

## **Great Yarmouth College: Developing Short Numeracy Activities for Vocational Lessons**

### **Background**

Great Yarmouth College is an FE college serving a wider community with a range of vocational and skills-based programmes. The focus of the project funded by the Skills for Life Support Programme is on improving numeracy skills of learners particularly at Level 2. In order to address low success rates in numeracy we set up a project which was designed to encourage closer working between numeracy tutors and vocational tutors.

### **Aim of project**

The aim of our project was to engage learners on vocational programmes in numeracy activities and improve our success rates. One issue identified was the time constraint of one numeracy lesson per week giving approximately 30 hours per year of numeracy delivery. Another was that a number of learners had proxies for the Level 1 Application of Number test and so were not familiar with the key skills test or with non-contextualised numeracy questions. One method of gaining extra time was to include short numeracy activities into vocational lessons; this also encouraged closer working between numeracy tutors and vocational tutors and built confidence in learners.

### **How we worked together**

Two groups were selected to highlight a range of learners who are currently on NVQ welding and hairdressing programmes. We set up a working group comprising vocational and skills tutors who met regularly to review progress and share ideas. Numeracy tutors, Oksana and Jo, developed and adapted a number of 5-minute ice breakers and energisers to be used at the end of vocational theory lessons at least once a week. Vocational tutors also set a numeracy test question for their learners, who then took the answers to the next numeracy lesson. The correct answer was discussed and there was also reward for every learner who has answered the question correctly.

### **Impact**

Learners began to see the links between learning in vocational and in skills sessions. Gradually the questions set moved away from the vocational context to generic test questions in preparation for numeracy tests and the move to transferable skills necessary for functional skills assessments. Over the 10 weeks of the project we saw an improvement in the confidence of the learners and also in their enjoyment of maths. All agreed that they had made good progress with maths this term.

### **Examples of materials**

In the following pages are a number of short tasks used by the numeracy and welding and hairdressing tutors with a brief commentary on how they were used and how successful they were. These are examples of the energisers which could be used with different vocational groups or could easily be adapted to work in context for a number of different programmes. Some are generic tasks linked either to Every Learner Matters themes or for test preparation. The short tasks worked well with both groups; the hairdressers preferred to work as a group in class whereas the welders also took away some tasks for individual working.

# Resources Developed for FMA Hairdressers

## Measurements

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This resource is very kinaesthetic: the students are the resource! The students are asked:

*How big is:*

- 1 cm
- 1 inch?

Being hairdressers, it is very important that they know the difference between these measurements because it is the difference of someone leaving the salon happy and willing to return or unhappy and unlikely to return, so that the salon loses money.

*On average:*

- 1 cm is the space between thumb and forefinger, pressed together
- 1 inch is the distance on your little finger, bent over between first knuckle, (just below nail and the next knuckle).

This is verified by the students measuring their own knuckles and finger/thumb distance.

The students then learn about how their body is proportionally developed.

*On average:*

- Your hand span is the same as width and the length of your face from chin to the hair line
- Your height is approximately the same measurement as your arm span, with arms held up out at the side, from middle finger tip, across your back to the other middle finger tip.

All the students enjoyed this small task and were very interested to see if the statements were correct. It also gave the students the opportunity to work together in small groups using a tape measure.

# Cocktail Smoothies

## Turmeric cocktail

60 ml carrot juice  
60 ml tomato juice  
30 ml apple juice  
1 shot of soya sauce  
 1 small celery stalk  
 1 pinch crushed turmeric



## Pineapple-almond smoothie

8 oz canned, drained pineapple  
1 tablespoon ground almonds  
150 ml natural yoghurt  
1 tablespoon grated coconut  
 Flaked almonds



## Raspberry smoothie

2 tablespoons milk  
1 teaspoon honey  
4 oz raspberries (fresh or frozen)  
2 tablespoons natural yoghurt



## Watermelon crush

1 cup of crushed watermelon  
3 tablespoons blackcurrant drink  
1 cup of water  
½ cup of crushed ice



## Measures

<b>Measures</b>		
1 cup = 8 oz = 240ml		1 teaspoon = 5ml
1 shot = 1oz = 30ml		1 splash = 2ml
1 tablespoon = 15ml		1 dash = 1ml

Using the menu, write down the ratio for the **MAIN** ingredients (*shown in bold and underlined*).

