Madison Public Schools REACH Curriculum

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Approval date:

September 25, 2018

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Course Overview

Description

The goal of REACH is to develop both life and career skills in a setting which will enhance the educational opportunities of students. It builds off of skills that are taught in reading, writing, math, science, and social studies. In this setting, students are able to learn at a higher grade level. These units are non-sequential and can be presented in any order and are highly adaptable for use with a variety of learners.

Goals

This course aims to:

- Develop research skills and analyze information
- Develop coding and robotic skills
- Make observations and collection data
- Critical problem solving skills
- Develop a simple schematic drawing
- Create a model
- Develop their use of technology
- Present information to an audience
- Develop financial skills
- Increase financial literacy
- Enhance the educational experience of students outside the classroom
- Develop guidance concepts

Resources

21st Century Life and Careers Standards https://www.state.nj.us/education/aps/cccs/career/

Modifications and Adaptations for Special Needs Learners

(Gifted and Talented Students, English Language Learners, Special Education Students, At-Risk Students)

Unit Title: Design Thinking

Unit Summary:

Design thinking is a methodology for creative problem solving. Design Thinking introduces a new way of thinking about the problems and questions we face in our world. It steps outside of the traditional boxes with visual thinking, creativity and innovation in order to find new solutions to the same old issues. This unit will allow students to survey their peers and discover a real life problem they may be having. Students will then develop a prototype to solve the problem, as well as a mock company, and present their findings. This unit will develop design thinking skills including empathizing, defining, ideating, prototyping, and testing.

Suggested Pacing: 17 lessons

Learning Targets

Unit Essential Questions:

- What is design thinking?
- How can use this in our real life to solve problems?

Unit Enduring Understandings:

• Design thinking is a tool we can use to solve real life problems.

Evidence of Learning

Objectives (Students will be able to)	Essential Content/Skills	Suggested Assessments/ Homework	Standards	Pacing
Understand and explain Design Thinking	Students will learn and understand the importance of the steps of Design thinking: -Empathize -Define -Ideate -Prototype -Test https://www.interaction-de sign.org/literature/article/ 5-stages-in-the-design-thin king-process https://dschool-old.stanfor d.edu/sandbox/groups/des ignresources/wiki/36873/a ttachments/74b3d/ModeG uideBOOTCAMP2010L.pdf https://dschool-old.stanfor d.edu/groups/k12/wiki/33 2ff/curriculum home pag e.html		Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12 English Language Arts E3.1 E3.2 E3.3 E3.5	Week 1-2
Understand open ended questions	Students will begin learning about the empathize step of the design process. To help students understand how to ask questions that will get to a deeper understanding of their user and the context in which the user operates. https://dschool-old.stanford.edu/groups/k12/wiki/332ff/curriculum_home_page.html	For homework, students should develop a set of open ended questions they can use to interview their peers. These questions should help students identify a problem that a peer is having that they can help solve.	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12 English Language Arts E3.1 E3.2 E3.3 E3.5	Week 3

Make Observations	To introduce students to the concepts of observation and interviews by using a premade video. https://dschool-old.stanford.edu/groups/k12/wiki/332ff/curriculum home page.html	Student should begin interviewing peers with their set of open ended questions.	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12 English Language Arts E3.1 E3.2 E3.3 E3.5	Week 4
Visually show their observations using space saturation.	To get students to get all of their observations and finding from the empathy stage of the process in one place visually. You space saturate to help you unpack thoughts and experiences into tangible and visual pieces of information that you surround yourself with to inform and inspire the design team. You group these findings to explore what themes and patterns emerge, and strive to move toward identifying meaningful needs of people and insights that will inform your design solutions. https://dschool-old.stanford.edu/groups/k12/wiki/33 2ff/curriculum home page.html		Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12 English Language Arts E3.1 E3.2 E3.3 E3.5	Week 5
To guide designers through the process of distilling a variety of needs	Students will enter the define phase of design thinking by using a POV mad lib.	For homework students should finalize their	Technology T.8.1 T.8.2	Week 6

and insights into a single point of view.	A point-of-view (POV) is your reframing of a design challenge into an actionable problem statement that will launch you into generative ideation. https://dschool-old.stanford.edu/groups/k12/wiki/332ff/curriculum home page.html	problem statement.	Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12 English Language Arts E3.1 E3.2 E3.3 E3.5	
Brainstorm	Students will enter the ideate phase of design thinking. Students try to come up with as many ways as possible to solve a problem. https://dschool-old.stanfor d.edu/groups/k12/wiki/33 2ff/curriculum home pag e.html	For homework students should choose the best 2 or 3 solutions.	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12 English Language Arts E3.1 E3.2 E3.3 E3.5	Week 7-8
Create a prototype	Students enter the prototype phase. Students will being create paper prototype. If time allows they can transfer their prototype onto the computer, 3D printing, or building.		Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2	Ongoing

