8.2 Quality Standard

8.2.1 ISO/IEC 25010:2011 – Software Product Quality Model

The ISO/IEC 25010 standard was utilized as the primary framework for defining the non-functional requirements of the Manage Progress Tracker Module. The following attributes were prioritized and implemented:

Quality Attribute	Description	Application in EduTrack
Usability	The degree to which a product can be used by specified users to achieve goals with effectiveness, efficiency, and satisfaction.	Dashboard Design: Implemented color-coded summary cards (Green/Red) to allow instant interpretation of academic standing. Goal Setting: Added interactive progress bars for students to visualize gaps between current grades and targets.
Reliability	The degree to which a system, product or component performs specified functions under specified conditions for a specified period of time.	Calculation Logic: Backend algorithms ensure 100% mathematical accuracy for GPA and Attendance calculations. Fault Tolerance: The "Self-Healing" function automatically updates

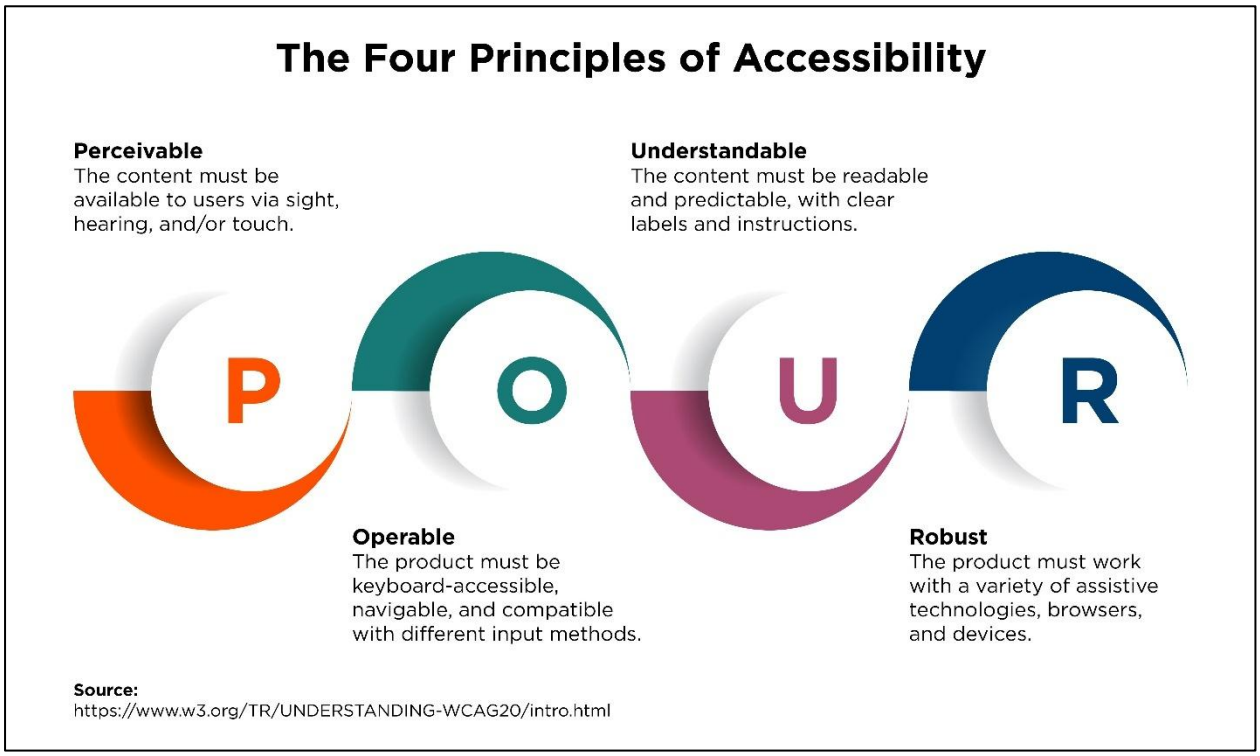
		summary records upon page load to prevent data discrepancies.
Performance Efficiency	The performance relative to the amount of resources used under stated conditions.	Data Caching: Implemented a progress_summary table to store calculated averages, reducing database query load time to under 1.2 seconds. Optimized Queries: Used indexed SQL queries for fast filtering of student cohorts.
Maintainability	The degree of effectiveness and efficiency with which a product or system can be modified.	Modular Code: The calculation logic is isolated in module3_functions.php, allowing updates to grading formulas without breaking the interface.

8.2.2 **IEEE 730-2014 – Software Quality Assurance Plans**

This IEEE standard was adopted to structure the SQA activities and documentation for the project. It guided the following processes:

- SQAP Creation: Defining the roles (QA Lead, Developer) and responsibilities outlined in Section 2.0 of this report.
- Review Process: Establishing the criteria for the "Contract Review" and "Product Assurance" phases.
- Traceability: Ensuring every test case in Section 5.0 can be traced back to a specific requirement in the Project Proposal.

2.3 WCAG 2.1 – Web Content Accessibility Guidelines



To ensure the dashboard is inclusive, specific principles from WCAG 2.1 were applied to the interface design:

- Perceivable (Color Contrast): The "At Risk" (Red) and "Excellent" (Green) status badges use high-contrast text (White on Dark Background) to ensure readability for users with visual impairments.
- Operable (Navigation): The sidebar and filter dropdowns are fully accessible via keyboard navigation (Tab key), ensuring operability without a mouse.
- Understandable (Feedback): Error messages (e.g., "No courses found") are clearly descriptive rather than generic codes, helping users correct their actions.