

Exploring the Use of Al to Create Classroom Seating Charts

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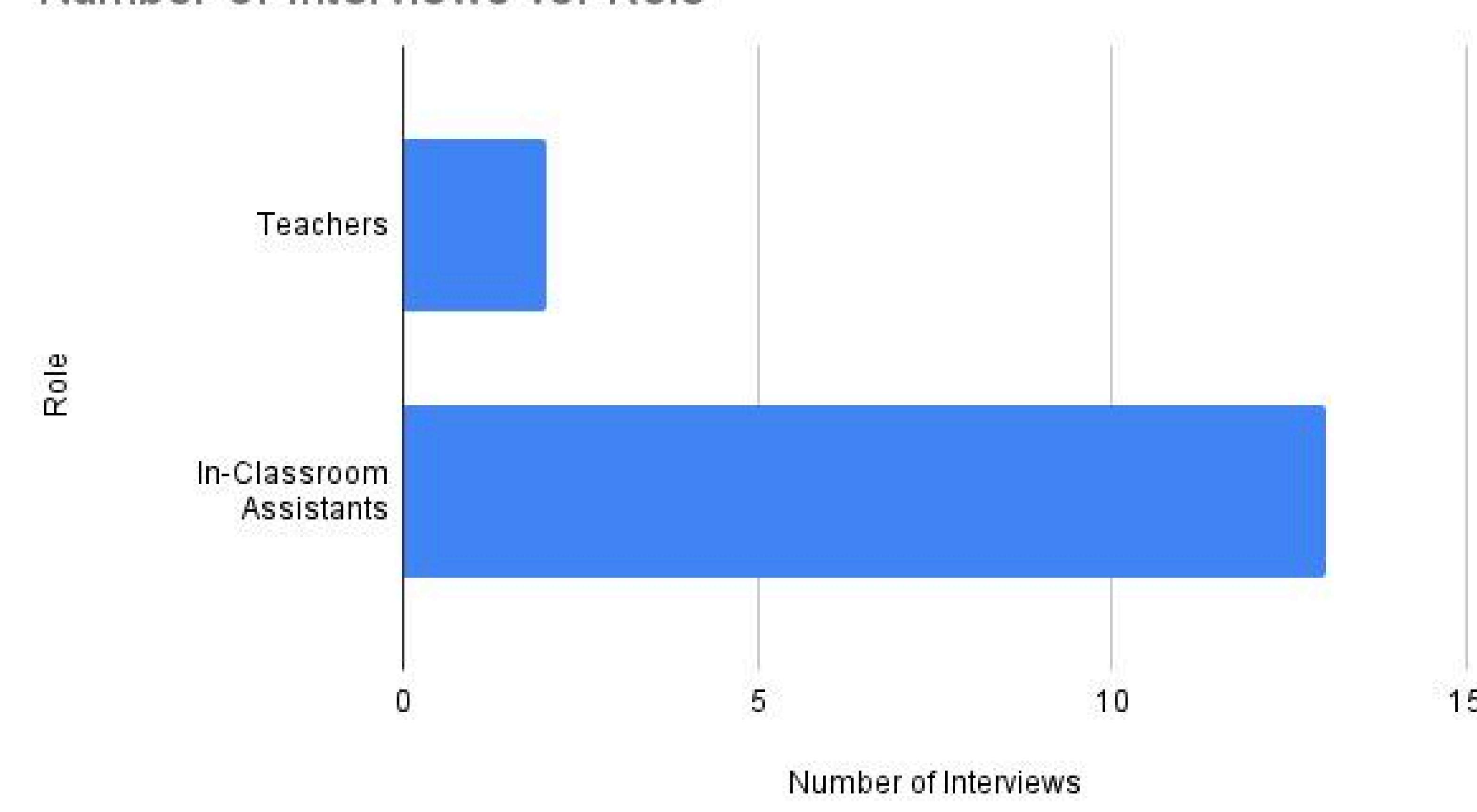
tailwindcss

