

# **Warehousing and Distribution Center Operations Project**

**Project-Based Learning in Cooperation with  
FAMILY DOLLAR STORES, INC.**

**MENTOR GUIDE**

**MID-SOUTH COMMUNITY COLLEGE  
WEST MEMPHIS, AR**

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# Warehousing and Distribution Center Operations Project

## Mentor Guide

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# Warehousing & Distribution Center Operations Project Project Overview

## **About this Project**

Warehousing and Distribution Center Operations is a career exploration project for high school and two-year college students. It uses a problem-based approach to teaching which heavily involves students in the teaching-learning process by giving them a real problem to research, discuss, and solve. Students learn about the role of Warehousing and Distribution Center Operations Project within the transportation, distribution, and logistics sector and then are given a real-world problem to solve.

Your role in this effort is one of guide or mentor, rather than one of lecturer. As with all learning, student success is directly related to how much they get involved in the problem... the more involvement... the more learning.

## **Project Goals**

The major goals of the project are to:

- Provide students with an orientation to career opportunities in Warehousing and Distribution Center Operations Project within the transportation, distribution and logistics career cluster.
- Provide students with the necessary career exploration experiences to students for them to decide whether they wish to explore these career opportunities further.
- Provide students with an orientation into how these careers relate to all aspects of the transportation, distribution and logistics industry.
- Demonstrate the application and integration of academic subjects as well as problem-solving, teamwork, computer, and learning skills in real-world workplace applications.

More specific learning objectives are presented at the beginning of each learning module.

## Project Outline

This Warehousing and Distribution Center Operations Project is divided into seven modules. These modules are:

- Module 1 Overview of Warehousing and Distribution Center Operations Project
- Module 2 Site Tour
- Module 3 Project Leadership and Team Work
- Module 4 Understanding Distribution Center Operations at Family Dollar Stores, Inc.
- Module 5 Writing Business Reports
- Module 6 Making Business Presentations
- Module 7 Company Presentation and Discussion

Each module is designed as a separate set of learning activities that builds on previous modules. Each module has the following structure:

- **Objectives:** Each module begins with a set of learning objectives. This is the expected learning outcome of the module based on the readings and class discussion and activities. It provides the basis for the assessments in Appendix C.
- **Readings:** Each module starts with short introductory readings on the module topic. These readings are designed to provide the basis for group discussion and problem-solving activities.
- **Activities:** Each unit provides group activities that are designed to show students how to apply concepts and skills in solving problems.

## Support Materials and Resources

You should have the following support materials and resources for this project:

- Mentor Guide
- Student Guide
- Video – Forklift Operator – Wholesale and Retail Trades.
- Family Dollar Stores, Inc. Problem Statement
- A Practical Guide to Transportation and Logistics, by Michael B. Stroh, 2<sup>nd</sup> Edition.
- Reinventing the Warehouse, World Class Distribution Logistics, by Roy L. Harmon.

# Introduction to Problem-based Learning

## **Problem-based Learning**

Most schools, teachers, and parents want students to become effective problem solvers by the time they graduate from our schools. Problem-based learning is an instructional approach that is designed to help us meet this goal.

Problem-based learning is an instructional approach that recognizes two educational outcomes as critical to the development of effective problem solvers. The first outcome is the acquisition of knowledge and skill. The second outcome is the high quality use of this knowledge and skill to solve problems.

The ability to develop new knowledge and use it effectively when faced with real-world problems is what distinguishes expert problem-solvers from novice ones. These characteristics also are what distinguish problem-based learning from rote, heuristic-based methods of problem solving.

Problem-based learning involves both the acquisition of knowledge and experience in working on real-world, ill-structured problems. At the core of problem-based learning are: (1) the ill-structured problem, and (2) a coaching relationship between teachers and students. Let's look at each of these elements.

The Ill-Structured Problem. Following are characteristics of ill-structured problems from the real world.

- They're messy and incapable of being fully understood when first met.
- They require investigation to gain more information to help clarify the problem and its possible solutions.
- They change as more is discovered through data gathering and critical thinking.
- They defy solution by simple formula.
- They demand a continuing reevaluation of the fit between a problem definition and a solution. Even after a solution has been carefully developed, good problem solvers recognize the tentative nature of their solutions because all pertinent information is rarely identified and uncovered and better solutions can always be found given more time, expert assistance, and information.

Students meet such a problem at the very beginning of this unit and problem solve their way to a solution. Along the way, they

gather important information, learn how information can be accessed, use information to think critically about the problems, and build solutions that are ethical and effective.

The Teacher as Mentor and Coach. Problem-based learning is **not** non-directed teaching. The teacher/mentor creates the environment of the ill-structured problem and uses it as context for learning. The teacher's commitment to and skill in using effective mentoring and coaching techniques is critical in making problem-based learning work.

Students do not progress from novice toward expert problem solvers by watching teachers solve problems. Nor does much help come from having students read or hear about how other people solved problems. Students learn to solve problems by actually solving problems with guidance and coaching.

Teachers as mentors and coaches do not direct and demonstrate. Rather, they challenge, suggest, probe, and consult when students need guidance. They also provide expert guidance and information if and when students see the need for assistance in solving problems.

**Note: All student materials are listed in the Mentor Guide. Mentor specific items/comments are in large bold type.**

# Module Objectives, Readings, and Activities

# Module 1

## Overview of Warehousing & Distribution Center Operations & Develop the Family Dollar Stores, Inc. Problem Statement

# Module 1

## Overview of Warehousing and Distribution Center Operations Project and Develop a Problem Statement for the Family Dollar Stores, Inc. Project

### Objectives

Read and discuss objectives with students.

In preparation for the warehousing discussion, have the students each pick one product to research. They can use any sources available to them to determine what happens to that product from the day it is manufactured until the day it is sold. They should be prepared to discuss their results with the class.

After completing this activity, you will be able to:

- Define the role of Warehousing and Distribution in the economy.
- Describe the types of career opportunities in Warehousing and Distribution.
- Explain the importance of stability in the warehousing and distribution workforce in providing the highest level of quality and overall performance including cost factors.
- Restate and discuss the Family Dollar Stores, Inc. problem.. Get the Family Dollar Stores, Inc. mentor to clarify issues, as required, and validate the final form of the Problem Statement as an accurate statement of the problem to be solved.
- Develop a worksheet for analyzing the problem, a list of things you want the students to observe, and questions to ask personnel during the site tour. You want to have as much information as possible to develop a solution to the problem.

## **Defining Warehousing and Distribution**

**After students have reviewed the readings,**

- **Ask students to define Warehousing and Distribution. How are they the same? How do they differ?**
- **How do Warehousing/Distribution activities occur in Transportation Operations? Why?**
- **Ask students to distinguish between Materials Management and Physical Distribution Management.**
- **Ask them to explain how Physical Distribution plays a major role in the economy.**

Large companies typically manufacture different but related items at a variety of locations, seldom producing their complete line at a single plant. Through the operation of storage and processing houses called, distribution centers, companies are able to offer their customers a complete selection of all their products, efficiently shipping whole mixed orders at once, rather than piecemeal from each factory. Finished goods are often stored both at pure storage locations , sometimes called field warehouses and located in close proximity to the manufacturing location, and at Distribution Centers, located more strategically available to key market areas, where they are combined with other products of the same manufacturer before being shipped directly to end-users or to multi manufacturer, multi-product Distribution Centers operated by wholesalers, distributors , or large retailers. Transportation providers often have to re-handle shipments of product to achieve economies of scale and to accommodate shipper and/or recipient delivery instructions. The design of transportation processing centers, often called terminals or cross-docks, usually includes provision for this type of temporary storage. The emphasis is always placed on the temporary and short-term nature of this storage. Long term storage and complex manipulation of shipped goods are generally beyond the scope of transportation carriers and generally fall in the province of special Distribution centers operated by third party operators who neither made the goods nor will eventually sell them. They operate solely for the purpose of providing services needed after manufacturing and before or after the transfer of title to the products in question. When services are provided after the transfer of title or ownership of the goods they are generally referred to as “return “ operations which are conducted as part of the customer services provided by either the manufacturer or the

seller of the goods.

Current trends in business require a close management of the amount of materials produced and held in anticipation of sales. This practice of reducing the investment prior to sales is called supply chain management and the most successful companies are those who manage their supply chain most effectively, such as Wal-Mart. Accurate market forecasting is essential to the effective managing of the supply chain and the successful functioning of a distribution center, where the flow of products must be continuous in order that space not be wasted on unused or obsolete items and empty space is kept to a minimum. The management of such storage is dynamic--that is, the movement of products is fairly constant and the use of goods changes with demand and selling practices. Required goods must be readily accessible and required goods on hand to be shipped on short notice to meet demand. The use of past history and expected sales must be combined to plan and manage effective inventory availability and the use of computer assisted planning and management of items is essential to the success of this endeavor. The maintenance of accurate inventory information is an essential part of all storage and distribution operations.

Storage facilities often require special characteristics that are tailored to the needs of accessibility, security, and climate control. Refrigerated space, for example, is very expensive and must be carefully designed to preserve the stored product while keeping operating expenses as low as possible. In all storage facilities, fireproof materials such as concrete and steel are preferable. These materials lend themselves readily to prefabrication and have good insulating and acoustic properties. They also tend to improve the use of utilities to heat or cool a facility. Fire protection systems also possess characteristics that can be damaging to the stored product, such as sprinkler systems, which are essential to overall protection but must be very carefully designed and maintained to prevent accidental damage to the stored product. Fire codes for storage facilities are often very stringent and failure to comply can result in major fines and possibly even complete shutdown of the facility until compliance is demonstrated to the satisfaction of the authorities. Failure to comply could also result in cancellation of insurance – a totally unwanted circumstance in all types of storage operation.

