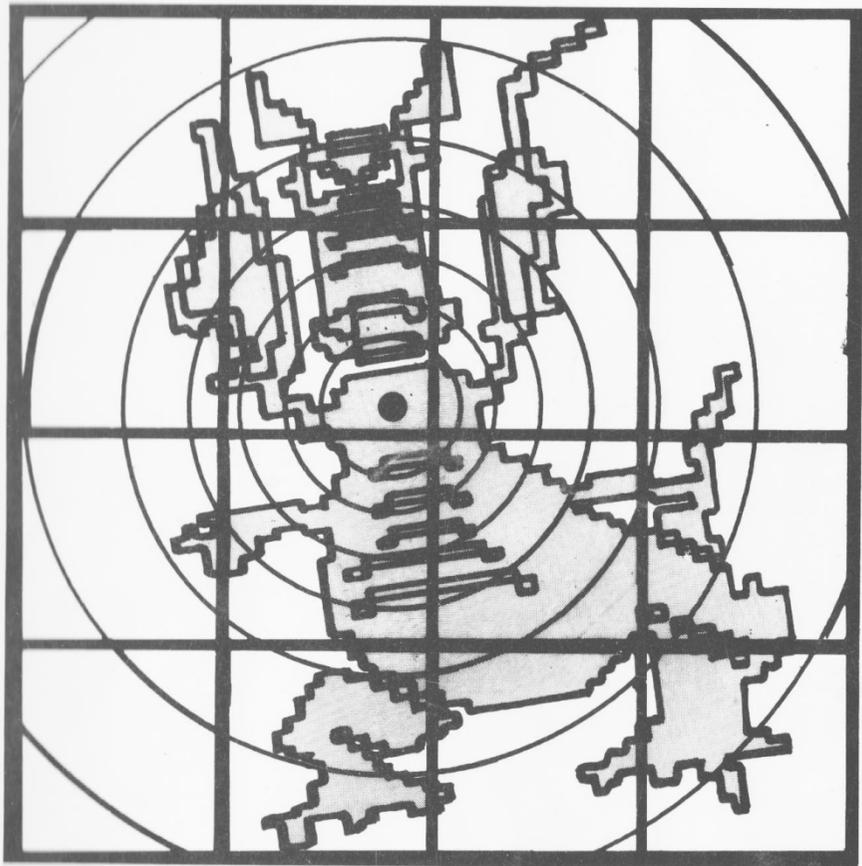


# DREAD DRAGON DROOM



Notes for Teachers

DROOM was designed and encoded by Derek Allen, Head of Snaith County Primary School, Humberside. The documentation and curricular material were prepared and developed by the Humberside Microelectronics in Education Support Team.

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# **DREAD DRAGON DROOM**

## SECTION 1

### Using "Droom" within the Primary Curriculum

#### Introducing "Droom"

"Droom" is an educational adventure package, but unlike most such packages, it is structured to allow teachers to use appropriate parts of it to support their curriculum in a well defined way. The program was designed and encoded by Derek Allen, Head of Snaith County Primary School, and the supporting written material was developed by the Humberside Microelectronics in Education Support Team and by teachers in various trial schools.

"Droom" is designed to be the basis for several weeks work for primary children. It is thus intended to be a major resource supporting a thematic approach to the curriculum. The package supports the curriculum defined both in terms of experience (particularly creative, linguistic and mathematical) and in terms of transferable skills and processes (particularly those in the communication, logical reasoning and social skills domains). It can also be seen as a means by which Mathematics can be integrated into all areas of work in the curriculum. "Droom" also provides an effective vehicle for integrating activities at the computer with those away from it.

The adventure is based around a story in which the Princess Arminda has been kidnapped by the wicked dragon Droom and Prince Henry, her true love, has been turned into a frog. The children's task is to rescue Arminda and in the course of their adventure the children will encounter fairies, trolls, a witch and a wizard. When they rescue Arminda the children can restore Prince Henry to his human form. The story book provided introduces these characters and sets the scene for the adventure.

Although the program is set in the context of a story, progression through much of it depends upon the solution of a series of mathematical problems and puzzles. In order to solve these it is expected that the children will need preliminary activities using materials. Similarly, in these notes there are suggestions for follow-up activities which will give children opportunities for mathematical explorations and investigations.

"Droom" is designed to be flexible in its use in the classroom. The adventure can be followed from start to finish, with the various problem elements being encountered in a continuous sequence as the story develops. Children need not complete the program in one session as they can leave and re-enter at any time. Alternatively the structure of the program allows teachers to set up one of the problems for several groups of children in turn.

## Using "Droom" in the classroom

The "Droom" package offers possibilities for up to a term's work based upon a thematic approach. The way in which the program is used will, of course, depend largely upon the age and ability of the children concerned and the talents and special interests of the teachers. With this in mind the program was 'triallyed' in a variety of schools throughout Humberside. The teachers who kindly agreed to try out the program for us were given no directions as to the curricular areas in which we thought the program might fit. Their results show that work with "Droom" can link into most areas of the primary curriculum.

There are two interlinking threads to the program. The first is the story line which has proved to be a rich source of inspiration for creative and expressive work, for art and craft, for movement and music, and for many aspects of language work, both oral and written. The second is the series of puzzles and problems, many of which can be linked to work using materials e.g. the sliding block puzzle and the Towers of Hanoi, and which offer opportunities for further investigation.

The main "Droom" program disc is designed so that it may be used in three ways. As in many adventure programs, it is possible for the children to work right through the adventure, solving a series of problems and following the story; this however does

not allow the children to derive the greatest benefit from the program. It is more advantageous to use the second option where the children complete only one or two problems at a time, and relate these to other work in the classroom; this is possible because the children can start at any point in the adventure and carry on as far as the teacher wishes. Thirdly, teachers can use the program so that groups of children work at the same section, thus linking the program to a specific teaching point or activity. This last option has most use when considering the mathematical aspect of the program, when teachers may wish to use the computer as only one of a series of activities to explore solutions to a problem.

A feature of "Droom" is that the children do not return to the beginning of a section when they make a mistake; they are instead allowed to persevere and find the solution while the problem is fresh in their minds. The teacher may decide after the initial attempt at the problem that the children need further practice away from the computer before they tackle the problem again on the computer, or that they can persevere, or that they need extension activities. The decision however is the teacher's: it is not determined by the program.

Although "Droom" can be used by individual children, one of the most rewarding

aspects to arise from the use of the program has been the social interaction and oral language that has developed through working in a group. Using the program with groups of three or four children has led to true group activity. The program provides a focus whereby the children are not only sitting together but they are actually functioning as a group. This has its most powerful application when the children who work together on the program are able to extend as a group into work away from the computer, whether it is to investigate further some of the problems met in the program or to follow up a line of enquiry raised by the story content.

Working as a group they have to learn to appreciate another's point of view, to justify their own decisions, to reason with each other, to collaborate and to accept criticism from their peers. They also have to share and to compromise; the children who tend to dominate the use of the keyboard have to learn to cope with those who are motivated by the program to leave their passive watching role and take part, and vice versa. As the program progresses and the children need to use a larger number of keys on the keyboard, there is a need for more co-operation; the children adopt many different strategies and are usually very critical of others who make mistakes, especially when those mistakes are due to carelessness.

Many of the teachers in the trial schools have been impressed by the way in which the children persevered when using the program; they were determined not to be beaten and continued with a problem long after the teachers thought they would have given up. Often one of the hardest things for adults to do in these circumstances is to resist interfering; if the children want help they will ask for it, and then they usually want only the next step towards the solution, NOT the solution itself.

In quite a few instances the children surprised their teachers by easily solving problems that were thought to be beyond them, and there were also occasions when the child who could most easily identify the problem and its solution was someone who was thought unlikely to be able to do so. This made the teachers wonder whether using a different approach was bringing to their notice children who were under-achieving.

Apart from the social skills, the group activity also provides opportunities for the children to implement many language strategies. These can extend beyond simpler directing and reporting strategies to logical reasoning, predicting, projecting and imagining. The story of Droom has proved a great stimulus for imaginative work, whether it be role play among younger children, puppet plays or drama, and this has led on many occasions into imaginative writing and poetry.

It soon became apparent to the teachers who tried the program that there would be great difficulties if they were only allocated the computer for one short session per week; to reap the greatest benefit from the program it was essential to allow the children to make mistakes and to learn from them, and to give them sufficient time for discussion. Teachers who are faced with this problem may find it worthwhile discussing alternative arrangements within their school. They may be able to make flexible arrangements with their colleagues, or to use the computer frequently for half a term and then not use it again for another few months, or perhaps the classes in one area of the school could have the computer for a whole term and work around a common theme. Whatever the decision, teachers may discover that there are more opportunities afforded for the development of intellectual, physical and social skills by using a package such as "Droom" once or twice a year than are offered by regular use of structured re-inforcement programs for short periods of time.

