



**Mantle Of The Expert numeracy project**

<b>TEACHING SEQUENCE</b>	<b>CREATIVE ACTIVITIES</b>
<b>INTRODUCTION</b> <b>The Client</b>	<p><b>Session 1 : 1 hour 15 minutes</b></p> <p>Class enter to find teacher in role as an unknown character at this point. There are overdue bills, a broken DVD and news articles of past triumphs lying around him on the floor. Teacher is in role as John or Jane Howard, reading the bills and adding up some of the debts. S/he begins a monologue which informs the class of the following.</p> <p>He is a producer of a children's TV channel called <i>Bubblegum TV</i> The ratings are down The director has threatened to sack him if the viewing figures do not dramatically increase He needs inspiration and help from another company who are experts in a particular field The field of research/children's TV would be helpful He has to present his ideas for a new channel to the director in 6 weeks time. A rival channel has recently had excellent ratings for a literacy programme using wizards! He has an idea of making maths fun by creating a programme about space.</p> <p>Teacher steps to the side and stands or sits with the class looking at the empty chair the character was just sitting in. Now out of role the teacher questions the class about what they have learnt so far. After talking to their neighbour the class feed back their ideas.</p> <ul style="list-style-type: none"><li>•</li></ul>



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<b>The Company</b>	<p>Task: The class are given some bills to add up. Each group of 3 have 4 multiples of 10 to add up. We then use their answers and add them together to get an idea of how much money the company owes at the moment. Can we round this up to the nearest 10 and the nearest 100?</p> <p>From this information we can discuss how in debt the company is. This is the moment where the teacher must gently guide the class to want to become the company that helps John/Jane Howard. Use of language is important here, not 'we will now become a company called ideas galore', but rather...</p> <p>What type of company could help this client? Do you think you as a group have what it takes? Could we think about a company we could become? What name could we call ourselves as a company?</p> <p>Once some ideas have been established the moment comes when the teacher asks the group to sit back at their tables, s/he places their company badge around their neck and addresses the class as the company for the first time. Teacher in role points them to their identity badges which they all put on. To inform the group of who you are the teacher must mention that there are a few newcomers to the company so this enables you to introduce yourself and your status is then clear S/he then briefs the company of the project (simply repeating the previous conversation to reinforce it). It is useful to be the team leader of that section of the company, but also ensure the group know that there is another boss. This device can then be used at a later stage when orders come from this boss to add to the tension of the story. Ask the class who has seen the email about Mr/Mrs Howard and the company should respond, simply repeating the story so far.</p> <p><b>Session 2 1 hour 15 minutes</b></p>
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<b>Security and office space</b>	<p>Class teacher in role addresses the group stating that their security codes must be added to their new badges as there was recently a break in and security is now getting tighter.</p> <p>Task: Every company member is given four separate single numbers. From this they must make at least 9 lots of 4 digit numbers, then decide on one to use on their card.</p> <p>Task: Teacher in role now addresses the class and asks them what the company offices would look like and what a research company may need in terms of resources etc...in groups of 4 with a large sheet of paper they have to design their office space. They are given a list of items they can include but all items have a price and they have a budget. Some items will have to be sacrificed for the good of the company as a whole and to fit with the budget. Also scope here to use squared paper and look at measuring area/perimeter of the space and ensuring all furniture can fit in etc..</p> <p>Now the company is established, the office has been created, the badges made and the brief is understood.</p>
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#### **Session 3. 1 hour 15 minutes**

It is agreed as a company that each day should begin with a group teamwork exercise using numbers to inspire us in this project. Play the following games to get going...

Count Dracula class versus teacher. Teacher points at child and calls out a sum. Child must answer before teacher gets to them.

Lift Off: Company have to count from 10-1 but only one voice at a time! Back to 10 if two people say a number at the same time. Aim is to get to zero and lift off!

Teacher then get s a call from Mr Howard who informs him that the company must get some viewing figures presented as a graph to him by tomorrow for a meeting that his boss has. Her name is Mrs White and she is not to be messed with.

