

## Activity 3: How can the business reduce food miles and delivery costs?

### Introduction

The Delivery Manager for the co-operative decides the most efficient routes for delivering carrots to customers to ensure food miles are kept to a minimum. Consequently the loading of the lorry must be carefully planned so each customer order can be unloaded in the correct sequence. Every customer orders different quantities of carrots. The Delivery Manager currently uses a handwritten grid which represents the back of the lorry, and on this grid he specifies the position of each pallet and the delivery location. The pallets at the back of the lorry are delivered first.

The **Final delivery** chapter (chapter six) of the video stimulus shows how the delivery is currently organised. Although most of the drivers use satellite navigation to guide them to their destination, further automation is not currently possible as the co-operative uses lorries from a number of different haulage companies.

This activity challenges learners to investigate solutions that might improve the current system.

Learners should be able to:

- develop their problem solving skills
- develop a business solution using standard software applications.

### Resources required

- A means of playing the **Using IT to develop a farm enterprise – multimedia presentation**. Headphones will be required if learners are working in small groups.
- Optional: a data projector or interactive whiteboard to view the video as a whole group and present learners' findings.
- Optional: the Delivery Manager's hand-drawn grid (linked to the video stimulus).
- **Sheet 3.1: Reducing food miles and delivery costs: Briefing sheet.**
- **Spreadsheet 3.2: The mileage spreadsheet** (included in a document – separate to these guidance notes).

### Suggested approach

#### Stage 1: Investigating the current system

Ask the learners to watch chapter six of the video which shows how the delivery of carrots is planned and organised (you may like to contextualise the clip by playing the **Introduction to the Freshgro co-operative** chapter – chapter one, first). Ask them to take notes on how the delivery firm plans the route each lorry follows. They may need to watch the video several times to make sure they have all the information they need.

### **Possible prompt questions.**

- What is the fuel consumption of each lorry?
- How much will it cost for a lorry to travel from the Freshgro headquarters to a local town? (Note: 1 gallon = 4.54 litres.)

### **Stage 2: Setting the challenge**

This challenge is deliberately open-ended. The challenge is to find a solution that improves on the current method. At the moment the current system relies on the Delivery Manager's local knowledge. Ask the learners why this might cause problems.

The learners are given two sources of information: the video stimulus and a spreadsheet table that states the distance between locations and the time taken to travel between centres.

Some possible questions are listed below.

- How does the current system work?
- What problems can you see with the current system?
- What are the advantages to the Delivery Manager and the co-operative – of using an IT solution to produce delivery sheets?
- How might you persuade the Delivery Manager to adopt your ideas?

Working in small groups, ask learners to discuss a range of possible solutions using one of the graphic organisers in the Co-operative learning area of the IT resource. Give them a deadline which includes time to present their case to the Delivery Manager.

### **Assessment for learning**

Use the graphic organisers to review the ideas that the learners have developed and then suggest ways that may develop their ideas further. At this point there will be a wide range of solutions. Make sure that less confident learners will be able to develop a simple solution and encourage other learners to consider a more complex solution that will stretch and challenge them.

Some learners may benefit from building their own matrix using a spreadsheet. Ask them to identify five centres in their local area and develop a similar matrix to the one provided, showing the distance between centres and the time taken to travel between them. Learners may find it useful to search for a local map to help them identify locations.

### **Stage 3: Interim plenary**

Ask each group to share their ideas with another group. Encourage learners to suggest improvements to each others' ideas.

The Peer review area of the IT resources contains suggestions of how to prepare your learners for giving and receiving feedback.

After this review, ask each group to draw up a shortlist that describes the solution they intend to develop.

### **Assessment for learning**

Ask the peer reviewers to suggest ways each solution can be improved and use this to check on progress. Encourage learners to reflect on the solutions they have developed and suggest further improvements.

### **Stage 4: Developing an implementation plan**

Encourage the learners to plan how they are going to solve the problem and allocate tasks. You might like to direct them to the **SuccessPlanner** tool within the Planning toolkit area of the **Effective teaching and learning** website, to help them plan their time.

There are a wide variety of solutions to this problem. The mileage and time matrixes within the spreadsheet provided can be used as prompts to help learners consider the development of an automated model. Three examples of solutions are provided but these should not be shared with the learners.

Some learners might argue that a simple solution may be more useful to the Delivery Manager; this is a reasonable response as long as they can back up their point of view.

### **Assessment for learning**

Are the learners confident they can calculate mileage and fuel consumption? It may be useful to check their numeracy skills before they design the final solution.

### **Stage 5: Creating a solution**

This area of the challenge may be limited by the time available, so you might need to discuss with each group how much they can achieve in the given timeframe.

Encourage learners to identify points in the development of the solution where they come together to monitor the progress made. You will be able to help them reflect on their progress by using regular reviews.

## **Assessment for learning**

Identify the points where learners have decided to monitor their progress, and hold short reviews when they have completed their discussions. The **SuccessPlanner** tool within the Planning toolkit area of the **Effective teaching and learning** website provides one way of structuring these reviews.

Some possible review questions are listed below.

- What progress have you made so far?
- What problems have you found?
- Have you been able to solve them?
- Have you made any changes to your solution?
- What do you hope to achieve before your next review?

## **Stage 6: Presenting the solution**

Invite the learners to think of different approaches to presenting their solutions. At the moment, the Delivery Manager may need to be persuaded that there is a better delivery method. Possible ideas might vary from a simple presentation, to a video or audio presentation.

Learners might present their solutions to the whole group or use a peer panel approach. You can find further guidance on using a peer panel approach in the Peer review area of the IT resources. They may also be able to share their solutions using a bulletin board or via a Virtual Learning Environment (VLE).

## **Stage 7: Reflection**

Ask each group to draw up a shortlist of what they think worked well and what could be improved. Share these ideas with the whole group.

Possible questions might include the following.

- Are there any common themes between the groups?
- Are there things that everyone needs to remember when taking part in a similar activity in the future?
- Is there a list of top tips that we could develop and use as a guide for next time?

## **Assessment for learning**

This activity could be a useful build up activity to prepare learners for external assessment. By reviewing the solutions that the learners reach you will be able to develop individual action plans that will help them identify the skills they need to develop before tackling their next assignment.