Framework Overload

Finding Success in New Media Interactive Development & A Glimpse at an AI-Enhanced Learning Tool

Before we get started…

- **Please visit jptweb.com/igm or use QR code**

- **Question:**
  - *What is a skill that you believe most developers lack?*

- **You may enter multiple words or short phrases.**
- **We will review the results in 10 minutes.**

John-Paul Takats

IT Professional, Educator, and Marketing Strategist with a Focus on Human–Centered Computing, Full Stack Development, and Impactful Digital Solutions

See more at
http://www.jptweb.com/

▪ Education:

Degree	Field	Institution	Date
Master of Science	Professional Studies (Concentrations in HCI, and Marketing)	Rochester Institute of Technology	5/2014
Bachelor of Science	Information Technology	Rochester Institute of Technology	5/2006

Industry Experience

Lead Developer

2006-08

Information Technology Strategist & Full Stack Developer
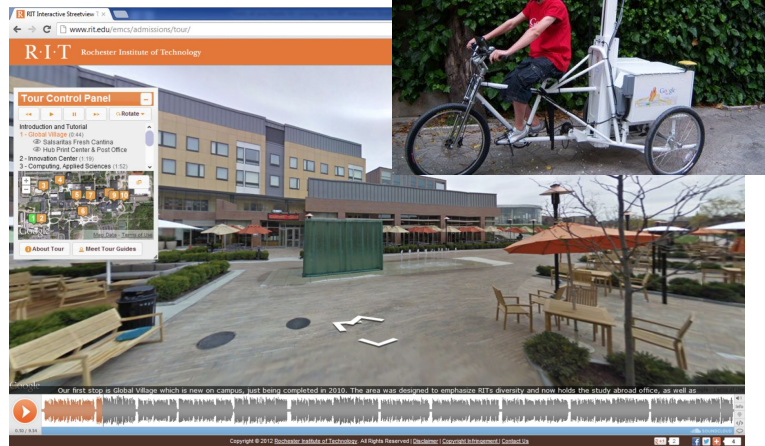
2009 - 2019
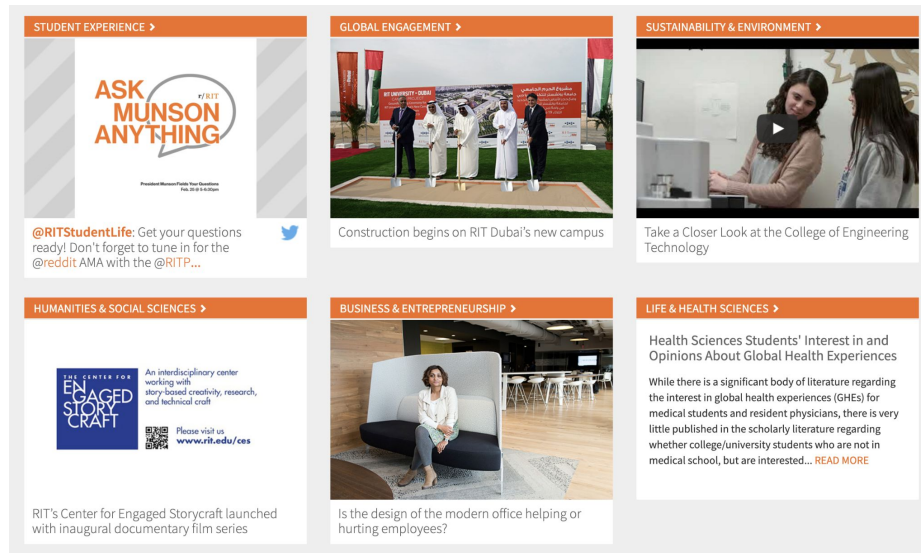
Founder

