

About the Story-Centered Curriculum

What is the best way to teach your students knowledge and skills to be used – knowledge and skills that transfer naturally from the learning context to real-world applications?

The *Story-Centered Curriculum Approach* is a project-based, learn-by-doing approach that promotes retention and transfer. In a Story-Centered Curriculum:

- Students play roles in realistic stories of professional work – roles to which they might aspire in the real world.
- Students perform authentic tasks in pursuit of meaningful goals and produce the same work products that professionals produce.
- They are encouraged to collaborate effectively as they work.
- Along the way, they are coached by a skilled mentor who helps them to learn relevant knowledge and skills just in time as that knowledge and those skills are relevant to what the students are trying to accomplish.
- Well-structured learning resources, keyed to particular tasks, provide additional support.
- The mentor also provides in-depth feedback on student work, and students revise their work improving their mastery of the underlying knowledge and skills.
- Periodically, the mentor facilitates reflection discussions, helping the students to solidify and broaden their learning.

By the end of the experience, students have acquired transferable knowledge and skills and have produced an impressive portfolio of work.

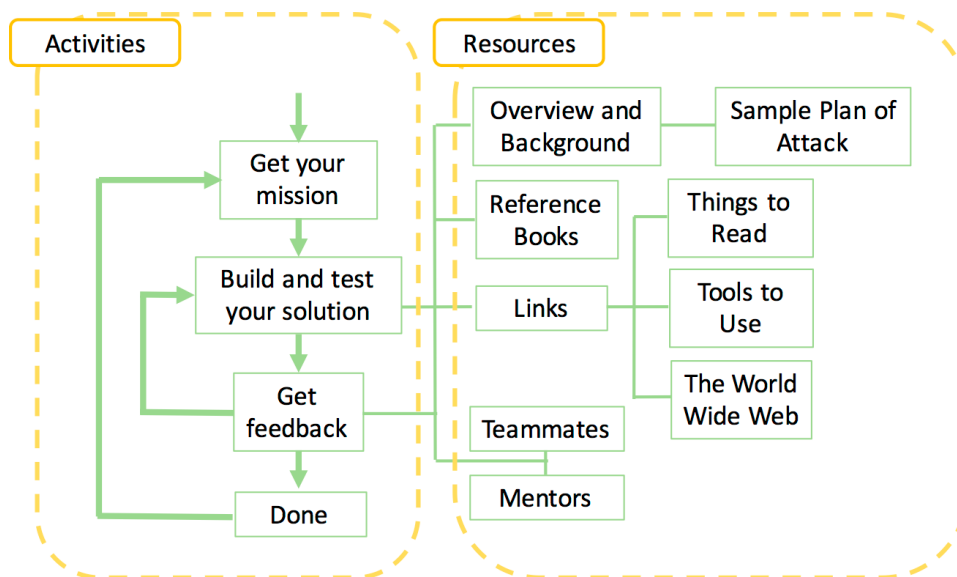


Figure: Learning by Doing in a Story-Centered Curriculum

Catalog of Courses

Socratic Arts and Experiential Teaching Online

February 2016



About Us

We have over 25 years of experience developing and teaching Story-Centered Curricula in university and corporate contexts. Over 1200 students have graduated from Carnegie Mellon University programs taught using our approach; hundreds more have taken individual Story-Centered courses. Approximately 50 students have graduated from or are currently enrolled in technical certificate programs at the University of Texas at Austin, and we will be launching additional technical education programs at Rutgers University and the University of Maryland University College this spring. Similarly, our courses have reached well over 100,000 students and more than 2500 faculty/mentors through our corporate design and development work. Additional experience at the middle and high school levels suggests that our pedagogy is equally applicable (and equally motivating) to younger students as well.

How to Implement

All of our courses and programs can be delivered in person or 100% online. We can train your faculty in both the technical skills and our teaching-by-mentoring approach (and provide on-going support), or we can provide skilled, knowledgeable mentors.

