TASK # 3

Goal:

To streamline the substitution process, balance teacher workloads, and ensure fair distribution of teaching periods.

Phase 1: Scope

The scope of the problem, specifically focusing on substitution scheduling and teacher workload distribution.

Challenges Identified:

- Teachers being assigned substitutions in multiple classes at the same time.
- Imbalanced number of periods per teacher.
- Teacher dissatisfaction with workload distribution.

Phase 2: Empathize (Stakeholders)

- **Teachers:**
  - Concerns about excessive or insufficient periods.
  - Prefer a more predictable and fair substitution system.
- **Students:**
  - Continuity in learning with minimal disruptions from substitutions.
- **Administration:**
  - Efficient resource management (teacher availability and student learning).
  - Keeping track of substitution schedules without errors.

Phase 3: Define (Insights)

Through empathy exercises, the insights gathered can help refine the problem. For example:

- **Pain Points:**
  - Substitutions happening at the same time for the same teacher.
  - Unequal distribution of periods across teachers.
- **Needs:**
  - Real-time, automated substitution scheduling.
  - Equal distribution of teaching periods across all teachers.
  - Minimization of disruptions to the learning schedule.

Phase 4: Ideate (Exploring Possibilities)

Brainstorm possible solutions using AI and other tools:

- **AI-Driven Substitution Scheduler:**
  - Automatically assigns substitutions based on teacher availability, workload, and student needs.
  - Integrates teacher preferences (e.g., preferred periods or subjects) and constraints (e.g., no double shifts).
- **Workload Balance AI Algorithm:**
  - Analyzes the total number of periods each teacher has been assigned over a specific period.
  - Suggests reallocation of periods to ensure fairness.
- **Interactive Dashboards:**
  - Real-time access for both administration and teachers to view substitutions and period allocations.
  - Allows for easy adjustment if conflicts arise.

Phase 5: Prototype

Create a working model of the substitution scheduling system and workload balancing system. This could include:

- A sample AI-driven substitution system that generates schedules based on inputs.
- A prototype AI tool that suggests and automatically reallocates periods for fair distribution.

Phase 6: Validate/Test

After creating prototypes, you will test the solution in a real-world setting:

- **Teacher Feedback:**
  - Collect feedback on how well the new system distributes workloads.
  - Assess if the AI scheduler resolves conflicts of overlapping substitution requests.
- **Student Feedback:**
  - Ensure the learning experience remains uninterrupted and consistent.
- **Admin Feedback:**
  - Evaluate ease of use, error reduction, and efficiency improvements.

Phase 7: Implement

Once validated, the solution can be rolled out fully:

- **Implement AI-driven substitution scheduling** across the entire school.
- **Implement workload balancing tool** that automatically adjusts periods based on teacher availability.
- **Monitor:**
    - Continue monitoring and adjusting the system as needed to address new challenges.

Output:

1. **Identify Boundaries:**
    - Teacher availability, subject expertise, and student needs.
2. **Data:**
    - Teacher schedules, substitutions, and period logs.
3. **Insights:**
    - Most common areas of conflict in substitution scheduling.
    - Unbalanced distribution of teaching periods.
4. **Ideas/Concepts:**
    - AI to handle the scheduling with an equal distribution of workload.
5. **Solutions:**
    - A working AI-driven solution with real-time dashboards and automated reallocation.
6. **Test:**
    - Ensure real-time adjustments and feedback collection after initial implementation.
7. **Action Plan:**
    - Deploy the system school-wide after final testing. Train staff to interact with the new system.

By following this process, we can effectively reduce conflicts, improve teacher satisfaction, and streamline the substitution process in your school.

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