

Curriculum Vitae

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Professional Skills & Training

Design Thinking – Designed & taught coursework in a Design Thinking context for high school students in interdisciplinary projects.

Technical writing – Designed & taught coursework in technical reading/writing for high school students in interdisciplinary projects. Designed & taught course in Computational Rhetoric in which students developed persuasive argument and learned data science techniques to generate custom visualizations of data to defend their claims.

Project management – Facilitated student group and individual projects. Relied heavily on collaborative productivity tools like [Trello](#), [Clockify.me](#), [GitHub](#), [Slack](#) and [Workplace](#). A good example of how we used Trello in our coursework can be found here: <https://blog.trello.com/curriculums-collaboration-and-reinventing-the-classroom>

Computer Science Fundamentals – I've received training and have been teaching [AP Computer Science A \(Java\)](#) for three years. I also teach a course in Data Science and Computational Rhetoric called [CompLab](#). In this course students use the [Wolfram Language](#) to acquire/import, manipulate and display data in meaningful, clear and persuasive ways. Students also use [Processing](#) and Arduino ([Circuit Playground](#)) to build interactive user experiences.

Software Design - Attended the Big Nerd Ranch "[iOS and Swift Essentials](#)" Training in 2018. In the 2018-2019 school year I co-developed and co-taught an iOS App Design course working with a local wedding gown alteration shop to eliminate friction in the process of dress intake. You can see our team [Trello](#), and our GitHub [Repo](#).

Web & Graphic Design – I am proficient in Photoshop and Illustrator and have done work in Logo and Web Design. [Old portfolio \(2009\)](#). I am efficient in HTML & CSS and dabble in JavaScript.

3D Modeling & Manufacturing – In my first three years at Riverpoint Academy I was given the charge to build a Makerspace. With the generous help of the [Hagan Foundation](#), we have built a world-class Makerspace in which students engage in building with industry standard tools, which include but are not limited to:

- [WASP Delta 3D Printer](#)
- [\(2\) LulzBot Taz 4 3D Printers](#)
- [DIWire CNC Wire Bender](#)
- [Boss Laser 150W, 3' x 5' laser cutter](#)
- [ShopBot PRSalpha 4' x 8' CNC Router](#)
- [Shapeoko desktop CNC router](#)

- [AxiDraw v3 CNC Drawing/Plotting machine](#)

We have moved from [Autodesk Inventor](#) to [Rhino](#) to [SketchUp](#) (briefly) and have now settled on [Fusion 360](#) for its CAD/CAM combination and aggressive education pricing model.

Microcontrollers & Embedded Systems – As the Makerspace coordinator my love was software and the best way to marry those experiences was through embedded systems and physical computing. As such we built an inventory of Arduinos, Raspberry Pi, sensors, motors, and other output devices that students could use to make their physical models become aware of, and interact with their environment. Example projects include (just to name a few):

- **Arduino powered Makerspace sign with embedded RGB LEDs** designed and manufactured by students. [Pictures & Video](#).
- **Interactive art installation** designed in collaboration with a local artist Carl Richardson entitled, “Pascal’s Dots.” It is an exploration of the patterns found in Pascal’s Triangle experienced through visualization, tactile engagement and sound. The podium itself was designed and manufactured by RA students. The custom controller array was built from Arduino and arcade buttons and was designed and built by RA students. [pictures, video & code](#).
- **Cocktail table arcade system** with embedded raspberry pi. The motivation was to play Super Street Fighter II Turbo. I gutted a coffee table and a set of Radio Shack computer speakers w/subwoofer. Installed a Super Nintendo emulator (on Raspberry Pi), custom joystick & arcade controller, and monitor into a coffee table. [Pictures & video](#).
- **Giant Spirograph** – In collaboration with local artist Carl Richardson, we designed a giant Spirograph in Illustrator and cut it in plexiglass on the ShopBot CNC. [Pictures & Video](#).
- **Generative Art Project** – Students worked with custom Processing code to design a piece of generative art that we plotted on the [AxiDraw](#). [Pictures & video](#).

Software Development Projects

Arduino

- **Malting Machine** – My colleague Corey has a startup grain malting operation on his property and we are building together a 50 gallon malting machine that is Arduino-powered. Circuit includes [LCD readout](#), [rotary encoder](#), [Arduino Uno](#), [temperature & humidity sensor](#), heater, and [geared dc motor](#). Essentially this device monitors grain temperature and turns the heat on/off based on sensor readings. V2. Will also control sprinkler valve to keep the grain moist. [Code](#).

Processing

- **Pascal's Dots** – Interactive Visualization using custom particle system generator and polar curve graphing algorithms. See "Microcontrollers & Embedded Systems" section below for more details. [Code](#), [Interactive Version \(no sound\)](#).
- **Word Painter** – Custom Wolfram Language Web Scraping API feeds content to Processing sketch in which user "paints" with the words scraped by API. [Code](#).
- **Kinect + AxiDraw** – Code to control AxiDraw with Kinect Sensor to move plotter head in real time. [Code](#).
- **APCS Fall Project** – I built classes in Processing to support drawing with line segments. Inspired by this animation from [Dave 🐝🌍 – @beesandbombs](#), see his [post](#). Students were tasked with extending the code to complete the challenge. [Code](#).

Swift

- **Choice Tracker** - a simple and focused app for the [Quantified Self](#) crowd that facilitates daily goal setting, monitoring and progress tracking. Available in the [iOS App Store](#). Code available upon request.
- **Quick Mileage** - a non-creepy mileage tracking & reporting app for iOS (in development). Code available upon request.

