



React and the Art of Gamification

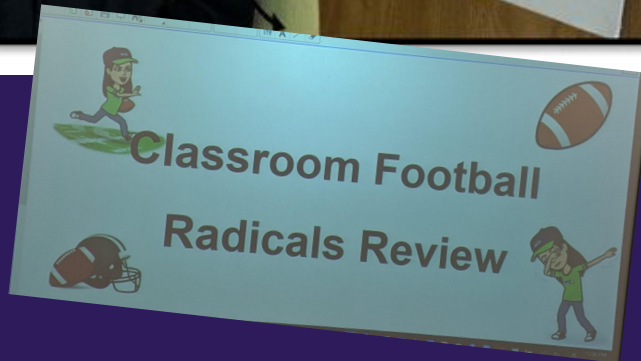
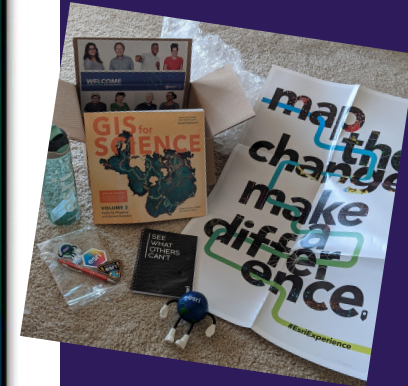
Courtney Yatteau



START

Courtney Yatteau

Developer Advocate, Esri





[https://github.com/cyatteau/
gamification-reactjsday-2025](https://github.com/cyatteau/gamification-reactjsday-2025)

Gamifying React Education

```
App.js Download Reset F

1 import { useState } from 'react';
2
3 function Square({ value, onSquareClick }) {
4   return (
5     <button className="square" onClick={onSquareClick}>
6       {value}
7     </button>
8   );
9 }
10
11 function Board({ xIsNext, squares, onPlay }) {
12   function handleClick(i) {
13     if (calculateWinner(squares) || squares[i]) {
14       return;
15     }
16     const nextSquares = squares.slice();
17     if (xIsNext) {
18       nextSquares[i] = 'X';
19     } else {
20       nextSquares[i] = 'O';
21     }
22     onPlay(nextSquares);
23   }
24   return (
25     <div>
26       <div>Next player: {xIsNext ? 'X' : 'O'}</div>
27       <table>
28         <tbody>
29           <tr>
30             <td>{squares[0]}</td>
31             <td>{squares[1]}</td>
32             <td>{squares[2]}</td>
33           </tr>
34           <tr>
35             <td>{squares[3]}</td>
36             <td>{squares[4]}</td>
37             <td>{squares[5]}</td>
38           </tr>
39           <tr>
40             <td>{squares[6]}</td>
41             <td>{squares[7]}</td>
42             <td>{squares[8]}</td>
43           </tr>
44         </tbody>
45       </table>
46       <div>
47         {calculateWinner(squares) ? `Winner: ${calculateWinner(squares)}</div>
48         : null}
49       <button onClick={onPlay}>Go to game start</button>
50     </div>
51   );
52 }
```

Next player: X

1.

What is gamification?