In high volume warehousing and distribution operations, the “flow through” the facility is the dynamic aspect of storage. These type of facilities are largely automated processes, designed to facilitate stock rotation by means of a combination of equipment such as

stacker cranes built into the storage area, remote-controlled forklift trucks for vertical and horizontal movement of goods, and gravity flow racks, in which pallets are automatically replaced in a line. Many warehouses are computer-controlled from dispatching towers. These type facilities represent 12-15% of the total storage facilities in use around the world. The vast majority of warehousing and distribution facilities use more traditional storage media and equipment, such as standard pallet rack, shelving, fork-lifts and order pickers, simple pick carts, and stairs and ladders to reach and shift product.. The single most important form of automation is the growing use of Information Technology to improve record keeping, control flows through the warehouse, and provide electronic identification of stored materials and their location in the facility. The introduction of computers and the use of bar codes are the two most important technological changes in this industry in the last 50 years.

Warehouse and distribution center management involves management of the locations where the firm's inventories are stored. Warehouses and distribution centers are similar but have different emphasis. A warehouse is used for the storage of goods. Canned foods, for example, are canned during one month of the year at the end of a growing season and then are shipped out in a fairly even flow for the next 11 months. Or, as an example of the reverse situation, Christmas decorations are made throughout the year, but their sales are concentrated in a four- to six-week period.

Distribution Centers emphasize a faster turnover (or throughput) of goods. Chain grocery stores use distribution centers for receiving railcars and trucks filled with pallet loads of individual grocery products. Inside the warehouse all the products are placed in individual stacks. Then orders are "picked" from these individual stacks for each retail store. They are assembled, loaded aboard pallets, placed aboard trucks, and delivered to the stores.

The ready availability of historical information about the use and purchase of materials, combined with the computing power of the information technology field and the development of more accurate forecasting methods to predict the future use of products has led to greatly reduced usage of warehousing and a much greater emphasis on the use of Distribution Centers and direct shipment from manufacturing points to place of use or sale. Combined with the myriad choices of transportation costs and service levels, the reduction of standing inventories is a major objective of the Logistics Industry. The determination to reach this objective is represented by the combination of planning, purchasing, product design, logistics planning and operations, transportation planning and management, customer service

planning and management, and life cycle planning into a single effort called Supply Chain Management. This will be a key area for business development in the early days of the 21<sup>st</sup> century.

## Activity

**Have students discuss and answer the following together or in their groups.**

Discuss the following with your group:

1. In general, how do products that you buy in stores get to the store?
2. How do raw materials get to the manufacturers?
3. How do the raw materials eventually become a part of the finished products or merchandise?
4. How do the finished goods get to your store? How do they get to the consumer?
5. What role does Warehousing and Distribution play in the delivery of goods and materials?
6. Draw a flow diagram of the product you selected based on your discussions and your investigation.

## Highest Levels of Service at Lowest Cost of Distribution

**After students have reviewed the readings,**

- **Ask students to define and explain service levels for Warehousing and Distribution.**
- **Ask students to define and explain the costs of distribution.**

Efficient distribution is very important to companies because it is a major factor in keeping both retail and wholesale customers satisfied and in controlling costs.

Customer Service and Satisfaction One key to customer satisfaction is having the right product available to customers when they want to buy it. Customers get very frustrated when they go to a store to buy a product and they are told that it is out of stock and will not be available until later in the week. Some customers may be satisfied with an alternative product if one is available but many are not. High levels of service exist when products are available in the stores when customers want the products. High levels of service are often measured by the percentage of products carried

by a store that are in stock during a buying period. Recent consumer laws impose a penalty on stores in many cases when items are advertised on sale and sufficient quantities are not available to meet demand.

Costs of Distribution In order to realize a profit, retail and wholesale companies must provide high levels of service at a reasonable cost of distribution. High levels of inventory were a traditional way of insuring that enough product was available to satisfy all possible demand but this practice can be very expensive, especially when demand varies greatly. Companies can also use the most expensive types of transportation such as air transport and special services like overnight delivery to get more inventory when it is in danger of running out but this practice increases the cost of the product and should be included in the price of the product. Customers want products available but will buy at the lowest price generally. Retailers and wholesalers must keep distribution cost down to levels at or below their competitors or risk losing the sale.

Managing Service and Cost Retail and wholesale companies are always trying to manage the tradeoff between high levels of services and lower costs of distribution. The goal is to find a way to get the highest levels of service and the lowest cost of distribution in comparison to your major competitors.

## Activity

**Have students discuss and answer the following questions together or in their groups.**

Discuss the following with your groups:

1. Why is it important for Warehousing and Distribution companies to maintain high levels of service?
  - **Their customers will not be satisfied with poor service. Dissatisfied customers will lose confidence and won't renew contracts. The result will be reduced revenues and profits.**

2. Why is it important for Warehousing and Distribution companies to keep distribution costs low? What would happen if their customers (I.e. retail stores) had to raise prices to pay for higher distribution costs?
- **Customers will buy the lowest priced service or product. If distribution costs are higher than competitors, then prices will be higher or you will have lower profits.**
  - **Customers would search for service or products where they could get lower prices and retail stores, for example, would lose sales and profits.**

## **What are the Career Opportunities**

**Ask the students to volunteer to define a major function and an example job for that function.**

**Show typical warehousing operations with the video Forklift Operator – Wholesale and Retail Trades, by Enter Here, L.L.C. (10:46 min.)**

**Ask the students if they have any questions about a function and try to clarify each function and give more examples.**

What are the career opportunities for people who are involved in warehousing and distribution?

Let's explore the major functions in warehousing and distribution and some common job titles for people who do this work.

### Warehouse/Distribution Operations Managers

Planning, organizing, and controlling physical distribution to and from warehouses and distribution centers to stores and consumers. Common jobs: Logistics Manager, Warehouse/Distribution Manager, Logistics Engineers, and Logistics or Materials Planners.

### Facility Engineering/Maintenance

Maintaining and repairing warehouse facilities, equipment and machinery. Common jobs: Industrial Electrician, Maintenance Mechanic, and Facility Engineer.

Traffic, Shipping and Receiving clerks

Planning, scheduling, and monitoring in-bound and out-bound shipments of products and merchandise. Common jobs: Transportation Planners, Dispatchers, and Traffic Managers, Dock Supervisors, Terminal Managers, O.S. &D. Clerks.

Motor Vehicle Operators

Movement of freight in yard, locally, and long distance. Common jobs: Commercial truck drivers, Vehicle Mechanics, Driver Trainers, Safety managers, Risk management technicians, Simulator Operation and Programming Technician, Route & Load Planners, Simulator Mechanics.

Packaging/Packing/Materials Handling and Moving jobs

Loading, unloading and movement of products at Distribution Centers. Common jobs: Material Handler, Forklift Driver, Dock Worker; Inventory Control Clerks and Auditors, Order Entry Clerks, Order Picking and Packing Clerks, Receiving Clerks, Shipping Clerks.

**Activity**

**Ask the students to do internet research and in the Library on Warehousing and Distribution careers – identify 3 jobs and related information including salary range. Be prepared to discuss at the next class meeting.**

With your team do the following:

- Library and Internet Research on Warehousing and Distribution Center careers. Identify 3 jobs and related information, including salary, and be prepared to discuss in the next class period.
- Introduce them to trade publications that will act as valuable resources for industry specific information.
- Discuss and demonstrate use of the internet to find trade publications and to review their content when hard copies are not available.

## Analyzing a Warehousing and Distribution Center Operations Problem

- **Provide some background information on the Family Dollar Stores, Inc. Project and hand out the statement located in Appendix A.**
- **Have students read the problem statement.**
- **Review the tips for analyzing problems and how to use Figure 1.2 in making a list of what they know and don't know.**
- **Use the example “our plan is due at the end of the semester” to show them how to do it.”**
- **Introduce client mentor and have them summarize problem as they view it. Have them answer questions about their company and the business problem to be pursued.**

Your instructor will hand out a short description of the Family Dollar Stores, Inc. Warehousing and Distribution Center Problem. You should analyze the problem and develop questions for your site tour and write these questions in your course notebook.

### Tips for Analyzing Problem Statements

Here are some tips in analyzing the problem.

- Read the problem statement very carefully. Read the statement sentence by sentence.
- Don't assume anything. Make sure that you can back up any assumption or conclusion about the problem by what is stated in writing.
- Don't be concerned if you do not have all the information you need. You can get more information at the site tour and by asking Family Dollar Stores, Inc. representatives and your instructor for the information you think you need to solve the problem.
- Don't be concerned that you do not know how to develop a personnel survey. Your instructor can help you learn how to develop this type of instrument.
- Don't be afraid to ask questions and tell people what you need to know. Good problem-solvers are people who are not afraid to learn new things and ask for assistance.

### Determining What You Know and What you Don't Know

Expert problem-solvers start their analysis of a problem by writing down what they already know and what they need to know to solve the problem. Once they identify what they don't know, they then develop questions and seek out people who can answer their questions and help them solve the problem.

As shown in Figure 1.2, one way to do this is to make a list using a two-column sheet of paper with one column for what you know and one column for what you don't know. For example, under the column for what you know, you could write down, "The report is due in at the end of the semester."

### **Activity**

**Ask your students to break into groups and develop their questions for the site tour by doing the following. Then ask them to get back together as a class and read and discuss the questions they want to ask.**

With your team, develop your questions for the site tour by doing the following:

1. Read the problem statement and make a list of what you know and what you don't know. Use Figure 1.2 to write down your team's list.
2. Look at your list of what you don't know and develop questions for Family Dollar Stores, Inc. that you can ask during your site tour. Enter these questions in your Student Log or course notebook.
3. Ask your questions of the Family Dollar Stores, Inc. in-class representative first. Get his or her input on their wording for clarity and sense of purpose. Explain what info you want, how you plan to use it, and what you expect to learn from it. Have Family Dollar Stores, Inc. mentor confirm that your questions should achieve your objective and ask them to provide any enhancements they think appropriate. Make sure you understand why the changes proposed are more appropriate.
4. Make sure that each team tests its objectives with other teams and allows them to challenge the planned questionnaire.

