Introduction Unit

Content Area: **Applied Tech**
Course(s):
Time Period: **Marking Period 1**
Length: **2 weeks**
Status: **Published**

Standards

TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT	Critical Thinking and Problem-solving
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).
TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
TRAN.9-12.9.4.12.P.(1).1	Develop transportation plans to move people and/or goods to meet customer requirements.
TRAN.9-12.9.4.12.P.(2).1	Analyze company or customer needs to develop targeted and successful logistics planning and management services.
TRAN.9-12.9.4.12.P.(2).2	Analyze the performance of logistics systems to provide targeted and successful logistics planning and management services.
TRAN.9-12.9.4.12.P.(7).1	Demonstrate knowledge of transportation, logistics, and distribution-related sales and service operations on an ongoing basis.
TRAN.9-12.9.4.12.P.1	Demonstrate language arts knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
TRAN.9-12.9.4.12.P.2	Demonstrate mathematics knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
TRAN.9-12.9.4.12.P.3	Demonstrate science knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
TRAN.9-12.9.4.12.P.4	Select and employ appropriate reading and communication strategies to learn and use technical concepts and vocabulary in practice.
TRAN.9-12.9.4.12.P.5	Demonstrate use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.
TRAN.9-12.9.4.12.P.6	Locate, organize, and reference written information from various sources to communicate with others.
TRAN.9-12.9.4.12.P.7	Evaluate and use information resources to accomplish specific occupational tasks.
TRAN.9-12.9.4.12.P.8	Use correct grammar, punctuation, and terminology to write and edit documents.
TRAN.9-12.9.4.12.P.9	Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.
TRAN.9-12.9.4.12.P.11	Apply active listening skills to obtain and clarify information.
TRAN.9-12.9.4.12.P.12	Develop and interpret tables, charts, and figures to support written and oral communications.

TRAN.9-12.9.4.12.P.14	Exhibit public relations skills in order to increase internal and external customer satisfaction.
TRAN.9-12.9.4.12.P.15	Employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.
TRAN.9-12.9.4.12.P.18	Conduct technical research to gather information necessary for decision-making.
TRAN.9-12.9.4.12.P.19	Formulate ideas, proposals, and solutions related to problems with this cluster to ensure effective and efficient delivery of products or services to consumers.
TRAN.9-12.9.4.12.P.20	Analyze and evaluate ideas, proposals, and solutions related to problems in this cluster and select the best deliverable to meet business objectives.
TRAN.9-12.9.4.12.P.21	Develop, implement, and evaluate solutions related to problems in this cluster using a structured problem-solving process to improve business functioning.
TRAN.9-12.9.4.12.P.23	Operate electronic mail applications to communicate.
TRAN.9-12.9.4.12.P.24	Operate Internet applications to perform tasks.
TRAN.9-12.9.4.12.P.25	Operate writing and publishing applications to prepare communications.
TRAN.9-12.9.4.12.P.26	Operate presentation applications to prepare and deliver presentations.
TRAN.9-12.9.4.12.P.29	Employ collaborative/groupware applications to facilitate group work.
TRAN.9-12.9.4.12.P.30	Employ computer operations applications to manage tasks.
TRAN.9-12.9.4.12.P.39	Evaluate risk management strategies used in the cluster to prevent and reduce risks and exposures in order to demonstrate understanding of risk management as a tool for improving organizational performance.
TRAN.9-12.9.4.12.P.41	Demonstrate an understanding of ongoing relationships with both internal and external customer groups in order to sustain business operations in this cluster.
TRAN.9-12.9.4.12.P.61	Employ leadership skills to accomplish goals and objectives.
TRAN.9-12.9.4.12.P.63	Employ teamwork skills to achieve collective goals and use team members' talents effectively.
TRAN.9-12.9.4.12.P.64	Establish and maintain effective relationships in order to accomplish objectives and tasks.
TRAN.9-12.9.4.12.P.78	Identify and explore careers in one or more career pathways to build an understanding of the opportunities available in the cluster.
TRAN.9-12.9.4.12.P.79	Examine requirements for career advancement to plan for continuing education and training.

Business Standards

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a)

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).

9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1)

9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a)

9.4.12.IML.2: Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources (e.g., NJSLSA.W8, Social Studies Practice:

Gathering and Evaluating Sources.

Transfer Goals and Career Ready Practices

Transfer Goals

Students will gain an understanding of logistics and supply chain management which will help them understand how products they use and purchase make their way from the manufacturer to the end user.

Students will gain an understanding of the wide range of jobs available in the logistics and supply chain management field.

Students will gain 21st Century skills and related experiences which will benefit them in this career cluster in the future.

Concepts

Essential Questions

What is supply chain management?

Understandings

Students will understand that supply chain management and logistics fields offer numerous career options for students with a wide range of skill areas.

Critical Knowledge and Skills

Knowledge

Students will know:

- how to define supply chain management
- career paths and opportunities in supply chain management
- their learning styles and personalities

Skills

Students will be able to:

 - Explain common supply chain careers

- Explain supply chain management

Assessment and Resources

School Formative Assessment Plan (Other Evidence)

- Professional Notebook - summarizing notes and articles

- Classwork activities - project management plans, optimization matrix, SWOT Analysis worksheets

School Summative Assessment Plan

- End of Project Assessment - test

Primary Resources

Supply Chain Management PowerPoint

Supply Chain Careers PowerPoint

Supplementary Resources

-Online research

-Professional articles about supply chain management

-Professional videos about supply chain management

Technology Integration and Differentiated Instruction

Technology Integration

● **Online Products**

> ○ Coursesites.com Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)

● **One to One Student's laptop**

> ○ All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

● **Additional Support Videos**

Differentiated Instruction

Gifted Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, the Gifted Students are given choice on topic and subject matter allowing them to explore interests appropriate to their abilities, areas of interest and other courses.

English Language Learners (N.J.A.C.6A:15)

❏   Within each lesson, the English Language Learners are given choice of topic and resources so that their materials are within their ability to grasp the language.

❏   All assignments have been created in the student's native language.

❏   Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

❏   Within each lesson, the at-risk students are given choice of topic and resources so that their materials are within their ability level and high-interest.

Special Education Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, special education students are given choice of topic and resources so that their materials are within their ability level and high-interest.

❏   All content will be modeled with examples and all essays are built on a step-by-step basis so modifications for assignments in small chunks are met.

All other IEP modifications will be honored (ie. hard copies of notes, directions restated, etc.)

Interdisciplinary Connections

MATH – Students will apply algebra and statistical concepts learned in math courses to their projects.

SCIENCE – Students use scientific information and processes as appropriate to complete the projects.

SOCIAL STUDIES – Students will apply social skills learned through psychology when interacting in group projects.

LANGUAGE ARTS – Students will using appropriate writing skills in taking notes, as well as the creation of a formal written document for their unit project.

APPLIED TECHNOLOGY – Students will use technology through online resources, class website, Microsoft and Google applications, and email applications.

GLOBAL AWARENESS – Students will learn about individuals from different cultures and backgrounds through their research.

Learning Plan / Pacing Guide

Class 1

Key Question: What is supply chain management?

Overview of Daily Activities: Students participate in an engaging entry event that helps them begin to think about the class. Brainstorming a definition of supply chain management.

Class 2

Key Questions: What is supply chain management?

Overview of Daily Activities: Students read and take notes on *Supply Chain Management PowerPoint*. Students encounter and record technical vocabulary in their Professional Notebooks.

Classes 4-6

Key Questions: What are common Supply Chain Management careers?

Overview of Daily Activities: Students read and take notes on *Supply Chain Management PowerPoint*. Students encounter and record technical vocabulary in their Professional Notebooks.

Class 7-8

Key Question: What type of learner are you?

Overview of Daily Activities: Student complete self-assessments to determine their learning style and personalities.

Class 9-10

Key Questions: What is project based learning?

