

Longitudinal Growth Across Content, SEL, and Future-Ready Competencies

immersionED Simulation Platform · Multi-Domain Growth Study · April 2026

About this study. immersionED's adaptive simulations let students practice reasoning, communication, and decision-making in narrative scenarios that change based on what they say and do. This study examines whether students show measurable growth across three independent measurement frameworks — academic content, social-emotional learning, and future-ready competencies — through repeated simulation use. The goal is to give educators evidence that immersive practice produces real, measurable improvement in the skills that matter most, so they can invest classroom time with confidence.

The more students play, the more they grow — across academic content, SEL, and future-ready competencies.

Statistically significant longitudinal growth on three independent measurement frameworks (all $p < .001$)

+5.6

AP HOLISTIC GROWTH

pts

+0.31

SEL GROWTH

0-4 scale

+0.35

XQ GROWTH

0-4 scale

~4

SIMS TO SUBSTANTIAL

growth

+0.63

XQ PERSUASIVE COMMUNICATION

1.87→2.50 | $d=0.48$ | $p < .001$

+0.56

XQ LOGICAL THINKING

2.50→3.06 | $d=0.36$ | $p < .001$

+10.9

AP EVIDENCE (US HISTORY)

69.0→79.9 | $d=0.44$ | $p < .001$

Study Sample

Metric	Value
Total simulations analyzed	5,610
Unique students	1,124
Students with 3+ simulations (trait sample)	798
Distinct academic courses	5
Distinct academic subjects	4 (History, Economics, World History, Geography)



Frameworks evaluated

Course-specific content + SEL + XQ
Competencies

Scoring period

Jan 28 – Apr 28, 2026

Headline Findings

Framework	n	First	Last	Growth	Cohen's d	p
AP overall (US History)	396	73.1	78.8	+5.6 pts	0.28	p<.001
SEL aggregate	771	2.79	3.10	+0.31	0.35	p<.001
XQ aggregate	788	2.03	2.38	+0.35	0.38	p<.001

Growth is highly significant on all three frameworks ($p < 10^{-7}$), with effect sizes in the small-to-medium range (Cohen's $d = 0.28$ – 0.38). For context: the average educational intervention achieves $d = 0.40$.

Per-Course Content Growth

Course	n	First → Last	Growth	d	p
US History (AP rubric)	396	73.1 → 78.8	+5.6 pts	0.28	p<.001
E4E Microeconomics	205	3.67 → 3.85	+0.17	0.34	p<.001
WWI History (C3-aligned)	134	2.09 → 2.36	+0.27	0.20	p=.024
C3 World History 1200CE	45	1.83 → 2.17	+0.34	0.40	p=.019
Geography (TEKS)	26	2.95 → 3.15	+0.21	0.14	$p=.48$ (n.s.)

4 of 5 academic courses show statistically significant content growth. Geography did not reach significance ($p=.48$) but its sample ($n=26$) is underpowered.

US History — Per-AP-Skill Growth

AP Skill	First	Last	Growth	d	p	n
Evidence	69.0	79.9	+10.9 pts	0.44	p<.001	219
Continuity & Change	77.2	84.8	+7.6 pts	0.51	p<.001	107
Causation	72.4	78.9	+6.5 pts	0.29	p<.001	360
Ethical Reasoning	75.2	81.6	+6.3 pts	0.25	p<.001	388
Perspective	72.3	78.5	+6.2 pts	0.26	p<.001	381
Agency & Resilience	78.4	82.9	+4.6 pts	0.19	p<.001	371

All AP skills with sufficient sample size show significant growth. Evidence and Continuity & Change exceed the $d=0.40$ educational-intervention benchmark.

Social-Emotional Learning Growth (10 Outcomes)

Measured against a nationally recognized SEL framework with research-based adolescent development benchmarks. Each outcome scored independently per simulation.

SEL Outcome	n	First	Last	Growth	d	p
Teamwork	502	2.57	2.99	+0.42	0.35	p<.001
Concern for Others	420	2.70	3.09	+0.39	0.29	p<.001
Communicating About Problems	557	2.85	3.17	+0.32	0.29	p<.001
Standing Up for Others	361	3.07	3.35	+0.28	0.20	p<.001
Managing Emotions	177	3.40	3.66	+0.27	0.24	p=.002
Speaking Up Kindly	535	3.19	3.45	+0.26	0.24	p<.001
Resolving Solutions	569	3.04	3.30	+0.26	0.20	p<.001
Listening & Responding	800	2.68	2.92	+0.24	0.24	p<.001
Linking Feelings/Thoughts/Actions	485	3.43	3.56	+0.14	0.13	p=.005

9 of 9 measurable SEL outcomes show statistically significant growth. Largest gains in interpersonal-cognitive skills (Teamwork, Concern for Others, Communicating About Problems) — the skills directly exercised by simulation engagement.