## Figure 1.2 Problem Analysis Work Sheet

<b>What I Know</b>	<b>What I Don't Know (Need to Ask)</b>

# Module 2

# Site Tour

## Module 2

### Site Tour

#### Objective

**Read and discuss objectives with students.**

After completing this activity, you will be able to:

- Describe how the order processing operation functions and the activities involved in picking, sorting, and loading orders for transfer to the Family Dollar Stores, Inc. stores occurs.
- Identify and describe major job opportunities at Family Dollar Stores, Inc.
- Ask questions and take notes on answers for solving the problem.

#### Preparing for the Site Visit

**Ask your students to read the tips in their student guides and the questions from Figure 1.2.**

**Then, ask them to review their questions and write down their questions in their Student Log Books.**

You need to make sure that you get all or most of your questions answered at the site visit. You also need to make sure you use the site visit to understand how the “flow-through” process works at the Family Dollar Stores, Inc. You’ll also need to understand how the sortation system works, how shipments for individual stores get sent to the correct location, and how that process affects the “through-put” of the operation. Here are some tips to get the most out of your site visit.

Understanding How the “Flow Through” process works and how the “through-put” of the facility can be impaired or improved.

- Read the tour topics and helpful questions in your Student Log Book.
- Write down some other questions that will give you a full understanding of the whole process from start to finish.
- When you are at “Family Dollar Stores, Inc.”, observe how are orders are picked and placed in the conveyor system;
- How they arrive at the merge stations;
- The amount of spacing between cartons;
- Whether the labels are all readable;

- What happens when a package is not discharged to the outbound door indicated on the label;
- How packages are queued to be loaded into trailers; how often the unload belt has to back-up and why;
- What problems does the loader of the truck have that are caused by the arrival of packages at their loading station; any other factors that might slow the “flow-thru” process and delay shipments to the store.

### Preparing to Ask Your Questions

- Practice asking your questions with other students. Be sure to state your question slowly and clearly and be prepared to restate your question if people do not understand what you are asking?
- Make sure you listen carefully to all questions and answers. If you don't understand the answer, ask people to say it again or repeat what you don't understand. Try paraphrasing the answer back to the interviewee for clarity.
- Take notes on the answers. Don't try to write down everything that is said. Write down the major concept or idea that you can refer to later.

## **Activity**

### **Brainstorm Session – Sight tour objectives.**

**Break students up into their groups and have them practice their questions with other students.**

- **Visit the groups and give feedback on the content of their questions and their delivery.**
- **Students should each be able to state one question clearly.**

With your group, do the following:

1. Have your students ask their questions to the Family Dollar Stores, Inc. representative, yourself, and other students and ask them to tell you whether they understand your questions and how you could say it better when you get to Family Dollar Stores, Inc. facility.

## **After the Site Visit**

**After the site visit, students will have more information.**

**Make sure that each group writes out their notes as soon as possible after the site visit.**

**Have students revise their work sheets following the three-step process in their student guides.**

After the site visit, you will have more information to solve your problem. But, you will quickly forget this new information if you don't review your notes and write down what you know. Here are some suggested steps to take.

As soon as possible after leaving Family Dollar Stores, Inc write out your notes in more detail in your course notebook or on a separate sheet of paper. Make sure you write clearly so you can read your own notes later!

Step 1: Revise your work sheet or start a new work sheet. Identify what you know and don't know after the tour.

Step 2: Make a list of questions that you need to answer and write down what you need to do to get these questions answered.

Step 3: Meet with your team to compile a list of what you know and what you don't know and write out all of your questions and strategies for finding answers to your questions.

Remember, the longer you wait to write out your notes and revise your work sheet, the more you will forget.

## **Activity**

**Student group activities are the following.**

With your team, do the following:

1. Revise your work sheet and write down your revised list of what you know and what you don't know.
2. Make a list of questions you need to answer and what you need to do to get your questions answered. Set some priorities and determine what you need to get answered first. (See Figure 2.1)

## Figure 2.1 Remaining Questions and Action Plan

<b>Remaining Questions (What I Need to Know)</b>	<b>Action Plan (How Will I Get My Questions Answered?)</b>

# Module 3

# Project Leadership and Teamwork

## Module 3

# Project Leadership and Teamwork

### Objective

**Read and discuss objectives with students.**

When you complete this activity, you will be able to:

- Explain the importance of leadership and teamwork in projects.
- Describe the characteristics of effective teams.
- Understand team rights and responsibilities.
- Evaluate leadership and teamwork on a project.

### Why are Leadership and Teamwork Important?

**Have students review the readings.**

Business is a team sport and everyone has to be a leader!

Companies can no longer afford to rely solely on upper managers to plan and make decisions and take responsibility for business goals and success. Doing your job well is not enough. Everyone needs to pull together and make a contribution. They must make sure that they are working effectively with others to meet the needs of customers and reach business goals.

To be successful in today's business world, you must develop and practice your leadership and teamwork skills.

### Activity

**As a group, have students discuss the following.**

With your team discuss the following:

1. Why have teams become so popular?
2. What's the difference between groups and teams?
3. How useful are problem-solving teams?
4. What are self-managed teams?

### Characteristics of Effective Teams

**Have students review the topic area as covered in the Student Guide.**

Everyone needs to assume the responsibility for creating and maintaining effective teams. What makes an effective team?

Here are some characteristics that are common to most effective teams:

Clear Goals and Plans: Effective teams have clearly defined goals and objectives and clearly defined measures or indicators for success. They also have clearly defined work plans that are designed to reach these goals.

Commitment to Goals and Success: Effective teams have full commitment from all team members to the goals and plans of the team and a full commitment to success. They all want to meet or exceed the expectations of customers.

Team Responsibilities and Contributions: Team leaders and members clearly define roles and responsibilities and make sure that everyone is participating fully and collaboratively and that all members are contributing their fair share of the work.

Team Leadership and Decision-making: Team leaders and members demonstrate democratic and collaborative leadership. All members participate in decision-making and the group seeks consensus on all decisions.

Interpersonal Relations: Team members treat each other with respect and value and recognize the contributions of all team members. Team members provide constructive praise and criticism and enjoy working together. Team members channel and control emotional reactions and resolve conflicts.

Resource Management: Team members make sure that they are effectively using all resources to complete the project especially the time of team members.

Team Members: Team members conduct effective meetings. They clearly define the purpose for each meeting and have well-defined agendas. They promote the full participation of all members and allow all members to express their views. All members keep to the point and do not argue or interrupt. Team leaders and members summarize the results of the meeting and next steps for the team.

## Activity

**Assign work teams comprised of 4 members each. Immediately after assigning teams, perform the activities below:**

- 1. “Team bonding” exercise – Give teams a few minutes to find three things they all have in common (other than attending school and taking this course). Have a member report the findings.**

2. **Provide handout on Team Rights and Responsibilities (from Appendix C). Lead class discussion on team rights and responsibilities.**
3. **Provide handout on Objectives and Requirements for Team Presentation Assignments (From Appendix C).**

Follow the instructor's directions for the "Team Bonding" exercise.

Discuss the following:

- Team rights and responsibilities
- Objectives and requirements for team presentation assignments.

## **Evaluating Teams and Your Leadership and Teamwork Skills**

**Have class review reading materials.**

### **Team Performance**

#### Clear Goals and Plans:

- Does your team establish clear goals and objectives that everyone understands fully?
- Does your team establish clearly defined work plans to reach these goals?

#### Commitment to Goals and Success:

- Are all team members fully committed to the goals and work plans?
- Are all team members committed to making the team successful?

#### Team Responsibilities and Contributions:

- Do your team leaders and members clearly define roles and responsibilities?
- Does everyone participate fully and collaboratively?
- Does everyone contribute his/her fair share of the work?

#### Team Leadership and Decision-making:

- Do team leaders and members demonstrate democratic and collaborative leadership?

- Do all members participate fully in decision-making?
- Do team leaders and members seek consensus on all decisions?

Interpersonal Relations:

- Do team leaders and members treat each other with respect?
- Do team leaders and members value and recognize the contributions of all team members?
- Do team leaders and members provide constructive praise and criticism?
- Do team leaders and members genuinely enjoy working together?
- Do team leaders and members channel and control emotional reactions and effectively control anger?
- Do team leaders and members effectively resolve conflicts?

Resource Management:

- Do team members effectively use all resources to complete the project?
- Do team leaders and members effectively manage the time of team members?

Team Meetings:

- Do team leaders and members define the purpose and agenda for each meeting?
- Do team leaders and members provide the opportunity for all members to fully participate in meetings?
- Do team leaders encourage all members to fully express their views in meetings?
- Do all team members fully participate and express their views?
- Are the viewpoints of all members considered fully in meetings?
- Do team leaders and members maintain focus and keep to the point in their conversations?

- Do team leaders and members fully listen to others and not interrupt others?
- Do team leaders and members summarize the results and next steps before the meeting is adjourned?

### **Your Leadership and Teamwork Skills**

- Do you seek consensus on your team's goals and work plans to reach these goals?
- Do you communicate and demonstrate full commitment to the goals and work plans and the success of the team?
- Do you seek and respect consensus on roles and responsibilities?
- Do you make a full commitment to your responsibilities?
- Do you participate fully and collaboratively?
- Do you contribute your fair share of the work?
- Do you promote and support the full participation of all members in decision-making?
- Do you seek and promote consensus on all decisions?
- Do you treat team members with respect?
- Do you value and recognize the contributions of all team members?
- Do you provide constructive praise and criticism?
- Do you genuinely enjoy working with other team members and demonstrate this attitude?
- Do you channel and control emotional reactions and effectively control anger?
- Do you effectively resolve conflicts?
- Do you effectively use all resources?
- Do you effectively manage your own time and effectively use the time of other team members?
- Do you ensure that all meetings have a clear purpose and agenda?
- Do you ensure that all team members fully participate in meetings?