Overview of Daily Activities: Student will discuss project based learning and the roles team members play in learning groups. Student teams will be created leading in to Project 1.

NEW Project 1.1: Supply Chain Flow

Content Area: **Applied Tech**
Course(s):   **Generic Course**
Time Period: **Marking Period 1**
Length: **3-4 weeks**
Status: **Published**

Standards

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a)

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).

9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1)

9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a)

9.4.12.IML.2: Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources (e.g., NJSLSA.W8, Social Studies Practice: Gathering and Evaluating Sources.

12.9.3.12.TD.1	Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.
12.9.3.12.TD.2	Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.
12.9.3.12.TD.3	Describe the key operational activities required of successful transportation, distribution and logistics facilities.
12.9.3.12.TD.4	Identify governmental policies and procedures for transportation, distribution and logistics facilities.
12.9.3.12.TD.5	Describe transportation, distribution and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health.
12.9.3.12.TD.6	Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.
12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.12.TD-OPS.1	Develop and evaluate transportation plans to move people and/or goods to meet customer requirements.
12.9.3.12.TD-OPS.2	Analyze performance of transportation operations in order to improve quality and service levels and increase efficiency.
12.9.3.12.TD-OPS.3	Comply with policies, laws and regulations in order to maintain safety, security and health and mitigate the economic and environmental risk of transportation operations.

12.9.3.12.TD-SAL.1	Analyze the ongoing performance of transportation, logistics and distribution-related sales and service operations.
12.9.3.12.TD-SYS.1	Develop plans to maintain and/or improve the transportation infrastructure.
12.9.3.12.TD-SYS.2	Assess, plan and manage the implementation of transportation services.
12.9.3.12.TD-SYS.3	Describe ways to improve the system utilization, flow, safety and environmental performance of transportation systems.
12.9.3.12.TD-WAR.1	Demonstrate efficient and effective warehouse and distribution center operations.
12.9.3.12.TD-WAR.2	Describe ways to improve the performance of warehouse and distribution operations.
12.9.3.12.TD-WAR.3	Analyze compliance with company policies and government laws and regulations in warehouse and distribution operations.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
TECH.9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
TECH.9.4.2.CI.2	Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).
TECH.9.4.2.CT	Critical Thinking and Problem-solving
TECH.9.4.2.CT.2	Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
TECH.9.4.12.IML.2	Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources (e.g., NJSLSA.W8, Social Studies Practice: Gathering and Evaluating Sources.
	There are strategies to improve one's professional value and marketability.

Applied Technology Standards

12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.MN.6	Demonstrate workplace knowledge and skills common to manufacturing.
12.9.3.MN-LOG.4	Manage inventory using logistics and control processes and procedures.
12.9.3.MN-PPD.1	Produce quality products that meet manufacturing standards and exceed customer satisfaction.
12.9.3.TD-LOG	Logistics Planning & Management Services
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.

CRP.K-12.CRP6	Demonstrate creativity and innovation.	
CRP.K-12.CRP7	Employ valid and reliable research strategies.	
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.	
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.	
CRP.K-12.CRP11	Use technology to enhance productivity.	
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.	

Transfer Goals

Transfer Goals

Students will gain an understanding of logistics and supply chain management which will help them understand how products they use and purchase make their way from the manufacturer to the end user.

Students will gain an understanding of the wide range of jobs available in the logistics and supply chain management field.

Students will gain 21st Century skills and related experiences which will benefit them in this career cluster in the future

Concepts

Essential Questions

What is Material Requirements Planning (MRP) and how do you use this tool to plan requirements for the materials that you will need to produce your product(s)?

What information do you need to create the material plan for each item?

What is a Bill of Materials (BOM) and how is it used in the MRP process to plan requirements for the materials that you will need to produce your product(s)?

Understandings

Students will understand how to develop a Bill of Materials (BOM) for a new table-and-chairs set, as well as

use Material Requirements Planning (MRP) techniques to determine the quantities and delivery dates for each of the materials necessary to meet the production schedule.

Critical Knowledge and Skills

Knowledge
Students will know:

- what a Material Requirements Planning (MRP) is and how this tool is used to plan requirements for the materials that you will need to produce your product(s)

- how to create a MRP in Microsoft Excel

- what a Bill of Materials (BOM) is and how it is used in the MRP process to plan requirements for the materials that you will need to produce your product(s)

- how to create a BOM in a Microsoft Word table

Skills
Students will be able to:

- Create a Bill of Materials (BOM)

- Complete a Material Requirements Planning (MRP)

-Apply information about BOMs and MRPs to a real-life scenario

Assessment and Resources

School Formative Assessment Plan (Other Evidence)
- Professional Notebook - summarizing notes and articles

- Classwork activities - project management plans, optimization matrix, SWOT Analysis worksheets

School Summative Assessment Plan

- Formal Presentation of Completed Project to stakeholders

- End of Project Assessment - test

Primary Resources

Fundamentals of Supply Chain Management: A Practitioner's Perspective by William McLaury and Eugene Spiegle

PowerPoint Presentation

Supplementary Resources

-Online research

-Professional articles about BOMs and MRPs

-Professional videos about BOMs and MRPs

Technology Integration and Differentiated Instruction

Technology Integration

● **Google Products**

       o Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)

       o GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time and

see results upon completion of the assignments to allow for 21st century learning.

● **One to One Student's laptop**

    o All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

● **Additional Support Videos**

The videos below are just examples of videos that can be used to support each of the Lessons within this Topic. There are more additional videos provided for each and can be assigned from the Pearson enVisions 2.0 online textbook from the teachers' login.

Differentiated Instruction

Gifted Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, the Gifted Students are given choice on topic and subject matter allowing them to explore interests appropriate to their abilities, areas of interest and other courses.

English Language Learners (N.J.A.C.6A:15)

❏   Within each lesson, the English Language Learners are given choice of topic and resources so that their materials are within their ability to grasp the language.

❏   All assignments have been created in the student's native language.

❏   Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

❏   Within each lesson, the at-risk students are given choice of topic and resources so that their materials are within their ability level and high-interest.

Special Education Students (N.J.A.C.6A:8-3.1)

❑   Within each lesson, special education students are given choice of topic and resources so that their materials are within their ability level and high-interest.

❑   All content will be modeled with examples and all essays are built on a step-by-step basis so modifications for assignments in small chunks are met.

All other IEP modifications will be honored (ie. hard copies of notes, directions restated, etc.)

Interdisciplinary Connections

MATH – Students will apply algebra and statistical concepts learned in math courses to their projects.

SCIENCE – Students use scientific information and processes as appropriate to complete the projects.

SOCIAL STUDIES – Students will apply social skills learned through psychology when interacting in group projects.

LANGUAGE ARTS – Students will using appropriate writing skills in taking notes, as well as the creation of a formal written document for their unit project.

APPLIED TECHNOLOGY – Students will use technology through online resources, class website, Microsoft and Google applications, and email applications.

GLOBAL AWARENESS – Students will learn about individuals from different cultures and backgrounds through their research.