We strongly recommend that students devote 15 hours per week, ideally three hours per school day, to participating in a Story-Centered Curriculum experience. While students could work and learn during traditional one-hour class periods, we have found that their progress is slower and their retention suffers. When a student reengages with a complex task in progress, it can take him or her up to an hour to regain the mental problem-solving context and to achieve a state of *flow* – deep immersion in the work at hand. The student will then make significant progress for a few hours until he or she encounters a barrier. This is a reasonable time to stop, letting the student's subconscious continue to process the problem until the next session. *All of the course durations listed in subsequent sections assume 15 hours of work per week.*



Full-Year Programs

Software Development - Option 1 (38 weeks)

Develop complex software for web and mobile applications.

Prerequisites: Basic computer skills (installing software on a computer, creating nested folders, using a text editor).

SD 100: Introduction to Website Development

SD 101: Introduction to JavaScript Programming

SD 102: Mobile Web App Development

SD 103: Java 1

SD 104: Java 2

Software Development – Option 2 (34 weeks¹)

Use modern agile software development methods and tools to develop large-scale web-based software systems.

Prerequisites: Previous programming experience using HTML, CSS, and JavaScript.

SD 105: Agile Web App Development (Ruby on Rails) Developer (24 weeks)

SD 106: Intro to Modern Development Practices (10 weeks)

¹ If students decide to do the optional programming challenges, each of the courses below takes an additional 6 weeks.



Entrepreneurship and Business (38 weeks)

Explore entrepreneurship.

Prerequisite: None

EB 100: The Idea Workshop

EB 101: Product Definition

EB 102: Business Essentials

EB 103: Think Like an Investor

EB 104: Write a Business Plan

EB 105: Launch Your Business

Online Entrepreneurship and Business (38 weeks)

Explore eCommerce entrepreneurship.

Prerequisite: Basic computer skills (no previous programming experience is required)

EB 100: The Idea Workshop

EB 101: Product Definition

EB 107T: The Web-Based Marketplace - Technology

EB 102: Business Essentials

EB 103: Think Like an Investor

EB 105: Launch Your Business

Introduction to eCommerce (38 weeks)

Explore careers in eCommerce.

Prerequisites: An analytical mind and basic computer skills (no previous programming experience is required)

EB 107B: The Web-Based Marketplace 1: The Business of eCommerce

EB 107T: The Web-Based Marketplace 2: eCommerce Technology

EB 106: Electronic Payments, Pricing, and Security

EB 108: Search Engine Optimization

EB 109: Optimizing the User Experience



Data Analytics/Big Data² (38 weeks)

Develop strong skills in Data Science as preparation for a career or further study.

Prerequisites: An analytical mindset, strong grounding in mathematics ideally including basic statistics, and basic computer skills (no previous programming experience is required)

Data 100: Understanding Customers

Data 101: Predicting Profitability and Customer Preferences

Data 102: Big Data: Web Mining OR Data 103: Deep Analytics and Visualization

Data 104: Capstone Project in Big Data or Statistical Machine Learning

² Although the course titles make the program seem very retail focused, students will gain in-depth experience with broadly applicable machine learning approaches to predictive analytics that are equally applicable to financial, medical, engineering, and other domains.



Part-Year/Semester Programs

Website Development (5 weeks)

Gain experience in website development.

Prerequisite: Basic computer skills (installing software on a computer, creating nested folders, using a text editor)

SD 100: Introduction to Website Development

Front-End Web Development (18 weeks; 26 weeks with the optional course)

Learn practical job skills in software development in preparation for a career or future study.

Prerequisite: Basic computer skills (installing software on a computer, creating nested folders, using a text editor)

SD 100: Introduction to Website Development

SD 101: Introduction to JavaScript Programming

SD 102: Mobile Web App Development

(Optional) SD 109: Optimizing the User Experience

Mobile Application Development (24 weeks)

Develop native mobile apps and mobile web apps.

Prerequisite: Previous programming experience using HTML, CSS, JavaScript, and Java

SD 102: Mobile Web App Development

SD 107: Native Mobile App Development [for Android]

SD 108: Sensor-Based Mobile App Development



Java Development (20 weeks; 28 weeks with the optional course)

Develop large-scale software systems and (optional) Java-based mobile apps.