- Do you encourage all members to fully express their views in meetings?
- Do you fully participate and express your views?
- Do you ensure that the viewpoints of all members are considered fully in meetings?
- Do you maintain focus and keep to the point in their conversations?
- Do you fully listen to others and not interrupt?
- Do you ensure that team leaders and members summarize the results and next steps before the meeting is adjourned?

## Activity

**With their teams, have students do the following.**

With your team:

1. Review the characteristics of effective teams and provide examples of how team members can demonstrate these characteristics in completing the project.
2. Discuss the how the criteria for effective teams and leadership and teamwork skills can be used to evaluate your performance and suggest ways to improve individual and group performance.

## Criteria for Evaluating Teamwork

**Explain to the class that their individual performance will be evaluated by fellow team members, by classmates, and by the instructor.**

Your individual performance on this project will be evaluated by fellow team members, the entire class and by the instructor.

## **Activity**

- 1. Hand out and discuss the Criteria for Evaluating Teamwork (found in Appendix C).**
- 2. Hand out and discuss the Peer Evaluation of Team Performance form (found in Appendix C).**
- 3. Explain how the instructor will review of individual and team performance. Circulate Team Performance Daily Evaluation form (found in Appendix C) for students to fill in their names and return to instructor.**

Your instructor will discuss the following with the class:

1. Criteria for evaluating team performance.
2. Peer evaluation of team performance.
3. Instructor review of individual and team performance.

# Module 4

## Understanding Distribution Center Operations at Family Dollar Stores, Inc.

## Module 4

# Understanding Distribution Center Operations at family Dollar stores, Inc.

### Objective

**Read and discuss objectives with students.**

By the end of this discussion you will be able to:

1. Define and apply Distribution Center terminology and operating objectives.
2. Understand what a distribution center does, particularly in a retail and resale environment.
3. Be able to discuss the major functions of a distribution center, as they relate to the Family Dollar Stores, Inc. operation in West Memphis, AR.
4. Learn the way the key functions affect each other and which functions directly effect the “through-put” in a Distribution Center.
5. Assist management in evaluating options for improving “through-put” in the Family Dollar Stores, Inc. facility.
6. Provide a feedback on the observed impact of the options proposed by the Family Dollar Stores, Inc. management.
7. Finally, we will brainstorm options based on what we have learned and make a recommendation(s) for improving the “flow-through” at the Family Dollar Stores, Inc. West Memphis facility.
8. We will select a single recommendation or more that appropriately solve our problem statement.
9. We will identify all the reasons for selecting this recommendation (s).
10. We will support our selection with our conclusions and test this conclusion on our client mentor.

### Title

A Practical Guide to Transportation and Logistics, by Michael B. Stroh, Second Edition.  
Chapter 3: “Warehousing”

Reinventing the Warehouse, *World Class Distribution Logistics*,  
by Roy L Harmon.

Chapter 4 : Warehouse Operations – *Keys to  
Success*”

Chapter 5: Future Vision - *Warehouse and  
Logistics Systems* “

Chapter 6: Warehouse and Logistics Systems –  
*Making it Work*”

## **Understanding Distribution Center Operations**

**Have students complete readings in Student Guide and Text.**

The Family Dollar Stores, Inc. West Memphis facility is part of a growing network of Distribution Centers, each serving a geographic area and all the stores contained within. Its value to Family Dollar Stores, Inc. is primarily determined by its ability to service an economical number of stores on a cost effective but timely basis. The economics of the general retail distribution business is tightening at a dramatic pace and Family Dollar Stores, Inc. is a major player. In order to be competitive they must maintain very high standards of customer service to their stores while keeping costs as low as possible. The greatest possible “through-put” rate tends to meet both of these criteria while insuring the stores have adequate quantities of the right product on their shelves.

This type of facility is designed to move product through it as quickly as possible, not store it for any long period of time. Ideally, product would arrive from its source within a day or two of when it is needed in the stores. It would be unloaded from the source in bulk, placed in close proximity to the outbound trucks and broken down into the quantities needed by individual stores. A perfectly balanced operation would then move the needed quantity to the truck assigned to each store, be loaded on it, and dispatched immediately to that store without spending any time at the Distribution Center.

At this point, reality sets in. In the real world, there is not sufficient quantity of a single product going to each specific store to allow a truck for each store. In fact, we realize that there is not enough products of differing types going to a single store to reserve a single truck for each store. Nor are there enough doors, tractors, or trailers, to make a load to each store every day, at the same time, so we introduce batches of stores, involving all product going to that store on this particular day. To better utilize our facility, we divide the work up into batches of stores and load multiple stores on a single truck to keep the

delivery cost to each store reasonable. This batching allows us to reuse all our outbound loading locations several times a day and to balance the flow of the system to utilize it at its highest capability. That's what "through-put" is all about and that's what makes this facility a Distribution Center rather than a Warehouse. Storage is an important but short-lived function in this type of operation.

The concepts and ideas that are presented in this module will be used to determine the "through-put" improvement opportunity that exists at Family Dollar Stores, Inc. and what action(s) need to be taken to achieve it.

## **Organizational Culture**

**Review objectives in Student Guide and clarify the following:**

- 1. How do the Order Picking, Sortation, and Truck Loading Operations function?**
- 2. What is the importance of these operations to the Family Dollar Stores, Inc. West Memphis facility.**
- 3. What is "through-put"? Why is it important to the success of the West Memphis facility?**
- 4. How can it be improved?**

**Have students read Chapter 3 in their text, "A Practical Guide to Warehousing and Logistics /Warehousing".**

Read chapter 3 in your text: A Practical Guide to Transportation and Logistics".

## **Activity**

**After the students have completed the readings, discuss the following in class.**

After completing the readings, be able to discuss the following with the class:

1. Identify the type of operation that best describes the Family Dollar Stores, Inc. operation.
2. Identify the principal functions performed in the Family Dollar Stores, Inc. operation.
3. Identify and describe at least 3 pick/sort operations performed in this facility.
4. Provide a working definition for the term "through-put" and assess at least three possible factors affecting "through-put" in this facility.
5. Brainstorm with your group potential improvements that you feel may be appropriate to increase the number of items in the "through-put" lanes.

**Activity**

**Have the students develop a survey tool to Collect flow data and another to collect impressions from the personnel in the D.C. on potential sources of “bottlenecks” and opportunities to increase “flow-through” lane capability.**

Develop a survey tool to collect flow data and another to collect impressions from the D.C. personnel on potential “bottlenecks” and opportunities to increase “flow-through” lane availability.

**Activity**

**Based on the readings and discussions, discuss the following with the class.**

1. What are the functions in the D.C. affecting the availability of “Flow-Through” lanes? What factors are affecting the current “Through-put” rates? How many would be improved by increased “through-put”?
2. What factors could improve “through-put” without changing “flow-through” capability? Why?
3. Do we know what it would take to make the gains not involved with changing the “through-put” rate happen? How would we recommend making them happen?
4. Have we seen opportunities to improve the “flow-through” lane usage? What needs to be done to improve the number of “flow-through” lanes or slots?
5. Brainstorm how the various improvements could be accomplished and at what investment in resources. Try to assign priorities to each possibility.

**Activity**

**Have the students read chapter their text: Reinventing the Warehouse, World Class Logistics, Chapter 4: “Warehouse Operation, Key to Success.”**

**Chapter 5: “Future Vision, Warehouse and Logistics Systems.”**

**Activity**

**After the students have completed the readings, discuss the following in class.**

After completing the readings, be prepared to discuss the following with the class:

1. What are the forces of change? Do any apply to our project?
2. How does technology affect the flow of materials through the Family Dollar Stores, Inc. facility?

3. Identify at least 3 special technology applications you observed in the Family Dollar Stores, Inc. facility. How did each work? What did they add to the “through-put” capability of this facility?
4. What could be done to change the present operation using existing technology? How would it help? How expensive would you estimate it to be?
5. Brainstorm the possible changes at Family Dollar Stores, Inc. and make recommendations in the form of operational changes you suggest and why they should be made.

## Activity

**Have the students read their text : “Reinventing The Warehouse, *World Class Distribution Logistics*” Chapter 6, “Warehouse and logistics Systems, *Making it Work*”.**

After these readings, discuss the following with the class:

1. How much of the activity at the Family Dollar Stores, Inc. operation is already applying these ideas?
2. Where these ideas might be applied to change or enhance the existing operation to meet the objective of the Problem Statement?
3. Are there systems not currently used at Family Dollar Stores, Inc. that might help to implement you proposed solution?
4. How would you suggest these be evaluated to see if they could be used at Family Dollar Stores, Inc.?

# Module 5

# Writing Business Reports

## Module 5

### Writing Business Reports

#### Objective

**Read and discuss objectives with students.**

When you finish this activity, you will be able to:

- Develop an outline of a business report.
- Write a business report.
- Evaluate the quality of a business report.

#### Developing and Evaluating Business Reports

**Review the readings on developing business reports with the students.**

Your business report should clearly and effectively communicate to your audience the purpose, methods, and results of your project.

In developing and evaluating your business report, you should focus on three issues:

- Purpose and content
- Organization and structure
- Communication clarity and accuracy

#### Information in Warehousing and Distribution Center Operations

**After reviewing the survey and data findings, ask students to identify and explain the personnel issues identified at the Warehousing and Distribution Center.**

**Ask students how to best present this information. Discuss formats such as charts, tables, and spreadsheets.**

In your groups:

- Review the survey and data findings
- Identify personnel issues
- Identify possible solutions
- Discuss the best way(s) to visually present your information – charts, tables, spreadsheets, etc.

## **Purpose and Content**

### **Review the readings with the students.**

The first step in developing or evaluating your business report is to make sure that you have clearly defined the purpose of the report and have addressed the needs and requirements of your audience.

You should start by developing a clear statement of the purpose of the report and a listing of the major topics and types of information that must be included.