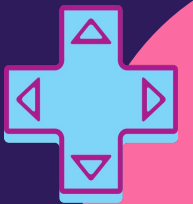
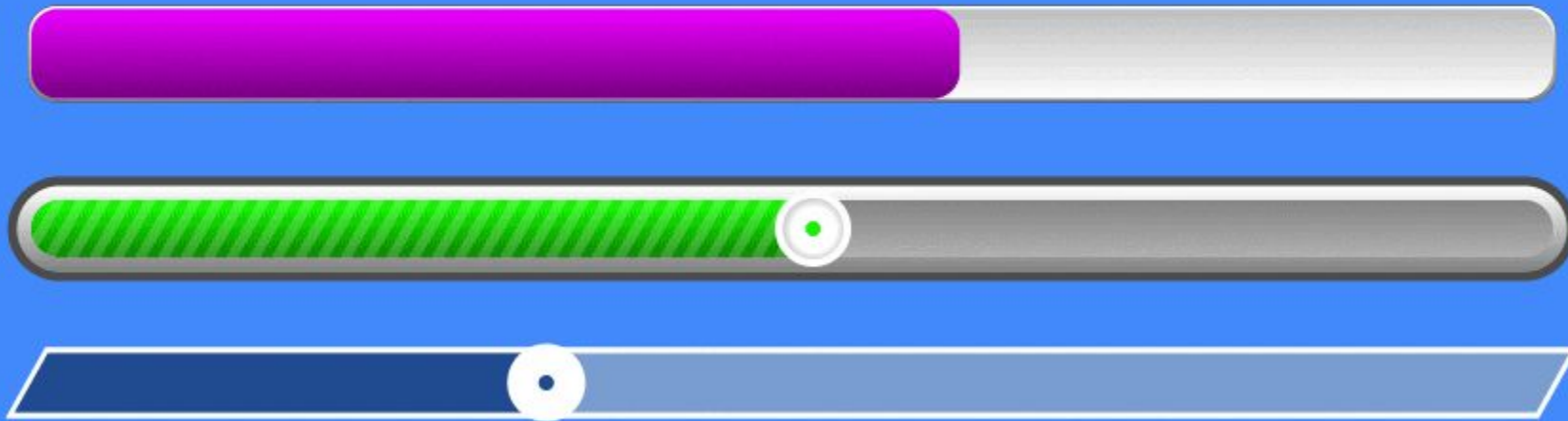
 Game mechanics in real life


 Motivates action

 Rewards progress

 Makes it fun

Why Gamify?





**Effective gamification
creates an ecosystem where
users are constantly
motivated to engage,
improve, and achieve. It's
about harnessing the power
of game mechanics to drive
real-world results.**

- Sebastian Deterding

How React Powers-Up Gamification

Server Components

Stream UI gradually; ship **zero client JS** for non-interactive parts

Server Actions

Mutate state on the **server**; keep progress **authoritative**.

React Compiler

Fewer manual memos; smoother updates in real trees.

Client Islands

Hydrate **only** truly interactive surfaces (buttons, editors, canvases).

Demo Time



Core loop: Click → Quest → XP

Built in tiny steps

Principles:

- stream early
- server-true progress
- one small client island



<https://github.com/cyatteau/gamification-reactjsday-2025>

Full Demo

Quest Map (Gemini)

Level 1

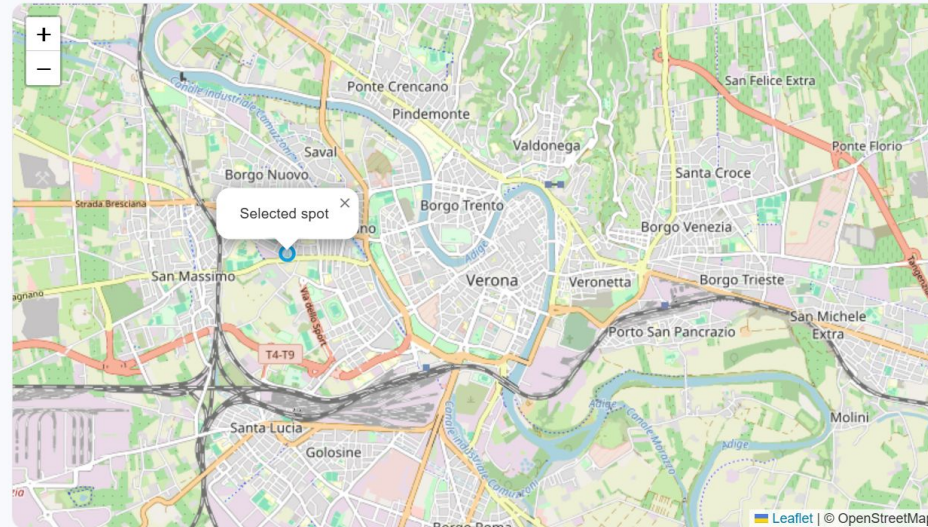


150 XP

Server Tip

Click the map to fetch a Gemini-generated micro-quest near that spot.