## SECTION 2

### Program notes

#### Introduction

In this package you will find two discs; Disc 1 contains the main program "Droom", and on Disc 2 there is a set of supplementary activities related to the situations that children will encounter in the main program. All of the programs on the discs are COPYRIGHT. You are, however, permitted to make a copies of each disc for use ONLY IN THE PURCHASING INSTITUTION. You are advised to use the backup discs and keep the master discs in a safe place.

Droom is a wicked dragon who has turned Prince Henry into a frog and locked the beautiful Princess Arminda in a dungeon. The program asks children to rescue Arminda and turn Henry back into a prince. While following the adventure, children will encounter a sequence of problems and puzzles, which they must solve if they are to be successful.

#### How to Get Started

Both discs have an "Auto-Boot" option. To use the programs insert the disc in the disc drive, tap the "BREAK" key while holding down the "SHIFT" key, release the shift key and the title page should appear. It is important, that the disc is left in the disc drive whenever the program is being used.

### 1: "Droom" (the main program)

The main "Droom" program disc is designed to be used in one of three ways:

1. The children may work through the whole adventure from start to finish.
2. The children may complete one or more sections of the program at a sitting, and may then go to do other work. When they use "Droom" again they can start at the next section and carry on through the program.
3. The teacher may decide that some, or all, of the groups will use only one section of the program, so that they are able to concentrate on a mathematical problem. In this instance, after each section, the program returns to the menu page. It is not necessary for each group to use the same section: this decision is left to the teacher.

Load the program using SHIFT and BREAK. After the title page the program will automatically move to the Menu Page. This can be speeded up by pressing the space bar.

## **The Menu Page**

This page has thirteen options. If you choose any of the Options A to M you will be asked if you wish to return to the menu after completing the chosen section of the story. If you answer "N" the program will start from the chosen section and it will be possible to continue to the end of the adventure (see note 2 above). If you answer "Y" the program will return to the contents page when the selected section has been completed (see note 3 above). Option A will, therefore, allow you to run through the whole adventure.

### **Option A. Run through the whole disc.**

This runs the program from the beginning. The program starts with a sequence of screen displays which set the scene for the adventure and introduce some of the characters. Each screen will be displayed until the SPACE bar is pressed: the white rectangular bar displayed on the left of the screen is the SPACE bar symbol; this symbol is used throughout "Droom".

Following the story pages, a pictorial map is displayed along with the message "Drive to a house". You can 'drive' the car around the screen by using the four cursor keys. The car cannot be driven through

trees or houses; a crash sound warns of a collision. When the car is driven to the front door of one of the houses, a message will tell you who lives in the house and ask, "Shall we go in?". Use the "Y" and "N" keys for your reply. You will need to visit all the houses and make an appropriate choice at each one. At first the Troll's, the Giant's and the Dragon's houses will be locked, and the Fairies will be out! The other houses belong to the Witch and the Wizard, but the Wizard expects to be paid with gold for the buns he offers, and since you have none you will need to visit the Witch first.

#### **Option B. The Witch's House (purple)**

You should drive the car to the Witch's house. The Witch explains that she has lost her spellbook and invites the you to help her find it. The screen shows a pair of bookshelves and you have to choose which book is the missing book of spells. The letterkeys "A" to "T" are used. When you choose the correct book there is a burst of sound and the titles of the five spells in the book are displayed. You are given the opportunity to read each spell in turn. If you reply with "N" to the prompt "Another spell?" you will be returned to your car.

#### **Option C. The Fairies House (lower white)**

If the Fairies are in, you will be asked to solve a problem for them. A co-ordinate grid is displayed, with the faces of many cats placed on it; one of the cats has a blue nose, and you

must find the set of co-ordinates for it. The co-ordinates should then be entered into the computer, using first the letter and then the number. The program will not accept a number first. Each correct answer is rewarded by a letter; the letters spell a fairy's name. If the wrong co-ordinates are entered, or if the letter and number are entered in the incorrect order, then no letter is awarded and you must try again. There are 20 possible names which occur at random. A silver key is given as a reward, and you are returned to the map.

#### **Option D. The Giant's House (light blue)**

The silver key from the Fairies unlocks the door to the Giant's house. After some story screens, a sleeping Giant is drawn and you are prompted to say a spell. Entering the wrong word will not work and you must try to remember the correct one. Writing the proper spell (CHEEP) will change the Giant into a mouse, who is soon joined by several others. They explain that the Wizard has made their cheese disappear and that they can get it back if a puzzle is solved. The puzzle is of the 'sliding block' kind. The purple square must be moved to the top right corner of the playing board. This is achieved by moving one coloured square at a time into the empty space. You use the 'arrow' keys to place the cursor in the square which you want to move, and then the SPACE bar to move it to the empty space. Only squares adjacent to the empty space may be moved, and diagonal moves are not permitted. If the puzzle is completed

in too many moves, you are asked to try to solve it in fewer moves. When you are successful i.e in 13 moves, the mice win back their cheese, you are given a golden key and return to your car.

### **Option E. The Troll's House (upper white)**

The golden key opens the door to the Troll's house. A page of text is followed by the "Nasties", and you are asked to put on the lights. This is done by pressing the SPACE bar. The Trolls appear, and a spell (POP) is needed to make them disappear. Several story pages explain that the Trolls have gold, but there is a problem to solve first. The screen shows ten bags of gold, grouped into pairs at five locations. The problem is to visit each of the locations twice without retracing any part of your path. You may start at any location. On pressing "A", for example, the message "A to " appears on the screen. Pressing another letter results in the computer drawing a line between the two chosen letters. This line may be continued around or across the screen by choosing another letter as a destination. Your present location is shown by a flashing letter and you may only continue from there. If you make a mistake, for example retracing a line already drawn or attempting a move which does not start at your present location, then you will hear a noise and the Red Troll demands to know who has stolen his gold. Pressing the SPACE bar will allow you to restart the problem. When the

problem is completed correctly, you win the gold and are directed back to your car.

### **Option F. The Wizard's House (red)**

You can take the gold to the Wizard's house. You are invited in and offered a bun. Answering "N" returns the you to your car, whereas if you answer "Y", the Wizard will demand some gold. A reply of "Y" (if you actually do have the gold) will result in the wizard changing for tea. The Wizard will ask you for a spell to make him disappear (POUF). As soon as the Wizard vanishes, the Witch appears. She explains the next puzzle. This involves three characters, Little Bit, Middle Bit and Big Norman. The problem is to move them to another hole while obeying the simple rules of the puzzle; no character can sit on top of one smaller than himself, and only the person on the top of a pile can be moved. The moves are entered by using the "a", "b" or "c" keys to choose a character, and "1", "2" or "3" to select a hole for him to move into. If you make an incorrect move you are not penalised but the message "He's too big" is displayed. If you fail to complete the puzzle in the minimum number of moves another attempt is offered. When the puzzle is completed, in the minimum number of moves, Little Bit offers to help and the children are given a "Special" key for the Dragon's house.

## Option G. Crossing the Floor

You should drive your car to the Dragon's house. Press the SPACE bar to move through the two introductory pages which set the scene. The task is to find a safe route across the floor avoiding the tiles which are too hot to stand on. Little Bit is shown near the top of the screen, at one side of the tiled floor. Move him, using the arrow keys, to find a safe route. If you move him on to a hot tile, or try to retrace your route, he goes back to his starting position.

There are different routes across the floor, and the secret is to look for a pattern of colours which works at the start of your crossing and then to repeat that pattern until you are safely across. The pattern is a sequence of three colours, and although the tiled floor is always the same the required colour sequence changes each time the children play. As they move across the floor the route is marked by flashing dots, but if Little Bit returns to the start, following a false move, the dots disappear.

When you have safely reached the other side of the floor, a SPACE bar sign will appear in the bottom left corner of the screen. Press the SPACE bar to see first a page of the story and then the tunnel of fire. When you press the SPACE bar again you will move into the tunnel.

## Option H. Secret Switches

Press the SPACE bar to move through the two pages of the story, in which you will be told the name of a fairy. This name is randomly selected from a list, so different groups of children will work with different names.

At the top of the next page is the fairy's name which you have to spell using the lamps, and below that you can see the letters of the alphabet with numbers beside them. In the bottom right corner of the screen is a series of lamps marked 16, 8, 4, 2, 1 and below lamp 16 is Little Bit.

The object of this activity is to spell the fairy's name by lighting the lamps which add up to the number beside the letter you need. For the letter E, numbered 5, you would need to light lamps 4 and 1, and for the letter N, numbered 14, you would need to light the lamps 8, 4 and 2.

In the top right corner are the instructions as to which keys to use to attempt this activity. The key to be used is shown in blue and its meaning is shown in red.