	https://dschool-old.stanfor d.edu/groups/k12/wiki/33 2ff/curriculum home pag e.html	21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12 English Language Arts	
		E3.1 E3.2 E3.3 E3.5	
Create a brand name, logo, slogan, and presentation on their protype.	Students will be required to create: -A brand name -A logo -A slogan for their product -A final presentation for their product to be presented, The presentation can be in any format they choose. Examples include video or slideshow. https://dschool-old.stanford.edu/groups/k12/wiki/332ff/curriculum_home_page.html	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12 English Language Arts E3.1 E3.2	Ongoing
		E3.2 E3.3 E3.5	

Unit Title: Lego WEDO

Unit Summary:

LEGO WEDO is a LEGO tool designed to introduce students to robotics, as well as increase their coding skills. In this unit, students will study how animals interact with their environment. Using LEGO WEDO parts and the LEGO WEDO platform, students will create a model of an animal. Using sensors, students will code the robotic animal model to interact with the environment. This unit will allow students to develop both coding and robotic skills at an advanced level.

Suggested Pacing: 11 lessons

Learning Targets

Unit Essential Questions:

- How do animals interact with their environment?
- How can we code robots?

Unit Enduring Understandings:

- Explore how animals use their senses in order to receive different types of information
- Create and program an animal robot with a focus on its senses
- Test a program and show how animals interact with different stimuli

Evidence of Learning

Objectives (Students will be able to)	Essential Content/Skills	Suggested Assessments/ Homework	Standards	Pacing
Preparation Phase	Prepare student by introducing how different animals interact with their environments. https://education.lego.com/en-us/lessons/wedo-2-computational-thinking/animal-senses	For homework students should choose one animal and describe how it interacts with its environment.	Technology T.8.1 T.8.2 NGSS Science Standards: Science and Engineering Practices 3-5-ETS1.1, 3-5-ETS1-2, 3-5-ETS1-3 Disciplinary Core Ideas ETS1.A, (3-5-ETS1-1) ETS1.B, (3-5-ETS1-2), (3-5-ETS1-3) ETS1.C, (3-5-ETS1-3) Common Core State Standards ELA/Literacy RI.5.1, RI.5.7, W.5.8 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12	Week 1-2
Explore Phase	Students will be introduced to the problem. They must build a robotic model of an animal which uses sensors to show how it interacts with its environment. https://education.lego.com/en-us/lessons/wedo-2-computational-thinking/animal-senses	For homework students should brainstorm how they will create their model.	Technology T.8.1 T.8.2 NGSS Science Standards: Science and Engineering Practices 3-5-ETS1.1, 3-5-ETS1-2, 3-5-ETS1-3 Disciplinary Core Ideas ETS1.A, (3-5-ETS1-1) ETS1.B, (3-5-ETS1-2), (3-5-ETS1-3) ETS1.C, (3-5-ETS1-3) Common Core State Standards ELA/Literacy RI.5.1, RI.5.7, W.5.8 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12	Week 3
Create and Test Phase	Have your students build and program a model of an animal	Student should begin interviewing peers with	Technology T.8.1 T.8.2	Week 4-7

	they have chosen. Make sure that they use sensors as an element in modelling the animal's interaction with its environment. https://education.le go.com/en-us/lesso ns/wedo-2-computa tional-thinking/ani mal-senses	their set of open ended questions.	NGSS Science Standards: Science and Engineering Practices 3-5-ETS1.1, 3-5-ETS1-2, 3-5-ETS1-3 Disciplinary Core Ideas ETS1.A, (3-5-ETS1-1) ETS1.B, (3-5-ETS1-2), (3-5-ETS1-3) ETS1.C, (3-5-ETS1-3) Common Core State Standards ELA/Literacy RI.5.1, RI.5.7, W.5.8 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12	
Share Phase	Students should document their work. Use different ways in order to let students share what they have learned and their reflections on these experiences. Have students create their final reports and present their projects. https://education.lego.com/en-us/lessons/wedo-2-computational-thinking/animal-senses		Technology T.8.1 T.8.2 NGSS Science Standards: Science and Engineering Practices 3-5-ETS1.1, 3-5-ETS1-2, 3-5-ETS1-3 Disciplinary Core Ideas ETS1.A, (3-5-ETS1-1) ETS1.B, (3-5-ETS1-2), (3-5-ETS1-3) ETS1.C, (3-5-ETS1-3) Common Core State Standards ELA/Literacy RI.5.1, RI.5.7, W.5.8 21st Century Life and Careers CRP4 CRP5 CRP6 CRP7 CRP8 CRP9 CRP10 CRP11 CRP12	Week 8-11