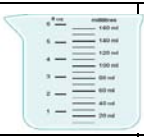




(Adapted from [skillsworkshop.org.uk](http://skillsworkshop.org.uk) /2010 with alcohol excluded from recipes)

Name of cocktail	
Main ingredients	
Ratio of ingredients in ml	
Simplified ratio	
Measurement required for 4 people	

Recipes were arranged with images to support the text about how to create cocktails. The students would have to use the measures table to calculate some to the *ml* for certain ingredients.

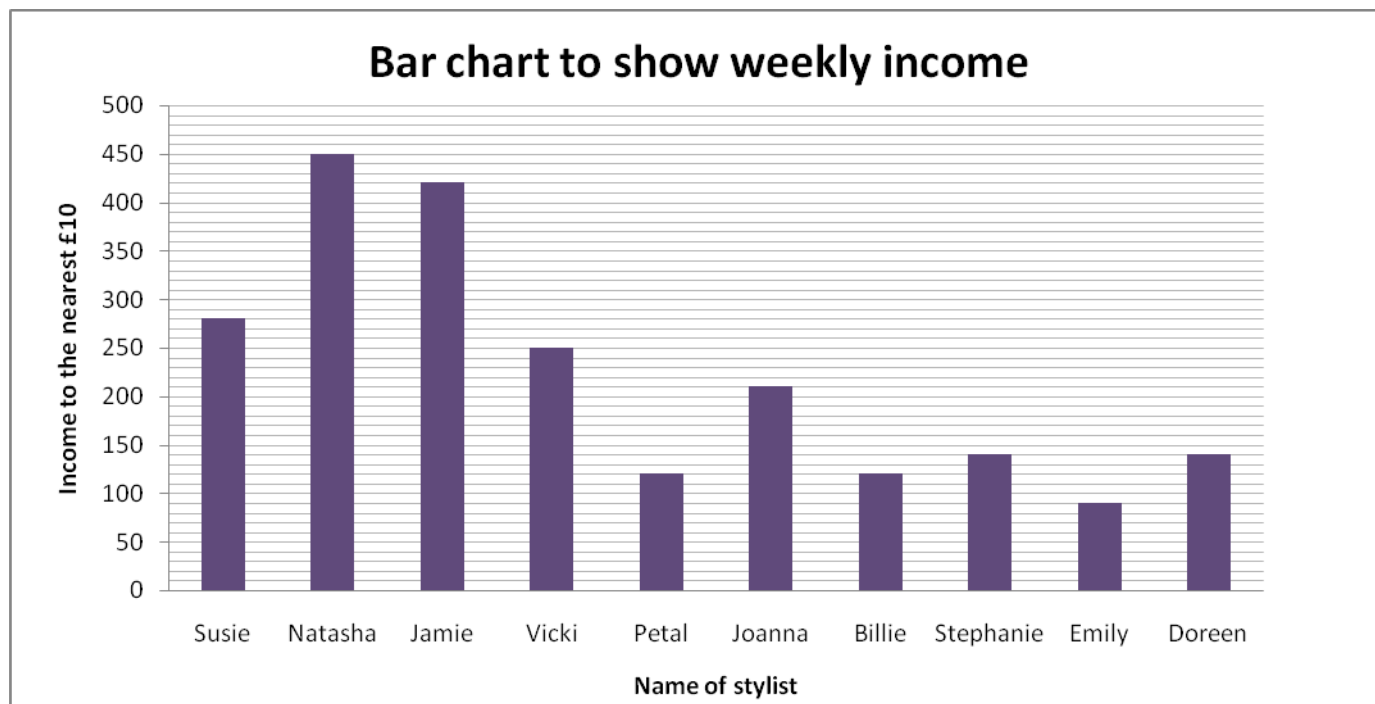
A table was created to introduce the sequence of ratio, simplifying and then increasing amounts needed for different quantities. This work well with the learners and they enjoyed working out the ratio for the cocktails. It was a good way of introducing the importance of ordering the names in the ratio and completing the ratio of ingredients in the same sequence so the cocktail would be correct. This task also reinforced the students' simplifying and multiplication skills.