Work out which lamps you will need to light for your first letter, then use the arrow keys to move Little Bit left or right until he is below a lamp you need. Press the SPACE bar and the lamp you have chosen will flash. At the bottom of the

screen you will see a blue letter whose number is equivalent to the number of the lamp lit. If you then need to light another lamp move Little Bit and press the space bar again, but this time the blue letter which appears at the bottom of the screen will be that with a number equalling the total of the numbers of the lamps lit. When you have lit all the lamps you need then press the RETURN key and a yellow letter will appear in the red box at the bottom left of the screen.

Imagine that you want letter "S". Move Little Bit using the cursor keys until he is under 16 and press the SPACE bar. Lamp 16 will flash, and the letter "P" will appear in blue at the bottom of the screen. Now move Little Bit so that he is under lamp 2 and press the SPACE bar again. Lamps 16 and 2 will now be flashing, and the letter "R" will be at the bottom of the screen. Move little Bit under lamp 1 and press the SPACE bar, and lamps 16, 2 and 1 will flash; a blue letter "S" will be shown at the bottom of the screen. Now you can press the RETURN key and the blue letter "S" will change to a yellow letter in a red box.

If you make a mistake and light a lamp you do not want, or you have chosen a letter you do not want, press 'C' for 'Clear' and you can start to do that letter again. If, however, you have already pressed RETURN and the letter appears in a red box, use the DELETE key to erase the mistake.

When you spell the fairy's name correctly the screen will clear and you will again see Little Bit outside the Tunnel of Fire. As you watch the flames die down. Press the SPACE bar and the Wizard will appear.

### **Option I. The Robot**

The Wizard appears on the first page to give some instructions. Press the SPACE bar to move through the story until you come to the robot diagram. You must colour the robot using only three colours, red, black, and white, and no two areas with adjoining sides may contain the same colour.

To the right of the robot is a flashing dot. Use the arrow keys to move the dot into an area of the robot pattern, then press either "B" for black, "W" for white or "R" for red to colour the area.

If you make a mistake and colour two adjoining areas the same, a message will be given, and you should press "C" to clear the colours. If you press "C" at any other time, the computer will check that you really do wish to clear your pattern and restart. If you answer "N", the pattern will stay the same; if you answer "Y", the pattern will clear and you can start again.

If the computer will not colour a space when you press the "R", "B" or "W" keys, it may be necessary to move the cursor slightly.

When you have successfully coloured the robot he will spell out a password for you. Do not forget to write down the password as you will need it later. This password is randomly selected from a list so different groups of children will have different passwords.

### **Option J. The Bottles**

After some pages of instructions, the guard will ask for a password. Now type in your password. Only the correct spelling is acceptable, although the computer will allow you to miss the space between two words.

When your password is accepted the screen clears, then you see three rows of cupboards above which is the guard with your instructions as to the bottles you need to find.

You must find three pairs of bottles, you can open the doors by typing in the co-ordinates for each cupboard in which you wish to look. Type the letter and then the number for the cupboard, then the door will open. Type in the co-ordinates for a second cupboard, and that door will also open. If the bottles inside make one of the pairs that you need then the doors will stay open, otherwise the doors will close and you can try another pair of cupboards.

Only matching pairs with white, red and blue tops are needed. When you have found all three pairs of bottles, press the SPACE bar. Continue to use the space bar to move through the story until you come to the picture of a tap.

You must now type in a spell and press RETURN. If you choose the wrong spell you will see the message "It didn't work."

If you use the correct spell (WOOSH) you turn on the tap, which will keep running until you press the SPACE bar. This will take you to the next page of the story.

#### **Option K. The Battle with Droom**

Press the SPACE bar to move through the story until you come to the picture of the dragon. You must now use the arrow keys to move Superbit through the flames until he is sitting between the dragon's ears, all the time avoiding the flames which issue from the dragon's mouth. Superbit can move through the flames as he goes left or right, but must avoid them as he moves towards Droom; you hear a noise when you are unable to move him in the direction you wish. You are guaranteed success after either your seventh attempt.

## Option L. The Journey Home

You see a diagram of the routes to the castle which is Henry's Home. In the bottom left corner of the diagram is a car which you must drive to the castle by giving instructions.

Four keys are indicated under the diagram. Pressing D will give a demonstration of how the program operates. Pressing the SPACE bar as you move through the demonstration shows how the car will move in response to each instruction.

You must enter a whole sequence of moves which you think will take you safely to the castle door and then press the RETURN key. The program will accept F on its own (to move one space) or F followed by a number to move several spaces. Entering L or R will give you a right angled turn.

When you have entered the complete sequence of moves press RETURN. The car will start to move and each instruction in your list will change colour as it is completed. If there is a mistake the program will stop and the SPACE bar sign will appear. The last instruction to have changed to blue is the one in which your mistake has occurred.

If the children find the problem too difficult, it is possible for the teacher to use the "Auto-pilot" to help them. This shows the directions as the car moves, but does not show any numbers. To use the "Auto-pilot" the teacher must press \* (using the SHIFT key) and then RETURN.

To complete the journey successfully your car must finish touching the gate of the castle. Press the SPACE bar to finish.

### **Option M. The Wedding Photograph**

You see a picture of all the characters in the story and are told to "SAY A SPELL". You must now type in a spell and press the RETURN key. If you type in the wrong spell then it will clear so that you can type in another. The correct spell is "BELLS". When you type this and press the RETURN key the microcomputer will play a tune and you will come to the end of the story. Pressing the SPACE bar at this point will take you back to the contents page.

## **Disc 2: Supplementary activities**

The menu on this disc offers two programs of resource material for a topic on Droom and six programs which could be used for extension activities related to mathematical elements of the main adventure.

### **1. Descriptions of Buildings and Rooms**

If you choose this option, after you press 1 you will see a heading entitled "THE WORLD OF THE DREAD DRAGON DROOM" and commands for FORWARD, BACKWARD and END at the foot of the page. The program is still loading at this stage so do not touch the keys until you see the description of room number 1 on the screen. To move forward or backward through the descriptions use the arrow keys at the top right of the keyboard. There are descriptions of 18 rooms (a printed version of the descriptions can be found at the back of this booklet). Pressing "E" will take you back to the menu.

### **2. Polygram drawings**

When you choose this program you are taken to a second menu with nine options. The first eight options allow you to select a polygram, and option 9 will return you to the main menu.

This program operates in a slightly different way to the pentagram puzzle in the main adventure. As with the pentagram, you can draw a line by entering the start and finish letters of that line, but in this program you do not need to carry on from your finishing point. Typing the end letters of a line again will delete that line.

There is also a colour option. When you first use the program the name of the polygram is in red, the instructions in white and the positions in blue. These colours can be altered by pressing \* (without the shift key) and then pressing the SPACE bar until you find a colour you like; then you press \* again to fix the colours.

When you have finished drawing your polygram, pressing "@" will take you back to the program menu. You can now select another polygram or you can press 9 to return to the disc menu.

### 3. The Four Colour Map

This program operates in a similar way to the Rusty Robot problem in the main adventure. The rules are the same i.e. no two adjoining areas may be the same colour. Move the cursor to the area to be filled using the arrow keys and the press "R", "B", "G" or "Y" to colour the area. Pressing "C" will clear all the colours from the map, "E" will clear the last colour entered, "N" will take you to the next map in the sequence and "S" will stop this program and return you to the main menu.

#### 4. Binary Letter Codes

There are two options in this program:

1. The computer will choose a message.
2. You choose your message.

If you choose option 1 you are given a two or three word message, chosen at random from a list so that if you play again you will get a different message. If you choose option 2 you are asked to input your message, and then the program continues as for option 1. The switches are operated in exactly the same way as in "Secret Switches" in the main adventure. When you successfully complete the message you are told "WELL DONE" and are then returned to the main menu.

#### 5. Sliding Blocks

This is similar to the sliding block puzzle in the Giant's House, except that you have the choice of moving one, two or three purple squares. If you choose to move one square the puzzle is the same as in the main adventure; in this instance however there is no limit to the number of moves you may make. If you choose to move two squares they must move to the top corners, and if you choose three squares they must move to the top row. When you complete the task you are told how many moves you took, and then asked "Again?" If you answer "Y", you return to the choice of squares. If you answer "N" you are returned to the main menu.

## **6. Tower of Hanoi**

There is a fourth creature, Tiny Bit, in this version of the Tower of Hanoi, but the program operates in exactly the same way as the Wizard's puzzle in the main adventure.

## **7. Paths across a grid**

This program offers another three problems, in differing colour combinations, similar to the Dragon's floor problem. This program differs from the one encountered in the main adventure in that you can choose to have the trace on (your safe route remains marked when you are returned to the start) or off (as in the Dragon's floor). When you have crossed the floor you are asked "Again?". If you press "Y" you will be asked once more whether you want the trace on or off, and then shown another grid. If you answer "N" you will be returned to the main menu.