## **Activity**

### **After reviewing the readings, ask students to do the following in teams.**

With your team:

1. Develop a clear and concise statement of the purpose of the report.
2. Develop a list of the major topics and types of information that must be included to meet the requirement of the customer.

## **Organization and Structure**

### **After reviewing the readings, ask your students to explain and discuss the structure and content of their cover letters and business reports.**

The second step is to make sure that you have organized your report in the most effective way. In general, reports should have four major parts:

- Introduction to the Report – The introduction should state the purpose of the report and should summarize what is described in the report.
- Body of the Report – The body of the report should contain the major sections that address all major issues and summarize all required information, which may include graphs, charts, tables, and figures.
- Summary of the Report – The summary of the report should summarize the body of the report and major conclusions and recommendations. Your most favored resolution should be clearly stated and supported.
- Appendix Materials – The report may contain appendix materials that support or provide background information for major sections in the body of the report.

You should start by developing an outline of your report that shows the content and sequencing of each major section of your report. This outline should contain titles for each section and a list of bulleted statements that summarize the purpose and content. It should also list any graphs, charts, tables and figures.

As you are developing your outline, you should ask:

- Do the report sections organize information logically? Does the information under each section belong there?
- Do the report sections contain all of the necessary information? Do the sections contain information that is not necessary?
- Are the report sections sequenced in the most effective order?
- Do the section titles clearly communicate the purpose and content of the sections?

## Activity

**Ask the students to do the following as a team. When they are finished, ask them to give a draft of the outline to you to review.**

With your team,

1. Develop a draft outline of your report.
2. Critique and revise your outline.

## Communication Clarity and Accuracy

**Have students complete the readings and ask them to explain each tip for writing a business report. Explain that these tips are the criteria that will be used to evaluate their reports.**

**Identify and discuss the major types of information to be included in their report. Discuss how to display their information in tables and charts.**

The next step is to write and edit your report. In writing and editing your report, you should make sure that you are communicating clearly and are presenting accurate information.

Remember, business reports should be short and to the point. They should communicate information effectively and efficiently. Here are some tips:

- Write your report using short sentences and paragraphs.
- Use supporting charts, graphs, tables, and figures to better convey your information whenever possible.
- Use consistent report formats for easy reading.
- Make sure your report does not contain spelling or grammatical errors.
- Make sure your report does not contain inaccurate information or math errors.

## Activity

**With their team, ask the students to do the following.**

With your group, do the following:

1. Write the first draft of each section including any graphs, tables, and figures.
2. Evaluate the clarity and accuracy of the first draft using the five tips and develop a second draft.

## Evaluating Your Draft Report

**Review the readings with the students.**

The final step in developing your business report is to conduct a final review and editing of your report before submitting it to your customer. This review should make sure that you have addressed the following criteria:

### Purpose and Content

- Do you clearly communicate the purpose of the report?
- Does the report contain all of the information needed to meet the requirement of the customer?

### Organization and Structure

- Does the report contain an introduction that summarizes the purpose and contents of the report?
- Is the body of the report divided into sections that logically group related information?
- Does each section contain all of the necessary information?
- Does any section contain information that is not necessary?
- Are the sections properly sequenced?
- Do the section titles clearly communicate the purpose and content of each section?

- Does the report have a final section that summarizes the conclusions and recommendations of the project?

### Communication Clarity and Accuracy

- Does the report contain long sentences and paragraphs?
- Does the report effectively use supporting charts, graphs, tables, and figures to better convey your information?
- Does the report use consistent report formats for easy reading?
- Does the report contain spelling or grammatical errors?
- Does the report contain inaccurate information or math errors?

## **Activity**

**As a team, ask the students to do the following.**

With your team,

1. Review and evaluate the final draft of your report or another team's report.
2. Develop the final draft of your report based on the evaluation.

# Module 6

# Making Business Presentations

## Module 6

# Making Business Presentations

### Objective

**Review and discuss objectives with students.**

When you complete this activity, you will be able to:

- Identify and describe the components of a business presentation.
- Develop and present your business presentation.
- Evaluate the quality of your business presentation.

### Organizing Your Presentation

**After reviewing the readings, ask students to identify and explain the three major components of business presentations.**

Business presentations usually have three major components:

Introduction. In the introduction, you tell the audience:

- Your name and the name of your group or organization
- The purpose of your presentation
- The major topics or sections of your presentation and the order in which you will present each section.

Body of Presentation. In the body of the presentation, you:

- Present the most critical information for the purpose of the presentation
- Explain the importance of the information for the purpose of the presentation.

Conclusion. In the conclusion, you:

- Summarize the most critical information in the presentation
- Summarize your conclusions and recommendations
- Ask for questions, reactions, and comments.

Keep your presentation short and to the point. Your presentation should be completed in the planned time.

## Activity

**Ask students to explain the tips for organizing their business presentations and tell them that these tips will be the criteria used to evaluate their presentations.**

Discuss the three major components of a business presentation.

In your group, discuss which member(s) will give various parts of the presentation.

## Developing Your Presentation Materials

**Ask students to review the readings.**

Visual support material should support your presentation. These visual support materials should include:

1. Presentation outline that clearly communicate the organization of your presentation and the major points.
2. Supporting graphs, charts, figures, and tables.

Your supporting materials should minimally be printed and distributed as handouts to your audience.

You also should prepare talking points and notes for your team to follow so that you make sure that everyone is making the essential points and following the plan. These talking points and notes can be written on note cards.

## Activity

**Provide the handout “Recommendations for Effective Presentations” (From Appendix C). Ask students to identify various resources they may be using for their presentation.**

With your group,

- Identify various resources you may be using for your presentation.

## Making Your Presentation

**Ask students to explain the tips for making their business presentations and tell them that these tips will be the criteria used to evaluate their presentations.**

Developing effective business presentations is only half the job. You also must deliver an effective presentation.

Here are some tips for making effective business presentations.

Start on Time. Make sure that you are prompt and ready to begin your presentation when it is scheduled.

Project a Professional Image. Make sure that you are dressed appropriately for a business presentation. Show good posture and stand up straight when you speak.

Show Enthusiasm and Confidence. Show you are very excited about your report and that you are confident in presenting and explaining the information.

Maintain Eye contact and Show Friendliness and Respect. Show interest in you audience by maintaining eye contact during your presentation. Show respect for your audience and do not use negative body language.

Use Effective Speaking Techniques. Speak slowly and distinctly. Use standard grammar. Avoid meaningless words like “y’know.”

Use Visual Aids. Use visual aids effectively to communicate information and maintain the interest and engagement of the audience.

Answer Questions Completely. Welcome questions and reactions. Make sure you understand the question. Answer the question completely. Don’t be defensive if you don’t know the answer. Show interest in finding the answer.

End on Time. Complete your presentation within the planned time.

## Activity

**In their groups ask students to do the following.**

In your groups, do the following:

- Prepare your presentation and develop your notes, cards, and visual aids. **Visual aids should at least be a listing of topics students put up on a board or a flipchart.**

## Practicing and Evaluating Your Presentation

**Ask students to review the reading material. Discuss how most effective speakers practice their presentations before giving them.**

Most people cannot deliver effective presentation without practice and feedback. It is critical that you practice your presentation out loud with your instructor and students using your visual aids and notes.

Ask for feedback on the following:

### Introduction

- Did we present our name and the name of our group or organization?
- Did we present the purpose of our presentation?

- Did we present the major topics or sections of our presentation and the order in which we will present each section?
- Did we effectively gain the interest and attention of the audience for our presentation?

#### Presentation Content and Visual Aids

- Did we present the most critical information for the purpose of the presentation?
- Did we organize this information in a logical way and in the most appropriate sequence?
- Did we effectively explain the importance of the information for the purpose of the presentation?
- Did we prepare neat and clear visual aids and handout materials without errors?
- Did we present a summary of the major conclusions and recommendations?
- Did we ask for questions, comments, and reactions?

#### Presentation Delivery

- Did we dress appropriately to project a professional image?
- Did we stand straight and maintain eye contact with the audience at all times?
- Did we demonstrate confidence in presenting the information?
- Did we speak clearly at the appropriate rate?
- Did we speak in complete sentences with correct use and pronunciation of words including professional terminology?
- Did we speak with intonation and volume that engaged the audience?
- Did we effectively use our visual aids?
- Did we present and explain the information effectively?
- Did we show respect for the audience in presenting and responding to questions, comments, and reactions?
- Did we effectively seek a full understanding of questions, comments, and reactions?
- Did we completely answer questions or respond to comments and reactions?

## **Activity**

**In their groups, ask students to do the following:**

- **Practice their presentation with the instructor and students and make improvements based on their suggestions.**
- **Give feedback using the tips as evaluation criteria.**

With your team,

1. Prepare your presentation and develop your note cards and visual aids.
2. Practice your presentation with your instructor and students and make improvement based on their evaluations.

# **Module 7**

# **Company Presentation and Discussion**

## Module 7

### Company Presentation and Discussion

#### Objective

**Review and discuss objectives with students.**

When you complete this activity, you will:

- Know specific details of the agenda for your presentation at Family Dollar Stores, Inc.
- Discuss ways to improve upon the project if asked to do it again.
- Learn more about the types of issues facing companies like Family Dollar Stores, Inc. every day.

#### Company Presentations

**Review the agenda for the day of presentation of student reports**

**Make sure all students know their scheduled time of presentation and how long they will have to make their presentations.**

**Make sure they know that Family Dollar Stores, Inc. representatives will be asking questions and that they should take notes to evaluate the presentations of other students.**

**Make sure they know how to dress for the presentation.**

**Ask the Family Dollar Stores, Inc. representative to complete the “Industry Sponsor Evaluation” Form found in Appendix “C”.**

Your instructor will review the agenda for the presentation of student reports to Family Dollar Stores, Inc. representatives.

- Make sure you know your schedule time of presentation and how long you will have to make your presentation.
- Make sure you are prepared for Family Dollar Stores, Inc. representatives to ask you questions.
- Be sure you are prepared to take notes to evaluate the presentations of other students.
- Make sure you know how to dress for the presentation.