Learning Plan / Pacing Guide

Week	Lesson	Teacher Prep	Student Activity
1	1	Read Introduction, Driving Question, Project Description and Problem Statement	Read Introduction, Driving Question, Project Description and Problem Statement
	2-3	Prepare props and review videos	Complete Engaging Activity
	4	Hand out team contracts (choose teams)	Teams met, complete the mind-mapping exercise and make research assignments.
	5-6	Read relevant readings and fundamental concepts	Read relevant readings and watch assigned videos
			Discussion as needed
2	7-10	Prepare Math lesson if included, Review Essential Vocabulary Definitions	Find definitions for Essential Vocabulary
			Complete Math lesson when included
3-4	11-23	Monitor student progress	Conduct authentic research relevant to topic
		Invite authentic audience and	

		schedule presentations	Share research findings with team members
			Develop a solution
5	24		Present solution to an authentic audience
6	25-28	Monitor student progress	Revise solution and create Final Deliverable
	29	Print End-of-Project Assessment	Take End-of-Project Assessment
	30		Participate in Roundtable Discussion

NEW Project 1.2: Strategic Sourcing and Supplier Selection

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **3-4 weeks**
Status: **Published**

Standards

12.9.3.12.TD.1	Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.
12.9.3.12.TD.2	Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.
12.9.3.12.TD.3	Describe the key operational activities required of successful transportation, distribution and logistics facilities.
12.9.3.12.TD.4	Identify governmental policies and procedures for transportation, distribution and logistics facilities.
12.9.3.12.TD.5	Describe transportation, distribution and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health.
12.9.3.12.TD.6	Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.
12.9.3.12.TD-HSE.1	Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.
12.9.3.12.TD-HSE.2	Develop solutions to improve performance of health, safety and environmental management services.
12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.12.TD-OPS.1	Develop and evaluate transportation plans to move people and/or goods to meet customer requirements.
12.9.3.12.TD-OPS.2	Analyze performance of transportation operations in order to improve quality and service levels and increase efficiency.
12.9.3.12.TD-SAL.1	Analyze the ongoing performance of transportation, logistics and distribution-related sales and service operations.
12.9.3.12.TD-SYS.1	Develop plans to maintain and/or improve the transportation infrastructure.
12.9.3.12.TD-SYS.2	Assess, plan and manage the implementation of transportation services.
12.9.3.12.TD-WAR.1	Demonstrate efficient and effective warehouse and distribution center operations.
12.9.3.12.TD-WAR.2	Describe ways to improve the performance of warehouse and distribution operations.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
WRK.9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth.
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

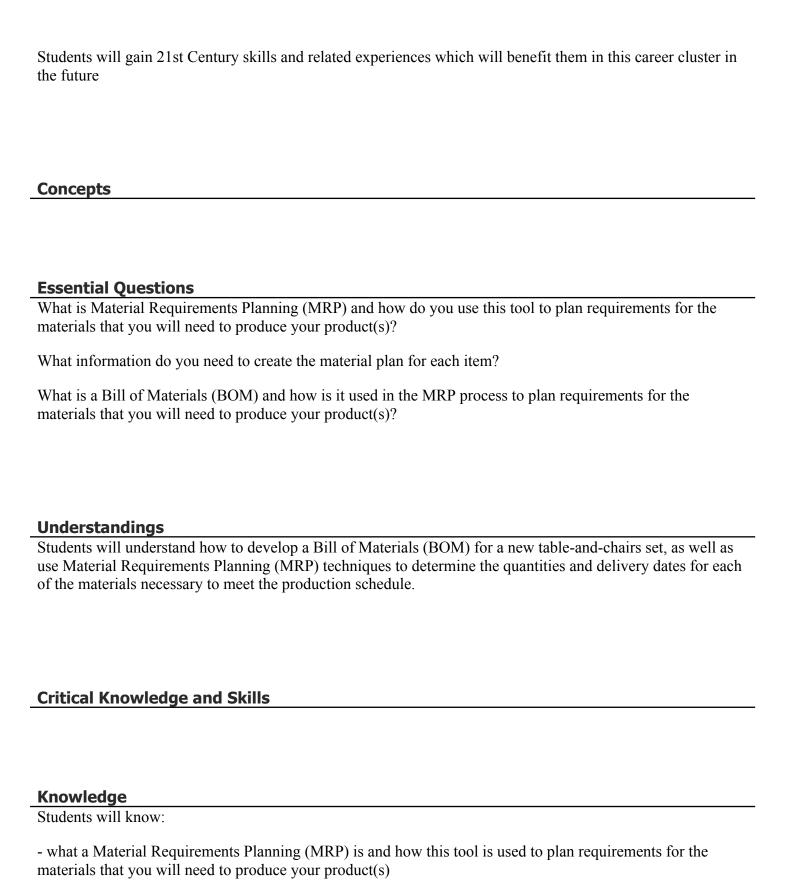| TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
TECH.9.4.12.IML.3	Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions (e.g., S-ID.B.6a., 8.1.12.DA.5, 7.1.IH.IPRET.8).

Applied Technology Standards

12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.MN.6	Demonstrate workplace knowledge and skills common to manufacturing.
12.9.3.MN-LOG.4	Manage inventory using logistics and control processes and procedures.
12.9.3.MN-PPD.1	Produce quality products that meet manufacturing standards and exceed customer satisfaction.
12.9.3.TD-LOG	Logistics Planning & Management Services
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Transfer Goals and Career Ready Practices

Transfer Goals

Students will gain an understanding of logistics and supply chain management which will help them understand how products they use and purchase make their way from the manufacturer to the end user.

Students will gain an understanding of the wide range of jobs available in the logistics and supply chain management field.
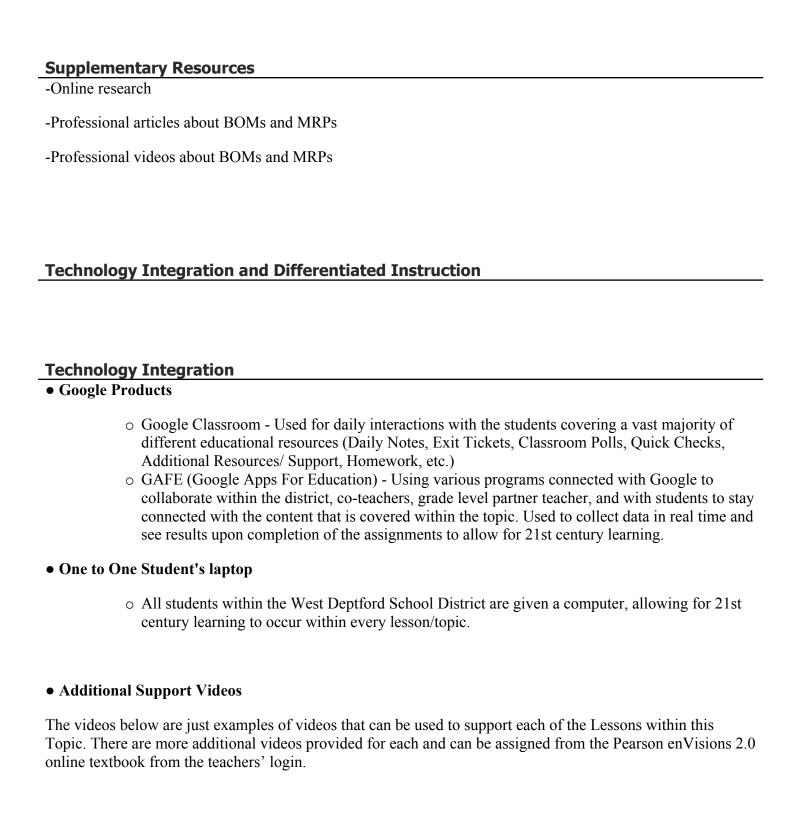
Students will gain 21st Century skills and related experiences which will benefit them in this career cluster in the future

Concepts

Essential Questions

What is Material Requirements Planning (MRP) and how do you use this tool to plan requirements for the materials that you will need to produce your product(s)?

What information do you need to create the material plan for each item?

What is a Bill of Materials (BOM) and how is it used in the MRP process to plan requirements for the materials that you will need to produce your product(s)?

Understandings

Students will understand how to develop a Bill of Materials (BOM) for a new table-and-chairs set, as well as use Material Requirements Planning (MRP) techniques to determine the quantities and delivery dates for each of the materials necessary to meet the production schedule.