## **8. Droom's Picture Gallery**

This program begins with a menu of all the pictures in Droom's gallery. Pressing a letter will show you the picture, pressing the SPACE BAR will return you to this menu. You will need to press SHIFT and BREAK to return to the main disc menu.

## 9. Co-ordinates

This program is based on the problem in the Fairy's House, where you have to find Bluenose. At the beginning of the program you are asked how many tries you wish to have; you must have at least 10. You are then shown a grid with Little Bit in the top left corner, and you are given an instruction as to where you must move him. Little Bit is moved to the correct square using the arrow keys, and when he is in position press the SPACE bar. Then his feet will flash. If you press the space bar while Little Bit is in the wrong position, an error is recorded. The program continues until you have completed your chosen number of "tries", and then the SPACE bar sign appears. On pressing the SPACE bar you are returned to the main menu.

## SECTION 3

### Using "Droom" Thematically

#### A. Activities Immediately Arising from the Adventure

##### Introduction

The aim of this section of "Notes for Teachers" is to describe the various elements of the "Droom" adventure in terms of the educational ideas they stimulate. The story element of "Droom" is clearly a rich source of stimulating ideas for teachers and Part B, "Activities Developing from the Story", outlines some of the potential that the story, itself, might have for curricular use.

##### 1. THE MAP

##### Description

The map of the "village" in which all the characters of "Droom" live is displayed on the screen after the initial story screens. This map is an important element of "Droom" that is used for the first six sections of the adventure. The children are invited to drive to a house; they will in fact need to drive to all the houses in order to find out who lives in each one, and also to take note of the information they are given each time they visit a house because this information will help them to plan their subsequent journeys more efficiently. Whenever they drive near

a house they are told whose house it is and asked if they want to go in. If their reply is "N", then the map reappears and they can drive to another house. If they answer "Y", then one of three things will happen; they may find the door is locked, or that the occupant of the house is out or they may be let in. It is for the children to discover for themselves about each house, and it is important that they drive to all the houses to make these discoveries.

### Preliminary Activities

The children should have no difficulty in driving the car, if they are shown which keys to use. Teachers may feel that the story represents the best introduction to the "Droom" adventure and being familiar with the story is perhaps the only preliminary experience necessary as the map itself uses pictorial representation.

### Follow-up Ideas

There is the possibility of fruitful discussion about the wisdom of entering a house that belongs to a witch, for example, and the references to trolls, wizards and dragons may suggest some ideas for creative work of all kinds. These same ideas could also be followed up in terms of children's literature. The booklist included towards the end of Section 3 may be useful in this respect. Children might also like to suggest where the various characters are, and what they are doing, if they are not at home.

The map suggests several ideas that could be developed in the classroom:-

- a) The children could draw their own maps of the village, and use these to record their journeys. They could "update" their maps as they discover which character lives in which house and they could also keep a records of the status of each house, i.e. whether the door is locked or not etc., and refer to this at later stages of the adventure.
- b) A large scale wall map could be built up. This could be a collaborative effort and should lead to opportunities for language development, particularly the vocabulary of position, e.g. above, below, left, right, and so on. If this map was to be an exact replica of the screen map then there are many possibilities for developing estimation or even measuring skills.
- c) The map could be developed as a three dimensional model of the village, and this could lead to many art and craft activities such as models of the houses and trees. A model car could be used to plan or record the journeys made.
- d) The screen map is a schematic map which only shows such information as might be useful for finding a way around the "Droom" village, but much imaginative and creative work could come from allowing the children to fill in the details. For example, there are no

roads marked, nor are there any public buildings and the children could be encouraged to discuss, draw, write, and model the real appearance of the village as they imagine it.

- e) The difference in sizes between the screen map, the wall map and individual or group maps could be used as an introduction to the idea of scale.
- f) Other maps could be drawn, either from of the real environment of the children, school, classroom etc., or from an imaginary "world" of the children's own creation. Teachers considering the latter might find a computer program called "Inhabitant" from Ladybird/Longman useful; this program encourages children to develop an imaginary world by asking a series of stimulating questions.

## **2. THE SPELL BOOKS**

### **Description**

After visiting all the houses, the children will find they are invited into the witch's house whenever they drive up to it. They may need some persuading if they are experienced with adventure programs! On entering the house there are some story pages to read, and then the children are invited to help the witch find her spellbook from a collection of magic books. These are arranged on two

bookshelves, and are identified by letters of the alphabet. A book is chosen by pressing the appropriate key. The letter required will be selected at random by the computer, but this random selection will not be made until ten different keys have been pressed. Thus the required letter cannot be one of the first ten letters chosen by the children.

### Preliminary Activities

The children will need to be able to recognise the letters of the alphabet as upper-case, or at least be able to match them from the screen to the keyboard. Some familiarity with alphabetical order may be advantageous.

### Follow-up Ideas

The less than random nature of the selection process suggests possible investigations for a group of children to follow. The idea of "fairness" in what are apparently random choices could be looked at in terms of the computer, dice, spinning wheels and even in children's choosing games such as "eenie-meenie" etc.

The books in the adventure are arranged neatly on shelves, and are arranged in alphabetical order. This suggests the topic of libraries and book-care, as well as activities related to order and sequence. Perhaps the children will suggest that a cataloguing system would make it easier for the witch to find the particular spell book she wants!

### 3. THE SPELLS

#### Description

When the correct spell book is selected the children are shown its contents page. They are asked "Which spell do you want to read?" and they choose by selecting a number from 1 to 5. The children might like to make a record of what each spell will do, as they will need to use the spells at a later stage of the adventure.

#### Preliminary Activities

The children should be able to find the number keys, and to discriminate between these and the red Function keys which also have numbers on them but which are not used.

#### Follow-up Ideas

The children will notice that the names of the "Droom" spells are in some way related to their effects, and they might like to invent similar ones of their own; these could be illustrated and bound into spell books.

Further library skills are suggested by this section of "Droom". The idea of a contents page could be explored, and the children might like to incorporate one in their own books, whether they be the work of individual children or the result of a group effort. This might involve using page numbers, and the idea might develop

towards consideration of other ways books are organised, e.g. into chapters. Older children, who may write quite lengthy stories might like to arrange some of their writing in this form.

#### **4. FINDING BLUENOSE**

##### **Description**

The problem is to write the name of a fairy letter by letter on the screen. This is done by finding the cat with the blue nose among a background of cats with purple ones. These cats are arranged in a grid format, with columns labelled with letters and rows labelled with numbers. When children have found Bluenose, they can "win" one letter of the fairy's name by entering the cat's correct co-ordinates. This is repeated until the correct name is spelt.

##### **Preliminary Activities**

Some experience with simple co-ordinates would be a help to children for this part of "Droom"; in particular they will need to enter the ordered pairs in the correct order, and may need some preliminary activities aimed at giving some experience with the horizontal and vertical, rows and columns etc.

## Follow-up Ideas

This part of the program offers children figure-ground differentiation practice, in that they have to determine the position of the blue nosed cat among a background of purple ones, and provides practice with co-ordinates in an interesting way. Both of these ideas could be followed up.

Figure-ground discrimination is seen as an essential pre-reading and early reading skill. Similar exercises could be developed as games using paper or concrete materials. For example, the drawings of the other characters in "Droom" could be duplicated and arranged in a similar way that the arrangement in the computer problem, these could be coloured in and used for figure-ground practice. Variations on this idea could use letters, numbers, shapes and so on. It is possible to build up a collection of games which develop figure-ground skills in discriminations which differentiate between shapes, colours, size and orientation.

The co-ordinate theme could lead to many mathematical activities and topics. Given time, it could be an introduction to graph work using cartesian co-ordinates, and the difference between the identification of a region on a grid and the identification of a unique point on a cartesian system could be explored. For example, children could fill a grid of squared paper with letters,

and use the co-ordinates of each letter to write messages in code. Buried treasure games could be created using sand trays. The "treasure" would be hidden secretly by the teacher before the game started, and the children would be given sets of instructions such as "right 4", "up 3" etc., the unit of measure could be anything to hand, and, of course, then children could develop their own paper versions of this. They could mark the treasure on the reverse of a map which has a grid drawn on it, and create a set of instructions using co-ordinate format to lead to the treasure. A correct result could be checked by looking on the reverse side of the paper. This pirate map theme could be developed into many areas of map work, including latitude and longitude, grid references on Ordnance Survey maps or road atlas and the creation, by the children, of maps of their school, home or local area.

