

Sebastián Sarmiento

Learning Scientist · Curriculum Engineer · EdTech Product Strategist

Santiago, Chile · Remote · cssarmiento@uc.cl · +56 9 5415 5385 · sarmiento.work · linkedin.com/in/ssarmientof

SUMMARY

Learning scientist and curriculum engineer building AI-assisted adaptive assessment systems on measurement foundations — Item Response Theory (IRT), Bayesian Knowledge Tracing (BKT), and Educational Data Mining (EDM). A decade designing measurement frameworks for national exams, now shipping production EdTech (Next.js, Firebase, AWS Bedrock) with 700+ verified items behind automated quality gates. I institutionalize what is worth measuring and how to keep it honest — not inflated outcomes.

SKILLS

Measurement & Analytics Item Response Theory (IRT) · Bayesian Knowledge Tracing (BKT) · Educational Data Mining (EDM) · psychometrics · learning analytics · assessment & item design

Curriculum & Learning Science mastery-based learning · curriculum design · IB MYP · ESSA evidence tiers · instructional design

Product & Systems product discovery · system design · automated quality gates · experimentation · data visualization

Technical Python · SQL · R · LaTeX · Next.js · Firebase · AWS Bedrock · LLM / AI pipelines

EXPERIENCE

Lead Learning Scientist & Platform Engineer (HS Math DRI) Alpha School 2025 – Present

High-school math research, AI-assisted content, and the quality gates that keep it honest · Remote

- Built the Alpha HS Math Hub, a research platform of 19 investigations graded by ESSA evidence tiers (I–IV), each with a scrollytelling brief and decision log. *Stack: Next.js, Firebase, AWS Bedrock (Claude).*
- Shipped a Digital SAT prep app to production with an AI-generated, hand-curated bank of 700+ verified items.
- Institutionalized quality as automated build gates: a “derive-the-truth” check recomputes every answer and fails the build on mismatch. *Python quality gates in CI.*
- Designed a tiered, cohort-level scaffolding engine so difficulty is a calibrated property, not a label.
- Hardened student-data pipelines by securing 42 unauthenticated routes, with zero production vulnerabilities.

Co-founder (part-time) MACT (EdTech) 2025 – Present

Early-stage Chilean EdTech for data-driven, personalized mathematics · Santiago, Chile

- Founded the company and set its measurement and curriculum direction.
- Designed the evidence model behind personalization — what a recommendation may assume about a learner — on a curricular prerequisite graph of 35 knowledge components (61 edges).

Mathematics Coordinator & Curricular Strategy Lead Craighouse School 2024 – 2025

IB MYP leadership for the Middle Section, performance strategy, and data-informed instruction · Santiago, Chile

- Led the entire Middle Section mathematics program under IB MYP, ensuring curricular alignment and pedagogical consistency.
- Supervised the teaching team and designed data-informed strategies to lift attainment and conceptual understanding.
- Certified in Mathematics (CAT.1) and Administration of Evaluation in the MYP.

Item Constructor & Review Advisor Universidad de Chile (DEMRE) 2024

Psychometrics (IRT) for national university-admission exams · Remote

- Designed and reviewed high-stakes items, ensuring psychometric validity (IRT) and curricular alignment for the national testing instrument.

Professor DUOC UC 2022 – 2024

Algebra, applied mathematics, and statistics for technical higher education · Santiago, Chile

- Developed course content including mathematical modeling to strengthen students’ problem-solving.

Innovation Manager & Pedagogical Data Analyst	Preuniversitario Cpech	2016 – 2020
<i>National-scale assessment data and a self-learning platform · Santiago, Chile</i>		
– Designed and automated national-scale pedagogical data pipelines across 52 campuses to optimize assessment operations. <i>Stack: SQL, automated reporting.</i> – Led development of a self-learning platform and information systems improving educational access.		
Earlier Teaching & Academic Roles	PUC & secondary schools	2013 – 2021
– Teaching Assistant at Pontificia Universidad Católica (Calculus I–II, Geometry, Algebra) and secondary mathematics-teacher roles.		

SELECTED PROJECTS & PUBLICATIONS

Alpha HS Math Hub — research platform lead	Alpha School · internal
19 math investigations graded by ESSA evidence tiers (I–IV), each with a scrollytelling brief and a decision log.	
Digital SAT Prep (Desmos) — builder	Alpha School · internal
Production app with a bank of 700+ verified items, generated via an AI pipeline and gated by automated quality checks.	
AI-Enhanced Cryptography Curriculum — designer	ISTELive 2025
AI-supported unit selected for ISTE Live 2025, resulting in a meeting with the ISTE CEO.	
Product Book & Portfolio — author	sarmiento.work/product-book
A curated portfolio of products and research with the decision logic behind each build.	

HONORS & AWARDS

Selected for ISTE Live 2025 — <i>Equations & Cryptology</i> , an AI-supported unit (ISTE, USA).	2025
Postgraduate Academic Projects Stimulus — Vice-Rectorate for Academic Affairs, Universidad de Chile.	2023
Academic Article Development Fund — Vice-Rectorate for Research, DUOC UC.	2023
Corporate Innovation Contest winner — “Mathematics for Life and Health,” DUOC UC.	2022
Academic Excellence Award for university-admission-exam results — CPECH.	2014 & 2015

EDUCATION

Graduate Coursework, Educational Research — Universidad de Chile	2022 – 2023
Focus: psychometrics, assessment design, and research methods. Research on mathematics teachers’ beliefs in the era of post-truth and AI.	
Diploma, Instructional Design (Virtual Learning Environments) — Universidad del Desarrollo	2021
B.A., Secondary School Teacher, Major in Mathematics — Pontificia Universidad Católica de Chile	2021

LANGUAGES

English (professional working proficiency) · Spanish (native)