N



Gemini Quest

Walk over Ponte Pietra. Discover the Roman Theatre's best river view. Find an ancient arch and imagine the spectators centuries ago.

Mark done (+50 XP)

Server Shell

```
// app/page.jsx (Server Component)
export default async function Page() {
  return <main>...left card...right card...</main>
}
```

Quest Live

Starter shell — left column.

(We'll add streaming, XP, and more in the next steps.)

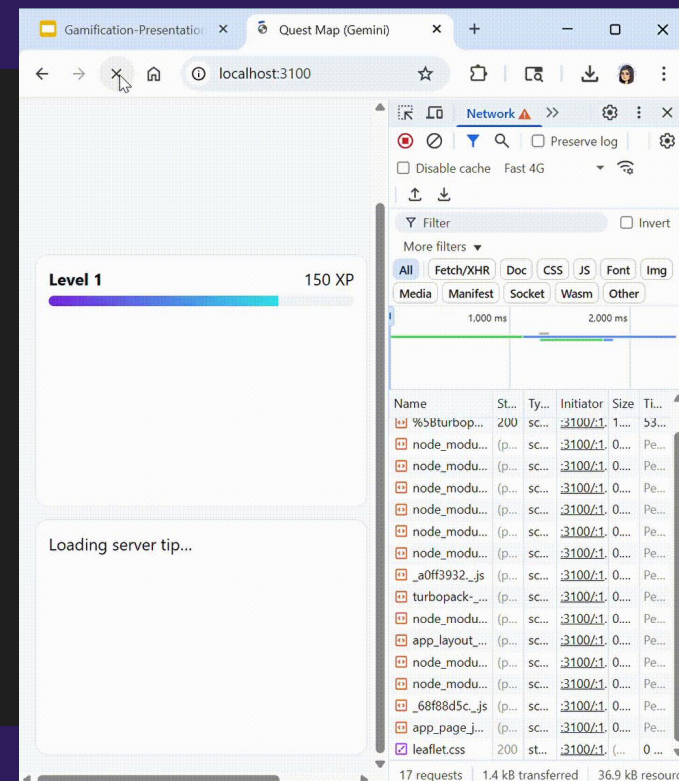
Right column

Placeholder for future interactive panel.

Streaming via Suspense

```
// app/page.jsx
<Suspense fallback={<div>Loading server tip...</div>}>
|   <ServerTip />
</Suspense>
```

```
// app/(rsc)/ServerTip.jsx
await new Promise(r => setTimeout(r, 700))
```



Add server XP

```
// lib/db.js
let state = { xp: 0 }
export async function addXP(n=0) {
  state.xp = Math.max(0, state.xp + n)
}
```

Show XP as a bar

```
// components/XPBar.jsx  
const level = Math.floor(xp / 200) + 1;
```



Add a Server Action

```
// app/actions.js
'use server'
export async function grantXP(n=50){
  |   await addXP(n)
}
```

AI route

```
// app/api/ai/route.js
const url = `.../gemini-2.5-flash:generateContent?key=${GEMINI_API_KEY}`

// ask for strict JSON
generationConfig: { responseType: "application/json" }
```

