**Mermaid ER Diagrams for Three Educational Platform Schemas**

**1. SkillMind AI Universal Syllabus Knowledge Base Schema**

erDiagram  
 curriculum\_modules {  
 UUID module\_id PK  
 VARCHAR module\_code UK  
 VARCHAR title  
 TEXT description  
 VARCHAR difficulty\_level  
 INTEGER estimated\_duration\_minutes  
 JSONB learning\_objectives  
 INTEGER order\_index  
 BOOLEAN is\_active  
 }  
  
 curriculum\_components {  
 UUID component\_id PK  
 UUID module\_id FK  
 VARCHAR component\_code UK  
 VARCHAR title  
 TEXT description  
 INTEGER order\_index  
 }  
  
 curriculum\_topics {  
 UUID topic\_id PK  
 UUID component\_id FK  
 VARCHAR topic\_code UK  
 VARCHAR title  
 TEXT description  
 INTEGER order\_index  
 }  
  
 curriculum\_concepts {  
 UUID concept\_id PK  
 UUID topic\_id FK  
 VARCHAR concept\_code UK  
 VARCHAR title  
 VARCHAR content\_type  
 INTEGER order\_index  
 }  
  
 content\_chunks {  
 UUID chunk\_id PK  
 UUID concept\_id FK  
 VARCHAR external\_id UK  
 VARCHAR title  
 TEXT content\_markdown  
 TEXT content\_plain\_text  
 VARCHAR difficulty\_level  
 VARCHAR cognitive\_level  
 INTEGER complexity\_score  
 VARCHAR status  
 TIMESTAMPTZ published\_at  
 }  
  
 ai\_avatar\_roles {  
 UUID role\_id PK  
 VARCHAR role\_name UK  
 TEXT role\_description  
 JSONB interaction\_style  
 JSONB assessment\_types  
 BOOLEAN is\_active  
 }  
  
 content\_role\_variations {  
 UUID variation\_id PK  
 UUID chunk\_id FK  
 UUID role\_id FK  
 VARCHAR instruction\_type  
 VARCHAR teaching\_strategy  
 VARCHAR interaction\_style  
 TEXT adapted\_content\_markdown  
 }  
  
 content\_embeddings {  
 UUID embedding\_id PK  
 UUID chunk\_id FK  
 VARCHAR embedding\_model  
 VECTOR embedding\_vector  
 VARCHAR embedding\_type  
 }  
  
 content\_relationships {  
 UUID relationship\_id PK  
 UUID source\_chunk\_id FK  
 UUID target\_chunk\_id FK  
 VARCHAR relationship\_type  
 DECIMAL similarity\_score  
 }  
  
 skill\_taxonomy {  
 UUID skill\_id PK  
 UUID parent\_skill\_id FK  
 VARCHAR skill\_name  
 VARCHAR skill\_code UK  
 INTEGER skill\_level  
 VARCHAR skill\_category  
 }  
  
 content\_tags {  
 UUID tag\_id PK  
 UUID chunk\_id FK  
 VARCHAR tag\_category  
 VARCHAR tag\_value  
 DECIMAL tag\_weight  
 }  
  
 assessments {  
 UUID assessment\_id PK  
 UUID chunk\_id FK  
 VARCHAR assessment\_type  
 VARCHAR title  
 TEXT question\_text  
 VARCHAR difficulty\_level  
 INTEGER points\_possible  
 }  
  
 user\_progress {  
 UUID progress\_id PK  
 UUID user\_id  
 UUID chunk\_id FK  
 VARCHAR status  
 DECIMAL completion\_percentage  
 INTEGER time\_spent\_minutes  
 DECIMAL mastery\_score  
 }  
  
 user\_assessment\_attempts {  
 UUID attempt\_id PK  
 UUID user\_id  
 UUID assessment\_id FK  
 INTEGER attempt\_number  
 JSONB responses  
 DECIMAL percentage\_score  
 BOOLEAN is\_passing  
 }  
  
 curriculum\_modules ||--o{ curriculum\_components : "contains"  
 curriculum\_components ||--o{ curriculum\_topics : "includes"  
 curriculum\_topics ||--o{ curriculum\_concepts : "covers"  
 curriculum\_concepts ||--o{ content\_chunks : "has"  
   