## **5. THE GIANT'S HOUSE-SLIDING BLOCK PUZZLE**

### **Description**

This emulates the plastic puzzles which have a number of tiles which must be rearranged to form a pattern or picture. A space is left empty to enable this to be achieved. In this case the children are expected to move a purple square to the top right hand position of the puzzle. This sort of activity is a puzzle rather than a problem, and it has close relatives in Rubik cubes, etc. and jigsaws.

## Preliminary Activities

It is essential that children have some successful experience with sliding block puzzles and jigsaws before attempting this part of the adventure. The ideas and language used will be meaningless to the children if they cannot relate it to concrete experiences. There are many sliding block puzzles available which are reasonably priced in toyshops etc.

## Follow-up Ideas

The mathematics from this activity would come from encouraging the children to find alternative solution methods, by counting their moves, by trying to use the smallest number of moves and by considering the possibility of odd or even numbers of moves for the puzzle within "Droom". Exploration of the various relationships that these considerations should highlight could be by creating jigsaws and puzzles of their own. These could be made out of card or more permanent ones could be made from wooden blocks, in which case each face of the blocks could have a different puzzle, or perhaps the three dimensionality of Rubik cubes could be emulated. If puzzles with different numbers of blocks are used then a children can explore the relationship between the minimum number of moves and the number of blocks etc. The ESM program "Jigsaw/Sliding Block" or the similar program from Acornsoft may be found useful as will the related activity on the disc of supplementary programs for "Droom".

"crossing the Floor" has obvious similarities to finding the way around a maze and perhaps a visit to a full sized one would be interesting for children. In any event there are many paper mazes available in puzzle books and so on, and it might be valuable for children to make their own.

## **6. THE TROLLS HOUSE-POLYGRAMS**

### **Description**

The problem here is to find a route, and there are several possibilities, around the set of letters in such a way that each letter is visited exactly twice while obeying the rule that no line that joins letters is followed more than once.

### **Preliminary Activities**

The children may need an explanation of the rules of the problem, and they may require help with the details of the screen display.

## Follow-up Activities

The polygram puzzle could lead to several geometry topics:-

- a) When the children have completed the polygram successfully, they will notice that they have constructed a pentagon within a pentagon, the new pentagon being formed with the diagonals of the original. They could try to find out if this phenomenon occurs with other shapes if their diagonals are drawn.
- b) The number of possible diagonals obviously depends on the number of sides of the shape, this relationship could be explored as a pencil and paper activity as well as by using the associated supplementary program on Disc 2.

- c) There are many examples of puzzles related to the polygram exercise in children's annuals and puzzle books. The basic formula is a set of people/vehicles/animals each of which has to travel to a new house/town/kennel while obeying the rule that no two routes must intersect. The children might like to do some of these and invent some for themselves. This idea could be developed toward the idea of topological maps such as those of the London Underground, in which it is the intersections that are important rather than the exact shapes. There are many activities related to this topic, including knots, networks and flow charts.

## **7. THE WIZARD'S HOUSE-THE TOWERS OF HANOI**

### **Description**

This classical puzzle involves moving three different sized playing pieces from one hole to another, while following the rule that no piece can sit on a piece smaller than itself. It can be transformed into a mathematical or logical problem if it is extended to establish the rule which relates the minimum number of moves required to move any given number of objects into a number of holes. The supplementary program on Disc 2 may be useful for this activity.

## Preliminary Activities

Children will need to have experience of the language of size and position used in the Towers of Hanoi problem. Many activities suggest themselves:-

- a) Arranging groups of children, objects etc. into rank order by size both biggest to smallest and vice versa.
- b) Experience with physical forms of the problem using toy bricks or anything else to hand would be invaluable.

## Follow-up Ideas

A lot of mathematical language can arise from talking about this part of "Droom", especially the vocabulary of relative and actual size, weight and position. For example, an interesting set of investigations should arise from asking the children if big things are always heavier than little ones. Also the children should be able to find situations where large things are on top of smaller ones, Tudor buildings belisha beacons and circus balancing acts, this in turn should lead to a consideration of what is meant by "bigger" and "smaller".

## **8. THE DRAGON'S HOUSE-CROSSING THE FLOOR**

### Description

This is a problem in sequencing. In order to find the safe path across the floor, the children will need to establish which pattern of colours is successful. There should only be a unique path which will use a repeating sequence of three colours.

## Preliminary Activities

Experience with sequencing will be useful for children. They will need to be able to recognise the various possibilities for patterns in this problem. They could have practice with sequences of numbers, letters, shapes and colours. They will benefit from having some experience with repeating sequences, such as 123123123 etc.

## Follow-up Ideas

Many variations of this theme are possible, using different types of sequence, or by making the patterns longer and more complicated. The sequences could be numbers, letters, shapes and so on. They could be used to spell out secret messages or names of the children or characters from the "Droom" adventure. Children making their own puzzles will need to do a lot of careful planning and checking if their puzzles are to have only one successful route, yet have a few convincing "red herrings" as well.

Finding the way often involves giving or following instructions and there are many ways that this theme could be explored; the Concept 7-9 materials provide activities linked to this topic and teachers and children could develop their own ideas in connection with moving around the school or playground by following a sequence of instructions. Some quite specific communication skills would be developed by these sorts of activities which could be developed further into map work other instruction following circumstances as cooking or model building.

## 9. SECRET SWITCHES

### Description

The problem in this section is to spell a fairy's name using the numbers 1 to 26 to represent the letters A to Z. This is achieved by switching on the bulbs which represent the numbers required.

Unfortunately, bulbs are only available for 1, 2, 4, 8 and 16, but combination of lights, which add up to the number required, can be used.

### Follow up-Ideas

This element of the adventure has obvious links with binary arithmetic and it offers much potential in this area:-

- a) The problem could be reproduced as a science/technology project, using real

(low voltage!) bulbs and switches.

- b) The children could tackle some simple arithmetic in binary form.
- c) Many children will have noticed that the computer sometimes displays numbers in base 16, perhaps they would like to experiment with number lines and arithmetic in this base, they may like to invent symbols and names for the digits in base 16 that count the decimal equivalent of 10, 11, 12, 13, 14 and 15.
- d) Children might like to consider why it is, that if numbers can be made to work sensibly in any base, the international standard base is 10.

Variations of the computer problem would be to write coded messages in numeric form, some children might even want to keep their different bases for replies etc. this could lead to many interesting activities on codes, especially those which substitute numbers for letters. Consideration as to how such codes might be broken could lead to looking at patterns in spelling and language.

## 10. THE ROBOT

### Description

This is a variation on the classic "four colour" problem. In this case the children are given the pattern of regions, in the shape of a robot. The problem is to fill in the regions with the three colours in such a way that no two adjacent

regions are coloured in the same colour.

### Preliminary Activities

Some practical experience with colouring in spaces with a limited number of colours will be a useful introduction to the problem. Children will need to understand the idea of adjacent regions, i.e. spaces with common edges, and to differentiate between these and areas which meet at a corner only.

### Follow-up Ideas

Children could explore the possibility of designing a set of spaces arranged so that four colours are necessarily needed; this exploration need not be restricted to work in two dimensions, e.g. on sheets of paper, but could usefully be extended to work on surfaces that enclose spaces e.g. balloons covered in paper mache or a model of the robot. Some interesting results should arise, and perhaps the children would like to think about the colouring problem in relation to a world map and a globe.

Investigating surfaces, lines spaces could lead to many related activities:-

- a) Moebus strips-paper strips glued into loops, with varying numbers of twists from none, i.e. a plain "hoop", to as many twists as the strength of the paper will allow. The problem comes from trying to decide how many surfaces and edges each loop has.

- b) Children might like to play with loops of string placed on a table, perhaps trying to decide which spaces are inside a loop and which are outside.
- c) There are some interesting relationships to be discovered by counting the number of loops and crossover points in a twisted loop of string.

## **11. BOTTLES**

### **Description**

This is a version of the well known memory game of pelmanism, in which the children are expected to find three pairs of bottles by entering the coordinates for the doors they think each bottle is behind.

### **Preliminary Activities**

There are many concrete variations of this game which could be used as an introduction. Most of these will use cards, either commercial games cards, such as "Happy Families" or "Donkey", alternatively teachers could make their own. Any symbols could be used, including numbers and letters, as well as the characters from "Droom" itself.

### **Follow-up Ideas**

This is essentially an exercise developing short term memory skills. Kim's Game would be a useful variation: here the children are shown a collection of objects and asked to look at them for a given

length of time. After this time the children must look away while one of the objects is removed. The game is to remember which one has gone. Variations on this theme would include remembering all the objects or noticing which one had been moved to a new position.

## **12. THE BATTLE WITH DROOM**

### **Description**

This is a recreational reward activity for children who have persevered this far with the adventure, but there is some pattern to the way the game is played. The children are bound to be successful on the seventh attempt, they might be able to discover this for themselves.

### **Preliminary Activities**

The children will need to be able to use the appropriate keys on the computer and will need to recall that Droom's weak spot is between his ears.