2015 - Present

Solutions Architect

2024 - Present

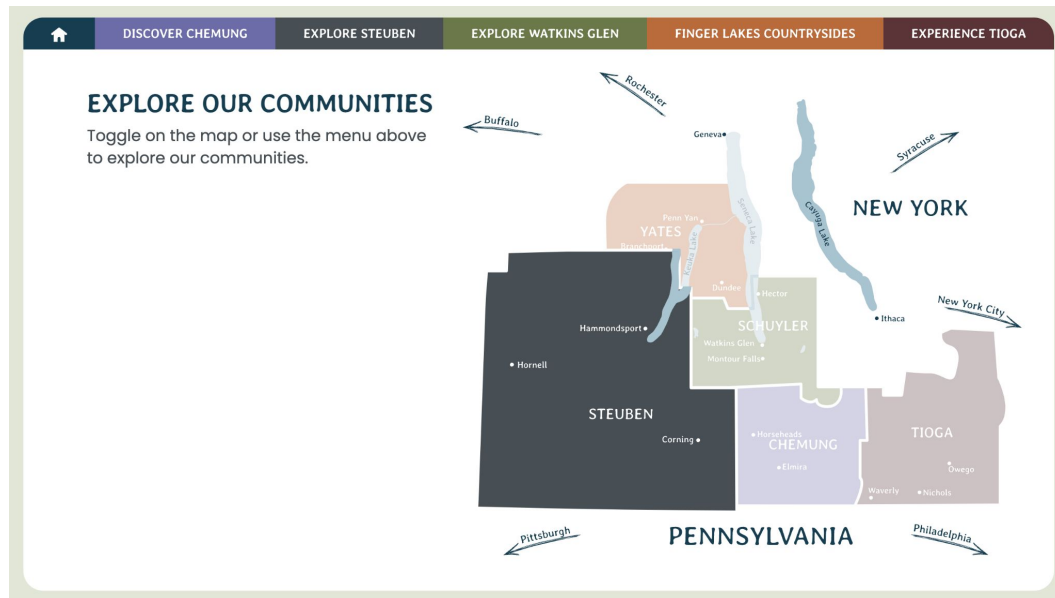# More on RIT Enrollment Management

RIT Interactive
Streetview Tour

FeedMasher - powered RIT Homepage from 2014 - 2017(ish)

Accelerate Media Example

https://www.fingerlakeswinecountry.com

Teaching Experience

RIT
Golisano College of Computing and Information Sciences
School of Information

Adjunct Professor
2015 - 2019

Visiting Lecturer
2019 - 2024

RIT
Golisano College of Computing and Information Sciences
School of Interactive Games and Media

Adjunct Professor
2024 - Present

Classes I've Taught

- Rich Media Web Application Development I
- Web and Mobile I (ISTE-140)
- Web and Mobile II (ISTE-240)
- Foundations of Web Technologies II
- Foundations of Web Technologies I
- Software Development and Problem Solving I
- Digital Image Creation & Photography (ISTE-205)
- Rapid Online Presence (ISTE-305)
- Digital Video Creation (ISTE-206)
- Web Integration & Application (ISTE-405)

Mentoring & Open Source Advocacy

Mentoring

Next Chapter Project
https://www.nextchapterproject.org/

Web Crash Course
Presentation for WIC and NSBE

Graduate Capstone Advising
12 in past 3 years and looking forward to more!)

More at:
https://www.jptweb.com/mentoring/

Open Source Advocacy

Mozilla Popocon.js
(former contributor)

Jabode Horoscope Extension

A Couple Wordpress Extensions

Open@RIT (some involvement before the role change)

Classes i'd be interested in teaching in IGM

IGME Website Design & Implementation
– *Full-stack expertise; leadership in curriculum development (iSchools Web & Mobile I & II)*

IGME-235: Introduction to Web Tech for Game Developers
– *Observational role to refine curriculum nuances for game-focused web design*

New Media Interactive Design & Algorithmic Problem Solving I & II
– *Foundation programming courses with proven success in engaging diverse skill levels*

IGME-330: Rich Media Web Application Development I & II
– *Positive teaching track record; collaborative curriculum development with faculty*

IGME-106: Problem Solving with Data Structures & Algorithms for Games
– *Experience teaching algorithms; potential integration of advanced API concepts*

Introduction to Interactive Media
– *Broad course covering emerging trends and core concepts in interactive media*

Digital Survey Classes – *Combining design fundamentals (typography, Adobe CS) with web tech concepts*

Vertically Integrated Projects / Multi-Platform Media App Development – *Cross-disciplinary, project-based learning (leveraging experience with Cordova, Electron, etc.)*

Digital Video for the Web & Audio Production – *Background in multimedia production; exploring modern digital content techniques*

Context and Challenges in the Field

"Finding Happiness" in The Presentation Title?