 content\_chunks ||--o{ content\_role\_variations : "adapted\_by"  
 ai\_avatar\_roles ||--o{ content\_role\_variations : "creates"  
   
 content\_chunks ||--o{ content\_embeddings : "embedded\_as"  
 content\_chunks ||--o{ content\_relationships : "relates\_to"  
 content\_chunks ||--o{ content\_tags : "tagged\_with"  
 content\_chunks ||--o{ assessments : "assessed\_by"  
   
 skill\_taxonomy ||--o{ skill\_taxonomy : "parent\_of"  
   
 content\_chunks ||--o{ user\_progress : "tracked\_in"  
 assessments ||--o{ user\_assessment\_attempts : "attempted\_in"

**2. Professional Education Platform Schema**

erDiagram  
 professional\_profiles {  
 UUID profile\_id PK  
 UUID user\_id UK  
 VARCHAR full\_name  
 VARCHAR job\_title  
 VARCHAR company\_name  
 VARCHAR industry  
 INTEGER years\_experience  
 INTEGER weekly\_available\_hours  
 INTEGER preferred\_session\_duration  
 BOOLEAN mobile\_primary  
 TIMESTAMPTZ last\_login  
 }  
  
 professional\_skills {  
 UUID skill\_id PK  
 VARCHAR skill\_code UK  
 VARCHAR skill\_name  
 VARCHAR workplace\_domain  
 INTEGER career\_impact  
 INTEGER job\_demand  
 DECIMAL salary\_impact  
 }  
  
 career\_milestones {  
 UUID milestone\_id PK  
 UUID user\_id FK  
 VARCHAR milestone\_name  
 VARCHAR milestone\_category  
 DATE target\_date  
 DATE achieved\_date  
 DECIMAL skill\_readiness  
 }  
  
 workplace\_applications {  
 UUID application\_id PK  
 UUID user\_id FK  
 VARCHAR application\_name  
 VARCHAR workplace\_domain  
 DECIMAL productivity\_gain  
 INTEGER people\_affected  
 }  
  
 professional\_curricula {  
 UUID curriculum\_id PK  
 VARCHAR curriculum\_code UK  
 VARCHAR title  
 INTEGER total\_weeks  
 INTEGER sessions\_per\_week  
 INTEGER avg\_session\_minutes  
 DECIMAL target\_efficiency  
 BOOLEAN mobile\_first  
 }  
  
 professional\_modules {  
 UUID module\_id PK  
 UUID curriculum\_id FK  
 VARCHAR code  
 VARCHAR title  
 }  
  
 professional\_components {  
 UUID component\_id PK  
 UUID module\_id FK  
 VARCHAR code  
 VARCHAR title  
 }  
  
 professional\_topics {  
 UUID topic\_id PK  
 UUID component\_id FK  
 VARCHAR code  
 VARCHAR title  
 }  
  
 professional\_learning\_units {  
 UUID unit\_id PK  
 UUID topic\_id FK  
 VARCHAR code  
 VARCHAR title  
 INTEGER estimated\_minutes  
 }  
  
 professional\_content {  
 UUID content\_id PK  
 UUID unit\_id FK  
 VARCHAR title  
 VARCHAR format  
 BOOLEAN mobile\_friendly  
 DECIMAL relevance  
 }  
  
 professional\_ai\_avatars {  
 UUID avatar\_id PK  
 VARCHAR name UK  
 VARCHAR role  
 INTEGER years\_experience  
 }  
  
 professional\_assessments {  
 UUID assessment\_id PK  
 UUID unit\_id FK  
 VARCHAR code  
 VARCHAR title  
 }  
  
 professional\_progress {  
 UUID progress\_id PK  
 UUID user\_id FK  
 UUID unit\_id FK  
 DECIMAL completion\_percentage  
 DECIMAL efficiency\_score  
 }  
  
 professional\_profiles ||--o{ career\_milestones : "has"  
 professional\_profiles ||--o{ workplace\_applications : "executes"  
 professional\_profiles ||--o{ professional\_progress : "engages\_in"  
 professional\_profiles ||--o{ professional\_skills : "develops"  
  
 professional\_curricula ||--o{ professional\_modules : "includes"  
 professional\_modules ||--o{ professional\_components : "includes"  
 professional\_components ||--o{ professional\_topics : "includes"  
 professional\_topics ||--o{ professional\_learning\_units : "includes"  
 professional\_learning\_units ||--o{ professional\_content : "has"  
 professional\_learning\_units ||--o{ professional\_assessments : "assesses"  
  
 professional\_ai\_avatars ||--o{ professional\_progress : "guides"  
  
 professional\_skills ||--o{ career\_milestones : "required\_for"  
 professional\_skills ||--o{ workplace\_applications : "used\_in"  
 professional\_skills ||--o{ professional\_content : "tagged\_in"