User Research

15 Educator Semi-structured Interviews

- Classroom context
- Student engagement
- Group formation
- Seating chart creation process





32 Student Survey Responses

- In-classroom experience
- Frequency and nature of group work
- Frequency and nature of switching seats

Number of Students vs. Survey Question

User Personas

Age: 28

Role: Full-time Elementary School Teacher (1st-3rd grade)

Work Setting: Public School Classroom Tech Comfort: Moderate to High

Student Ratio: ~20-30 students per class
Teaching Style: Hands-on, student-centered

Common Tasks: Lesson planning, grading, prepping materials,

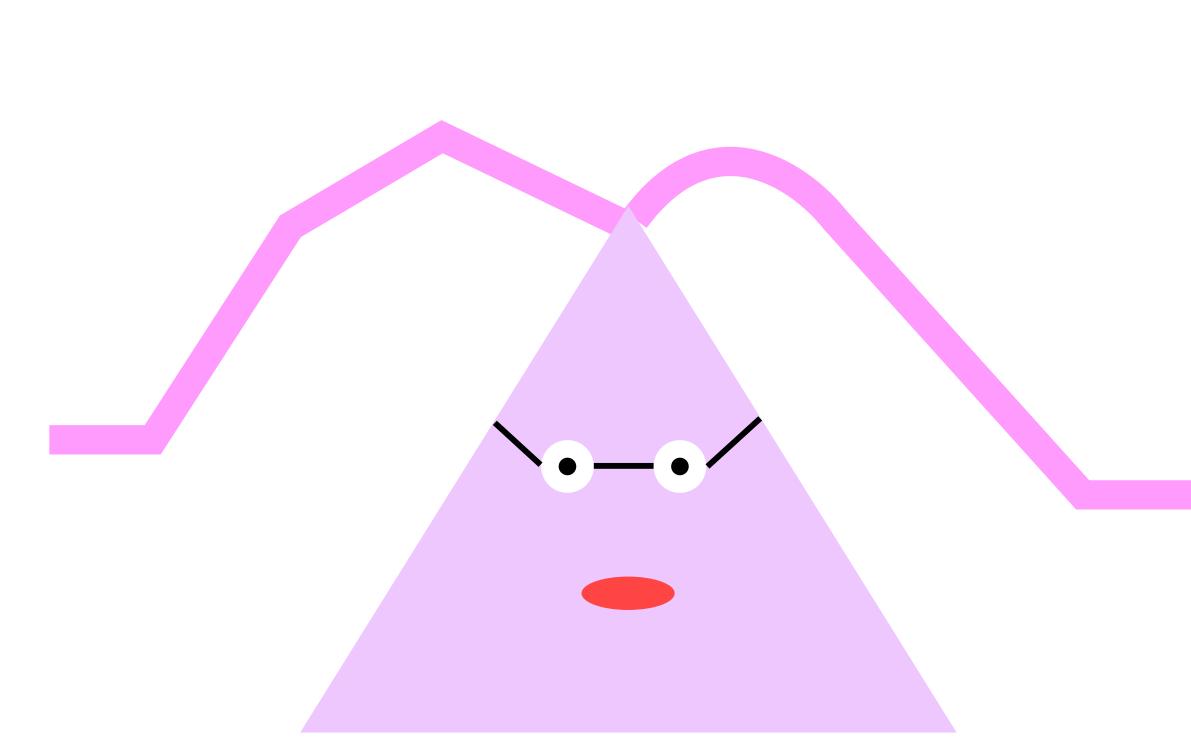
managing group dynamics

Motivators: Fostering independent learning, meaningful student

discussions, creative activities

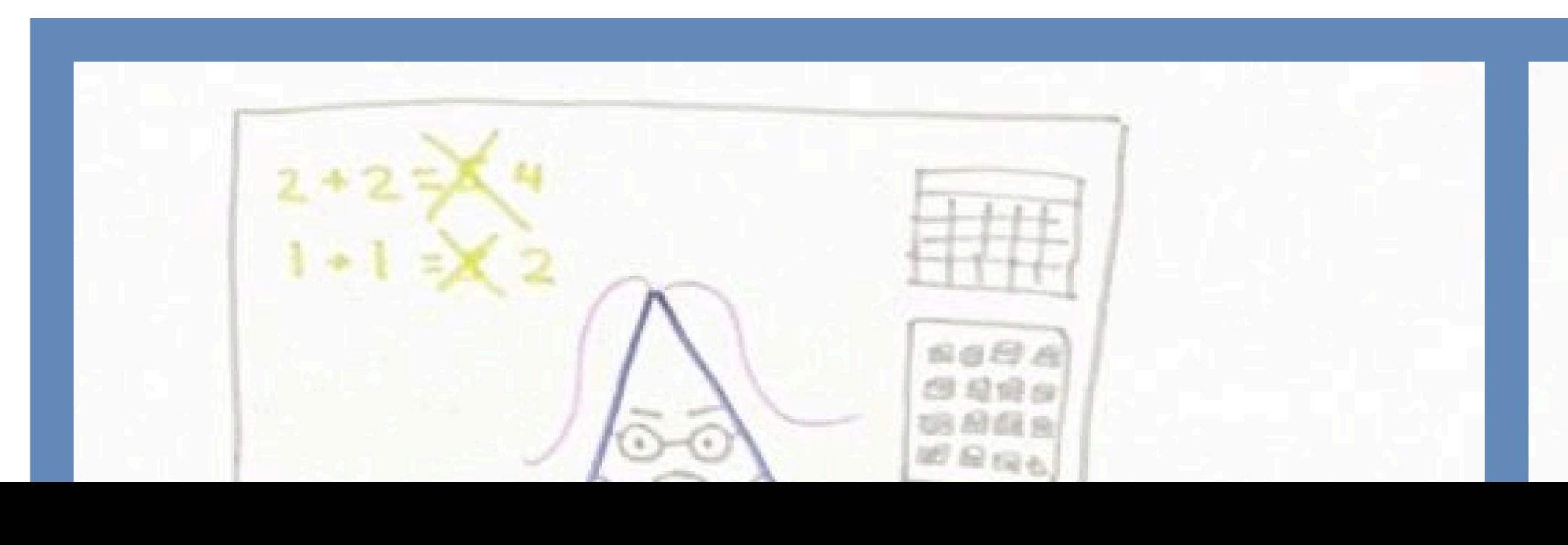
Pain Points

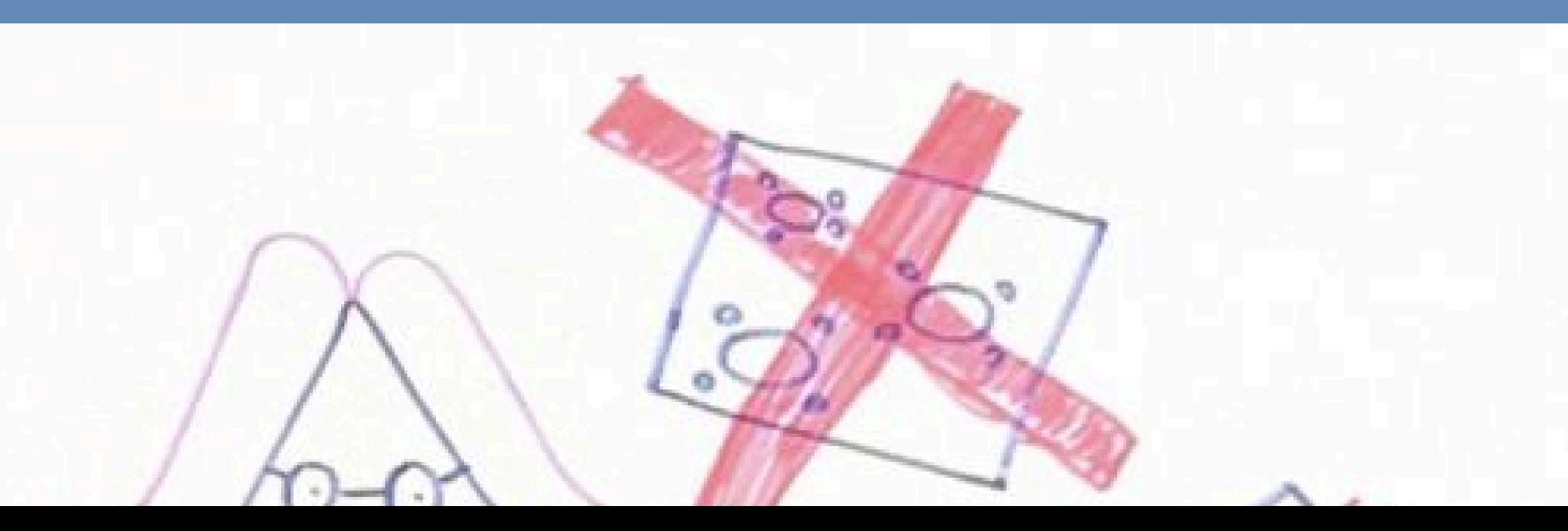
- Managing chatty or disengaged students
- Balancing diverse skill levels in groups