### **Follow-up Ideas**

This lends itself to creative activities in many media. Drama, art, modelling and language could be used to describe the battle. Children's literature is full of accounts of heroic battles, see the booklist for further ideas.

## **13. THE JOURNEY HOME**

### **Description**

This is a small programming exercise. The

children have to enter a series of instructions using the format direction, number that will direct the car all the way to the castle. There are indications to the children of the likely positions of the errors in their program, and they will eventually be able to succeed. There is estimation of distance as well as some good practice with the language of direction and orientation involved with this element.

### Preliminary Activities

Suitable concrete experience could be given with activities in which the children have to give and obey sets of instructions. These could be in coded form to simulate the computer's limited vocabulary. For example children could take it in turns to be a 'robot' that only understand forward, backward, left and right and a number to represent a number of paces. The other children will have to program hm, either in writing or speech, to perform certain journeys, such as going to the school hall etc.

Other activities using ideas, such as those in 'Concept 7-9', which develop the giving and following of instructions would be useful preliminaries.

There is an element of estimation of distances in the Journey Home, and teachers might like to spend some time on simple exercises related to this.

The screen layout for the Journey Home is in the form of a stylised map. Copies or variations of this, in conjunction with toy cars etc. could be used to give some

practice in left, right differentiation, estimation and sequencing.

The microcomputer program 'Crash' in the MicroPrimer pack might be relevant to this problem, although teachers should note that "Crash", mistakenly, does not use the same scale for diagonal moves as it does for horizontal and vertical ones.

#### Follow-up Ideas

Children and teachers could devise their own, more complicated, versions of the game. These would be in the form of maps or models, and could be related to real journey, such as from home to school etc.

The children could make sets of instructions to help people lost in their locality, and begin to discover how difficult this can be.

Other situations using sets of instructions could be introduced to the children. For example, cooking or model making.

The programming theme could be developed further by using one of the Logo type of programs for the BBC microcomputer.

## Preliminary Activities

Experience with sequencing will be useful for children. They will need to be able to recognise the various possibilities for patterns in this problem. They could have practice with sequences of numbers, letters, shapes and colours. They will benefit from having some experience with repeating sequences, such as 123123123 etc.

## Follow-up Ideas

Many variations of this theme are possible, using different types of sequence, or by making the patterns longer and more complicated. The sequences could be numbers, letters, shapes and so on. They could be used to spell out secret messages or names of the children or characters from the "Droom" adventure. Children making their own puzzles will need to do a lot of careful planning and checking if their puzzles are to have only one successful route, yet have a few convincing "red herrings" as well.

"crossing the Floor" has obvious similarities to finding the way around a maze and perhaps a visit to a full sized one would be interesting for children. In any event there are many paper mazes available in puzzle books and so on, and it might be valuable for children to make their own.

## B. Activities Developing from the Story

1. There is a lot of reading in both the introductory story and the computer program. Teachers may wish to read the story to the children in order to set the scene before the program is used, and then allow the children to read the story again when they wish. If some children are likely to have difficulty in reading the screen story it may be possible to structure the groups so that each contains an able reader.
2. Apart from the oral language promoted by using the program, there are many opportunities for language development away from the computer, much of which relates to creative activities. In all of these activities there are possibilities for the use of mathematical language, especially related to size, position and time.
3. The story of "Droom" offers many opportunities for dance, drama or mime. Role play by younger children can be extended into drama by older ones as they enact part(s) of the story or experiment with the results of alternative happenings. If Little Bit had not been able to defeat Droom, how would you have rescued Arminda? This may link to creative activities if the children make their own 'props', masks etc. Perhaps Droom can be made in the form of a Chinese

dragon, with a mask head and a cloth body (it may be possible to see a Chinese dragon locally if there is a celebration of the Chinese New Year). Masks could also be made for the frog and the trolls. Music can be used as a stimulus for some of the above activities. Suggestions for recorded music include 'Peer Gynt' and 'The Sorcerer's Apprentice', but the children may wish to experiment with percussion.

4. The large number of characters involved means that many of the class can be involved in a puppet play. Often shy children find it easier to express themselves through a puppet, rather than directly facing others. These can be in many forms: glove, sock or paper bag puppets, or stick puppets with papier mache or paper plate heads, or the characters cut out of card and mounted on sticks for shadow puppets.
5. The children can make up taped stories about "Droom", possibly experimenting with sound effects to emphasise parts of the story.
6. There are many possibilities for written language:
  - a. Reporting what has happened e.g. "How we found the silver key," or "How we made our dragon."

- b. Descriptive writing such as "My favourite character", "Henry's Castle", or "Our dragon".
  - c. Imaginative writing and poetry such as "If I had wings....", "Our book of spells" or "I am locked in a dungeon".
  - d. Predicting the outcome of the story.
7. There are possibilities for phonic work, perhaps looking at phonic digraphs e.g. dr, or looking at alliteration. "The wizard's wellies wait by the wall" and "deep dark dungeon" are deliberately included because the children like the effect. Perhaps they can make some phrases of their own.
  8. Graphs. These may be class graphs e.g. favourite characters, or group graphs e.g. the number of attempts needed at each problem.
  9. There are many opportunities for painting and drawing and collage using a variety of media. 'Comic strip' versions of the story, or wall stories, depending on the age of the children concerned can be accompanied by the children's writing. Collage pictures of the fairies, the wedding, the dragon etc. may link to mathematics e.g. 1 fairy has 2 wings, 2 fairies have 4 wings. It may be necessary to use a corridor wall for a picture of the

dragon if there is to be enough room for his long tail; he can be painted, or made him paper circles to represent his scales.

10. There are possibilities for 3-dimensional 'junk' models of Droom, the giant, the houses and castle, the room sets, cars. A castle can be made from boxes, large enough for the children to go into. This can be used for drama activities, or it can be used for role play in conjunction with the playhouse in one of many disguises (the witch/ wizard/ giant/ fairy/ troll/ dragon's house, or The Bits' hole). It may be used with box houses for Bigtrak work, as the children move the machine from one building to another. A model of the giant may be a collage fastened to the wall, or there may be a suitable point from which to hang a three-dimensional figure made of cloth or paper and then stuffed with newspaper. Remember to consider the weight of such a figure, and if this idea isn't suitable perhaps the giant could be made from boxes. The giant will need to stand by himself, so how tall can he be without being in danger of collapsing. It may also be possible to consider the sizes of things a giant would use; how large a chair would he need, or how big would his knife and fork be?

11. Clay or plasticene models can be made of the characters in the story.
12. Board games and their playing pieces can be designed. The boards may be in the shape of a dragon or a castle, with playing pieces made from clay, plasticene, Lego, or small pieces of 'junk'. Precise language is needed to give instructions to others as to how to play the game.
13. Sewing. Characters such as a dragon, frog or mouse, can be made from felt or similar material and then stuffed. Designs on Binca could relate to the polygrams, or to the co-ordinate games if using cross stitch. Fabric pictures can be made of most of the characters.
14. These are a few of the songs which have been found to link with the story of Droom:

Puff the Magic Dragon	Various sources
Maggon the Dragon	Apusskidu
A&C Black	
Song for a Bragging Dragon	Silly
Aunt Sally	Ward Lock
Gobbolino	Apusskidu
A&C Black	
There was an old witch	Apusskidu
A&C Black	
Five little frogs	Apusskidu
A&C Black	

Teachers may wish to make up their own songs about characters in the stories. This may involve putting their own words to a known tune, or making up a tune for the words of poems (perhaps using a limited number of chime bars).

15. Teachers may wish to consider the good or evil characters within the story. Must witches always be evil, as they are usually thought to be at Hallowe'en? Arminda was afraid of the dragon. Children may like to think of what makes them afraid? How do people feel when they are afraid? What can others do to help those who feel afraid?

Reference could perhaps be made to the story of St. George and the dragon.

Some of the characters in the story are friendly. What makes a good friend? Is it possible to be a good friend to more than just a few people?

16. Family celebrations. If any child has a wedding in the family their preparations and celebrations could link with Henry and Arminda's wedding. Teachers may also wish to consider that other people celebrate in different ways at different times. If using the program in the spring term there may be a link between Droom and Chinese dragons, and thus to the Chinese New Year. Look also at the lucky colour red.

### C. Using Droom With Pupils Having Special Educational Needs - A Case Study

When I was asked to try out the "Droom" computer program with a group of children with moderate learning difficulties I was unsure of the level at which to aim the program. After working through "Droom" at home I felt it was difficult and so I decided to start with the fifteen year olds and work down the age range in the school.

The story is a fairy story, something most fifteen year olds would shun, but I experienced little or no difficulty with the interest level, initially because of the relationship I had with the children and then because the program with its puzzles, graphics and humour took over and became the motivation to continue.

