OVERVIEW OF THE CASE STUDY

This case study is based around video clips of the Swanscombe Tigers youth football team training and preparing for a game. There are three activities altogether, which can be used consecutively, in any order or as stand-alone lessons.

1 Pre-Match training

2. Passing the ball

3. Penalties

Each activity provides opportunities for pupils to demonstrate their competence in using key mathematical skills and processes as well as encountering a range of curriculum content.

RATIONALE

Each of the activities includes actuality video and real-life data to give pupils the opportunity to grapple with realistic problems and decision making, as opposed to fabricated data that gives 'tidy' answers. Consequently, this means there is no single correct answer or response and pupils are required to justify their own answers or decisions.

Similarly, although there are suggestions within the Teachers' notes on how to proceed with each activity, pupils should be encouraged to seek their own approaches and solutions where possible, thus giving them greater ownership of the task as well as increased cognitive challenge.

The Teachers' notes also contain suggestions for differentiating tasks, though these should be seen only as prompts, as teachers and pupils may devise their own tasks and problems using the same materials.

In some activities a selection of on-screen tools is provided, with which teachers should become familiar and bring to pupils attention as necessary. However, they are primarily there for pupils to decide to use as they see fit and when they think they will be helpful to the approach the pupils adopt, rather than for a specific predetermined purpose.

ACTIVITY OUTLINES

1. Pre-Match training

In this activity, several video clips show players carrying out different football-related training tasks. Based on the players' performances, pupils must decide which positions on the field the different players might be best suited to.

2. Passing the ball

A series of video clips shows two players passing the ball and a third player trying to intercept it. This provides a stimulus for pupils to consider the key factors involved in ensuring a successful pass or interception. On-screen tools enable them to test their conjectures.

3. Penalties

A video of several penalty kicks starts pupils thinking about those areas of the goal that are 'better' to aim at to score a goal. They can then create a hypothesis about the chances of scoring in different sectors of the goalmouth. An interactive penalty-taking tool also enables pupils to explore experimental and theoretical probabilities further, and an interactive 3-D diagram of the penalty area allows them to investigate the geometry of penalty taking.

DIFFERENTIATION

In each of the teachers' notes there are suggestions for extension activities as well as guidance that might be given to support pupils. When introducing the tasks, the amount of guidance the teacher gives to the pupils can be varied according to the ability of the class and their familiarity with less structured activities like these.

Many of the activities are 'self-differentiating' since the strategies pupils will devise for making decisions and the explanations they come up with will naturally be more or less sophisticated according to their levels of mathematical understanding. If the teacher gives too much guidance to pupils about how to carry out the task, it will defeat the object of pupils making their own decisions and can result in the task becoming either too easy or too complicated for pupils.

INTRODUCING THE ACTIVITIES

Each activity has its own built-in introductory video in which the Swanscombe Tigers team coach explains the investigation he's setting pupils and asks them to 'report back' to him with their conclusions. Clearly it is up to teachers to decide how best to introduce each activity, but it may be sufficient and more intriguing for pupils just to play these introductory clips to the whole class and let them get started, supporting them as necessary.

With this type of work, our general advice is for the teacher to leave the pupils to decide on their own course of action where possible, though during the activity it's helpful to discuss with individuals or groups what they're planning or attempting to do by asking questions but avoiding giving direct answers. Once the teacher gives an answer or validates one, it's often perceived as 'correct' by the pupils and stifles their creativity.

Similarly, when drawing the class together to share their approaches part-way through the lesson or in the plenary session, it's important for teachers to praise or value groups equally and encourage discussion and debate amongst the class without giving any indication of their own thoughts. This encourages pupils to realise there is no single correct answer to many problems, as any hint of favour for a particular response immediately suggests it's the right one and the others are wrong.

Having said that, there are some 'answers' provided in the teachers' resources for the convenience of teachers, but these should be used cautiously. Much of it is to save teachers from having to carry out all the tasks in detail for themselves and to enable them to spot glaring errors in pupils' work and ask relevant probing questions to help pupils correct their own mistakes.

If pupils are unfamiliar with working on less structured tasks like this, the *Bowland Professional Development* modules offer some short activities and suggestions about how teachers and pupils might begin to work in this way. To prepare for this case study, the Bowland PD module *'Structured v s Unstructured Tasks'* is particularly relevant.

GROUPINGS

When working on these tasks it's helpful if pupils are able to discuss their ideas and approaches. It's envisaged that pupils will work collaboratively with another pupil, or perhaps in groups of three, on each activity. There are arguments for and against friendship groupings and also for and against ability groups. Pupils who are unfamiliar with working in a less structured way may feel more confident if they can work with friends. Pupils may benefit from working with others of a similar ability, but can also benefit in different ways from working in mixed ability groupings and with pupils whom they know less well.

RESOURCES

Each of the activities works most effectively if each group has access to a computer so they can work with the material independently. If this is not possible, some parts of the activities could be used on a projector/whiteboard with a whole class as long as significant contributions from pupils are encouraged. Each activity comes with printable sheets for pupils to refer to or to record their responses, though they could construct their own data tables or produce a report in their own style without these.

The *Teacher Support* resources for all the activities are accessible from the introductory page of the case study, which also contains the team coach's first introductory video. To get back to the case study, close or minimise the resources pdf file.

As teachers will play the introductory page and navigate to a specific activity with the whole class, it's unlikely pupils will stumble into the teacher resources by themselves, though teachers should look out for more inquisitive pupils poking around in an attempt to find the 'right answers'!