Prerequisites: Previous programming experience using HTML, CSS, and JavaScript

SD 103: Java 1 (10 weeks)

SD 104: Java 2 (10 weeks)

(Optional) SD 107: Native Mobile App Development (8 weeks)

User Experience Design (8 weeks)

Learn the basics of human-computer interaction design.

Prerequisites: Strong basic computer skills (No programming is required, but knowledge of basic website development in HTML could be useful.)

SD 109: Optimizing the User Experience

Basic Business Skills (8 weeks)

Gain broad basic business skills in accounting and finance, marketing, hiring, project management, and seeking investment.

Prerequisites: An analytical mind, a strong grounding in basic math, and basic computer skills

EB 102: Business Essentials

Financial Analysis (16-18 weeks)

Gain deep experience in analysis of a company's financial situation and strategies to improve it.

Prerequisites: An analytical mind, a strong grounding in basic mathematics, and basic computer skills

EB 110: Financial Analysis Essentials

EB 111: Financial Strategy Essentials

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Product Development (10 weeks)

Learn how to develop innovative products that satisfy deep customer needs.

Prerequisite: Basic business skills are highly recommended

EB 100: The Idea Workshop

EB 101: Product Definition

Fundamentals of Predictive Analytics (16 weeks)

Learn the basics of Data Science as preparation for a career or further study.

Prerequisites: An analytical mindset, strong grounding in mathematics ideally including basic statistics, and basic computer skills (no previous programming experience is required)

Data 100: Understanding Customers

Data 101: Predicting Profitability and Customer Preferences

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Summer School Programs

The expected student time commitment is 20 hours per week, ideally devoting four hours per weekday.

Front-End Web Development

SD 100: Introduction to Website Development

SD 101: Introduction to JavaScript Programming

SD 102: Mobile Web App Development

Data Analytics: Discovering and Exploiting Patterns in Data

Data 100: Understanding Customers

Data 101: Predicting Profitability and Customer Behavior



Opportunities for additional study:

Students who want additional study in Software Development can choose from these mentored programs:

Software Development Technical Training:

SD 105: Agile Web App Development (Ruby on Rails) (24-30 weeks)

Prerequisites: SD 100: Intro to Website Development & SD 101: Intro to JavaScript (or previous programming experience using HTML, CSS, and JavaScript)

SD 106: Intro to Modern Development Practices (10-16 weeks part time)

Prerequisites: SD 105: Agile Web App Development (Ruby on Rails)

SD 103 & 104: Java 1&2 (20 weeks part time)

Prerequisites: SD 100: Intro to Website Development & SD 101: Intro to JavaScript

SD 107: Native Mobile Application Development [for Android] (8 weeks part time)

Prerequisites: SD 103 & 104: Java 1 & 2

Software Development Non-technical Training:

SD 109: Optimizing the User Experience (8 weeks part time)

Data Analytics Further Study:

Data 102: Big Data: Web Mining (16 weeks part time)

Data 103: Deep Analytics and Visualization (12 weeks part time)



XTOL Course Catalog

Socratic Arts XTOL offers high school and college students online courses in several academic areas.

Software Development:

SD 100: INTRO TO WEBSITE DEVELOPMENT

This course provides the student with an introduction to website development and software development practices using HTML and CSS. Recommended for students who want to learn practical job skills in software development in preparation for a career or future study

Prerequisites: Basic computer skills (installing software on a computer, creating nested folders, using a text editor)

Duration: 5 weeks

SD 101: INTRO TO JAVASCRIPT

This course teaches web programming in the popular JavaScript language. Recommended for students who want to learn practical job skills in software development in preparation for a career or future study.

Prerequisites: SD 100: Intro to Website Development (or previous programming experience using HTML and CSS)

Duration: 5 weeks

SD 102: MOBILE WEB APP DEVELOPMENT

This course teaches students to develop mobile web applications that function similarly to native applications when deployed on smartphones. Recommended for students who want to learn practical job skills in software development in preparation for a career or future study.