**Improving Your Report and Presentation**

**Make sure students know that they will be asked how they would do their project differently if they could do it again.**

Discuss with the class how you would do the project differently if you were asked to do it again.

**Learning More about Warehousing and Distribution Center Operations**

**The Family Dollar Stores, Inc. representative will talk briefly about the types of Warehousing and Distribution problems they deal with everyday.**

**Make sure students are prepared to ask questions about Warehousing and Distribution Center Operations.**

The Family Dollar Stores, Inc. representatives will talk briefly about the types of warehousing and distribution problems they deal with everyday and career opportunities with "Family Dollar Stores, Inc."

Be prepared to ask questions about Warehousing and Distribution Center Operations and careers in the industry.

# Appendix A

## Problem Statement and Problem Expansion

## **Problem Statement**

Family Dollar Stores, Inc. Mid-South Distribution Center would like to increase the amount of merchandise that is considered flow through merchandise. For this project, “flow through” merchandise is defined as merchandise that is shipping from bulk modules 96T, 97, 98, and 99. The goal will be to increase the flow through percentage as it relates to the total amount shipped per day. Currently this percentage is 29% and the goal is 35%.

The noted constraints on increasing the flow through percentage are:

1. Speed of the sorter
2. Amount of accumulation from the modules to the sorter
3. Available slots for merchandise in these modules
4. Available dock doors to replenish merchandise to these dock doors
5. Keeping high volume items in this area as seasonal, special purchases, sales, etc., force the movement of items in and out of these modules.
6. Type of merchandise

# Appendix B

## Problem Solution Resources

## Students Questions and Company/Project Team Answers

Here are some expected questions and responses.

**1. What will probably provide the easiest and most effective opportunities for increasing “flow through” capacity?**

- Create more flow through rack positions.
- Speed up the conveyor system.
- Make better use of the capacity of the conveyor system.
- Reduce the number of cartons that are not unloaded to the right shipping conveyor.

**2. What would be needed to create more “flow through” positions?**

- Create more dock positions to unload and stage storage trailers.
- Keep very timely reports on empty slots in flow through area.
- Investigate possibility of converting one of the pick modules to a flow through area.

**3. How could we speed up the conveyor system?**

We would have to change the drive gears on the sortation and feed lines to run at a higher feet/minute. This would involve updating the sortation computer as well to insure that the offload conveyor responded correctly to the increased speeds.

**4. Are there any alternatives to speeding up the conveyor system?**

Yes, more effective utilization of the existing conveyor system could be possible. We need to investigate the factors which cause major gaps in the spacing between packages and the significance of materials moving in the re-circulation system. Also factors causing pieces to be re-circulated instead of discharging to the right loading dock need to be investigated for cause and magnitude.

**5. How much do process and procedure impact the effectiveness of flow through the facility?**

The impact could be significant. Improper process and failure to follow procedures could result in a significant amount of re-handling and misdirection of materials, resulting in capacity loss as well as poor service levels to the customer.

**Appendix C**

**Program Tools and  
Assessments**

**Student Reports and  
Presentations**

**Sponsor Assessment**

## TEAM RIGHTS AND RESPONSIBILITIES

Working with a team can be a fun and effective way of achieving goals. Learning how to be an effective member of a team will better prepare you for the modern workplace where teams are prevalent and team players are highly valued. Engaging in team activities with a clear understanding of your rights and a commitment to fulfilling your responsibilities will enable you to develop and refine your teamwork, communication, and interpersonal skills. These skills will take you far in the real world!

### Rights

1. **To Support**
  - You should receive assistance from teammates whenever needed and requested. A sense of cooperation should pervade.
2. **To Respect**
  - Understanding and appreciation of diversity at every level should be apparent in team activities.

### Responsibilities

1. **To Attend**
  - Be there!
  - Attend all classes and team meetings.
  - You cannot participate effectively if you're not there - physically and mentally.
2. **To Prepare**
  - Complete all assignments, including reading, on a timely basis.
  - Give thought to concepts addressed by assignments.
  - Bring all necessary learning tools to class.
3. **To Cooperate**
  - Assist teammates wherever possible.
  - Be patient and listen to team members.
  - Strive for team understanding and success, not your individual success; your success will follow.

## **CRITERIA FOR EVALUATING TEAMWORK (For Teamwork Performance Grade)**

At intervals during the course of the semester, your peers and your instructor will rate your performance as a team member. Both will use the following questions in the evaluation process:

1. Did you show respect for the team concept?
2. Did you do your share of the work?
3. Did you show respect for members of the team?
4. Were you motivating?
5. Did you come to the team meeting/class prepared?\*
6. Were you effective in helping the team complete its tasks?
7. If specific roles were assigned, did you fulfill the responsibilities of your team role?

**Separate evaluations will be conducted for any team project that may be assigned.**

**\*HINT:** If you find participating in team activities is more difficult for you than your teammates, then you would probably benefit from a thorough preview of the chapter before it is addressed in class.

## PEER EVALUATION OF TEAM PERFORMANCE

*The evaluation will be kept confidential.*

A. List **full** names of each member of your team (include yourself). **Circle your name.** If team roles have been assigned, identify the role of each member.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

B. An ability to evaluate effectively others' work is a skill you must develop for the workplace. You should try not to use same rating more than once for each criteria. Try to find a basis or distinction for at least the highest and lowest rating on each or most criteria.

Using a scale of 1 to 5 (5 being highest or best), rate each member on all criteria listed below.

Your evaluation will be considered invalid if you rate all team members equally on each individual criterion or if total results are equal. You must try to find a basis for distinction. An invalid evaluation will **adversely affect** your instructor's evaluation of **your team performance grade.**\*

C.

MEMBER # (from above list)	1	2	3	4	5
<b>Criteria</b>					
Showed respect for team concept					
Did fair share of work					
Showed respect for team members					
Was a motivating influence					
Was an effective team member					
Came to team meetings and class prepared					
Fulfilled responsibilities of team role					
<b>*Total to check for valid evaluation</b>					

**Provided for instructor's use. Meant to be used just to indicate + or - when appropriate.**

**Circulate once in class for student's to fill in their names.**

**TEAM PERFORMANCE DAILY EVALUATION**

ACC \_\_\_\_\_

Meeting Day/Time \_\_\_\_\_

**PLEASE PRINT CLEARLY**

Names (First & Last)	DATES									
<u>Team 1</u>										
1.										
2.										
3.										
4.										
5.										
<u>Team 2</u>										
1.										
2.										
3.										
4.										
5.										
<u>Team 3</u>										
1.										
2.										
3.										
4.										
5.										
<u>Team 4</u>										
1.										
2.										
3.										
4.										
5.										
<u>Team 5</u>										
1.										
2.										
3.										
4.										
5.										
<u>Team 6</u>										
1.										
2.										
3.										
4.										
5.										

## OBJECTIVES AND REQUIREMENTS FOR TEAM PRESENTATION ASSIGNMENTS

### I. Broad Objectives

1. **To develop learning to learn skills.** These assignments will require you to utilize outside resources to gather information on a particular topic and to find answers to specific questions.
2. **To develop effective teamwork and interpersonal skills.** Your team will have to determine the most efficient and effective approach to completing the assignment. This experience will probably present the same kinds of problems encountered by corporate teams charged with addressing a specific business issue. Striving to resolve these problems will develop desired skills.
3. **To develop communication skills.** Business situations, in a variety of business career paths, frequently require presentations. The more you engage in presenting, the greater your potential for developing the special types of communication skills necessary for success.

### II. Specific Objectives

1. **To learn about the topic of the presentation.** Discovery is the most active form of learning. Preparing with your team and sharing information and concepts discovered will further involve you in the learning process.
2. **To teach the class the topic.** The highest level of retention is when you teach others. Your team has an enormous responsibility in that the team presentation will be the primary opportunity for your classmates to learn about the topic. The topics selected for these presentations are non-technical and suitable for research and discovery learning

### III. Requirements

1. **All** members must participate in the preparation and the presentation.
2. On the day of the presentation, your team must send a **memo** to the instructor explaining the following:
  - Procedure followed by the team to prepare presentation.
  - Roles played by each teammate in the preparation of the presentation.
  - The resources utilized.
3. The day after the presentation, each teammate must complete and submit the Peer Evaluation Form--Team Presentation Preparation.

## RECOMMENDATIONS FOR EFFECTIVE PRESENTATIONS

1. **Utilize all available resources** to develop the presentation content. The generic resources listed below are *recommended for all team presentations*.

**Generic Resources include:**

- **Your Organizational Behavior text and other appropriate textbooks. Your instructor may lend you, or have placed on reserve in the campus library, copies of other Organizational Behavior textbooks that may provide additional information on the topic or have a presentation with a different focus or emphasis.**
- **Instructional Videos. Publishers of textbooks sometimes provide instructional and/or tutorial or lecture review or enhancement videos. Your instructor may make these available.**
- **Library. Particularly business periodicals—newspapers and magazines. These resources should enable you to bring the topic alive! In many cases, proper research will disclose relevant real-world illustrations to incorporate in the presentation. Be sure to identify sources in presentation.**

**Interviews. The following special notes apply:**

When the assignment recommends interviews, the entire team should brainstorm who they might be able to interview and how it might be arranged. You do not have to have a connection or introduction to arrange an interview, but it helps. You may have to make “cold” contacts.

Interviews may take time to set up, so **PLAN AHEAD**. Don’t wait until a few days before the presentation is due!

A letter or a phone call explaining your role and assignment to a potential interviewee and requesting an interview appointment is appropriate. A letter could include the interview question(s). If the interviewee is not local, a telephone interview will be the best arrangement. Submit a copy of your request letter with your team presentation report. (See Requirements for Team Presentation Assignments).

All teammates should contribute to formulating the interview question(s).