^{**}If there is time left over at the end of the unit, students can use LEGO WEDO Curriculum to choose another activity. https://education.lego.com/en-us/lessons?Products=LEGO%20Education%20WeDo%202.0%20Core%20Set&pagesize=12

Unit Title: The Stock Market Game

Unit Summary:

This unit will develop financial skills and independence through the Stock Market Game, while increase levels of math, social studies, reading, and writing. In The Stock Market Game (SMG), students work together to create and manage a virtual investment portfolio of real world stocks, bonds, and mutual funds. Each team is responsible for researching and evaluating potential investments. Team members must also effectively come together on cooperative decisions on whether to buy, sell, or hold the stocks, funds, and bonds in the portfolio they have created. In addition to working in the online portfolio and researching their investments, each student is encouraged to keep a journal. Student journals are effective formative assessment tools.

Suggested Pacing: 17 lessons

Learning Targets

Unit Essential Questions:

- What is the Stock Market?
- What is a company?
- What is the difference between a public/private company?
- What is a stock?
- What is diversification? What is risk?
- What causes stock prices to hold?
- How to buy, hold, and sell stocks.

Unit Enduring Understandings:

- The Stock Market is a place where we buy and sell shares of companies.
- A public company is one in which is available to buy and sell on the Stock Market.
- There are different markets.
- A stock is a part of a company.
- We can buy and sell shares of a company based on the market.
- Different things in the market cause stock value to increase and decrease.

Evidence of Learning

Objectives (Students will be able to)	Essential Content/Skills	Suggested Assessments/ Homework	Standards	Pacing
Understand the fundamentals of The Stock Market Game like teamwork and cooperation and investing.	-Understand the relative dollar value of \$100,000Understand the consensus building process - Cooperatively create rules for successful cooperation and consensus building https://www.stockmarketgame.org/tsc.html#/gallery	Journaling Students make a list of popular products and identify the companies that make them for the following class.	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6 English Language Arts E3.1 E3.2 E3.3 E3.5 Math M4.1 M4.3 M4.4 M4.5 Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6	Week 1-2
Understand characteristics of a public company.	-Identify and describe a companyIdentify and describe a brandContrast and compare distinguishing characteristics of companies and brands https://www.stockmarketgame.org/tsc.html#/gallery	Journaling	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6	Week 3

-Calculate gain and loss of sample stock salesUnderstand why some companies are public and others are privately held. https://www.stockmarketgame.org/tsc.html#/gallery Lookup a company's ticker symbol online. current several calculation of the same privately held. bttps://www.stockmarketgame.org/tsc.html	T.8.1 T.8.2 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6 English Language Arts E3.1 E3.2 E3.3 E3.5 Math M4.1 M4.3 M4.4 M4.5 Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6 ing Technology T.8.1 Week 6-7
symbols to locate ticker symbol online. -Use the ticker	T.8.1 T.8.2

companies. Students will also learn to read a stock quote. Student begin playing the Stock Market Game.	symbol to locate a company https://www.stockmarketgame.org/tsc.html#/gallery		Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6 English Language Arts E3.1 E3.2 E3.3 E3.5 Math M4.1 M4.3 M4.4 M4.5 Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6	
Understand that there is some level of risk in all invest. They will also apply their research to determine the risk level of their Stock Market Game portfolios. Students continue trading in the Stock Market Game.	-Define and illustrate the three major kinds of riskUnderstand stocks, bond, and cashResearch two industries and decide the level of risk their Stock Market Game team would take if they invest in companies in these industriesPersuade their team to purchase or not to purchase a particular stock. https://www.stockmarketgame.org/tsc.html#/gallery	Journaling	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6 English Language Arts E3.1 E3.2 E3.3 E3.5 Math M4.1 M4.3 M4.4 M4.5	Week 8

			Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6	
Students will define the term "diversification" and learn to diversify their Stock Market Game portfolios by investing in companies from different industries and sectors. Students continue trading in the Stock Market Game.	-Create a diversified portfolio selecting stocks and mutual fundsConduct Internet research on different investment optionsInterpret company and industry charts to determine which investments to make with their SMG teams https://www.stockmarketgame.org/tsc.html#/gallery	Journaling	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6 English Language Arts E3.1 E3.2 E3.3 E3.5 Math M4.1 M4.3 M4.4 M4.5 Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6	Week 9
Students will explain mutual funds and describe the advantages to purchasing them. Students continue trading in the Stock Market Game.	-Explain mutual fundsDescribe the advantages to purchasing mutual fundsUse the web to locate mutual funds. https://www.stockmarketgame.org/tsc.html#/gallery	Journaling	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6	Week 10