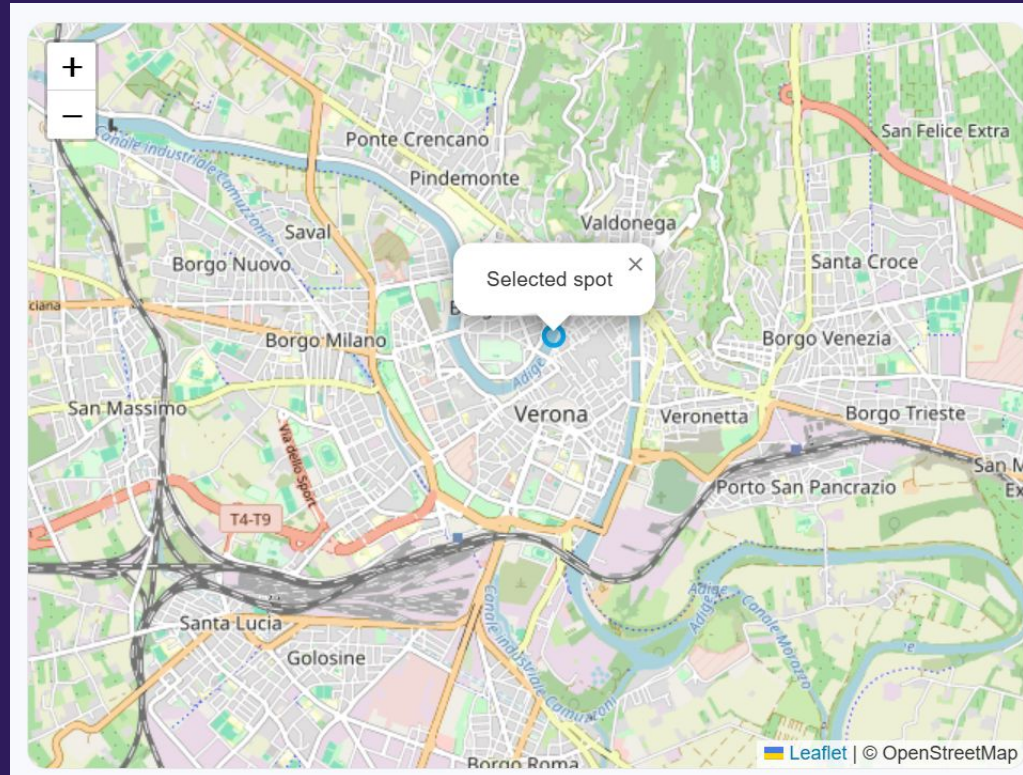
Gemini Quest

At Piazza delle Erbe, locate the Arco della Costa. Look up and confirm if the ancient whale rib still hangs from it.

Mark done (+50 XP)

Map island

```
// components/Map.jsx  
const L = await import('leaflet')
```



Wire click → AI quest

```
// components/MapQuest.jsx
const res = await fetch('/api/ai',{
  method:'POST', body: JSON.stringify({ lat, lng })
})

setMsg((await res.json()).quest)
```

Mark done → Server Action → Refresh

```
// components/MapQuest.jsx  
await grantXP(50); router.refresh()
```



