

Joe Fernander

Learning Analyst & Educational Data Scientist | University System of Georgia eCampus

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I am a proficient data scientist specializing in educational statistics, psychometrics, survey methodology, and the measurement of student learning. My primary focus lies in harnessing the power of learning analytics, data visualization, and data democratization to drive educational improvements. With strong skills in R programming, SQL, and Tableau, I bring extensive experience in hypothesis testing, machine learning, and predictive analytics to extract actionable insights from complex educational and messy datasets. My commitment to leveraging data for educational enhancement is evident in my track record of delivering data-driven solutions to support evidence-based decision-making in educational institutions.

Relevant Professional Experience

University System of Georgia (USG) eCampus

Assistant Dean for Digital Innovation & Data Scientist
Leadership position over the Data Science & Salesforce Teams with 5 direct reports
and 5 indirect reports

2025 - present

Data Scientist & Learning Analyst
Leadership position with 4 direct reports (2 FTE, 2 Students)

2023-2025

Associate Director of Analytics & Research
Leadership position with 1 direct report (1 FTE)

2023

Educational Program Specialist, Assessments & Analytics/Data
Analyst

2021-2022

University of West Georgia

Assistant Registrar for Graduation
Leadership position with 5 direct reports (3 FTE, 2 Students)

2018-2021

Adjunct Instructor, First Year Programs

2018-2019

Georgia State University

Senior Enrollment Services Assistant

2016-2018

Admissions Representative

2015-2016

Law Library Associate

2012-2015

Emory University, Pitts Theology Library

Cataloging Specialist

2014

Education

Georgia State University

College of Education & Human
Development

Master of Science (M.S.) in Educational Research

2024

Concentration in Research, Measurement & Statistics

University of North Georgia

College of Education

Post-Master's Certificate in Transfer Leadership &

2019

Practice

Georgia Southern University

College of Education

Master of Education (M.Ed.) in Higher Education

2017

Administration

Georgia State University

College of Arts & Sciences

Bachelor of Arts (B.A.) in Religious Studies & Philosophy

2012

Certifications

Salesforce	Salesforce Certified Associate	2025
Tableau	Certified Tableau Data Analyst	2022
Qualtrics	Qualtrics Certified Core XM Expert Researcher	2019
Google	Google Data Analyst	2021
CITI	Social & Behavioral Researcher	2021

Skills & Software Proficiency

Research	Research design, hypothesis testing, sampling theory, survey design and implementation
Statistical Analysis	Descriptive statistics, inferential statistics (parametric & non-parametric), regression (linear, logistic, poission, etc.), Bayesian statistics
Machine Learning/LLMs	Logistic regression, k-Means, k-Nearest Neighbors, Naïve Bayes, decision trees, Claude/ChatGPT (prompt engineering, retrieval augmented generation RAG), Claude Code
R Programming Language Expert Proficiency	R, R Studio, R Markdown, Flexdashboard, Quarto, Shiny, Plumber, Posit Cloud, Posit Workbench, Posit Connect, Posit Package Manager
	Most used packages: Tidyverse (tidy, dplyr, ggplot2, tibbles, stringr, lubridate, readr,forcats,), Tidymodels, Caret, Shiny, GoogleSheets4, Janitor, Knitr, purr, SalesforceR, GT, reactable, psych, ellmer, ShinyChat, Ragnar
SQL Advanced Proficiency	Proficient in querying data from Microsoft SQL Server and similar SQL applications (Google BigQuery, MariaDB, etc.)
Tableau Expert Proficiency	Tableau Desktop, Tableau Prep, Tableau Server Administration, Tableau Cloud
Microsoft Excel / Google Sheets Expert Proficiency	Power Pivot, VBA, Data Modeling, SQL Server integration
SPSS/Jamovi Advanced Proficiency	Hypothesis testing, descriptive statistics, inferential statistics, machine learning
Other	Git, GitHub, Qualtrics, Survey Monkey, Smartsheet, Linux (Ubuntu/RHEL), Bash

Key Achievements

Learning Analytics Dashboards

Developed a series of dashboards and reports in Tableau/R Shiny connected to learning management system (LMS) data to provide instructional designers & faculty with actionable insights into course performance and areas for improvement. Dashboards include grades, learning outcomes, rubrics, quiz item analysis, and LMS system access.