toward answering the following questions: Why are there two stock exchanges? What is the difference between the New York Stock Exchange/ICE and the NASDAQ? When researching investments, does it matter which exchange a company is listed on? Students continue trading in the Stock Market Game. This lesson explores - Diff between the New and to Stock - Uncomparation of the Stock - Uncomparat	ine a stock ange. ferentiate reen the NASDAQ the New York k Exchange derstand the act listing on a fecular exchange on a company's d and stock price s://www.stockma game.org/tsc.htm allery	Journaling	Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6 Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6 English Language Arts E3.1 E3.2 E3.3 E3.5 Math M4.1 M4.3 M4.4 M4.5 Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6 Technology T.8.1	Week 11-12 Week 13
3	s stock prices are enced.		T.8.1 T.8.2	

internal events that affect stock prices. Students continue trading in the Stock Market Game.	-Evaluate the ways investors can be affected by the change in market prices when choosing to buy, sell or holdInterpret charts and graphs to better understand the growth and change in stock prices. https://www.stockmarketgame.org/tsc.html#/gallery		Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6 English Language Arts E3.1 E3.2 E3.3 E3.5 Math M4.1 M4.3 M4.4 M4.5 Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6	
In this lesson students learn to use key resources to help them determine whether to buy, sell or hold a stock. Students continue trading in the Stock Market Game.	-Decide whether to buy, hold or sell stock based on researchCompare and contrast companies based upon stock market statistical dataUse the Internet to obtain annual reports and research companies. https://www.stockmarketgame.org/tsc.html#/gallery	Journaling	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6 English Language Arts E3.1 E3.2 E3.3 E3.5 Math M4.1 M4.3 M4.4 M4.5	Week 14-15

			Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6	
This lesson asks students to reflect on and critically assess the investment decisions their team made during the course of The Stock Market Game. Students continue trading in the Stock Market Game.	-Draw supported conclusions as to whether their strategy in preparing their portfolio was successful and what investment changes they might have made to improve portfolio performance. -Generate a detailed report including support material -Deliver a convincing presentation • Give and receive constructive criticism -Evaluate the work of other team members and other students https://www.stockmarketgame.org/tsc.html#/gallery	Journaling	Technology T.8.1 T.8.2 Family and Consumer Science FSC9.2c5 FSC9.D1 FSC9.D2 FSC9.E2 21st Century Life and Careers 9.1.4.D.2 9.1.8.D.3 9.1.12.D.1 9.1.12.D.6 English Language Arts E3.1 E3.2 E3.3 E3.5 Math M4.1 M4.3 M4.4 M4.5 Social Studies SS6.1 SS6.2 SS6.3 SS6.4 SS6.5 SS6.6	Week 16-17

Unit Title: Storyboarding

Unit Summary:

Storyboarding is a way to organize ideas, frame by frame, before creating a video. Using guidance topics, such as bullying, students will create a storyboard using an online storyboarding tool called Storyboarder. Storyboarder will allow students to turn their storyboard into a video to be shared with their peers. This unit will develop both technology skills, as well as guidance concepts while students create a storyboard.

Suggested Pacing: 15 lessons

Learning Targets

Unit Essential Questions:

- How can we use a storyboard to share information with others?
- How can we use technology to share information with others?

Unit Enduring Understandings:

• Technology allows us to share information with others, all over the world.

Evidence of Learning

Objectives (Students will be able to)	Essential Content/Skills	Suggested Assessments/ Homework	Standards	Pacing
What is storyboarding? Why do we use storyboarding? Who uses storyboarding?	Prepare students by introducing them to storyboarding, who uses storyboarding and why we use it.		Technology T.8.1 T.8.2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP8 CRP9 CRP10 CRP11	Week 1-2
Explore and learn to use Storyboarder by Wonder Unit	Students will be introduced to the online program of Storyboarder and begin to explore its tools.	For homework students should brainstorm on what topic they would like to make a storyboard on. Some ideas may include: -What to do if they see bullying-not being a bystander -First day of school jitters -How to be a good friend -What to do if they see someone eating/playing alone -Taking care of the environment -Being yourself -Not giving up -The importance of honesty -Fears	Technology T.8.1 T.8.2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP8 CRP9 CRP10 CRP11	Week 3
Create a Storyboard	Students will spend the rest of the unit designing their storyboard. If time permits, students can also use their storyboard to create a book.		Technology T.8.1 T.8.2 21st Century Life and Careers CRP4 CRP5 CRP6 CRP8 CRP9 CRP10 CRP11	Ongoing