We then use the data in the table below. *Add more data if you think the class should plot more than 5 bars on their chart.*

<b>Programme Name</b>	<b>Average Viewing Figures Per Show</b>
<b>Hot News</b>	<b>4,075</b>
<b>Cartoon Classics</b>	<b>7,020</b>
<b>Maths Is Fun!!</b>	<b>1,260</b>
<b>Apollo 13 (a true story)</b>	<b>10,370</b>
<b>Bubblegum Boogie</b>	<b>3,900</b>



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Analyse some viewing figures for Bubblegum TV and firstly round the figures to the nearest 100. Convert this into a bar chart.

Then analyse a graph to see when the figures were higher than usual. Present the ideas in groups to the rest of the company.

Group discussion

Realise the figures were at the highest when there was a story on the channel about Apollo 13.

Retell the story using timeframe in hours and minutes. Question the company what key events happened a certain times.

Other opportunities: See how temp of cabin changed as the journey progressed.

Measure distance travelled at key times

Money spent on the mission.

Create a piece of drama from this as a timeline and this could be something one of the groups may want to develop when they plan their programme.



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#### **Session 4: 1 hour 15 minutes**

Begin the session as always with company badges on and a couple of numeracy games!  
We then focus on planet facts for our presentation. Each group of 3 is given the facts about the diameter of the planets, but cut up and random and their first task is to order them from smallest planet to largest.  
Then we do the same but ordering in terms of time they take to orbit the sun.  
We then do the same with distance but this time we use cut outs of the planets.  
Use the tables below for this activity

<b>Distance from sun in millions of miles!!</b>		<b>Diameter in thousands of miles</b>	
<b>Mercury</b>	<b>3</b>	<b>Mercury</b>	<b>35</b>
<b>Venus</b>	<b>7</b>	<b>Venus</b>	<b>67</b>
<b>Earth</b>	<b>8</b>	<b>Earth</b>	<b>92</b>
<b>Mars</b>	<b>4</b>	<b>Mars</b>	<b>141</b>
<b>Jupiter</b>	<b>88</b>	<b>Jupiter</b>	<b>483</b>
<b>Saturn</b>	<b>74</b>	<b>Saturn</b>	<b>888</b>
<b>Uranus</b>	<b>31</b>	<b>Uranus</b>	<b>178</b>
<b>Neptune</b>	<b>30</b>	<b>Neptune</b>	<b>279</b>
<b>Pluto</b>	<b>1</b>	<b>Pluto</b>	<b>3 67</b>



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**Time taken to orbit the Sun in days**

**Mercury 88**

**Venus 224**

**Earth 365**

**Mars 687**

**Jupiter 4332**

**Saturn 10,760**

**Uranus 30,000**

**Neptune 60,000**

**Pluto 90,000**

**Why would the order of this table be the same as the ‘distance from the sun table’?**

Discuss as a company how this data and activity could be used in a game about space. Ideas about ordering large planets against the clock, in teams between schools or against teachers should be facilitated by the teacher but the ideas need to come from the company.



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### **Session 5: 1 hour 15 minutes**

Badges on and games!

Then a spider diagram looking at objects being taken into space and how much they weigh.

See resources: Don't overload the spaceship!!

After the activity, discuss how this activity can be adapted into a fun, physical game on TV.

Read an email on the board from Mr Howard who is under a lot of pressure from his boss, Mrs White.

The email need to say something like this

Dear all

I have had this email from Mrs White today...please help! I will need an update soon.

Jon

I need to hear from you by the end of the week. I need the following information. What is the company you are working with going to do? What departments will be planning which ideas, and what are the ideas so far.

Teacher in roll asks for a company meeting to look at what ideas we have so far. Brief the group that they must come up with an rough outline of the following...

A physical game using teams

A mental challenge

A website game

All of the games must include areas of numeracy and also space.

Feedback and get ideas down as a whole group at the end of the session. Now there will be groups within the company working on different games.



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### **Session 6: 1 hour 15 minutes**

Begin with the usual routine. Introduce the following task and get people working in pairs for this activity.