Some aspects I define as "Success in The Field"

- **Good Work Life Balance**
- **Adequate Income**

Others like me define it as

- **Helping Others (ie non-profit roles)**

The Framework Overload Dilemma

What is a Framework ?

- *"In software development, a framework is like a set of pre-built tools and templates that help developers build applications faster and more efficiently. Instead of starting from scratch, frameworks provide common building blocks—like libraries, components, and predefined rules—that make repetitive tasks easier."*

The Battle of the Frontend Frameworks
(Github Stars Over Time)
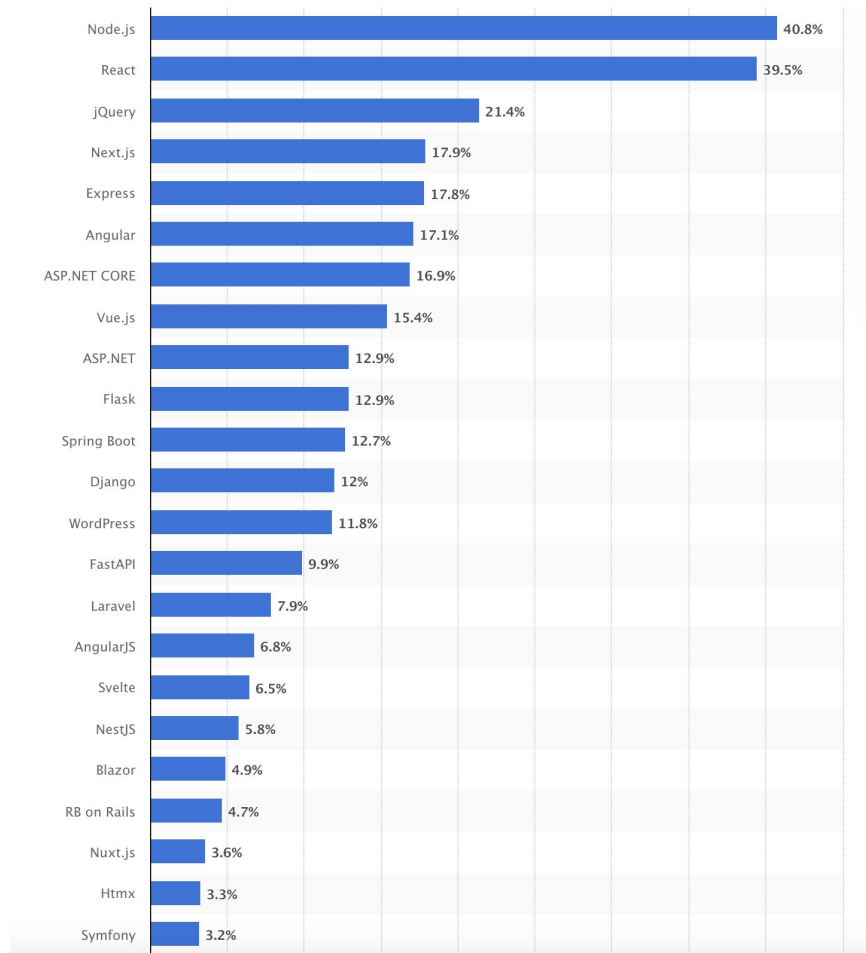
svelte   vue
angular   react
nextjs