The children worked in groups of two; I have found this to be the best group size for the child with moderate learning difficulties as it promotes discussion and maximum participation without producing conflict. There is no reason however why larger groups should not be used in an ordinary school.

I introduced the program to each group in the same way, first reading through the screen version of the story and then leaving the children to get on with the puzzles. The better readers were then independent as they could read their own text, but the poorer readers were helped with the text when difficulties arose.

Two advantages were noticed here. First, the puzzles do not rely on the written word; this is of great benefit to the poor readers as once they have read each section of the story they derive great enjoyment from working out the puzzle without the "frustration of words". The second advantage was that the teacher could leave the group working on the puzzle and have the freedom to work with the rest of the class on other work or on work related to the program.

Little or no instruction was given with each puzzle and the children had to "discover" what to do for themselves. Although I did not initially realise it, this was an important advantage of the program. The "discovery situation" is a rare one for the slow learner to be in. Many of the groups rose to the situation and worked out their own methods of problem solving. The others required only a little help and then they too were able to continue.

When groups did experience problems with the puzzles the disc of supplementary programs was useful, as practice could be given on work related to the particular problem thus enabling the children to continue. In the time available I did not fully explore the use of the supplementary disc but I feel much work of an investigative nature could come from this second disc, as well as extension work to that experienced in the main program.

The response to the program was tremendous and the children could not wait for their next session. Because of this response I worked my way down the age range to a group of eleven year olds. So long as I ensured that each group had one child who had made a good start with reading the groups remained independent.

After a few sessions working with "Droom" I encouraged a wide variety of art and craft work, written work and mathematically related work, much of which is detailed in the accompanying flow chart. The children enjoyed all of this and some excellent work was produced. The characters which the children related to best were Droom, the Wizard, and Little Bit.

After this first experience of the program I feel that my method of attack would be much broader next time around. More useful work could be done by running workshop sessions with the children. The actual program would be only a part of each session, and other activities could include board games, Bigtrak activities, 3-dimensional puzzles, and investigative problems of a practical nature.

## D. BOOKLIST

This list was compiled with the help of the staffs of the schools which trialled the program for us, and Mr J Mayor and the staff of the Junior Library, Grimsby.

The letters in brackets after the book titles indicate the following approximate age range when read by the children themselves:

- A Fiction 5-7 years
- B Fiction 7-9 years
- C Fiction 9-13 years
- R Reference

Many books in the (C) range are included because they may be suitable for teachers to read to their children.

### DRAGONS

- Fabulous Beasts (R)  
M Beisner & A Lurie                      Jonathan Cape
- A Good Knight for Dragons (A)  
R Bradfield                                  World's Work
- Wu and the Yellow Dragon (A)  
M Clarke                                      Hart-Davis
- Dragon in Class Four (C)  
J Councel                                      Faber
- The Great Dragon Competition (C)  
J Cunliffe                                      Deutsch

The Dragon of Og (C) R Godden	MacMillan
The Reluctant Dragon (BC) K Grahame	Methuen
Charlie, Emma (series) (BC) M Greaves	Methuen
Book of dragons (C) R L Green	Puffin
Dragon Hunters Handbook (C) J Hargreaves	Granada
Georgina and the Dragon (B) J Jellinek	Warne
Gran's Dragon (BC) M Joy	Faber
There's No Such Thing as a Dragon (A) J Kent	Blackie
Dragon in danger (C) R Manning	Kestrel
The Dragon's Quest (C) R Manning	Kestrel
Green Smoke (C) R Manning	Kestrel
Dragon in the Harbour (C) R Manning	Kestrel
Book of Dragons (C) R Manning-Sanders	Methuen

The Dragon Who Could Only Breath Smoke	
E McLachlen	Brockhampton
Red Dragon (B)	
M Micklethwaite	MacDonald
The Fiery Dragon (B)	
E Nesbit	Kaye Ward
Dragons, Unicorns and Other Magical Beasts	
R Palmer	Hamilton
The Dragon in the Drain Pipe (C)	
M Prince	Hoder
Dragons, Giants and Witches (BC)	
C Rawson	Usborne
Dragon (series) (A)	
A Ruffell	Hamilton
Ninety Nine Dragons (BC)	
B Sleight	Puffin
Murdo (BC)	
M Speight	Collins
Dragons Live for ever (BC)	
R Swindells	Hodder
Albert (series) BC	
R Weir	Abelard
Everyone Knows What A Dragon Looks Like	
J Williams	Four Winds
St George and The Dragon	
Various sources	

## WITCHES

Simon and the Witch (B) M S Barry	Fontana Lions
Witch of Monopoly Manor (BC) M S Barry	Fontana Lions
Maggie Gumption (BC) M S Barry	Fontana Lions
Witch on Holiday (BC) M S Barry	Fontana Lions
Well Met by Witchlight (C) N Beachcroft	Heinemann
Trouble Among The Witches (B) J Cass	Hodder
Witch of Witchery Wood (B) J Cass	Hodder
Witch's Buttons (B) R Chew	Scholastic
Witch of Candlewick (B) M Cockett	Kaye & Ward
Dorrie (series) (B) P Coombs	World's Work
Ellie and the Hagwitch (BC) H Cresswell	P Hardy
Lizzie Ddripping (B) H Cresswell	BBC Pub.

The Witches (C)	
R Dayl	Jonathan Cape
Anna Witch (C)	
M Edmondson	Hamilton
Witches and the Grinnygog (C)	
D Edwards	Faber
Miss Grimscuttle (BC)	
J Furminger	Hodder
Oh no, Aunt Belladonna (BC)	
J Furminger	Hodder
Gemma and the Witch (AB)	
P Gilber	Hodder
Witches (ABC)	
C Hawkins	Granada
Which Whitch? (C)	
E Ibbotson	MacMillan
Heggerty Haggerty and the Dreadful Drought	
E Lindsay	Hamilton
A Book of Witches and Wizards (C)	
R Manning-Sanders	Methuen
Enchantments and Curses (C)	
R Manning-Sanders	Methuen
The Worst Witch (series) (B)	
J Murphy	Allison & B
The Wickedest Witch in the World (C)	
B Nichols	Knight

Wheaton book of Witches, Wizards and Warlocks D Oakden	Wheaton
The Witch in the Summerhouse (BC) P Oldfield	Hodder
My Favourite Book of Witches and Wizards (BC) G Osband	Heinemann
Meg and Mog (series) (A) J Pienkowski	Puffin
The Little Witch (C) O Preussler	Knight
Broomsticks and Beasticles (BC) B Sleigh	Puffin
Carbonel (BC) B Sleigh	Kestrel
Teeny-Tiny and the Witch-Woman (AB) B Walker	Puffin
Spell me a Witch (BC) B Willard	Hamilton
Gobbolino, the Witch's Cat (BC) U M Williams	Puffin
Holiday Witch (B) R Wilson	Hodder
Secret Witch (B) R Wilson	Hodder
Hungry Witch (B) R Wilson	Hodder

The Witch's Big Toe (BC)  
R Wright Methuen

### **WIZARDS**

The Sorcerer's Scrapbook (BC)  
M Berenstain Random House

William the Wizard (B)  
P Cleveland-Peck Hamilton

Book of Sorcerers and Spells (C)  
R Manning-Sanders Methuen

Book of Wizards (C)  
R Manning-Sanders Magnet

Derwin (C)  
R Taylor Andersen

The Sorcerer's Apprentice  
Various Sources

### **GIANTS**

The Hungry Giant  
Stagel (Story Chest E J Arnold  
(This story contains descriptions of  
bommyknockers).

Jack and the Beanstalk  
Various sources

The Giant's Feast (AB)  
M Bollinger

The Giant who Stole the World (AB)  
J Cunliffe Deutsch

Giant Kippernose (B)  
J Cunliffe Deutsch

Jim and the Beanstalk (B)  
R Briggs

B.F.G. (C)  
R Dahl Cape

Giants, Giants, Giants (C)  
H Hoke Watts

Book of Giants (C)  
R Manning-Sanders Methuen

The Selfish Giant (BC)  
O Wilde

### **TROLLS**

Three Billy Goats Gruff (A)  
Various sources

Torum's Magic Drum (AB)  
J E Edwards Methuen

The Tomten (AB)  
A Lindgren Kestrel

The Christmas Tomten (AB)  
A Lindgren Kestrel

## **FAIRIES**

- |  |           |
|--|-----------|
| Necklace of Raindrops (BC)<br>J Aiken          | Puffin    |
| Kingdom Under the Sea (BC)<br>J Aiken          | Puffin    |
| Fairy Gold (BC)<br>R Ainsworth                 | Heinemann |
| Up the Airy Mountain (BC)<br>R Ainsworth       | Heinemann |
| Fairy Tale Treasury (AB)<br>R Briggs           | Hamilton  |
| Fairy Books (series) (BC)<br>A Lang            | Kestrel   |
| The Terribly Plain Princess (BC)<br>P Oldfield | Hodder    |
| Fairy Tales from Many Lands (BC)<br>A Rackham  | Heinemann |
| Fairy Tales (BC)<br>A Uttley                   | Puffin    |

## Descriptions of the rooms

### Room 1 The Witch's Kitchen

There is a table in the middle of the room. There are three stools round it. There is a red teapot on the table. A black cat is sitting on one of the stools.