Critical Knowledge and Skills

Knowledge

Students will know:

- what a Material Requirements Planning (MRP) is and how this tool is used to plan requirements for the materials that you will need to produce your product(s)

- how to create a MRP in Microsoft Excel

- what a Bill of Materials (BOM) is and how it is used in the MRP process to plan requirements for the materials that you will need to produce your product(s)

- how to create a BOM in a Microsoft Word table

Skills

Students will be able to:

- Create a Bill of Materials (BOM)

- Complete a Material Requirements Planning (MRP)

-Apply information about BOMs and MRPs to a real-life scenario

Assessment and Resources

School Formative Assessment Plan (Other Evidence)

- Professional Notebook - summarizing notes and articles

- Classwork activities - project management plans, optimization matrix, SWOT Analysis worksheets

School Summative Assessment Plan

- Formal Presentation of Completed Project to stakeholders

- End of Project Assessment - test

Primary Resources

Fundamentals of Supply Chain Management: A Practitioner's Perspective by William McLaury and Eugene Spiegle

PowerPoint Presentation

Supplementary Resources

-Online research

-Professional articles about BOMs and MRPs

-Professional videos about BOMs and MRPs

Technology Integration and Differentiated Instruction

Technology Integration

● **Google Products**

- o Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
- o GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time and see results upon completion of the assignments to allow for 21st century learning.

● **One to One Student's laptop**

- o All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

● **Additional Support Videos**

The videos below are just examples of videos that can be used to support each of the Lessons within this Topic. There are more additional videos provided for each and can be assigned from the Pearson enVisions 2.0 online textbook from the teachers' login.

Differentiated Instruction

Gifted Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, the Gifted Students are given choice on topic and subject matter allowing them to explore interests appropriate to their abilities, areas of interest and other courses.

English Language Learners (N.J.A.C.6A:15)

❏   Within each lesson, the English Language Learners are given choice of topic and resources so that their materials are within their ability to grasp the language.

❏   All assignments have been created in the student's native language.

❏   Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

❏   Within each lesson, the at-risk students are given choice of topic and resources so that their materials are within their ability level and high-interest.

Special Education Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, special education students are given choice of topic and resources so that their materials are within their ability level and high-interest.

❏   All content will be modeled with examples and all essays are built on a step-by-step basis so modifications for assignments in small chunks are met.

All other IEP modifications will be honored (ie. hard copies of notes, directions restated, etc.)

Interdisciplinary Connections

MATH – Students will apply algebra and statistical concepts learned in math courses to their projects.

SCIENCE – Students use scientific information and processes as appropriate to complete the projects.

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LANGUAGE ARTS – Students will using appropriate writing skills in taking notes, as well as the creation of a formal written document for their unit project.

APPLIED TECHNOLOGY – Students will use technology through online resources, class website, Microsoft and Google applications, and email applications.

GLOBAL AWARENESS – Students will learn about individuals from different cultures and backgrounds through their research.

Learning Plan / Pacing Guide

Week	Lesson	Teacher Prep	Student Activity
1	1	Read Introduction, Driving Question, Project Description and Problem Statement	Read Introduction, Driving Question, Project Description and Problem Statement
	2-3	Prepare props and review videos	Complete Engaging Activity
	4	Hand out team contracts (choose teams)	Teams met, complete the mind-mapping exercise and make research assignments.
	5-6	Read relevant readings and fundamental concepts	Read relevant readings and watch assigned videos
			Discussion as needed
2	7-10	Prepare Math lesson if included, Review Essential Vocabulary Definitions	Find definitions for Essential Vocabulary
			Complete Math lesson when included
3-4	11-23	Monitor student progress	Conduct authentic research relevant to topic
		Invite authentic audience and schedule presentations	Share research findings with team members
			Develop a solution
5	24		Present solution to an authentic audience
6	25-28	Monitor student progress	Revise solution and create Final Deliverable
	29	Print End-of-Project Assessment	Take End-of-Project Assessment
	30		Participate in Roundtable Discussion

NEW Project 1.3: Manufacturing Strategy Decision

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **3-4 weeks**
Status: **Published**

Standards

12.9.3.12.TD.1	Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.
12.9.3.12.TD.2	Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.
12.9.3.12.TD.3	Describe the key operational activities required of successful transportation, distribution and logistics facilities.
12.9.3.12.TD.4	Identify governmental policies and procedures for transportation, distribution and logistics facilities.
12.9.3.12.TD.5	Describe transportation, distribution and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health.
12.9.3.12.TD.6	Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.
12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.12.TD-OPS.1	Develop and evaluate transportation plans to move people and/or goods to meet customer requirements.
12.9.3.12.TD-OPS.2	Analyze performance of transportation operations in order to improve quality and service levels and increase efficiency.
12.9.3.12.TD-OPS.3	Comply with policies, laws and regulations in order to maintain safety, security and health and mitigate the economic and environmental risk of transportation operations.
12.9.3.12.TD-SYS.1	Develop plans to maintain and/or improve the transportation infrastructure.
12.9.3.12.TD-SYS.2	Assess, plan and manage the implementation of transportation services.
12.9.3.12.TD-SYS.3	Describe ways to improve the system utilization, flow, safety and environmental performance of transportation systems.
12.9.3.12.TD-WAR.1	Demonstrate efficient and effective warehouse and distribution center operations.
12.9.3.12.TD-WAR.2	Describe ways to improve the performance of warehouse and distribution operations.
12.9.3.12.TD-WAR.3	Analyze compliance with company policies and government laws and regulations in warehouse and distribution operations.
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem

solving (e.g., 1.3E.12profCR3.a).

| TECH.9.4.12.IML.2 | Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources (e.g., NJSLSA.W8, Social Studies Practice: Gathering and Evaluating Sources. |

Applied Technology Standards

12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.MN.6	Demonstrate workplace knowledge and skills common to manufacturing.
12.9.3.MN-LOG.4	Manage inventory using logistics and control processes and procedures.
12.9.3.MN-PPD.1	Produce quality products that meet manufacturing standards and exceed customer satisfaction.
12.9.3.TD-LOG	Logistics Planning & Management Services
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Transfer Goals and Career Ready Practices

Transfer Goals

Students will gain an understanding of logistics and supply chain management which will help them understand how products they use and purchase make their way from the manufacturer to the end user.

Students will gain an understanding of the wide range of jobs available in the logistics and supply chain management field.

Students will gain 21st Century skills and related experiences which will benefit them in this career cluster in the future

Concepts

Essential Questions

What is Material Requirements Planning (MRP) and how do you use this tool to plan requirements for the materials that you will need to produce your product(s)?

What information do you need to create the material plan for each item?

What is a Bill of Materials (BOM) and how is it used in the MRP process to plan requirements for the materials that you will need to produce your product(s)?

Understandings

Students will understand how to develop a Bill of Materials (BOM) for a new table-and-chairs set, as well as use Material Requirements Planning (MRP) techniques to determine the quantities and delivery dates for each of the materials necessary to meet the production schedule.

Critical Knowledge and Skills

Knowledge

Students will know:

- what a Material Requirements Planning (MRP) is and how this tool is used to plan requirements for the materials that you will need to produce your product(s)

- how to create a MRP in Microsoft Excel

- what a Bill of Materials (BOM) is and how it is used in the MRP process to plan requirements for the materials that you will need to produce your product(s)

- how to create a BOM in a Microsoft Word table

Skills

Students will be able to:

- Create a Bill of Materials (BOM)

- Complete a Material Requirements Planning (MRP)

-Apply information about BOMs and MRPs to a real-life scenario

Assessment and Resources

School Formative Assessment Plan (Other Evidence)

- Professional Notebook - summarizing notes and articles

- Classwork activities - project management plans, optimization matrix, SWOT Analysis worksheets

School Summative Assessment Plan

- Formal Presentation of Completed Project to stakeholders

- End of Project Assessment - test

Primary Resources

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PowerPoint Presentation

Supplementary Resources

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-Professional videos about BOMs and MRPs

Technology Integration and Differentiated Instruction

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❏   All assignments have been created in the student's native language.