The Framework Overload
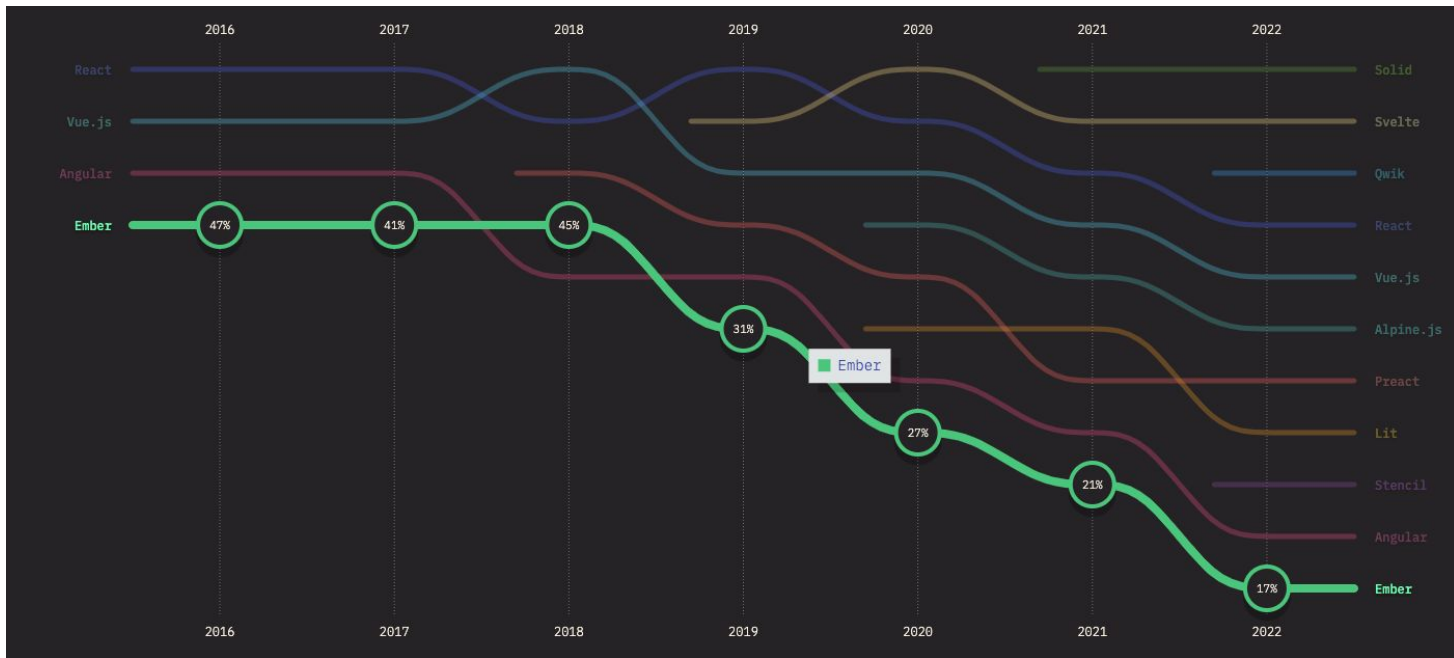
So What's The Dilemma?

- There's a Proliferation of Things to know (even for an entry level position)
  - Coding Languages
  - Frameworks / Libraries
  - Environment Setups
  - Version Control
  - AI Integration

Framework	Percentage
Node.js	40.8%
React	39.5%
jQuery	21.4%
Next.js	17.9%
Express	17.8%
Angular	17.1%
ASP.NET CORE	16.9%
Vue.js	15.4%
ASP.NET	12.9%
Flask	12.9%
Spring Boot	12.7%
Django	12%
WordPress	11.8%
FastAPI	9.9%
Laravel	7.9%
AngularJS	6.8%
Svelte	6.5%
NestJS	5.8%
Blazor	4.9%
RB on Rails	4.7%
Nuxt.js	3.6%
Htmx	3.3%
Symfony	3.2%