You can see three windows. One has pink curtains, one has blue curtains and the other has green curtains. There is a yellow door next to the green window. The door is closed. There is a black cloak hanging behind the door.

### Room 2 The Witch's sitting room

You can see an armchair in front of a large fireplace. There is a cat sitting in the armchair on a red and white silk cushion. There is a cooking pot on the fire.

You can also see a broomstick, a long wand, four bats hanging from the lights, a large grandfather clock and a hat. The walls are light blue. The curtains are green and the carpets yellow. You can see a bookcase full of books.

### Room 3 The Giant's bedroom

In the middle of the room you can see a large bed. There is a giant sleeping

in it. The sheets are orange. There is a pot under the bed.

There are little mice running about everywhere. You can see a big club in the corner. There is a little table next to the bed. It has a lamp on it. The giant's coat is hanging on the door. You can see a pair of boots, a chair, and a vase of pink flowers on the windowsill.

#### **Room 4 The Wizard's Sitting Room**

There is a round table in the middle of the room. There is a white table cloth spread over it. There are piles and piles of delicious cakes and jellies. A blue lampshade is hanging over the table.

You can see a red armchair next to the fireplace and there is a large pile of books on the floor next to the other armchair.

You can also see a machine to make green icecream, jars and jars of sweets and two windows with their red curtains closed. A dog basket and a bird cage are near to the big rocking chair.

#### **Room 5 The Fairies' Garden**

In the middle of the garden is a pond filled with sparkling water. The trees which hang over the pond are always drinking from the fountain. Around the

pond the fairies have a fine lawn. They love sunbathing.

All round the edge of the garden are giant bell shaped flowers. The baby fairies love swinging from them. Hanging from each tree is a little swing where the fairies sit to knit. You can also see a wheelbarrow, a spade, two fairies playing with a yellow ball, a fairy picking red roses, a window-cleaning fairy and a pony with wings.

### **Room 6 Prince Henry's Castle**

Henry's Castle has many towers with flags flying from the top of each one. The walls are built from white stone. Soldiers are standing guard all over the castle in case Droom attacks. There are cannon everywhere. Henry stands at the main gates waiting to welcome you if you should return. The Castle moat has been emptied and many buckets of water stand waiting in case you are followed by Droom.

Henry's mother is looking from the highest window in the highest tower. His father stands by the cannon, ready to fight for his life.

### **Room 7 Little Bit's Hole**

This is a very special hole. Little tunnels lead off in all directions. Above each tunnel there is a brightly

shining lamp. In the middle of the hole there is a pile of GUNGE. This is Little Bit's favourite food.

In the darkest corner, next to the smallest tunnel, is a pile of soft leaves, grass clippings and feathers... Little Bit's bed. Next to the bed is a tiny pair of blue boots. A little green worm is sleeping in them. Hanging from the walls of the hole are DIGGERS... spades, knives, forks, drills and daggers. Underneath each one is a little bucket. Little Bit likes red and yellow flowers.

### **Room 8 The Dragon's Library**

There is a huge window in the middle of the longest wall. The window is open. When Droom attacks the town he flies from this window.

The floor is covered with square tiles. There is a large pile of books on the floor. Two large desks are under each of the other two windows. Under one of the desks you can see an enormous box of EMERGENCY matches.

A spare pair of wings hangs above the roaring fire in the fireplace. All the books in the bookcases are decorated with gold.

## **Room 9     The Mice's Cheese Store**

What a strong smell! The mice keep all their cheese on an enormous table. There are little ladders leading from the floor to the table top. At the bottom of each ladder there is a guard mouse holding a long pin!!!

There are three huge churns next to the table. Each churn has a mouse wheel fixed to it. Mice are running round inside the wheels churning butter, which is their second favourite food.

Underneath the table is a Cat Trap... the mice don't like cats. Against the wall is a rack of pegs which the mice wear on their noses when it's hot and the cheese pongs.

## **Room 10     The Troll's Treasure Room**

In the middle of the room there are ten yellow sacks of gold, each tied with string. In the corner is the Red Troll, asleep in a rocking chair. The windows are high up and covered with bars. There are open wooden chests. Each chest is filled with precious stones....diamonds, emeralds, rubies, sapphires.

There are coat hooks on the walls. Most of the hooks have rich cloaks and crowns hanging from them. The fire is toasting the troll's toes. He took his boots off and left them near the door. In the opposite corner there is a large cauldron where the trolls melt down their stolen gold.

## **Room 11    The Room of Gloom**

Black curtains hang from dirty broken windows. Skeletons hang in each corner. The door is dark red. There is a sign hanging above it which says...GLOOMERY. The only light in the room is from a candle in the middle of the table. Sad looking servants wander around carrying empty trays. Cobwebs and little black spiders are everywhere. Above the fire place is a mirror. The mirror doesn't seem to work any more. An old black stove stands next to the table. There is a steaming pot of dirty dragon's socks. A record player is playing music at a speed far too slow. A little dwarf sits in the corner. He is scraping a knife across a plate.

## **Room 12    The Tap Room**

There is an enormous tap sticking out of the wall. Underneath the tap you can see a red bucket. This is the only tap in the house. It is only used when Droom sets fire to his house. Above the tap are coiled hosepipes, firemen's axes, and a helmet. Above the door there is a large alarm bell. There are some steps leading to the guardroom above. Against the wall of this underground room rests a row of wellies. There is a pile of chains in one corner. Under the stairs is a door... the door to the cells... Droom is down there.

### **Room 13    The Troll's Entrance Hall**

Behind the door there is a little row of hooks. On three of the hooks hang green cloaks, and on the fourth a red cloak. Underneath the cloaks there is a rack of bommyknockers.

There are three goats tied up in one of the corners. The floor is covered with straw. Trolls will collect any old rubbish they can find. On their last trip into town they brought back....old bottles, bikes, beds, broomsticks... clocks chickens and cases of crockery. The three windows are open. Each has a cactus in a little pot sitting on the windowsill.

### **Room 14    Arminda's Cell**

The walls are made of large stone blocks. The door is made of steel. It has a small barred window in it. There is only one other window. That too has bars. Through the window you can see FIRE.

There is a small bed in one corner, one small stool and a table. In the middle of the table is a photograph of Prince Henry.

On the wall there is a small shelf. There is a single red rose in a jam jar on that shelf.

Next to the rose are four books. The only light is from two burning torches set into the walls.

## **Room 15    The Dragon's Entrance Hall**

This is a very bright room. There are little fires burning all over the floor. Every so often a little dwarf comes in and puts one piece of coal on each of the fires.

The walls are red and are covered with gold-framed mirrors. There is a long bench under the one window. There are little bowls of water under the bench. In one corner there is a pile of red hot stones. Another little dwarf takes the bowls one by one and pours the water over the red hot stones to make steam. Hanging from the ceiling there are hundreds of fireflies giving blue, purple and orange light.

## **Room 16    The Tunnel of Fire**

At one end of the tunnel you can see five switches and five lamps. At the other end is a box. Sitting on the box is a rusty robot. There is a padlocked cupboard next to the robot. There is a sign on it which says... OIL.

There are holes in the walls of the tunnel. This is where the fire comes out when the lamps are off. The tunnel walls are made of a strange kind of blue rock.

There are large iron rings set into the wall. Chains hang from the rings. Black skeletons hang from some of the chains.

## **Room 17    The Dragon's Wine Cellar**

Along the whole of one wall is an enormous cupboard. It has many little doors. Some are open. A red coated man stands guard. Round the other walls are suits of armour.... and there are racks of spears in the corner.

There are corks all over the bare stone floor. There is a very long table in the middle of the room. The Dragon likes making his own wine and this table is filled with pots, pans and bottles.

Set into the walls are little stone hollows. In each of the stone hollows there is a lighted candle.

## **Room 18    Droom's Bedroom**

Droom sleeps outside the cells. His bed is in the middle of the room. He sleeps in an enormous pile of GOLD...gold coins, rings, bars and watches. Droom sits on top of the pile. He spits out fire at anyone who dares to come near. There is a sad face looking out of each cell door. A huge bunch of keys hangs on the wall. Droom only wakes when a dwarf enters carrying new treasure. There is only one light in the room... an enormous golden lamp, which stands next to the pile of gold.