2. **Use effective presentation techniques**

- **Articulate clearly and make sure presenters can be heard by the entire audience.**
- **Display enthusiasm, seriousness, and humor at appropriate times.**
  - **Present an appropriate appearance.**
  - **Make eye contact with audience.**
    - **Involve the audience.**

**Leave time for questions, answers, and discussion.**

3. **Use Visuals.** Use of appropriate, clear and effective visuals will be highly valued in evaluation. This could include charts, pictures, lists of key points, and/or any illustration that will make the presentation clearer and/or more interesting and dynamic. In some cases the team may decide it would be effective to show short excerpts from videos. This is appropriate but it cannot take a majority of the presentation time.

If you prepare black and white masters on 8x11 paper, your instructor might assist you in making transparencies to utilize on the overhead projector.

Someone in your group may know how to use the *Microsoft PowerPoint* or other presentation software. This software is used to create electronic transparencies. Most college computer labs have some computers with *Microsoft Office* that includes this program. If a teammate knows how to operate a computer using *Windows*, a lab technician might be able to assist with the preparation of a few electronic transparencies. Get your ideas on paper and seek assistance. (First check if your classroom is equipped to utilize electronic transparencies or if the necessary equipment can be requisitioned).

4. **Use handouts.** Your audience will be able to follow your presentation better, and reflect on it later, if hard copies of the visuals are distributed. Detailed information and reference material should also be supplied on handouts.

5. **Be completely prepared—use the following checklist:**

- **Have all necessary materials.**
- **Equipment is in place and functioning properly.**
- **Presentation is well planned/organized—attention-getting introductions and summarizing conclusions are desirable.**
  - **Rehearsed.**

**Have a broad knowledge base on topic and feel comfortable taking questions from audience.**

## Student Report

April 23,2002

Family Dollar Stores, Inc. Project

Ken Nilsen, Observer

**Problem Statement:** Family Dollar Stores, Inc. Mid-South Distribution Center would like to increase the amount of merchandise that is considered flow through merchandise. For this project, flow through merchandise is defined as merchandise that is shipping from bulk modules 96T, 97, 98, and 99. The goal will be to increase the flow through percentage as it relates to the total amount shipped per day. Currently this percentage is 29% and the goal is 35%.

The noted constraints on increasing the flow through percentage are:

7. Speed of the sorter
8. Amount of accumulation from the modules to the sorter
9. Available slots for merchandise for these modules
10. Available dock doors to replenish merchandise to these dock doors
11. Keeping high volume items in this area as seasonal, special purchases, sales, etc., force the movement of items in and out of these modules.
12. Type of merchandise

**Methodology:** Based on the previous constraints we will make observations on several different levels.

1. Observe actual warehouse design and set-up
2. Observe pick and set-up process
3. Observe flow process at the “saw-tooth” and merge
4. Observe shipping process at points where outbound trailers are loaded

Observations were made over a period of 3 days, April 12-15,2002 ,and were conducted on both first and second shift.

**General observations:** There are four primary pick areas for “flow through” merchandise. Area 96T is located near the shipping docks and is used for oversized or odd shaped merchandise that is non-conveyable. Areas 97 and 98 are located at the east receiving docks and occupy a Level One and Level Two location. Area 99 is located at the west end of the receiving docks. Areas 97, 98, and 99, handle the majority of “flow through” merchandise. The merchandise that is stored in Athese pick areas is interchangeable.

Merge. There are a total of 9 lanes that come into the merge area. These are:

1. Shorts

2. West JIT
3. East JIT
4. Repack/Aerosols
5. Repack
6. Repack
7. Bulk module lower
8. Bulk module upper
9. Recirculation

Priority goes to the JIT lanes, re-circulation, and shorts. All items should arrive label up and in readable condition. Once packages go through the merge they are then sent to the appropriate shipping lane.

### **Specific Observations:**

1. Speed of the Sorter: Mr. Sweeney discussed the speed of the sorter with maintenance personnel and determined that there would be no advantage in increasing the speed of the sorter without a total reconstruct of the entire operation.
2. Amount of accumulation. I observed on two separate days the amount of accumulation from the modules 97, 98, and 99. Modules 97 and 98 maintained full accumulation the entire time. Module 99 flowed through at a fairly high rate and there was no major accumulation that was causing any shut downs in the system.
3. Available Slots: In modules 97 and 98, on the morning shift, I observed there were at least three open slots for merchandise. I did not observe any replenishment during the time I was making observations. There were also merchandise items that were not co-located that the picker had to pick from both the upper and lower level. In module 99 I observed that there was a mixture of items that had been received on different days being picked. There were some items that were labeled for the 15<sup>th</sup> and other items that were labeled from the 9<sup>th</sup> that were being picked from simultaneously. In discussions with Andy, there was also the concern that all pick slots are not being shown available in the system.
4. Dock Doors: On the days that I observed there was not an issue with available dock doors to replenish merchandise to the pick modules. There was adequate freight in the pick areas and there was no delay in picking caused by waiting on available dock doors.
5. High Volumes of Specific Items: The only area that I observed with multiple open slots was 96T. There were as many as 3 open areas where flow through merchandise could have been picked from and there was no freight in these areas.
6. Type of Merchandise: During my observations I did not see where there were any major problems with the type of merchandise in the flow through modules.

During my observations at the merge I looked at the speed of the sorter, orientation of freight, timing of lane releases, and timing of spacing. I made the following specific observations:

1. **Speed of the Sorter:** Speed was maintained well on all lines except for the recirculation line. It appeared to be running at a slower speed and was not timed well to move freight into the sorter.
2. **Orientation of Freight:** It appeared during my observations that there was a problem with smaller packages being tossed and turned when coming into the merge area causing the bar codes to be out of place or unreadable. They had to be manually reset so that they could be read at the merge. Some of the freight that went past the first check point had to be tossed off the belt or turned just prior to it's being read and sent to the proper lane. Because of the speed of the belt on two occasions I observed boxes being pulled off just to keep the sorter running and not cause a shut down.
3. **Lane Releases:** There did not appear to be a problem with lane release timings at the times that I observed. The only problem again being the recirculation belt, which the first two or three boxes came around at the right time, but because of the speed of the belt, the space between boxes had become very wide.
4. **Timing Gaps and Spaces:** I made specific 15-minute interval observations. During my observations I noted that system shut down an average of 16 times an hour with an average delay of 12 seconds per occurrence to run the recirculation belt. With the re-circulation belt running there was an average of 1.5 seconds spacing between boxes. Over a two-shift period this calculates to an average loss of 50 minutes a day due to operation of the re-circulation belt.

### **Possible Solutions:**

1. Increase the speed of the sorter. As Mr. Sweeney discussed this is not viable, as it would require re-engineering the entire process.
2. Exchange one of the Repack belts for accumulation from the 99 pick area.
3. Reduce the amount of time the recirculation belt runs and /or make it's speed equal to the other lines in the system.

### **Recommended Solutions:**

1. Exchange a repack belt to allow for more accumulation from the 99 pick area. This is viable as the repack belts run less and need less accumulation. This would be done by splitting the 99 belt after it comes through the wall and creating two lanes of flow to the sorter from this pick area.
2. Reduce the amount of time the recirculation belt runs. This can be done in two different ways. The first being send all rejects to the LTL line to be manually taken to the appropriate docks. The second way would be to increase manpower by one at the merge to maintain the integrity of boxes coming to the sorter and make sure they are readable when arriving.
3. There is another opportunity to improve "through-put" by increasing management emphasis on proper procedures, particularly labels up and timely reporting and verification of open slots, especially in the "flow through" areas.

## Student Presentation

### Slide 1



Project Based Learning  
Family Dollar Stores – MSCC  
Coop

Presented by  
Ken Nilsen  
Student at MSCC

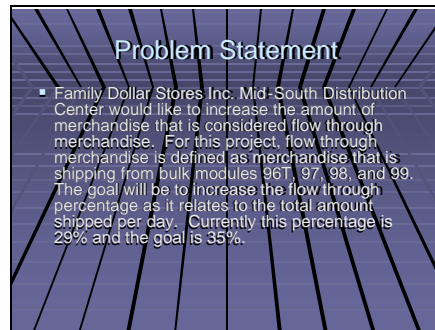
### Slide 2



Participants

- Project Director: Dennis Sweeney
- FD Contact: Ron Reaves
- Observer: Ken Nilsen

### Slide 3



Problem Statement

- Family Dollar Stores Inc. Mid-South Distribution Center would like to increase the amount of merchandise that is considered flow through merchandise. For this project, flow through merchandise is defined as merchandise that is shipping from bulk modules 96T, 97, 98, and 99. The goal will be to increase the flow through percentage as it relates to the total amount shipped per day. Currently this percentage is 29% and the goal is 35%.

Slide 4

### Problem Statement Constraints

- Speed of the sorter
- Amount of accumulation from the modules to the sorter
- Available slots for merchandise for these modules
- Available dock doors to replenish merchandise to these dock doors
- Keeping high volume items in this area as seasonal, special purchases, sales, etc., force the movement of items in and out of these modules.
- Type of merchandise

Slide 5

### Methodology

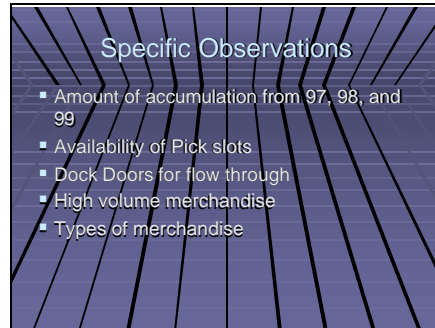
- Based on the previous constraints we will make observations on several different levels.
  - Observe actual warehouse design and set-up
  - Observe pick and set-up process
  - Observe flow process at the sawtooth and merge
  - Observe shipping process at points where outbound trailers are loaded
- Observations were made over a period of 3 days, April 12-15, and were conducted on both first and second shift.

Slide 6

### General Observations

- Location of four flow through pick areas
- 9 lanes coming into the sorter
- Priority of release into the sorter
- Availability of accumulation to outbound ship lanes and impact on recirculation line.