## Capacity measures

	Shade in 70ml.
	Mark where you think 4½ fl oz should be.
	You need to fill ¾ (ml) with peroxide, shade to show where you would measure.
	You add 2 fl oz, then add another 3 fl oz. Shade in how many fl oz you have in total.
	Your beaker is full and then you empty out 95ml. How many ml do you now have?

This table was used as a quick introduction to capacity where the students have to identify the correct measurement in either *ml* or *fl oz*.

# Statistics



Find the following information using the above chart.

1. Mean income for the salon from the stylists
2. Median income
3. Mode income

Who took the most money?

Who made the least amount of money for the salon?

What is the range of the income from the stylists?

The aim was to get the students to use statistical information to work out averages. It also developed into other discussions about what the chart displayed (who took the most and least), and what information was missing. It could be that the highest income was due to a few chemical treatments being carried out whereas one of the stylists who had been very busy took a smaller amount because they were only working on clients who wanted cuts.

The discussion also developed into how salons could improve takings, e.g. having special promotions and loyalty cards.

## Tubes of Colour



### Using tubes of Colour

How many ml is 50% of <b>Colour Pro</b> ?	
If you use $\frac{2}{3}$ of <b>Move</b> , how many ml have you left in the tube?	
If you squeeze three fifths from <b>Bell Colour</b> , how many ml do you have left in the tube?	
You must mix $\frac{1}{2}$ tube of <b>Move</b> Light Brown with $\frac{1}{3}$ of <b>Move</b> Red. How many ml have you mixed?	

Using the images the students had to calculate the *ml* colour they must use. The aim of this was to present the link between %, fractions and adding fractions.

# Finding the Perimeter, Area and Volume

<i>Item</i>	<i>Width</i>	<i>Length</i>	<i>Height</i>	<i>Perimeter</i>	<i>Area</i>
	<b><u>(Round to the nearest cm)</u></b>				
Cheez Dippers					
Adidas Ice Dive					
Chocolatey Squares					
Sticky Toffee & Nut Ring					
Lego City					
Umbro Total Body Set					
Power Miners					

This task used real life cuboids for the students to handle and measure to find face perimeter, area and volume. The students enjoyed handling the boxes and it brought up discussions about how people perceive width, length and height and how the packaging influences people's perceptions.

<i>Item</i>	<i>Wide</i>	<i>Length</i>	<i>Height</i>	<i>Volume</i>
	<b><u>Round to the nearest cm</u></b>			
<i>Oxo cube</i>				
<i>Oxo box</i>				
<i>How many cubes will fit in the Oxo box?</i>				

The Oxo cubes and box demonstrated how many cubes would fit into a cuboid. It also gave the students a visual representation of space and volume.

# Resources Developed for NVQ Welders

During the project, the students mainly had a chance to practise/reinforce the knowledge of the areas identified as areas for development by the Initial Assessment, such as: ratio and proportion (Curriculum reference N1/L1.7, N1/L2.3), perimeter, area, volume (MSS1/L1.8-10, MSS1/L2.7-9), fractions, percentages and decimals (N2/L1.1-11, N2/L2.1-10).

The short tasks were set in such a way that the students could solve 'active learning' problems in pairs or small groups during their Welding lessons (such as Fractions Dominoes, Build a Hexagon etc), and problems requiring individual work were given as homework (e.g. Temperature research, Fractions spider diagram, Percentage Worker-Outer etc). Some topics were then reinforced during a short activity at the beginning of the lesson.

## **Calculate mean temperature**

- 1. Choose a town/city on [www.bbc.co.uk/weather/ukweather](http://www.bbc.co.uk/weather/ukweather)**
- 2. Select a full 5-day weather forecast**
- 3. Use the data to calculate the mean (average) temperature and the range**





**Check the following statements:**

- 1. Your height is seven times the length of your foot.**
  
  
  
  
  
  
  
  
  
  
- 2. Your height is the same as the length of your arms outstretched.**
  
  
  
  
  
  
  
  
  
  
- 3. The total length of all your fingers is equal to the length of one of your arms from your shoulder to the end of your fingers.**
  
  
  
  
  
  
  
  
  
  
- 4. The distance round your head is the same as the length of your arm from your shoulder to your wrist.**