Prerequisites: SD 100: Intro to Website Development & SD 101: Intro to JavaScript (or previous programming experience using HTML, CSS, and JavaScript)

Duration: 8 weeks



SD 103: JAVA 1

This course teaches students to program in the popular Java programming language. (Part 1)

Prerequisites: SD 100: Intro to Website Development & SD 101: Intro to JavaScript (or previous programming experience using HTML, CSS, and JavaScript)

Duration: 10 weeks

SD 104: JAVA 2

This course takes students deeper into programming in the popular Java programming language. (Part 2)

Prerequisites: SD 103: Java 1

Duration: 10 weeks

SD 105: AGILE WEB APP DEVELOPMENT (RUBY ON RAILS)

This course teaches students web application programming in the Ruby language using the Rails framework.

Prerequisites: SD 100: Intro to Website Development & SD 101: Intro to JavaScript (or previous programming experience using HTML, CSS, and JavaScript)

Duration: 24 to 30 weeks

SD 106: INTRO TO MODERN DEVELOPMENT PRACTICES

This course teaches modern agile software development practices in the context of a team-based Ruby on Rails project.

Prerequisites: SD 105: Web App Development

Duration: 10 to 16 weeks

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SD 107: NATIVE MOBILE APP DEVELOPMENT

This course teaches students to develop native mobile applications for Android phones in Java.

Prerequisites: SD 104 and 105: Java 1&2 (or previous Java programming experience)

Duration: 8 weeks

SD 108: SENSOR-BASED MOBILE APP DEVELOPMENT

This course teaches programming techniques to access a smartphone's sensors to develop apps that interact with the physical world.

Prerequisite: SD 107: Native Mobile App Development

Duration: 8 weeks

SD 109: OPTIMIZING THE USER EXPERIENCE

This course teaches students to understand user needs and to design, prototype, and test user interface solutions to meet those needs.

Prerequisites: Strong basic computer skills (No programming is required, but knowledge of basic website development in HTML could be useful)

Duration: 8 weeks



ENTREPRENEURSHIP/BUSINESS:

EB 100: THE IDEA WORKSHOP

In this team-based workshop, students brainstorm possible products and business models.

Prerequisites: Basic business skills are highly recommended

Duration: 2 weeks

EB 101: PRODUCT DEFINITION

Working as a team, students transform an initial product idea into a realistic, achievable vision.

Prerequisite: EB 100: The Idea Workshop

Duration: 8 weeks

EB 102: BUSINESS ESSENTIALS

In this course, students will gain broad basic business skills in accounting and finance, marketing, hiring, project management, and seeking investment.

Prerequisites: An analytical mind, a strong grounding in basic math, and basic computer skills

Duration: 8 weeks

EB 103: THINK LIKE AN INVESTOR

In this course, students will assume the role of angel investors and make principled investment decisions based on entrepreneurs' startup pitches.

Prerequisites: None

Duration: 1 week



EB 104: WRITE A BUSINESS PLAN

In this course, students will refine the business model for a new venture. They will then craft an investor pitch and write a formal business plan.

Prerequisites: EB 101: Product Definition

Duration: 8 weeks

EB 105: LAUNCH YOUR BUSINESS

In this course, students who have developed an early-stage product will interact with early-adopting customers.

Prerequisites: EB 101: Product Definition

Duration: 8 to 12 weeks

EB 106: ELECTRONIC PAYMENTS, PRICING, AND SECURITY

In this course, students explore eCommerce strategies for online payment, dynamic product pricing, and site security.

Prerequisites: EB 107T: The Web-Based Marketplace - Technology

Duration: 8 weeks

EB 107B: THE WEB-BASED MARKETPLACE – BUSINESS

In this course, students will analyze the feasibility of an eCommerce venture.

Prerequisites: An analytical mind and basic computer skills (no previous programming experience is required)

Duration: 8 weeks

EB 107T: THE WEB-BASED MARKETPLACE – TECHNOLOGY

In this course, students will develop desktop and mobile eCommerce websites using open source tools.

Prerequisites: An analytical mind and basic computer skills (no previous programming experience is required)

Duration: 8 weeks



EB 108: SEARCH ENGINE OPTIMIZATION

In this course, students will optimize a website to improve its visibility in search engine rankings.

Prerequisites: EB 107T: The Web-Based Marketplace - Technology

Duration: 6 weeks

EB 109: OPTIMIZING THE USER EXPERIENCE

In this course, students will learn to understand user needs, then design, prototype, and test a user-appropriate human-computer interface.