## Slide 7



Slide 7 features a dark blue background with a grid pattern and a perspective effect of lines converging towards the center. The title 'Specific Observations' is centered at the top in a light blue font. Below the title is a bulleted list of five items.

### Specific Observations

- Amount of accumulation from 97, 98, and 99
- Availability of Pick slots
- Dock Doors for flow through
- High volume merchandise
- Types of merchandise

## Slide 8

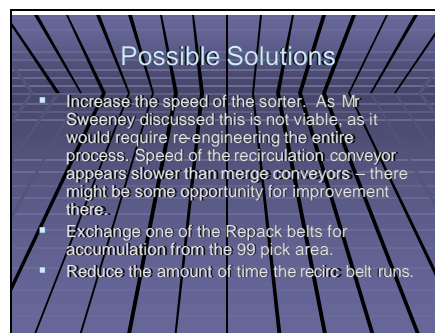


Slide 8 features a dark blue background with a grid pattern and a perspective effect of lines converging towards the center. The title 'Merge/Sorter Observations' is centered at the top in a light blue font. Below the title is a bulleted list of four items.

### Merge/Sorter Observations

- Speed of Sorter
- Orientation of freight
- Lane releases
- Timing Gaps/Spaces

## Slide 9



Slide 9 features a dark blue background with a grid pattern and a perspective effect of lines converging towards the center. The title 'Possible Solutions' is centered at the top in a light blue font. Below the title is a bulleted list of three items.

### Possible Solutions

- Increase the speed of the sorter. As Mr Sweeney discussed this is not viable, as it would require re-engineering the entire process. Speed of the recirculation conveyor appears slower than merge conveyors – there might be some opportunity for improvement there.
- Exchange one of the Repack belts for accumulation from the 99 pick area.
- Reduce the amount of time the recirc belt runs.

Slide 10

**Recommended Solutions**

- Exchange a repack belt to allow for more accumulation from the 99 pick area. This is viable as the repack belts run less and need less accumulation. This would be done by splitting the 99 belt after it comes through the wall and creating two lanes of flow to the sorter from this pick area.

Slide 11

**Recommended Solutions**

- Reduce the amount of time the recirc belt runs. Speed it up throughout length to reduce excessive spacing between cases. This can be done in two different ways. The first being send all rejects to the LTL line to be manually taken to the appropriate docks. The second way would be to increase manpower by one at the merge to maintain the integrity of boxes coming to the sorter and make sure they are readable when arriving.

Slide 12

**Conclusion**

- Looking at all 6 of the previous constraints on the system it appears there are only two areas that can be changed that would give improved performance.
- Adjusting Accumulation
- Reduce usage of recirculation belt
- However, there is another opportunity to improve through-put by increasing management emphasis on proper procedures, particularly labels up and timely reporting and verification of open slots, especially in the flow through areas.

**INDUSTRY SPONSOR ASSESSMENT**  
(Sample)

Assessor's Name \_\_\_\_\_ Company Name \_\_\_\_\_

Date of Presentation \_\_\_\_\_ Presentation Location \_\_\_\_\_

Presentation Made By: \_\_\_\_\_

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**Problem Restatement & Data Collection:**

Was student(s) understanding of problem accurate? Yes \_\_\_ No \_\_\_  
Explain

\_\_\_\_\_

Did student(s) restate problem for analysis and solution? Yes \_\_\_ No \_\_\_  
Explain

\_\_\_\_\_

Did student(s) explain data collected and method used? Yes \_\_\_ No \_\_\_ Was method  
adequate and reasonable? Yes \_\_\_ No \_\_\_ How would you suggest improving it?

\_\_\_\_\_

Was an adequate amount of data collected? Yes \_\_\_ No \_\_\_ How could it have been  
improved? \_\_\_\_\_

**Data Analysis and Solution Development:**

Did presentation clearly state analysis methods employed? Yes \_\_\_ No \_\_\_ Did  
student(s) follow method suggested by you? Yes \_\_\_ No \_\_\_ How would you  
recommend improving approach?

\_\_\_\_\_

Were conclusions drawn from analysis reasonable and well thought-out? Yes \_\_\_ No \_\_\_  
What would you recommend to improve the approach in the future? \_\_\_\_\_

\_\_\_\_\_

Were the solutions developed logical and possible (given the availability of resources to carry them out? Yes\_\_ No\_\_ ANY recommendations on how to improve the solution set development?

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**Solution Prioritization, Evaluation, and Selection Process**

Was the criteria for evaluating and prioritizing solutions clearly stated? Yes\_\_ No\_\_  
Was the approach taken reasonable? Yes \_\_ No\_\_ Did the selection Process used follow the approach stated? Yes\_\_ No\_\_ How did it vary from the theory?

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How might the evaluation process have been improved?

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Was the alternative selected reasonable in light of the data collected and analyzed? Yes \_\_ No \_\_ What was wrong? \_\_\_\_\_

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Do you Like the process overall? Yes \_\_ No \_\_ Can you recommend how it might be made more effective?

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**Presentation:**

Was the presentation well organized? Yes\_\_ No\_\_ How would you improve it?

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**Was the Presenter:**

Well prepared?	Yes	___	No	___
Dressed appropriately?	Yes	___	No	___
Well groomed?	Yes	___	No	___
Knowledgeable about his materials?	Yes	___	No	___
Able to answer your questions succinctly?	Yes	___	N0	___

**Was the presentation:**

Easy to follow? Yes \_\_\_ No \_\_\_

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Well supported by data and/or logic? Yes \_\_\_ No \_\_\_  
Comprehensive? Yes \_\_\_ No \_\_\_  
Easy to follow? Yes \_\_\_ No \_\_\_  
Make good use of Audio/Visual tools available? Yes \_\_\_ No \_\_\_  
Make a good argument for the proposed solution(s)? Yes \_\_\_ No \_\_\_

How would you rate the presentation overall?

Excellent \_\_\_  
Good \_\_\_  
Fair \_\_\_  
Nothing special \_\_\_  
A waste of time \_\_\_

Does the problem-based learning approach make sense to you?  
Yes \_\_\_ No \_\_\_

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What recommendations can you make for improving this program?

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**THANK YOU FOR YOU AND YOUR COMPANY'S PARTICIPATION!**

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## INDUSTRY SPONSOR ASSESSMENT

**Assessor's Name** Ron Reaves    **Company Name** Family Dollar Stores, Inc.

**Date of Presentation** 4/25/02    **Presentation Location** FDS MSDC Training Room

**Presentation Made By:** Ken Nilsen

**Audience:** Gerald Bocker - Bulk Department Manager; Adam Sprenkle - Receiving Department Manager; Deloris Kent - Forklift Department Manager; Pat Crum - Nurse

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### **Problem Restatement & Data Collection :**

**Was student(s) understanding of problem accurate?** Yes X No \_\_\_ Explain  
\_\_\_\_\_

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**Did student(s) restate problem for analysis and solution?** Yes X No \_\_\_ Explain  
Twice to keep the audience on track

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**Did student(s) explain data collected and method used? Yes X No \_\_\_ Was method adequate and reasonable? Yes X No \_\_\_ How would you suggest improving it?** Vary the data collection times even more

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**Was an adequate amount of data collected? Yes X No \_\_\_ How could it have been improved?** Spend more time on the effect of adding additional items in the flow through area. The simple solution seemed to add more of the total to the area that we want to increase

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### **Data Analysis and Solution Development :**

**Did presentation clearly state analysis methods employed? Yes X No \_\_\_ Did student(s) follow method suggested by you? Yes X No \_\_\_ How would you recommend improving approach?** Spend more time understanding why the facility is at the current rate of 29%. Available slots not being used was noted, why not add more slots to the JIT area?

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**Were conclusions drawn from analysis reasonable and well thought-out? Yes  No \_\_\_** **What would you recommend to improve the approach in the future?**  
Allow more time for observation and fact gathering.

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**Were the solutions developed logical and possible (given the availability of resources to carry them out? Yes  No \_\_\_** **ANY recommendations on how to improve the solution set development?** Given the time constraints, the solutions were right on target.

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### Solution Prioritization, Evaluation, and Selection Process

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**Was the criteria for evaluating and prioritizing solutions clearly stated? Yes  No \_\_\_** **Was the approach taken reasonable? Yes  No \_\_\_** **Did the selection Process used follow the approach stated? Yes  No \_\_\_** **How did it vary from the theory?**  
Everything followed logical steps.

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**How might the evaluation process have been improved? If the opportunity was available to perform an experiment such as trying an additional case flipper.**

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**Was the alternative selected reasonable in light of the data collected and analyzed?**  
**Yes  No \_\_\_** **What was wrong?** Solutions were right on target, recommendations showed insight.

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**Do you Like the process overall ? Yes  No \_\_\_** **Can you recommend how it might be made more effective?** Complete more projects like this and the process will fine tune itself.

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### Presentation:

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**Was the presentation well organized? Yes  No \_\_\_** **How would you improve it?**  
The format was well thought out and kept interest.

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**Was the presenter:**

- Well prepared? Yes  No
- Dressed appropriately? Yes  No
- Well groomed? Yes  No
- Knowledgeable about his materials? Yes  No
- Able to answer your questions succinctly? Yes  No

**Was the presentation:**

- Easy to follow? Yes  No
- Well supported by data and/or logic? Yes  No
- Comprehensive? Yes  No
- Easy to follow? Yes  No
- Make good use of Audio/Visual tools available? Yes  No
- Make a good argument for the proposed solution(s)? Yes  No

**How would you rate the presentation overall?**

- Excellent
- Good
- Fair
- Nothing special
- A waste of time

**Does the problem-based learning approach make sense to you?**

Yes  No

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**What recommendations can you make for improving this program?** Allow for more observation and possible experimentation.

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**THANK YOU FOR YOU AND YOUR COMPANY'S PARTICIPATION !**

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