❏   Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

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Special Education Students (N.J.A.C.6A:8-3.1)

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Interdisciplinary Connections

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Learning Plan / Pacing Guide

Week	Lesson	Teacher Prep	Student Activity
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2	7-10	Prepare Math lesson if included, Review Essential Vocabulary Definitions	Find definitions for Essential Vocabulary
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3-4	11-23	Monitor student progress	Conduct authentic research relevant to topic
		Invite authentic audience and schedule presentations	Share research findings with team members
			Develop a solution
5	24		Present solution to an authentic audience
6	25-28	Monitor student progress	Revise solution and create Final Deliverable
	29	Print End-of-Project Assessment	Take End-of-Project Assessment
	30		Participate in Roundtable Discussion

NEW Project 1.4: Transportation Mode Selection

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **3-4 weeks**
Status: **Published**

Standards

12.9.3.12.TD.1	Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.
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12.9.3.12.TD-WAR.3	Analyze compliance with company policies and government laws and regulations in warehouse and distribution operations.
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TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
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Applied Technology Standards

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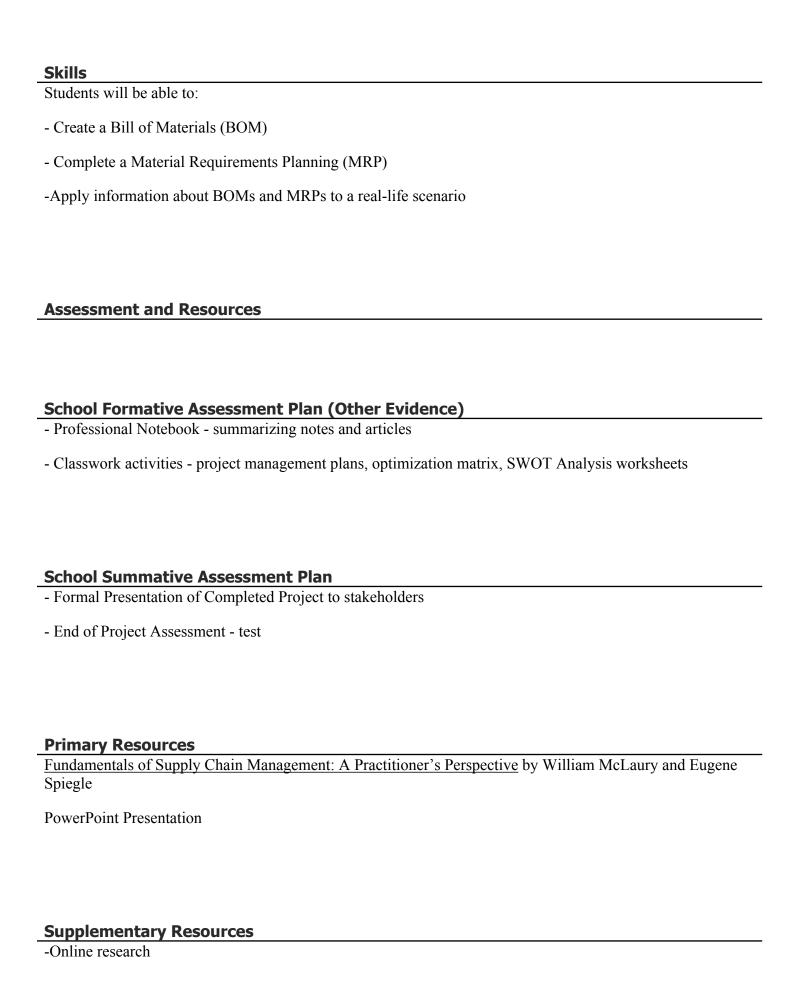
- how to create a BOM in a Microsoft Word table

Skills

Students will be able to:

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Assessment and Resources

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			Complete Math lesson when included
3-4	11-23	Monitor student progress	Conduct authentic research relevant to topic
		Invite authentic audience and schedule presentations	Share research findings with team members
			Develop a solution
5	24		Present solution to an authentic audience
6	25-28	Monitor student progress	Revise solution and create Final Deliverable
	29	Print End-of-Project Assessment	Take End-of-Project Assessment
	30		Participate in Roundtable Discussion

NEW Project 1.5: Supply Chain Disruption

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **3-4 weeks**
Status: **Published**

Standards

12.9.3.12.TD.1	Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.
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12.9.3.12.TD.3	Describe the key operational activities required of successful transportation, distribution and logistics facilities.
12.9.3.12.TD.4	Identify governmental policies and procedures for transportation, distribution and logistics facilities.
12.9.3.12.TD.5	Describe transportation, distribution and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health.
12.9.3.12.TD.6	Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.
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12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.12.TD-OPS.1	Develop and evaluate transportation plans to move people and/or goods to meet customer requirements.
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Applied Technology Standards

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CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Transfer Goals and Career Ready Practices

Transfer Goals

Students will gain an understanding of logistics and supply chain management which will help them understand how products they use and purchase make their way from the manufacturer to the end user.

Students will gain an understanding of the wide range of jobs available in the logistics and supply chain management field.

Students will gain 21st Century skills and related experiences which will benefit them in this career cluster in the future

Concepts

Essential Questions

What is Material Requirements Planning (MRP) and how do you use this tool to plan requirements for the materials that you will need to produce your product(s)?

What information do you need to create the material plan for each item?

What is a Bill of Materials (BOM) and how is it used in the MRP process to plan requirements for the materials that you will need to produce your product(s)?

Understandings

Students will understand how to develop a Bill of Materials (BOM) for a new table-and-chairs set, as well as use Material Requirements Planning (MRP) techniques to determine the quantities and delivery dates for each of the materials necessary to meet the production schedule.

Critical Knowledge and Skills

Knowledge

Students will know:

- what a Material Requirements Planning (MRP) is and how this tool is used to plan requirements for the materials that you will need to produce your product(s)

- how to create a MRP in Microsoft Excel

- what a Bill of Materials (BOM) is and how it is used in the MRP process to plan requirements for the materials that you will need to produce your product(s)
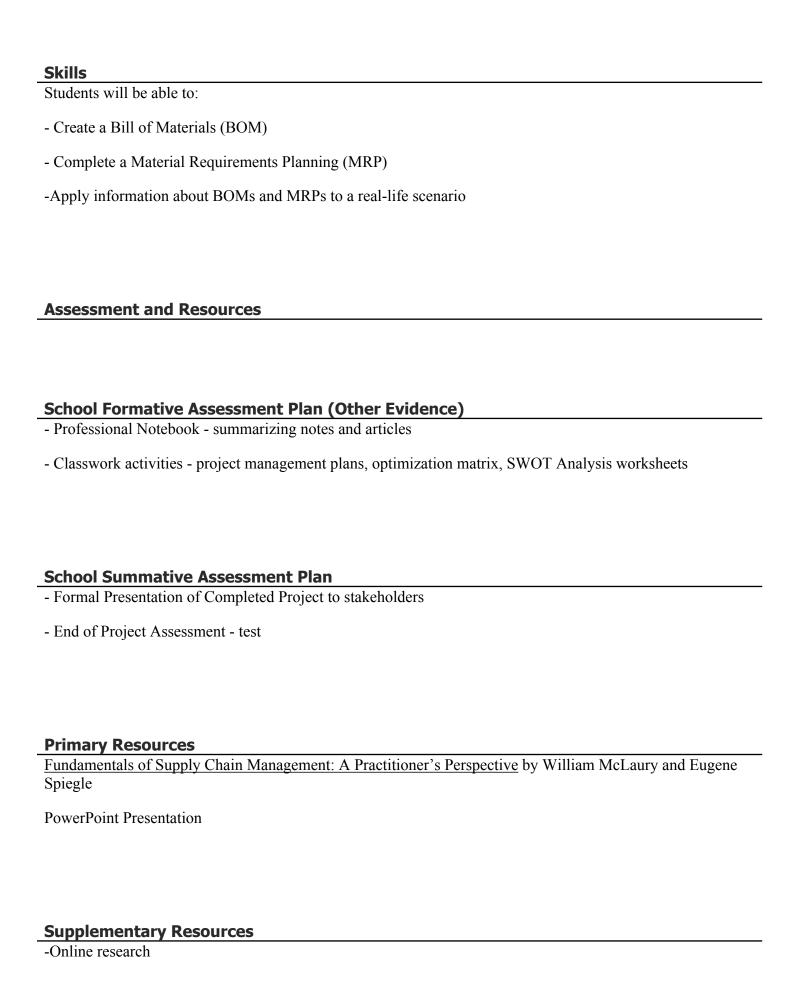
- how to create a BOM in a Microsoft Word table

