PE Control Systems Study App

The Problem

Engineers preparing for the PE Control Systems exam ($350, once/year in October, 67% pass rate) lack affordable, mobile-friendly practice tools. Existing options are either expensive live courses ($1000+), desktop-only reference books ($150-300), or generic multi-discipline apps that don't focus on Control Systems specifics (measurement, control systems, final control elements, signals/networking, safety systems).

Evidence of Demand

- **PE Prep Pro:** Multi-discipline app with 1,400+ questions across 16 engineering disciplines (exists = proven market)

- **PPI Control Systems materials:** $150 for sample questions book (premium pricing = willingness to pay)

- **School of PE:** Live review courses at $1000+ with "high pass rates" marketing (expensive alternative)

- **NCEES data:** 67% first-time pass rate = 33% fail and retake ($350 + lost time each attempt)

- **PrepFE (FE exam):** $69.99 subscription model works for engineering exam prep

- **Reddit/forum activity:** Active discussions seeking Control Systems PE prep resources

- **ISA (International Society of Automation):** Offers PE review course (EN00) - validates professional demand

The Solution

Mobile-first study app focused exclusively on PE Control Systems exam. Practice questions across all five exam domains (Measurement, Control Systems, Final Control Elements, Signals/Transmission/Networking, Safety Systems) with step-by-step solutions, performance analytics, and offline access. Think PrepFE but for PE Control Systems.

MVP Scope

- **Question bank:** 200+ practice questions covering all 5 exam domains
- **Practice modes:** Timed exam simulation (80 questions, 8 hours) + topic-specific practice
- **Solutions:** Step-by-step explanations with references to NCEES/ISA standards
- **Analytics:** Track performance by topic, identify weak areas
- **Mobile + web:** Responsive design, offline functionality
- **Reference materials:** Quick-access formulas and key concepts
- **Free tier:** 20 practice questions (lead generation)
- **Paid tier:** Full question bank + analytics + timed exams

Build Estimate

3-4 weeks (aggressive but achievable for MVP)

- **Week 1:** Question content creation (80-100 questions with solutions)
- **Week 2:** Web app frontend (question delivery, timer, analytics dashboard)
- **Week 3:** Question content completion (200+ total), mobile optimization
- **Week 4:** Testing with Ryan (taking exam), polish, launch

Tech stack: Next.js + Supabase (fast setup, proven for SaaS)

Monetization

Subscription model:

- **Free tier:** 20 practice questions (email capture for marketing)
- **Monthly:** $19.99/month (aligned with PrepFE $69.99 but simpler product = lower price)
- **One-time:** $49.99 lifetime access (exam is once/year, many prefer one-time payment)

Secondary revenue: Jedson Engineering referral pipeline

- Users = control systems engineers with 4+ years experience

- Warm leads for Jedson recruiting
- Estimated value: $5,000 per successful hire

Path to $400/month

MONTHLY SUBSCRIBERS NEEDED	OR LIFETIME PURCHASES/MONTH
20	**8**
@ $19.99/month = $400	@ $49.99 = $400

Realistic assessment:

- PE Control Systems exam: ~1,000 test-takers/year (estimate based on niche discipline)
- If we capture 5% of annual market = 50 users/year
- 50 users × $49.99 one-time = $2,500/year = **$208/month average**
- Need 2-3 exam cycles (2-3 years) to hit $400/month consistently

Secondary (Jedson referrals):

- 1 successful hire/year from user base = $5,000 bonus
- Combined: $208/month subscriptions + $417/month (amortized referral) = **$625/month**

Confidence level: Medium. Market is small but underserved. Dual revenue streams help.

Risks/Unknowns

1. **Small market size:** PE Control Systems is niche (~1,000 test-takers/year vs 40,000+ for FE)
2. **Content quality bar:** Questions must match NCEES difficulty/style or users will complain

3. **Ryan's exam timing:** If he takes exam before MVP ready, we lose our perfect beta tester

4. **Competition:** PE Prep Pro already covers Control Systems (but not specialized)

5. **One-time payment preference:** If most users choose $49.99 lifetime vs monthly, revenue is lumpy

6. **Jedson referral conversion:** Unproven - do study app users actually want recruiting contacts?

Recommendation: Worth Exploring (with caveats)

Pros:

- Ryan is perfect target user + tester
- Dual revenue streams (subs + referrals)
- Underserved niche with proven willingness to pay
- 3-4 week build timeline = fast validation

Cons:

- Small market caps revenue potential (~$200-600/month max)
- Content creation is time-intensive (200+ quality questions with solutions)
- Won't hit $400/month goal reliably for 1-2 years

Strategic value beyond revenue:

- Portfolio piece (working SaaS product)
- Learning opportunity (Next.js, Supabase, subscription payments)
- Real user feedback from Ryan
- Jedson relationship building

Suggested approach:

1. Build lean MVP (100 questions instead of 200)

2. Test with Ryan as he studies

3. Launch at $29.99 one-time (lower friction than subscription)

4. Validate demand with 10-20 paying users

5. If traction is weak, pivot to larger market (FE exam) or different opportunity

Bottom line: Good first product to build skills and prove you can ship, but unlikely to be the solo path to $400/month. Consider it a stepping stone, not the final answer.