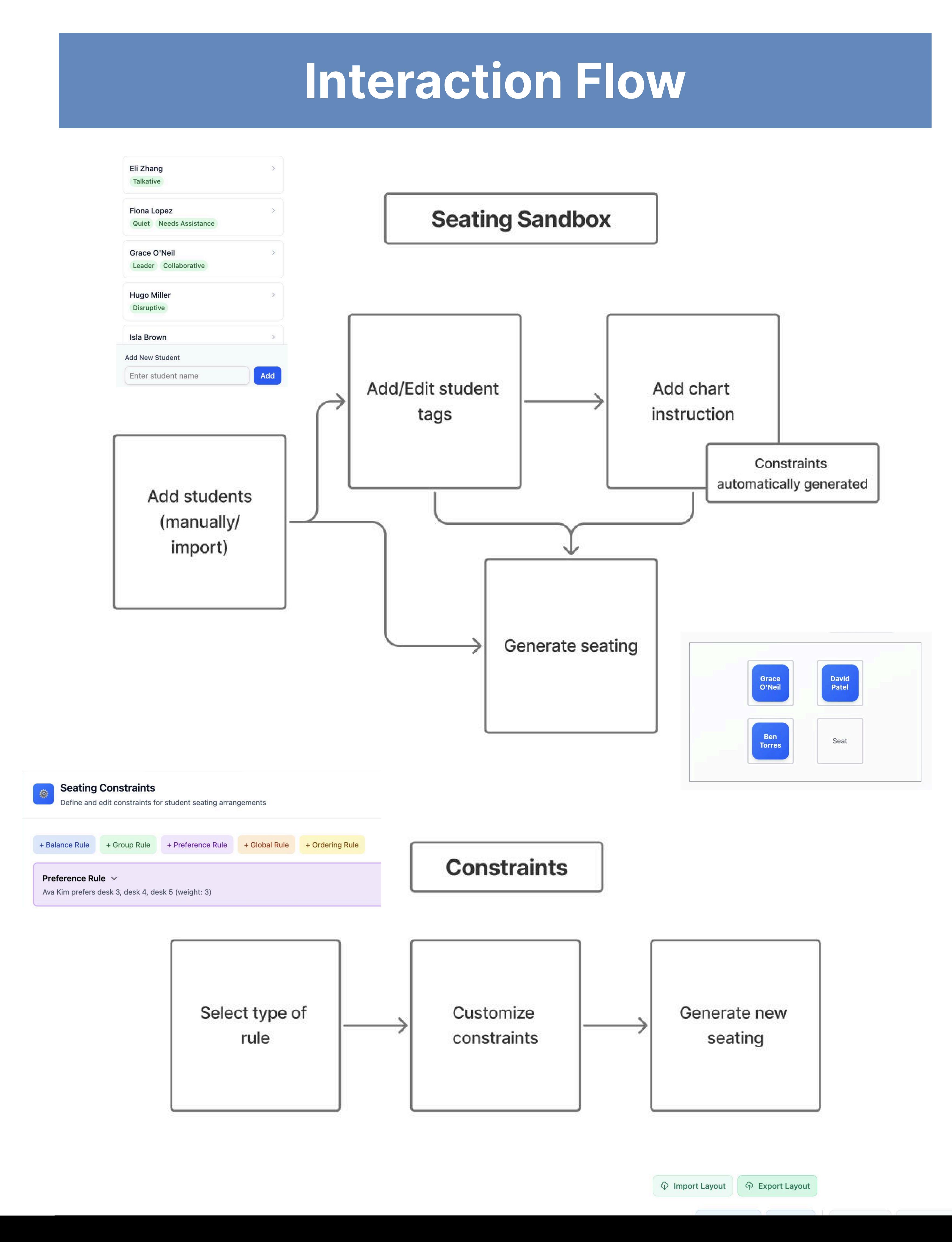


Research Question

Teachers struggle to manage talkative or disengaged students while balancing skill levels, and often lack simple, data-informed tools to quickly create effective seating charts and groups.



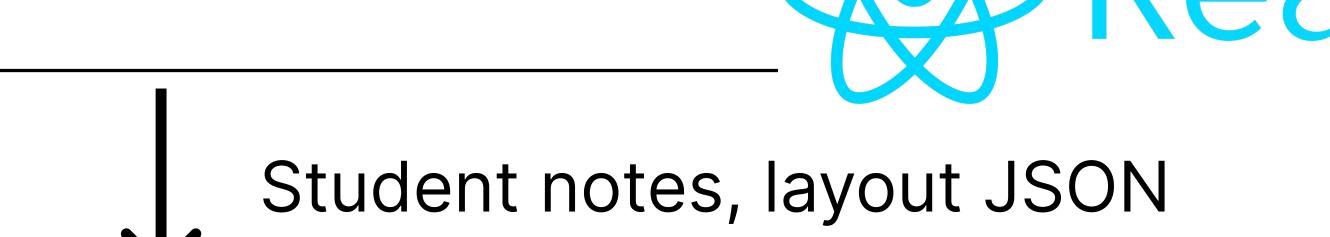




Implementation

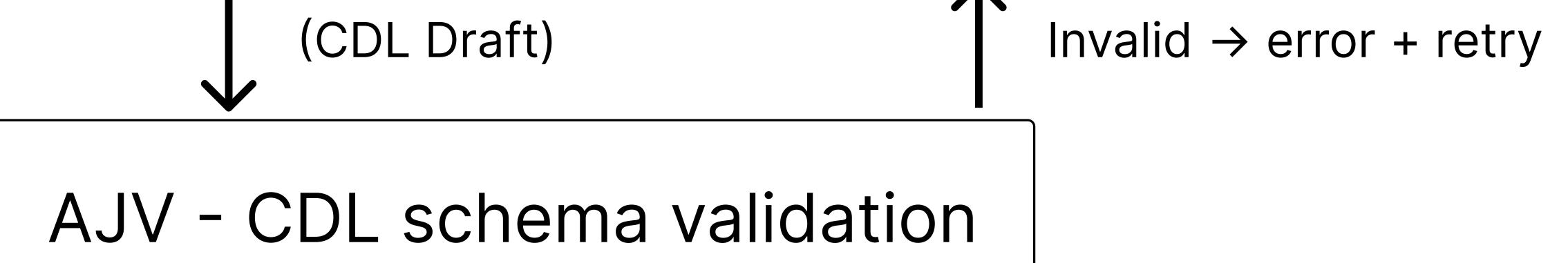
React App

- Tailwind + shadcn/ui components
- dnd-kit for drag and drop
- React hooks for state



Client-side CDL Logic

- CDL editor (blocks + raw Json)
- File import + download
- AJV JSON schema validator



Seat Optimizer (Type Script)

- Hill-climb swap search
- seedrandom for reproducibility



React UI updates layout/tooltips