Skills

Students will be able to:

- Create a Bill of Materials (BOM)

- Complete a Material Requirements Planning (MRP)

-Apply information about BOMs and MRPs to a real-life scenario

Assessment and Resources

School Formative Assessment Plan (Other Evidence)

- Professional Notebook - summarizing notes and articles

- Classwork activities - project management plans, optimization matrix, SWOT Analysis worksheets

School Summative Assessment Plan

- Formal Presentation of Completed Project to stakeholders

- End of Project Assessment - test

Primary Resources

Fundamentals of Supply Chain Management: A Practitioner's Perspective by William McLaury and Eugene Spiegle

PowerPoint Presentation

Supplementary Resources

-Online research

-Professional articles about BOMs and MRPs

-Professional videos about BOMs and MRPs

Technology Integration and Differentiated Instruction

Technology Integration

● **Google Products**

- ○ Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
- ○ GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time and see results upon completion of the assignments to allow for 21st century learning.

● **One to One Student's laptop**

- ○ All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

● **Additional Support Videos**

The videos below are just examples of videos that can be used to support each of the Lessons within this Topic. There are more additional videos provided for each and can be assigned from the Pearson enVisions 2.0 online textbook from the teachers' login.

Differentiated Instruction

Gifted Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, the Gifted Students are given choice on topic and subject matter allowing them to explore interests appropriate to their abilities, areas of interest and other courses.

English Language Learners (N.J.A.C.6A:15)

❑   Within each lesson, the English Language Learners are given choice of topic and resources so that their materials are within their ability to grasp the language.

❑   All assignments have been created in the student's native language.

❑   Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

❑   Within each lesson, the at-risk students are given choice of topic and resources so that their materials are within their ability level and high-interest.

Special Education Students (N.J.A.C.6A:8-3.1)

❑   Within each lesson, special education students are given choice of topic and resources so that their materials are within their ability level and high-interest.

❑   All content will be modeled with examples and all essays are built on a step-by-step basis so modifications for assignments in small chunks are met.

All other IEP modifications will be honored (ie. hard copies of notes, directions restated, etc.)

Interdisciplinary Connections

MATH – Students will apply algebra and statistical concepts learned in math courses to their projects.

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GLOBAL AWARENESS – Students will learn about individuals from different cultures and backgrounds through their research.

Learning Plan / Pacing Guide

Week	Lesson	Teacher Prep	Student Activity
1	1	Read Introduction, Driving Question, Project Description and Problem Statement	Read Introduction, Driving Question, Project Description and Problem Statement
	2-3	Prepare props and review videos	Complete Engaging Activity
	4	Hand out team contracts (choose teams)	Teams met, complete the mind-mapping exercise and make research assignments.
	5-6	Read relevant readings and fundamental concepts	Read relevant readings and watch assigned videos
			Discussion as needed
2	7-10	Prepare Math lesson if included, Review Essential Vocabulary Definitions	Find definitions for Essential Vocabulary
			Complete Math lesson when included
3-4	11-23	Monitor student progress	Conduct authentic research relevant to topic
		Invite authentic audience and schedule presentations	Share research findings with team members
			Develop a solution
5	24		Present solution to an authentic audience
6	25-28	Monitor student progress	Revise solution and create Final Deliverable
	29	Print End-of-Project Assessment	Take End-of-Project Assessment
	30		Participate in Roundtable Discussion

NEW Project 1.6: Supplier Relationship Management

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **3-4 weeks**
Status: **Published**

Standards

12.9.3.12.TD.1	Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.
12.9.3.12.TD.2	Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.
12.9.3.12.TD.3	Describe the key operational activities required of successful transportation, distribution and logistics facilities.
12.9.3.12.TD.4	Identify governmental policies and procedures for transportation, distribution and logistics facilities.
12.9.3.12.TD.5	Describe transportation, distribution and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health.
12.9.3.12.TD.6	Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.
12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.12.TD-OPS.1	Develop and evaluate transportation plans to move people and/or goods to meet customer requirements.
12.9.3.12.TD-OPS.2	Analyze performance of transportation operations in order to improve quality and service levels and increase efficiency.
12.9.3.12.TD-OPS.3	Comply with policies, laws and regulations in order to maintain safety, security and health and mitigate the economic and environmental risk of transportation operations.
12.9.3.12.TD-SYS.1	Develop plans to maintain and/or improve the transportation infrastructure.
12.9.3.12.TD-SYS.2	Assess, plan and manage the implementation of transportation services.
12.9.3.12.TD-SYS.3	Describe ways to improve the system utilization, flow, safety and environmental performance of transportation systems.
12.9.3.12.TD-WAR.1	Demonstrate efficient and effective warehouse and distribution center operations.
12.9.3.12.TD-WAR.2	Describe ways to improve the performance of warehouse and distribution operations.
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
TECH.9.4.12.IML.2	Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and

relevance of information, in media, data, or other resources (e.g., NJSLSA.W8, Social Studies Practice: Gathering and Evaluating Sources.

Applied Technology Standards

12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.MN.6	Demonstrate workplace knowledge and skills common to manufacturing.
12.9.3.MN-LOG.4	Manage inventory using logistics and control processes and procedures.
12.9.3.MN-PPD.1	Produce quality products that meet manufacturing standards and exceed customer satisfaction.
12.9.3.TD-LOG	Logistics Planning & Management Services
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
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CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Transfer Goals and Career Ready Practices

Transfer Goals

Students will gain an understanding of logistics and supply chain management which will help them understand how products they use and purchase make their way from the manufacturer to the end user.

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Concepts

Essential Questions

What is Material Requirements Planning (MRP) and how do you use this tool to plan requirements for the materials that you will need to produce your product(s)?

What information do you need to create the material plan for each item?

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Understandings

Students will understand how to develop a Bill of Materials (BOM) for a new table-and-chairs set, as well as use Material Requirements Planning (MRP) techniques to determine the quantities and delivery dates for each of the materials necessary to meet the production schedule.

Critical Knowledge and Skills

Knowledge

Students will know:

- what a Material Requirements Planning (MRP) is and how this tool is used to plan requirements for the materials that you will need to produce your product(s)

- how to create a MRP in Microsoft Excel

- what a Bill of Materials (BOM) is and how it is used in the MRP process to plan requirements for the materials that you will need to produce your product(s)

- how to create a BOM in a Microsoft Word table

Skills

Students will be able to:

- Create a Bill of Materials (BOM)

- Complete a Material Requirements Planning (MRP)

-Apply information about BOMs and MRPs to a real-life scenario

Assessment and Resources

School Formative Assessment Plan (Other Evidence)

- Professional Notebook - summarizing notes and articles

- Classwork activities - project management plans, optimization matrix, SWOT Analysis worksheets

School Summative Assessment Plan

- Formal Presentation of Completed Project to stakeholders

- End of Project Assessment - test

Primary Resources

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PowerPoint Presentation

Supplementary Resources

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❏   All assignments have been created in the student's native language.

❏   Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

❏   Within each lesson, the at-risk students are given choice of topic and resources so that their materials are within their ability level and high-interest.

Special Education Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, special education students are given choice of topic and resources so that their materials are within their ability level and high-interest.