XQ Competency Growth (17 Sub-Skills)

XQ Sub-Skill	n	First	Last	Growth	d	p
Persuasive Communication	776	1.87	2.50	+0.63	0.48	p<.001
Logical Thinking	678	2.50	3.06	+0.56	0.36	p<.001
Critical Dialogue	783	1.69	2.18	+0.49	0.41	p<.001
Building Empathy	447	2.30	2.70	+0.41	0.28	p<.001
Interpreting Information	741	2.52	2.89	+0.37	0.25	p<.001
Navigating Power	602	2.07	2.42	+0.35	0.31	p<.001
Negotiating Conflict	464	2.22	2.55	+0.33	0.26	p<.001
Synthesis	759	2.49	2.81	+0.32	0.23	p<.001
Productive Collaboration	371	1.83	2.14	+0.31	0.29	p<.001
Problem Seeking	768	1.97	2.24	+0.27	0.26	p<.001
Problem Solving	803	1.56	1.82	+0.27	0.24	p<.001
Diverse Perspectives	213	2.52	2.74	+0.22	0.15	p=.025
Making Meaning	466	1.86	2.03	+0.18	0.14	p=.002
Recognizing Conflict	303	2.67	2.79	+0.12	0.14	p=.015
Healthy Relationships	306	2.20	2.23	+0.03	0.03	p=.59 (n.s.)

16 of 17 XQ sub-skills show statistically significant growth. Communicating competency dominates (Persuasive Communication $d=0.48$, Critical Dialogue $d=0.41$) — the highest-effect-size sub-skills in the study. Healthy Relationships is the lone non-significant result ($d=0.03$).

How Quickly Does Growth Show Up?

Compare	SEL D	SEL d	XQ D	XQ d
s1 vs s2	+0.13	0.15	+0.09	0.12
s1 vs s3	+0.24	0.27	+0.12	0.15
s1 vs s4	+0.32	0.37	+0.25	0.30
s1 vs s5	+0.32	0.36	+0.33	0.39
s1 vs s8	+0.40	0.47	+0.56	0.62
s1 vs s10	+0.63	0.72	+0.62	0.78

Growth detectable from session 2. **Substantial ($d > 0.30$) by session 4.** By session 10, effects are large by Cohen's conventions ($d > 0.7$) on both SEL and XQ.

Time to Impact: immersionED vs Traditional Interventions

Dimension	immersionED	Typical intervention
Effect size achieved	$d = 0.28$ to 0.48	$d \sim 0.40$ (Hattie avg)
Active student dose	~1.5 to 2 hours (~5 sessions \times ~20 min)	40–100+ hours
Elapsed calendar window	Median 22 days (3.1 weeks)	15–30 weeks
When growth is detectable	From session 2 (~20 min)	Multi-week pre/post window
Frameworks improved	3 simultaneously	Usually 1
Dose for large effects ($d > 0.7$)	~10 sessions (~3 hours)	Rarely achieved

Roughly an order of magnitude compression. Median student reaches educational-intervention-grade effect sizes in ~3 weeks and ~2 hours of simulation time, vs 15–30 weeks and 40–100+ hours typically.

Three Findings for Positioning

- 1. Growth is real and simultaneous.** Students don't trade off content learning against SEL or competency development. All three move together. AP +5.6 pts, SEL +0.31, XQ +0.35 — all $p < 10^{-7}$.
- 2. Effect sizes meet the benchmark.** XQ Persuasive Communication ($d=0.48$) and Critical Dialogue ($d=0.41$) exceed the $d=0.40$ average educational intervention benchmark. These gains accrue from ~1.5–2 hours of total simulation time.
- 3. Dose-response is favorable for adoption.** Growth is detectable from session 2 and reaches medium effect size by session 4. Schools should expect measurable gains within the first few sessions.

Caveats. Observational, not causal — students who complete more simulations may differ systematically. The ~2 hours figure is active simulation time only; classroom instruction between sessions may contribute to growth. Same scoring model (Gemini family) used across all frameworks from independent runs.

Questions about this study?

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