*'Houston, we have a problem'*

*Mission control work very hard on the ground communicating with the spacecraft and making sure everything goes smoothly. With the Apollo 13 launch, Mission Control were kept very busy. Their number crunching skills saved the astronauts lives. Can you solve these problems to save your crew?*

- 1) Each astronaut uses 1 cylinder of oxygen a day  
How many did they take to last 3 astronauts 6 days?
- 2) After the explosion the crew are told it will be four days before  
They can get home...how many cylinders of oxygen do they need?
- 3) They only have 9 cylinders. How long will this last?
- 4) If Apollo 13 can float 1,000km in 12 hours how far will it travel in a day?
- 5) How far will it travel in 4 days?
- 6) When flying towards earth at 400 mph (miles per hour)  
How far will it travel in two hours?
- 7) How far will it travel in four hours?
- 8) The space craft launch time was 13.13. What exact time would it be  
3 hours later.
- 9) The first explosion was at 19.13. The crew made an emergency  
inspection of the craft. It took them 27 minutes. What time was  
the inspection completed?
- 10) How long was the whole successful failure mission from 13.13pm on  
April 11<sup>th</sup> to 14.00pm on April 17<sup>th</sup>.

Discuss the idea that some of the games can have these kinds of questions and encourage the pairs to create one question like this each. The questions are then used in a mini quiz as a company and we look at ensuring the questions are of a reasonable standard for a typical year 4/5 child. We ensure the question makes sense and that those asking the questions know the answer!

Issues will arise from this and this will be a good thing. The groups really need to consider all of the above when planning their questions.



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### **Session 7: 1 hour 15 minutes.**

Teacher in role gets a call from Mrs White herself. It is as though an argument is taking place. After the call teacher in role says that Mrs White is not happy with the range of questions in the games. She asks company to consider the following. Groups create one one question for each area and share ideas at the end.

#### **Planning your games for the presentation**

How many contestants will there be?

What is the aim of the game?

Are there different levels or stages to the game?

#### **Please try and include some of the following areas of numeracy**

##### **Counting in tens**

*20, 30, 40, 50, 60*

##### **Doubling multiples of 10**

*20, 40, 80, 160*

##### **Recognising odd and even numbers**

*3,5,7,9 and 2,4,6,8*

##### **Adding and subtracting 2 digit numbers**

*22+13*

##### **Adding and subtracting 3 single digit numbers**

*3+5+9, 3-5-9*

##### **Counting in steps of 5 minutes**

*1.05, 1.10, 1.15...*

##### **Calculating areas of shapes?**

##### **2,3,4,5 and 10 times tables**

##### **Double whole numbers 22,44,88**

##### **Coordinates and grids**

##### **N. S. E. W NE, NW, SE, SW**



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### **Session 8: 1 hour 15 minutes**

Now the content of the game is agreed the company reads an email from Jon asking for out outline of what the presentation to Mrs White will actually look like on the day.

Company are asked to consider the following

Will you play your game with volunteers?

Would you like to film your game being played and show it as a film on the day?

Would you like to create some visual art work to show what your game may look like?

Maybe a 3D model of the TV set (opportunity for working with scale here)

A power point presentation, especially for Website games

Each group needs to use 2 of the above areas in their presentation.

By the end of this session the groups have agreed on two ways of presenting their ideas, they have shared this with each other to ensure there are not too many of one option. They will have also made a list of resources they need to begin and have started creating their presentations.



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#### Session 9:

This is the creative session where the groups really need to get working on their presentations. If time is an issue then limit each group to use just one of the options. This session can become their focus for art, DT or ICT.

The rules of the games can be written up as part of literacy if giving instructions is an area that need to be covered for example. The opportunities for cross curricular work are vast and this project can be something that is done for one hour a day for two weeks, or it could spread across other areas, to the point where the class are a company for a longer period of time than they are a class!

Session 10: The final rehearsal for the presentaions. Groups show their ideas to each other. These can be filmed and evaluated as a company before the film is `sent` away to Mrs White. Or could a mystery guest come into the class for the presentation and be Mrs White for that session?

The outcome must be that she loved the ideas and that Bubblegum TV have been asked to make a programme for Sky TV using the ideas. Jon Howard keeps his job and you as a company get lots of press and more work!!!

This then enables you to have another client come along looking for help...this time they may want help trying to write a perfect adventure story...could you help?