The Framework Overload Dilemma

So What's The Dilemma?
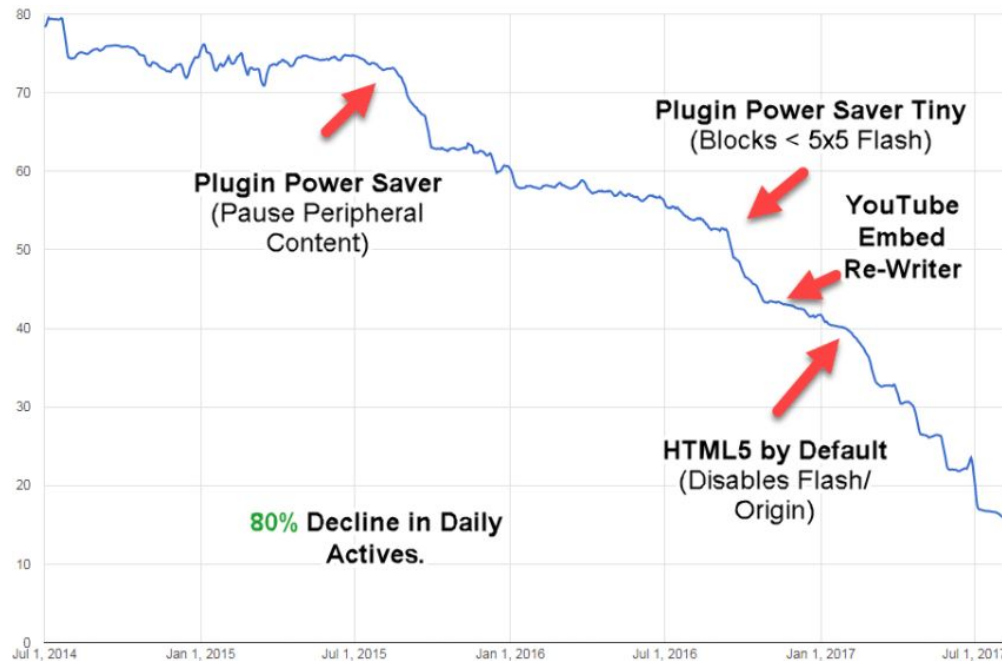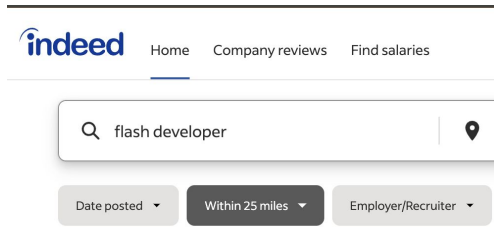
- ■ Rapid Obsolescence & Hype Cycles

The Framework Overload Dilemma

So What's The Dilemma?

- Impact on Career Development

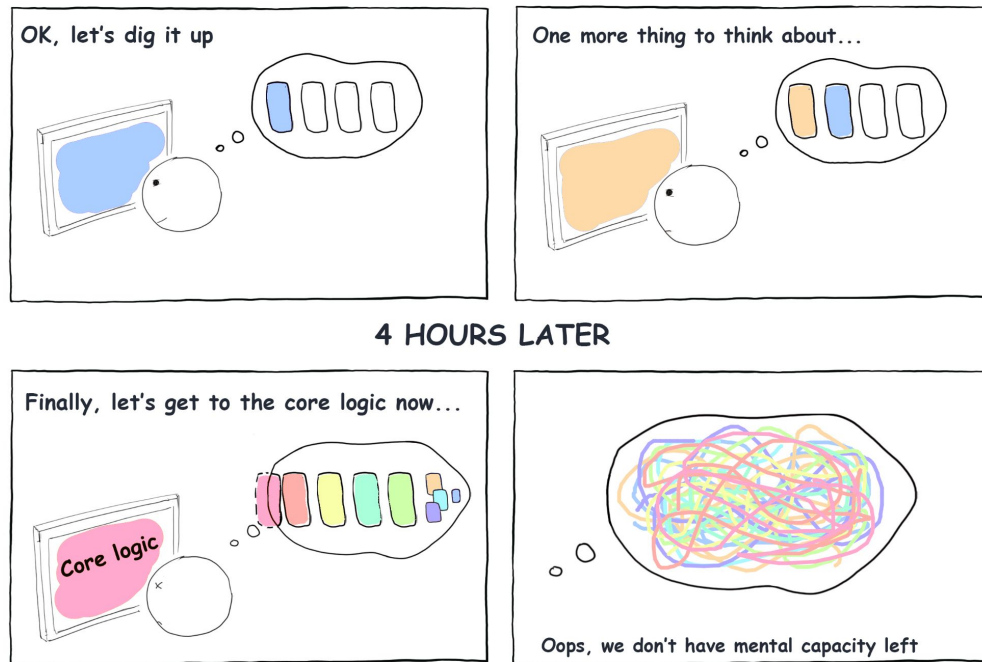Percentage of users who have encountered at least one page w/ Flash Player content in a day. Courtesy Chromium.org

The Framework Overload Dilemma

So What's The Dilemma?

- Cognitive Load &
  The Rabbit Hole Effect

Useful Resources for Software Engineers (and
where the image was borrowed from)
https://github.com/zakirullin/cognitive-load

OK, let's dig it up

One more thing to think about...

4 HOURS LATER

Finally, let's get to the core logic now...