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Interdisciplinary Connections

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	5-6	Read relevant readings and fundamental concepts	Read relevant readings and watch assigned videos
			Discussion as needed
2	7-10	Prepare Math lesson if included, Review Essential Vocabulary Definitions	Find definitions for Essential Vocabulary
			Complete Math lesson when included
3-4	11-23	Monitor student progress	Conduct authentic research relevant to topic
		Invite authentic audience and schedule presentations	Share research findings with team members
			Develop a solution
5	24		Present solution to an authentic audience
6	25-28	Monitor student progress	Revise solution and create Final Deliverable
	29	Print End-of-Project Assessment	Take End-of-Project Assessment
	30		Participate in Roundtable Discussion

NEW Project 1.7: Manufacturing Process Decision

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **3-4 weeks**
Status: **Published**

Standards

12.9.3.12.TD.1	Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.
12.9.3.12.TD.2	Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.
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12.9.3.12.TD.4	Identify governmental policies and procedures for transportation, distribution and logistics facilities.
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12.9.3.12.TD.6	Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.
12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.12.TD-OPS.1	Develop and evaluate transportation plans to move people and/or goods to meet customer requirements.
12.9.3.12.TD-OPS.2	Analyze performance of transportation operations in order to improve quality and service levels and increase efficiency.
12.9.3.12.TD-OPS.3	Comply with policies, laws and regulations in order to maintain safety, security and health and mitigate the economic and environmental risk of transportation operations.
12.9.3.12.TD-SYS.1	Develop plans to maintain and/or improve the transportation infrastructure.
12.9.3.12.TD-SYS.2	Assess, plan and manage the implementation of transportation services.
12.9.3.12.TD-SYS.3	Describe ways to improve the system utilization, flow, safety and environmental performance of transportation systems.
12.9.3.12.TD-WAR.1	Demonstrate efficient and effective warehouse and distribution center operations.
12.9.3.12.TD-WAR.2	Describe ways to improve the performance of warehouse and distribution operations.
12.9.3.12.TD-WAR.3	Analyze compliance with company policies and government laws and regulations in warehouse and distribution operations.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and

transition (e.g., 2.1.12.PGD.1).

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Applied Technology Standards

12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.MN.6	Demonstrate workplace knowledge and skills common to manufacturing.
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CRP.K-12.CRP2	Apply appropriate academic and technical skills.
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Transfer Goals and Career Ready Practices

Transfer Goals

Students will gain an understanding of logistics and supply chain management which will help them understand how products they use and purchase make their way from the manufacturer to the end user.

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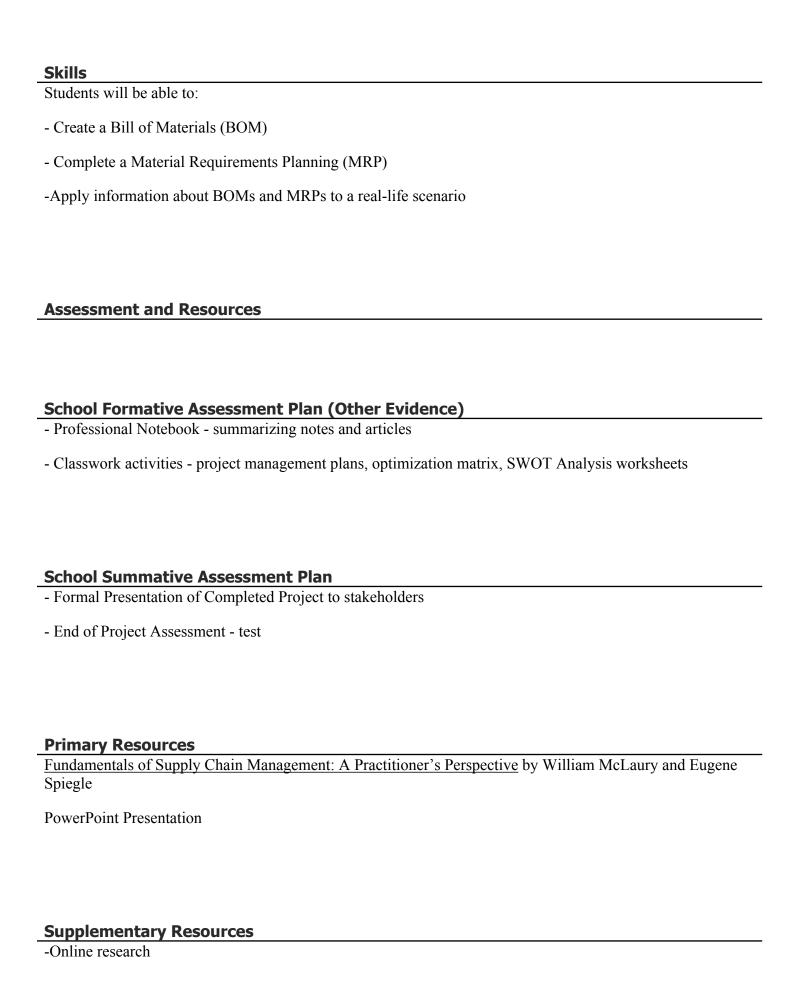
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- what a Bill of Materials (BOM) is and how it is used in the MRP process to plan requirements for the materials that you will need to produce your product(s)

- how to create a BOM in a Microsoft Word table

Skills

Students will be able to:

- Create a Bill of Materials (BOM)

- Complete a Material Requirements Planning (MRP)

-Apply information about BOMs and MRPs to a real-life scenario

Assessment and Resources

School Formative Assessment Plan (Other Evidence)

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	4	Hand out team contracts (choose teams)	Teams met, complete the mind-mapping exercise and make research assignments.
	5-6	Read relevant readings and fundamental concepts	Read relevant readings and watch assigned videos
			Discussion as needed
2	7-10	Prepare Math lesson if included, Review Essential Vocabulary Definitions	Find definitions for Essential Vocabulary
			Complete Math lesson when included
3-4	11-23	Monitor student progress	Conduct authentic research relevant to topic
		Invite authentic audience and schedule presentations	Share research findings with team members
			Develop a solution
5	24		Present solution to an authentic audience
6	25-28	Monitor student progress	Revise solution and create Final Deliverable
	29	Print End-of-Project Assessment	Take End-of-Project Assessment
	30		Participate in Roundtable Discussion

NEW Project 1.8: Warehouse Design

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **3-4 weeks**
Status: **Published**

Standards

12.9.3.12.TD.1	Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.
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12.9.3.12.TD.3	Describe the key operational activities required of successful transportation, distribution and logistics facilities.
12.9.3.12.TD.4	Identify governmental policies and procedures for transportation, distribution and logistics facilities.
12.9.3.12.TD.5	Describe transportation, distribution and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health.
12.9.3.12.TD.6	Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.
12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
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12.9.3.12.TD-SYS.1	Develop plans to maintain and/or improve the transportation infrastructure.
12.9.3.12.TD-SYS.2	Assess, plan and manage the implementation of transportation services.
12.9.3.12.TD-SYS.3	Describe ways to improve the system utilization, flow, safety and environmental performance of transportation systems.
12.9.3.12.TD-WAR.1	Demonstrate efficient and effective warehouse and distribution center operations.
12.9.3.12.TD-WAR.2	Describe ways to improve the performance of warehouse and distribution operations.
12.9.3.12.TD-WAR.3	Analyze compliance with company policies and government laws and regulations in warehouse and distribution operations.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and

transition (e.g., 2.1.12.PGD.1).

| TECH.9.4.12.CT.2 | Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a). |
| TECH.9.4.12.IML.2 | Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources (e.g., NJSLSA.W8, Social Studies Practice: Gathering and Evaluating Sources. |

Applied Technology Standards

12.9.3.12.TD-LOG.1	Develop solutions to provide and manage logistics services for the company and customers.
12.9.3.12.TD-LOG.2	Analyze and improve performance of logistics systems to provide logistics planning and management services.
12.9.3.MN.6	Demonstrate workplace knowledge and skills common to manufacturing.
12.9.3.MN-LOG.4	Manage inventory using logistics and control processes and procedures.
12.9.3.MN-PPD.1	Produce quality products that meet manufacturing standards and exceed customer satisfaction.
12.9.3.TD-LOG	Logistics Planning & Management Services
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Transfer Goals and Career Ready Practices

Transfer Goals

Students will gain an understanding of logistics and supply chain management which will help them understand how products they use and purchase make their way from the manufacturer to the end user.