Wolfram Language

- **RC Data Logger** – Custom designed circuit combining the [Adafruit Feather M0 Data logger](#), [Adafruit MPL3115A2](#) Altimeter & Barometric pressure sensor, & [MPXV7002](#) Airspeed Sensor. [Pictures](#) & Arduino [code](#) and Wolfram Language [code](#). Circuit gathers flight data and records to microSD card. WL Code processes raw data and creates data display dashboard.
- **Khan Academy Student Report Generator** – Riverpoint Academy uses [Khan Academy](#) with students to practice mathematics skills. Khan Academy generates large amounts of user data but the reporting and student organization features made it difficult for our

teachers to coach their students. I wrote a report generator that combined live class rosters hosted in Google Sheets, scraped all student performance and engagement data and generated a dashboard of their work displaying key values teachers used in coaching students. I made use of the public and private [Khan Academy API](#) and wrote all code in native [Wolfram Language](#). Code available upon request as the current repo is private as it contains private student demographic data.

Other

- **ProjectEuler.net** – *I've been working with [projecteuler.net](#) and have completed 37 of these problems in [Wolfram Language](#) and [Swift](#). I've also worked collaboratively with students to explore the mathematics and computer science concepts needed to work through these problems.*
- **Khan Report v0.5** – *Written in [Visual Basic](#), this was the first beta version of the Khan Academy Student Report Generator. It was essentially a group of macros that ran inside Excel to generate reports. [Code](#).*

Employment History

August 2020 – Present:	Interdisciplinary Instructional Coach, Glover Middle School
June 2020:	Reader, AP Computer Science A Exam
2019 – Present:	Instructor, University of Idaho
2019 – Present:	Innovative Educator, Gizmo
2016 – 2019:	Computer Science & Mathematics Teacher, Riverpoint Academy
2013 – 2016:	Engineering & Computer Science Teacher & Makerspace Coordinator, Riverpoint Academy
2009 – 2013:	Mathematics Department Chair, Lewis and Clark High School

- 2001 – 2013: Mathematics Teacher, Lewis and Clark High School,
Spokane Public Schools
- Spring 2004: Long term substitute teacher, Mt. Spokane High School Teaching Web
Design and CISCO Certified Networking

Education Experience

- 2020 – Present: Principal Certificate Program Student
Eastern Washington University
- 2016 – 2019: CTE Certification in STEM technologies
South Seattle College
- 2013 – 2014: PhD in Mathematics & Science Education Student, Washington State
University. Coursework only.
- 2006 – 2008: MS in Educational Technology, Boise State University.
- 2001 – 2004: BA in Mathematics and Washington State Teaching Certificate,
Whitworth University
- 1999 – 2001: Two years undergraduate study, Central Washington University

Speaking Engagements & Presentations, and Writing

- August 2019: The Great Idaho STEM Together: idahomath.com/stem_dev/
- Talk: “Exploring the Standards for Mathematical Practices - a project-
based high school approach”
- Deck: <https://docs.google.com/presentation/d/1mC-64AWhPF3ImpRFVB6SwwK0osNrpSu2BnniLbF-nDk/edit?usp=sharing>
- Field Trip: “Come experience Gizmo, CDA’s non-profit makerspace &
see what project-based learning can be”
- Deck:
https://drive.google.com/open?id=1_pIEY7HAAumPk92xl4idc5rTdV63rutlPOI73uZ3yZ4

- June 2018: “Let’s go to the CompLab: Teaching Computational Rhetoric in the High-School Classroom” Link: <https://bit.ly/2Uzd9jR>
- October 2017: Wolfram Technology Conference Presenter Video link: <https://www.wolfram.com/broadcast/video.php?v=1968>
- July 2016: NSTA 2016 STEM Forum & Expo Presenter “Making Meaning Makers in Science” Slides: <https://www.dropbox.com/s/mcngdpf6km2nst3/NSTA.pdf?dl=0>
- See description here: <https://www.nsta.org/conferences/schedule2.aspx?id=2016den>
(Search by title above)
- July 2016: NSTA 2016 STEM Forum & Expo Panelist: “Design Thinking & Experiential Learning” See Description here: <https://www.nsta.org/conferences/schedule2.aspx?id=2016den>
(Search by title above)
- Spring 2015: “Riverpoint Academy: Case Study”
Link: <https://www.pensalabs.com/riverpoint-academy>
(Written about my classroom)
- Fall 2015: “Curriculums, Collaboration, And Reinventing the Classroom”
Link: <https://bit.ly/2x70mLL> (Written about my classroom)

Professional Associations and Committee Work

SPOKANE PUBLIC SCHOOLS

- 2012 – 2013: Co-planned and facilitated professional development for math teachers focused on researched and effective pedagogy for math classrooms.
- 2011: Presented with a panel of four teachers and two building principals to school board regarding the decisions and findings of the Standards Based Grading committees

- March 2011: Developed and delivered teacher professional development in using graphing calculators to drive mathematical discourse and problem solving in the classroom.
- 2011 – 2012: Member of district wide Standards Based Grading and reporting committee. I was also a member of technology support sub-committee and steering committee.
- 2005 – 2006: Planned and facilitated professional development in using technology for effective mathematics instruction.

OUTSIDE SPOKANE PUBLIC SCHOOLS

- Fall 2012: Co-Facilitator in new RAMP-A, three-year grant cycle. RAMP-A is an extension of the original Riverpoint Math Project grant lead by Jackie Coomes PhD, Janet Frost PhD and Kristine Lindeblad.
- Fall 2011: Presented a lesson at the NCTM conference in Spokane on novel approaches to approximating areas in Calculus.
- April 2010: Attended professional development summit retreat with founders of RAMP; Jackie Coomes PhD, Janet Frost PhD and Kristine Lindeblad.
- 2009 – Present: Member of Riverpoint Math Project (RAMP), Cohort 1. Work focused on transition from secondary to post-secondary mathematics.