Core logic

Oops, we don't have mental capacity left

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The Framework Overload Dilemma

Results From The Poll

See results at: https://www.jptweb.com/igm/results/

An Aside

Mike
Talent Acquisition and Sales Leader! | A Friend of Bill's (5/26/18) | 25k+ Connections...
4h • Edited • 🌐

Dear Hiring Managers,

If you are looking for:

-Java, Python, PHP, Ruby
-React, Angular
-PostgreSQL, Redis, MongoDB
-AWS, S3, EC2, ECS, EKS
-nix* system administration
-GIT and CI with TDD
-Docker, Kubernetes

...that's not a full stack developer. That's an entire IT department.

👍 🙂 ❤️ 54 • 5 Comments

iDK ➡️ Emerald City ✳️
@kevinkaywho

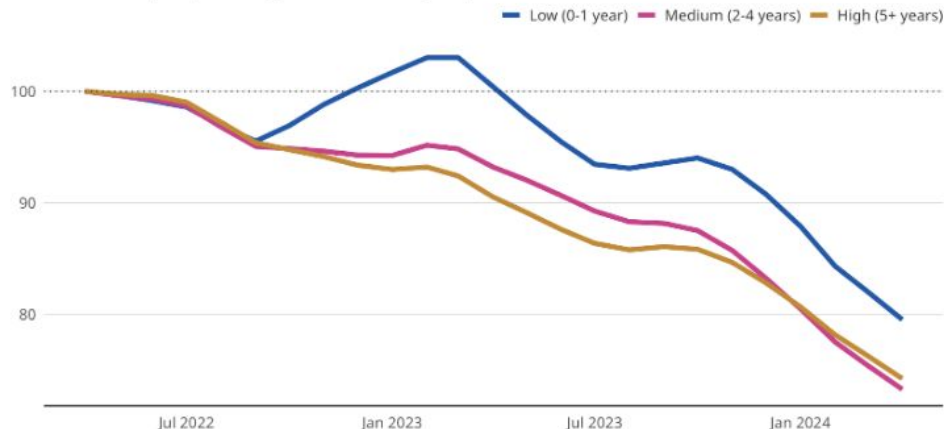Found a job opening that requires 8+ years of Swift experience.

Swift is a programming language that came out 3 years ago.

Maybe Some Hope

- Job Postings Mentioning experience levels may be falling (which may be good news to our recent graduates

- Despite More Tech Stacks and Frameworks evolving, the major players have stayed fairly constant (ex: react, angular)

Experience requirements falling across all tenure levels

Share of US job postings mentioning experience level, indexed

— Low (0-1 year)   — Medium (2-4 years)   — High (5+ years)

Source: Indeed. 6-month moving average indexed. Apr 2022 = 100.
Data is adjusted for changes in occupational mix over time and is based on highest experience requirement mentioned
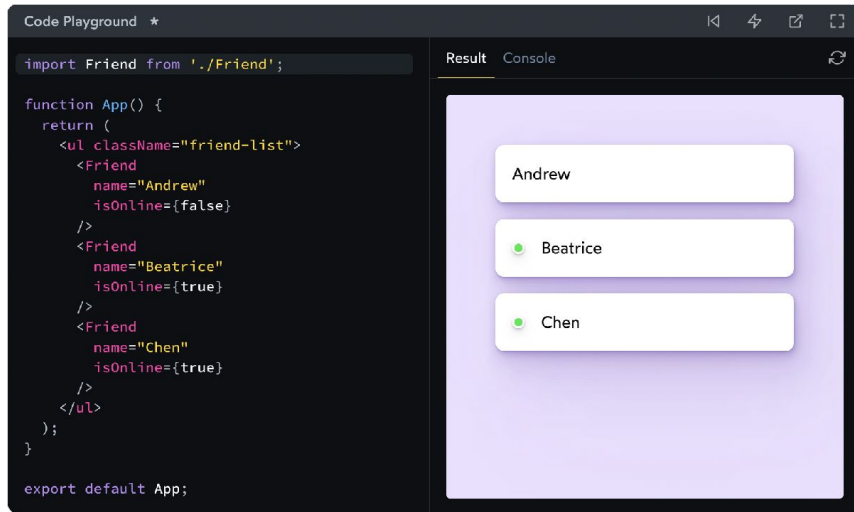
indeed

Any Solutions?

- **We likely need exposure to some of these tools to find careers (esp. beyond entry level)**

- **What are some approaches we can take as educators and learners?**

  - Code Playground & Interactive TextBooks
  - IGME-330's "Flipped Classroom Approach"

What's a Code Playground and What can it offer?