Students will gain an understanding of the wide range of jobs available in the logistics and supply chain management field.

Students will gain 21st Century skills and related experiences which will benefit them in this career cluster in the future

Concepts

Essential Questions

What is Material Requirements Planning (MRP) and how do you use this tool to plan requirements for the materials that you will need to produce your product(s)?

What information do you need to create the material plan for each item?

What is a Bill of Materials (BOM) and how is it used in the MRP process to plan requirements for the materials that you will need to produce your product(s)?
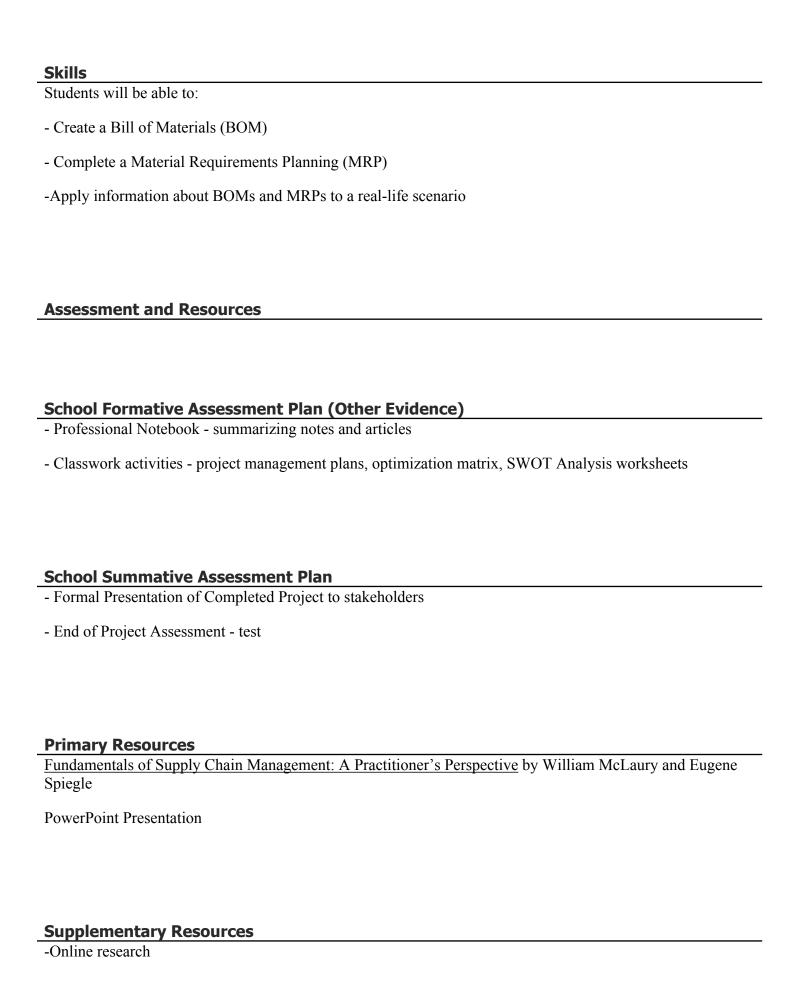

Understandings

Students will understand how to develop a Bill of Materials (BOM) for a new table-and-chairs set, as well as use Material Requirements Planning (MRP) techniques to determine the quantities and delivery dates for each of the materials necessary to meet the production schedule.

Critical Knowledge and Skills

Knowledge

Students will know:

- what a Material Requirements Planning (MRP) is and how this tool is used to plan requirements for the materials that you will need to produce your product(s)

- how to create a MRP in Microsoft Excel

- what a Bill of Materials (BOM) is and how it is used in the MRP process to plan requirements for the materials that you will need to produce your product(s)

- how to create a BOM in a Microsoft Word table

Skills

Students will be able to:

- Create a Bill of Materials (BOM)

- Complete a Material Requirements Planning (MRP)

-Apply information about BOMs and MRPs to a real-life scenario

Assessment and Resources

School Formative Assessment Plan (Other Evidence)

- Professional Notebook - summarizing notes and articles

- Classwork activities - project management plans, optimization matrix, SWOT Analysis worksheets

School Summative Assessment Plan

- Formal Presentation of Completed Project to stakeholders

- End of Project Assessment - test

Primary Resources

Fundamentals of Supply Chain Management: A Practitioner's Perspective by William McLaury and Eugene Spiegle

PowerPoint Presentation

Supplementary Resources

-Online research

-Professional articles about BOMs and MRPs

-Professional videos about BOMs and MRPs

Technology Integration and Differentiated Instruction

Technology Integration

● **Google Products**

  ○ Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
  ○ GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time and see results upon completion of the assignments to allow for 21st century learning.

● **One to One Student's laptop**

  ○ All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

● **Additional Support Videos**

The videos below are just examples of videos that can be used to support each of the Lessons within this Topic. There are more additional videos provided for each and can be assigned from the Pearson enVisions 2.0 online textbook from the teachers' login.

Differentiated Instruction

Gifted Students (N.J.A.C.6A:8-3.1)

❏ Within each lesson, the Gifted Students are given choice on topic and subject matter allowing them to explore interests appropriate to their abilities, areas of interest and other courses.

English Language Learners (N.J.A.C.6A:15)

❏   Within each lesson, the English Language Learners are given choice of topic and resources so that their materials are within their ability to grasp the language.

❏   All assignments have been created in the student's native language.

❏   Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

❏   Within each lesson, the at-risk students are given choice of topic and resources so that their materials are within their ability level and high-interest.

Special Education Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, special education students are given choice of topic and resources so that their materials are within their ability level and high-interest.

❏   All content will be modeled with examples and all essays are built on a step-by-step basis so modifications for assignments in small chunks are met.

All other IEP modifications will be honored (ie. hard copies of notes, directions restated, etc.)

Interdisciplinary Connections

MATH – Students will apply algebra and statistical concepts learned in math courses to their projects.

SCIENCE – Students use scientific information and processes as appropriate to complete the projects.

SOCIAL STUDIES – Students will apply social skills learned through psychology when interacting in group projects.

LANGUAGE ARTS – Students will using appropriate writing skills in taking notes, as well as the creation of a formal written document for their unit project.

APPLIED TECHNOLOGY – Students will use technology through online resources, class website, Microsoft and Google applications, and email applications.

GLOBAL AWARENESS – Students will learn about individuals from different cultures and backgrounds through their research.

Learning Plan / Pacing Guide

Week	Lesson	Teacher Prep	Student Activity
1	1	Read Introduction, Driving Question, Project Description and Problem Statement	Read Introduction, Driving Question, Project Description and Problem Statement
	2-3	Prepare props and review videos	Complete Engaging Activity
	4	Hand out team contracts (choose teams)	Teams met, complete the mind-mapping exercise and make research assignments.
	5-6	Read relevant readings and fundamental concepts	Read relevant readings and watch assigned videos
			Discussion as needed
2	7-10	Prepare Math lesson if included, Review Essential Vocabulary Definitions	Find definitions for Essential Vocabulary
			Complete Math lesson when included
3-4	11-23	Monitor student progress	Conduct authentic research relevant to topic
		Invite authentic audience and schedule presentations	Share research findings with team members
			Develop a solution
5	24		Present solution to an authentic audience
6	25-28	Monitor student progress	Revise solution and create Final Deliverable
	29	Print End-of-Project Assessment	Take End-of-Project Assessment
	30		Participate in Roundtable Discussion