Course Learning Analytics Reports

The course learning analytics reports represent a cornerstone of our learning analytics operations at USG eCampus, leveraging the standardized nature of eCore course offerings to deliver comprehensive insights into student outcomes, behaviors, and learning activities at scale. Built using Quarto and deployed to Posit Connect, each course offering in eCampus has an associated analytics report that provides a holistic view of course performance and student engagement. These reports begin with foundational course information including descriptions and learning outcomes, then progress through five-year enrollment and

grade distribution trends, detailed learning outcomes analysis, and in-depth examination of gradebook patterns. The reports dive deeper into specific assessment types with dedicated analyses of course quizzes and assignments, while also tracking how students interact with course content including access patterns and engagement frequency. Finally, each report incorporates multiple layers of student feedback through course module surveys, end-of-course evaluation surveys (featuring LLM-generated summaries of qualitative responses), and course withdrawal surveys, creating a comprehensive feedback loop that informs continuous course improvement efforts.

Quiz Item Analysis Application

The quiz item analysis dashboard performs item analysis analytics based on methods in classical testing theory for better understanding student and quiz performance from quizzes in the D2L LMS. This application includes descriptive statistics on student performance, discrimination analysis, item-rest correlation, and quiz item analysis. Many of these features are developed using the psych and ctt R packages. Further, this application connects to the OpenAI API using the ellmer R package for an LLM review of quiz questions ensuring accuracy and question feedback.

Machine Learning Student Risk Model

Implemented a student risk model for detecting students who may be at risk for not passing their online, asynchronous courses using k-Means in R. To accompany this model, I designed a Tableau dashboard that integrates with the Salesforce CRM to provide Student Success Team members with data about student performance including course access trends, grades, missing assignments/quizzes, and participation in online discussions. Additionally, R scripts were generated to combine all this information using the Salesforce API to generate cases in Salesforce.

Faculty Course Evaluation Reports

Created comprehensive course evaluation reports for course faculty. Reports include metrics about student success and their results from their course evaluation surveys. These interactive HTML reports were developed in R Markdown and reduce the administrative burden of compiling report manually each semester saving hours of work.

Learning Outcomes Reports

In Fall 2021 eCore and eMajor learning outcomes reporting transitioned from faculty reporting to being generated through the learning management system data. This process reduced faculty workload and increased the reporting capabilities of this data for assessment and accreditation purposes.

ETL (Extract, Transform & Load) Processes for INGRESS & LMS Data

Designed and implemented ETL processes for receiving student and LMS data from INGRESS / D2L (via SFTP) and automated imports into the eCampus Analytics Database (SQL Server). This process significantly reduces staff time manually extracting these files and allows dashboards deployed into Tableau to have near-real-time data.

Presentations

Joe Fernander and Kelly Steed: A Data-Driven Approach to Redefining RSI, <i>Distance Learning Administration Conference, Jekyll Island, GA</i>	2025
Joe Fernander: Leveraging Learner Data and Explainable Machine Learning to Support At-Risk Students, <i>Distance Learning Administration Conference, Jekyll Island, GA</i>	2024
Aimee Berger and Joe Fernander: Practice Makes Progress: Lessons from Learning to Learn, <i>Meaningful Living in a Digital World Conference, Savannah, GA</i>	2023
Joe Fernander: Panel Discussion on Data and Technology, <i>University System of Georgia Momentum Summit IV, Atlanta, GA</i>	2023
Joe Fernander and Aimee Berger: Supporting Online Math Students with a Scaled Growth Mindset Intervention, <i>Distance Learning Administration Conference, Jekyll Island, GA</i>	2023
Joe Fernander and Kelly Steed: eCampus Introduces New Data-Driven Processes in the Course Revision Cycle, <i>Distance Learning Administration Conference, Jekyll Island, GA</i>	2023

Reports

- Brittany Grissette, Amanda Hawkins, Sarah Kuck and **Joe Fernander**: The Effect of Collaboration and Utilization of Academic Coaches in Online Learning Environments, *Advances in Online Education* (in review)
- Joe Fernander**: Assessing the Effectiveness of Virtual Labs in Asynchronous Introductory Biology Courses, *University System of Georgia eCampus* 2023
- Joe Fernander**: Does course reinstatement affect course outcomes in eCore asynchronous online courses?, *University System of Georgia eCampus* 2023
- Joe Fernander**: Exploring the relationship between late registration and academic performance, *University System of Georgia eCampus* 2022
- Joe Fernander**: Is there a significant difference in proctored exam scores based on exam modality?, *University System of Georgia eCampus* 2022
- Joe Fernander**: An analysis of the University System of Georgia Mindset Learning Project, *University System of Georgia* 2022
- Joe Fernander**: What strategies do eCore instructors use to achieve high response rates on end-of-course evaluations? 2022

Teaching Experience

University of West Georgia - XIDS 2002: **College Ethics** (Fall 2019 - Fall 2020, in-person and hybrid)

This course examines ethical questions and situations that affect college students in the American higher education system. Topics include affirmative action, free speech & campus protest, friendship & dating in college, sexual misconduct, the costs of higher education, financial aid, plagiarism, performance-enhancing drugs, extra credit and the aims of higher education.

References

References available upon request