

Module-wise Functional Specification

Product

learntoaction – Learning Execution SaaS Platform

This document translates the PRD + TAD into **implementation-ready functional modules**. Each module defines scope, responsibilities, key workflows, and acceptance criteria.

1. Authentication & Authorization Module

Responsibilities

- User authentication
- Role-based access control (RBAC)
- Workspace-level permission enforcement

Roles Supported

- Super Admin
- Teacher
- Student

Functional Requirements

- Email + password authentication
- Magic link / OTP (optional, phase 2)
- JWT-based session management
- Role validation on every request
- Workspace context resolution per request

Acceptance Criteria

- Users cannot access resources outside their workspace
 - Students cannot access teacher dashboards
 - Super Admin can access all workspaces
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2. Workspace Management Module

Responsibilities

- Workspace lifecycle
- Tenant isolation

- Branding configuration

Functional Requirements

- Create workspace on teacher signup
- One workspace per teacher
- Store branding settings:
 - Brand name
 - Business name
 - Logo
 - Colors
 - Fonts
- Workspace-level settings page

Acceptance Criteria

- Branding applies to all public-facing pages
 - Workspace data is fully isolated
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3. Domain & SSL Management Module

Responsibilities

- Default and custom domain handling
- SSL provisioning

Functional Requirements

- Auto-generate default subdomain
- Allow teacher to add custom domain
- Show CNAME target and DNS instructions
- Verify domain ownership
- Auto-provision SSL certificates
- Show domain status (pending / active / error)

Acceptance Criteria

- Custom domain resolves to correct workspace
 - SSL is enforced on all domains
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4. Content Organization Module (Folders & Views)

Responsibilities

- Content discoverability

- Folder hierarchy

Functional Requirements

- Create nested folders
- Rename and delete folders
- Drag worksheets/workbooks into folders
- Views:
 - List
 - Grid
 - Recent
 - Global search
 - Sorting & filtering

Acceptance Criteria

- Folder changes reflect instantly
 - Search returns only workspace-owned content
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5. Worksheet Management Module

Responsibilities

- Standalone worksheet lifecycle

Functional Requirements

- Create, edit, duplicate, soft-delete worksheets
- Draft / published status
- Editable unique slug
- Preview in new tab
- Track created_at and updated_at

Acceptance Criteria

- Draft worksheets are not publicly accessible
 - Published worksheets render correctly
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6. Workbook Management Module

Responsibilities

- Multi-page learning flow management

Functional Requirements

- Create workbook
- Add, reorder, rename, delete pages
- Each page references a worksheet snapshot
- Import worksheet (copy-only)
- Editable unique slug

Acceptance Criteria

- Reordering pages updates navigation correctly
 - Imported worksheets are independent copies
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7. Worksheet Builder Module

Responsibilities

- Interactive content creation

Functional Requirements

- Drag-and-drop block editor
- Supported blocks:
 - Text (rich formatting)
 - Inputs (single/multi-line)
 - Checkboxes, radio, dropdown
 - Media (image, video)
 - Progress bar
 - Divider
 - Finish button
 - Dynamic field
 - Dynamic custom value
- Grid layout with columns and rows
- No nested rows inside rows
- Autosave on change

Acceptance Criteria

- Blocks can be reordered across columns
 - Autosave persists state reliably
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8. Field System Module

Responsibilities

- Structured data generation

Functional Requirements

- Auto-generate field name and field key
- Enforce uniqueness per workspace
- Prevent editing of field keys
- Alert on duplicate field generation
- Allow URL parameter injection
- Support cross-worksheet rendering

Acceptance Criteria

- Duplicate field keys are impossible
 - Fields persist across worksheets
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9. Custom Fields & Values Module

Responsibilities

- Global dynamic variables

Functional Requirements

Custom Fields Manager

- List all generated fields
- Search fields
- Show usage count

Custom Values Manager

- Create key-value pairs
- Render values via template syntax

Acceptance Criteria

- Updating custom values reflects everywhere
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10. Student Runner Module

Responsibilities

- Student-facing experience

Functional Requirements

- Access worksheets/workbooks via link
- Optional login to save progress
- Autosave responses
- Resume progress
- Show progress indicator
- Next / previous navigation in workbooks
- Privacy toggle (shared / private)

Acceptance Criteria

- Students can resume from last state
 - Progress is accurately calculated
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11. Student Management Module

Responsibilities

- Teacher visibility into learners

Functional Requirements

- Global student directory
- Search by name/email
- Filter by:
 - Active / inactive
 - Workbook
 - Display:
 - Completion %
 - Worksheets completed
 - Workbooks completed
 - Last active
 - Privacy status

Acceptance Criteria

- Student metrics update in near real-time
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12. Response Management Module

Responsibilities

- Persist student input

Functional Requirements

- Autosave partial responses
- Version responses
- Track progress state
- Soft delete responses

Acceptance Criteria

- No data loss during refresh or navigation
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13. Analytics Module

Responsibilities

- Behavioral insight generation

Functional Requirements

- Event-based tracking
- Dashboards:
- Overview
- Student analytics
- Worksheet analytics
- Workbook analytics
- Field analytics
- Device & traffic
- Filters by date, workbook, worksheet

Acceptance Criteria

- Analytics reflect real user behavior
 - No PII leakage across workspaces
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14. Super Admin Module

Responsibilities

- Platform governance

Functional Requirements

- View all workspaces
- View global analytics
- Moderate content
- Manage plans and limits

Acceptance Criteria

- Super Admin access bypasses workspace isolation safely
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15. System Utilities Module

Responsibilities

- Platform reliability

Functional Requirements

- Activity logs
 - Soft delete & recovery
 - Rate limiting
 - Error handling
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16. Non-Functional Modules

Performance

- Fast student rendering
- Low-latency autosave

Scalability

- Stateless services
- Horizontal scaling

Security

- HTTPS enforced
 - Secure token handling
 - GDPR-compliant deletion
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17. Implementation Order (Recommended)

1. Auth + Workspace
 2. Worksheet Builder
 3. Field System
 4. Student Runner + Responses
 5. Workbook Flow
 6. Analytics
 7. Domains & Branding
 8. Super Admin
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18. Guiding Principle

Every module must support learning as an ongoing process, not a one-time submission.