G

Gamified UI

A

**Advanced
State**

M

Memoization

E

**Efficient
Rendering**

Possible Extensions •

1

- **Social:** server-rendered leaderboard

2

- "Copy to share" button in quest panel

3

- Streaks / achievements

4

- Persist XP to DB

G

Streak Counters & XP Bars

A

Advanced State Control

M

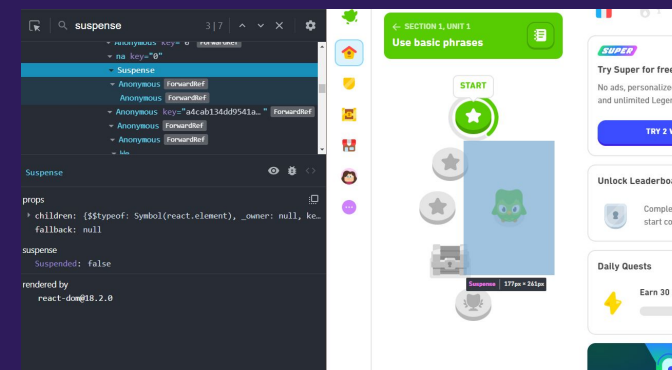
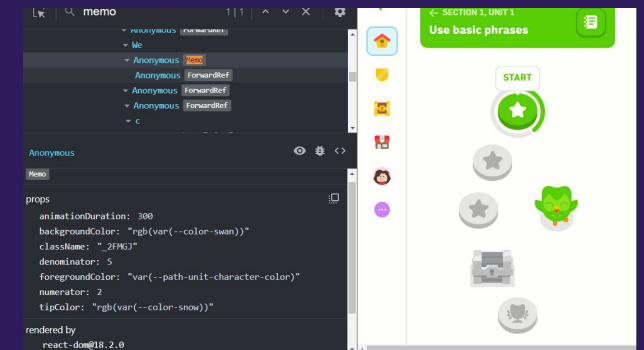
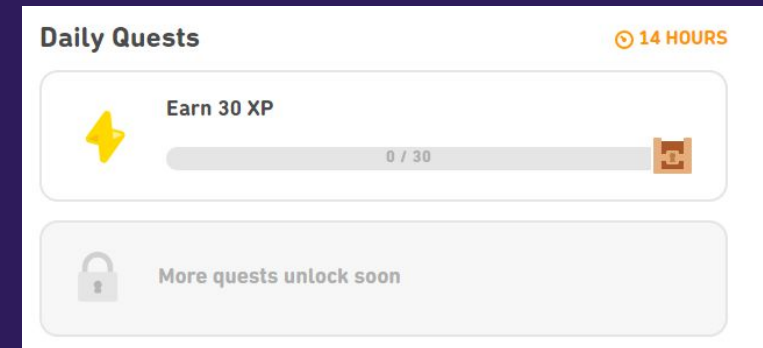
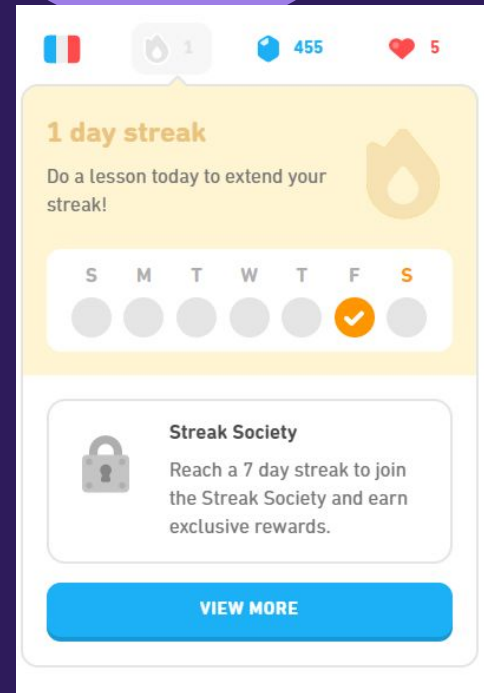
Optimized Lesson Rendering

E

Efficient Component Rendering

S

Leaderboards & Challenges



duolingo

Get Started Today!



Start server-first

RSC page + small Suspense fallback

One measurable action

Pick a single number (XP/progress)

Server as authority

Mutate on the server (Server Action)

Make progress visible

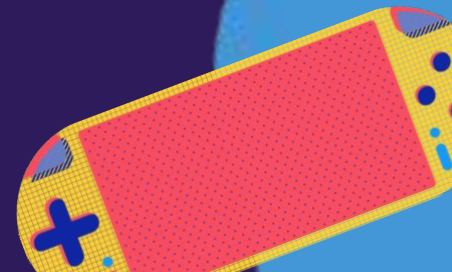
A small, honest bar/counter

Hydrate one island

Only the real interaction surface

Guard the AI seam *(if using AI)*

Server-only key, **strict JSON**



Thank you, ReactJSDay!

Courtney Yatteau



c_yatteau



courtneyyatteau



cyatteau.bsky.social



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