- **Enables students practice coding without having to set up entire development environments**
- **Enable Active Learning (help force this versus watching me code)**

Combined with an Interactive Textbook

- **Give modular feedback by assessing small components of a program.**

Implementing ZyBook in ISTE-140

- **Successfully Rolled out in 2022 to multiple sections of ISTE-140**

- **Offered ZyLabs, Participation Activities, and Challenge Activities**

Impact of ZyBook in ISTE-140

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	TOTAL
Increased my confidence	40.00% 2	20.00% 1	40.00% 2	0.00% 0	0.00% 0	5
Improved my grades	60.00% 3	20.00% 1	20.00% 1	0.00% 0	0.00% 0	5
Easy to use	60.00% 3	40.00% 2	0.00% 0	0.00% 0	0.00% 0	5
Helped prepare for class	60.00% 3	40.00% 2	0.00% 0	0.00% 0	0.00% 0	5
Helped further solidify what I learned in class	40.00% 2	40.00% 2	20.00% 1	0.00% 0	0.00% 0	5

Zybook Shortfalls?

- clearList() should remove the grocery list from localStorage.

All three functions should use the localStorage item called "list".

▶ Run   🕘 History   Tutorial

index.html   ☁

```
 1   <!DOCTYPE HTML>
 2   <html lang="en">
 3       <head>
 4           <title>Grocery List</title>
 5           <link rel="stylesheet" href="styles.css">
 6           <script src="groceries.js"></script>
 7       </head>
 8       <body>
 9           <h1>Grocery List</h1>
10           <input type="text" id="item"> <input type="button" id="addBtn" value="Add">
11           <ol></ol>
12           <input type="button" id="clearBtn" value="Clear">
13       </body>
14   </html>
```

WEBVIEW   CONSOLE   🔄   https://njbsvtdprpqm-8080.na.app.cod   📋   DEVTOOLS   ⬆   ⤢

Grocery List

[ ] [Add]

[Clear]

⚙

```
2/6 R-0 min:2
```

Latest submission - 4:41 PM EST on 02/06/25   Total score: 0 / 10

☐ Only show failing tests   **Open submission's code**

1: QUnit test ⌃   0 / 2

Test loadList() with localStorage items: apples, fried rice, milk, bread

Feedback

✗ loadList() returns an array

Your value   [false]

Expected value   [true]

✗ Test aborted.

2: QUnit test ⌃   0 / 2

Test loadItems() with empty list in localStorage

Feedback

✗ loadList() returns an array

Your value   [false]

Expected value   [true]

✗ Test aborted.

An "Improved" Interactive Code Playground

Provide:

- **Immediate, constructive feedback on code.**
- **Targeted hints.**

Desired Impact

- **Frees up educators to focus on deeper, in-class learning experiences.**
- **Better outcomes for the student**

Demo Time & Putting on My Teacher Hat!

View Demo By Visiting The Presentation Companion Page

Click The Link to Code Demo under Resources

OR by going to: https://www.jptweb.com/igm/demo/

Components of my AI Learning Tool

Integration with openAI API using the 4o-mini model.

- **The 4o-mini model is cheap < $.01 for dozens of queries!**

Code Playground "editor" using Monaco

- **Same editor as VScode**
- **I tried others such as CodeMirror but didn't offer "intellisense"**

Fully Editable; and modular to put in other websites (soon)

- **I can show a quick demo of the backend if time!**

Closing Remarks & Questions

- **Q&A and Discussion**

  Thank you for attending!

  To get a link to the coming sandbox complete the feedback form on the presentation website jptweb.com/igm and I will email it to you when ready!

  Email jptkts@gmail.com

Additional Interesting Tidbits

- **Could we incorporate an AI integration project into our curriculum? Possibly use my tool as a base/starter point and let students run with the idea**
  - The Rise of Generative AI and Prompt Engineers: 2024 Industry Update
    https://www.profocustechnology.com/general/rise-of-generative-ai-and-prompt-engineers-2024/

- **This Project was inspired a bit from an earlier project; and the "start small idea, then build bigger has helped me grow**
  - Portfolio Queen an AI Portfolio Builder:
    https://www.feedmasher.org/project-queen/