Prerequisites: An analytical mind and basic computer skills (no previous programming experience is required)

Duration: 8 weeks

EB 110: FINANCIAL ANALYSIS ESSENTIALS

In this course, students will analyze a company's finances to identify strengths and weaknesses.

Prerequisites: An analytical mind, a strong grounding in basic mathematics, and basic computer skills

Duration: 8 to 9 weeks

EB 111: FINANCIAL STRATEGY ESSENTIALS

In this course, students will propose strategies to improve a company's financial situation.

Prerequisites: EB 110: Financial Analysis Essentials

Duration: 8 to 9 weeks



Data Analytics³:

DATA 100: UNDERSTANDING CUSTOMERS

In this course, students will apply statistical machine learning techniques to understand behavior and make recommendations.

Prerequisites: An analytical mindset, strong grounding in mathematics ideally including basic statistics, and basic computer skills (no previous programming experience is required)

Duration: 8 weeks

DATA 101: PREDICTING PROFITABILITY AND CUSTOMER PREFERENCES

In this course, students will apply statistical machine learning techniques to predictive analytics problems.

Prerequisites: DATA 100: Understanding Customers

Duration: 8 weeks

DATA 102: BIG DATA: WEB MINING

In this course students will learn sentiment analysis on the World-Wide Web using typical big data analytics tools.

Prerequisites: DATA 101: Predicting Profitability and Customer Preferences

Duration: 16 weeks

³ Although the course titles make the program seem very retail focused, students will gain in-depth experience with broadly applicable machine learning approaches to predictive analytics that are equally applicable to financial, medical, engineering, and other domains.



DATA 103: DEEP ANALYTICS AND VISUALIZATION

In this course, students will do advanced work in R involving data visualization, time series analysis, and advanced machine learning.

Prerequisites: DATA 101: Predicting Profitability And Customer Preferences

Duration: 12 weeks

DATA 104: CAPSTONE DATA PROJECT

In this course, students explore a range of advanced statistical machine learning techniques to solve a student-selected problem.

Prerequisites: DATA 101: Predicting Profitability And Customer Preferences; Data 103: Deep Analytics And Visualization is highly recommended

Duration: 6 to 10 weeks



Health Sciences:

HS 100: INTERNAL MEDICINE

In this course, students will learn to diagnose serious illnesses and make ethical treatment decisions.

Prerequisites: None

Duration: 10 weeks

HS 101: NUTRITION ADVISOR

In this course, students will learn how and what to recommend for healthy diet and exercise choices to patients.

Prerequisites: None

Duration: 10 weeks

HS 102: SUPER-WORM

In this course, students will design a better earthworm to improve crop growth.

Prerequisites: None

Duration: 4 weeks

HS 103: SPORTS MEDIC

In this course, students will learn to diagnose and treat sports-related injuries.

Prerequisites: None

Duration: 6 weeks

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HS 104: DESIGNER GENES

In this course, students will learn to evaluate a proposal to create a genetically modified cat.

Prerequisites: None

Duration: 12 weeks

HS 105: PLANT PLAGUE

In this course, students will learn to evaluate proposals for eliminating a disease killing wheat plants

Prerequisites: None

Duration: 4 weeks

HS 106: MEDICAL DETECTIVE

In this course, students will investigate forensic evidence of a possible murder.

Prerequisites: None

Duration: 8 weeks

HS 107: BUSINESS OF HEALTHCARE

In this course, students will advise a hospital on improvements to its business

Prerequisites: None

Duration: 6 weeks

HS 108: MYSTERY CASE

In this course, students will diagnose the difficult case of a seriously ill child.

Prerequisites: None

Duration: 2 weeks

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HS 109: OUTBREAK

In this course, students will investigate and manage the widespread outbreak of a disease

Prerequisites: HS 108: Mystery Case

Duration: 4 weeks

HS 110: DELIVERING SERIOUS NEWS

In this course, students will learn how to have difficult conversations with seriously ill patients.

Prerequisites: None

Duration: 1 week

Politics:

POLITICS 100: EFFECTIVE ELECTED

In this course, students will explore what's involved in a career as an elected official.

Prerequisites: None

Duration: 2 weeks