**3. Credibility-Building Graduate Academic Platform Schema**

erDiagram  
 graduate\_profiles {  
 UUID profile\_id PK  
 UUID user\_id UK  
 VARCHAR full\_name  
 VARCHAR academic\_email  
 VARCHAR institution\_name  
 VARCHAR department  
 VARCHAR graduate\_program  
 DATE program\_start\_date  
 DATE expected\_completion\_date  
 VARCHAR advisor\_name  
 TEXT dissertation\_topic  
 INTEGER h\_index  
 INTEGER citation\_count  
 INTEGER publication\_count  
 }  
  
 research\_projects {  
 UUID project\_id PK  
 UUID user\_id FK  
 VARCHAR project\_title  
 VARCHAR project\_type  
 VARCHAR research\_domain  
 VARCHAR methodology  
 TEXT project\_description  
 DATE start\_date  
 DATE expected\_completion\_date  
 DECIMAL progress\_percentage  
 INTEGER publications\_planned  
 INTEGER publications\_generated  
 }  
  
 academic\_publications {  
 UUID publication\_id PK  
 UUID user\_id FK  
 UUID project\_id FK  
 VARCHAR title  
 VARCHAR publication\_type  
 TEXT abstract  
 INTEGER author\_position  
 JSONB co\_authors  
 VARCHAR venue\_name  
 DATE publication\_date  
 INTEGER citation\_count  
 VARCHAR publication\_status  
 }  
  
 conference\_participation {  
 UUID participation\_id PK  
 UUID user\_id FK  
 UUID publication\_id FK  
 VARCHAR conference\_name  
 INTEGER conference\_year  
 VARCHAR location  
 VARCHAR participation\_type  
 VARCHAR presentation\_type  
 INTEGER networking\_contacts\_made  
 }  
  
 graduate\_thesis\_work {  
 UUID thesis\_id PK  
 UUID user\_id FK  
 UUID project\_id FK  
 VARCHAR thesis\_title  
 VARCHAR thesis\_type  
 VARCHAR research\_domain  
 INTEGER total\_planned\_chapters  
 INTEGER chapters\_completed  
 DATE proposal\_defense\_date  
 DATE thesis\_defense\_date  
 VARCHAR defense\_outcome  
 }  
  
 academic\_skills {  
 UUID skill\_id PK  
 VARCHAR skill\_code UK  
 VARCHAR skill\_name  
 TEXT description  
 VARCHAR research\_domain  
 VARCHAR skill\_category  
 INTEGER academic\_importance  
 INTEGER research\_applicability  
 }  
  
 graduate\_skill\_development {  
 UUID development\_id PK  
 UUID user\_id FK  
 UUID skill\_id FK  
 INTEGER current\_proficiency  
 INTEGER target\_proficiency  
 DATE learning\_start\_date  
 INTEGER research\_projects\_applied  
 INTEGER academic\_papers\_utilized  
 BOOLEAN advisor\_recognition  
 }  
  
 academic\_credibility\_tracking {  
 UUID credibility\_id PK  
 UUID user\_id FK  
 DATE measurement\_date  
 VARCHAR current\_credibility\_stage  
 DECIMAL credibility\_score  
 INTEGER publications\_count  
 INTEGER citations\_received  
 INTEGER h\_index  
 INTEGER conferences\_presented\_at  
 }  
  
 graduate\_profiles ||--o{ research\_projects : "conducts"  
 graduate\_profiles ||--o{ academic\_publications : "authors"  
 graduate\_profiles ||--o{ conference\_participation : "presents"  
 graduate\_profiles ||--o{ graduate\_thesis\_work : "completes"  
 graduate\_profiles ||--o{ graduate\_skill\_development : "develops"  
 graduate\_profiles ||--o{ academic\_credibility\_tracking : "builds"  
  
 research\_projects ||--o{ academic\_publications : "produces"  
 research\_projects ||--o{ graduate\_thesis\_work : "supports"  
 academic\_publications ||--o{ conference\_participation : "enables"  
  
 academic\_skills ||--o{ graduate\_skill\_development : "develops"

