comparing and sorting prices, some of which may require mathematical computation to convert percentage reductions, and prices from cents to dollars and vice versa. They can work out rent prices per day, week, year, and 10 years, to find out whether it would be more economical to buy or rent a product.

A simple activity that aims to improve students' appreciation of the role that mathematics plays in most occupations, involves students studying the careers pages to identify how many jobs use mathematical procedures and concepts.

Similar to a previous activity described using catalogues, students can work in a pair or group to budget for a family. This would involve them searching the classifieds for a job, accommodation, a vehicle, and a pet that they can afford out of a given sum of money. They will also need to allow for extra spending including petrol money, clothes, holidays, furniture, gifts, and pocket money for children.

Conclusion

Reys et al. (2001, p.85) describe mathematics as a 'very well integrated domain of study' with the 'ideas of school mathematics [being] richly connected'. They emphasise the importance of providing children with 'ongoing opportunities to experience and appreciate the connectedness of the subject'. An integrated topic such as this enables students to form meaningful connections through exposure to real-life situations and problems in the newspaper.

Each of the activities that I have generated from the newspaper naturally assimilate into other subject areas. Obviously they all relate to Society and Environment since they focus on

different aspects of the newspaper so deal with real-life issues. Health and Physical Education is covered through studying the sports pages and lifestyle sections, and Technology through reading the printed material and using computers and Internet to locate and record information and results. Interpreting and communicating visual results through graphs, tables, and pictorially relates to the Arts, studying sport and the weather link to Science, and actually reading and understanding articles in the search for relevant mathematical information and communicating orally with peers incorporate aspects of English.

Griffiths and Clyne (1994, p. 10–11) highlight the benefits of teaching in context, which include students forming connections between their own experiences and those in the classroom, building on prior knowledge, creating a more integrated classroom, increased interest and motivation due to a clear purpose for learning, and learning is likely to be better retained as context provides meaning.

Some of my suggestions are best suited for quick individual activities, while others, such as the budgeting for a family, are more appropriate for pair and group work. Some are short, quick activities, while others will require a lot longer for an open-ended week project. It is up to the individual teacher to decide how best to adapt activities to best cater for the needs and interests of their students.

Of course there are many more ideas and adaptations that can be gained from further studying the newspaper yourself. My list is by no means exclusive, but acts as basic overview, so grab a newspaper and a coffee and get planning!

References

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