**4. Combined Multi-Platform Educational Ecosystem Schema**

erDiagram  
 %% SkillMind AI Core  
 curriculum\_modules {  
 UUID module\_id PK  
 VARCHAR title  
 VARCHAR difficulty\_level  
 }  
   
 content\_chunks {  
 UUID chunk\_id PK  
 UUID concept\_id FK  
 VARCHAR title  
 TEXT content\_markdown  
 VARCHAR status  
 }  
   
 ai\_avatar\_roles {  
 UUID role\_id PK  
 VARCHAR role\_name UK  
 TEXT role\_description  
 }  
   
 user\_progress {  
 UUID progress\_id PK  
 UUID user\_id  
 UUID chunk\_id FK  
 VARCHAR status  
 DECIMAL completion\_percentage  
 }  
  
 %% Professional Education Platform  
 professional\_profiles {  
 UUID profile\_id PK  
 UUID user\_id UK  
 VARCHAR full\_name  
 VARCHAR job\_title  
 VARCHAR industry  
 }  
   
 professional\_curricula {  
 UUID curriculum\_id PK  
 VARCHAR title  
 BOOLEAN mobile\_first  
 }  
   
 career\_milestones {  
 UUID milestone\_id PK  
 UUID user\_id FK  
 VARCHAR milestone\_name  
 DATE target\_date  
 }  
   
 workplace\_applications {  
 UUID application\_id PK  
 UUID user\_id FK  
 VARCHAR application\_name  
 DECIMAL productivity\_gain  
 }  
  
 %% Graduate Academic Platform  
 graduate\_profiles {  
 UUID profile\_id PK  
 UUID user\_id UK  
 VARCHAR full\_name  
 VARCHAR institution\_name  
 INTEGER h\_index  
 INTEGER citation\_count  
 }  
   
 research\_projects {  
 UUID project\_id PK  
 UUID user\_id FK  
 VARCHAR project\_title  
 VARCHAR research\_domain  
 }  
   
 academic\_publications {  
 UUID publication\_id PK  
 UUID user\_id FK  
 VARCHAR title  
 INTEGER citation\_count  
 }  
   
 academic\_credibility\_tracking {  
 UUID credibility\_id PK  
 UUID user\_id FK  
 DECIMAL credibility\_score  
 INTEGER publications\_count  
 }  
  
 %% Cross-Platform Relationships  
 curriculum\_modules ||--o{ content\_chunks : "contains"  
 ai\_avatar\_roles ||--o{ user\_progress : "guides"  
 content\_chunks ||--o{ user\_progress : "tracked\_in"  
   
 professional\_profiles ||--o{ career\_milestones : "has"  
 professional\_profiles ||--o{ workplace\_applications : "executes"  
 professional\_curricula ||--o{ professional\_profiles : "trains"  
   
 graduate\_profiles ||--o{ research\_projects : "conducts"  
 graduate\_profiles ||--o{ academic\_publications : "authors"  
 graduate\_profiles ||--o{ academic\_credibility\_tracking : "builds"  
 research\_projects ||--o{ academic\_publications : "produces"  
  
 %% Inter-platform Connections (conceptual)  
 user\_progress ||--o{ professional\_profiles : "user\_link"  
 user\_progress ||--o{ graduate\_profiles : "user\_link"

**Schema Comparison Summary**

**Key Differences:**

1. **SkillMind AI**: Focus on universal content with AI avatar personalization and vector embeddings
2. **Professional Platform**: Emphasis on career advancement, workplace applications, and mobile-first learning
3. **Graduate Platform**: Academic credibility building, research projects, publications, and thesis management

**Common Elements:**

* User-centric design with progress tracking
* AI avatar guidance systems
* Hierarchical content organization
* Assessment and evaluation systems
* Skill development tracking