

**Front-End Analysis Plan for Increasing Teacher Satisfaction With
Technology Training In US K-12 Schools**

FEA Plan Final Project

Nathan Elequin

Syracuse University

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Context and Performance Problem

In the United States' K-12 public schooling system, districts have made big investments in educational technology within the past three years. According to Simba Information's 2016-2017 survey of 4,000 teachers in 47 states, **81% report** that their school's district has created goals for 1:1 Student-to-Computers. The average date predicted for these districts to reach their goal is **3.1 years**, which has been reflected in the **21.7% annual increase** in portable device spending (on items such as iPads and Chromebooks) since 2014.

Moreover, districts nationwide are becoming increasingly invested in the Google ecosystem. When EdWeek Market Brief interviewed 1,000 teachers in 2017, they found that 68% of districts using an LMS reported using G-Suite and Google Classroom the most frequently in their classroom. Across all districts, teachers reported that if they were asked to "hire one of the following companies to help improve student achievement in your school district," 58% would choose Google over Apple (13%), Scholastic (9%), McGraw-Hill (7%), Pearson (6%), Microsoft (6%), and others.

While teacher confidence in edutech remains high (Simba Information found that 91% believe "up-to-date training" on using technology in the classroom is important to achieving success in instruction), their confidence in their schools' ability to train them remains low - GfK Verein's 2017 report reveals that 37% of teachers said they would "love" to use new technology in the classroom, but they "do not know how" to do so.

This research concerns the gap between teacher's general optimism regarding educational technology and their dissatisfaction with their schools' technological training - in other words, the weaknesses with school-provided technological training.

Current State and Desired State

Given GfK Verein's report that 37% of U.S. K-12 teachers would "love" to use new technology but "do not how" do do so, we could establish a similar metric for evaluating whether schools are properly equipping already-interested teachers with the skills to use new technology, specifically Google Classroom as a learning management system. In short, this would be a measurement of teachers that report both (a) a "strong desire" to use the technology but (b) a "lack of ability" to do so.

After doing an initial benchmark of this figure (which should sit at around 30-40% of surveyed teachers), we could prescribe a desired outcome for our performance analysis and describe the gap between these figures as the *need* for the program. For instance, the *need* for a given school system would be to drop this figure from 37% down to 8% within three years.

Justification

Economic data shows that districts are not only spending a higher proportion of funds on educational technology, but they are also matching that with higher spending on professional development for instructors. Discovering the weaknesses with current technological training and the gaps in teacher onboarding can help to improve and distribute useful edutech workshops, seminars, and materials for teachers throughout K-12 environments in the United States. The result will be more tech-savvy instructors with a greater capacity to engage and respond to their students more thoroughly.

Plan of Analysis

After conducting a literature review of major survey data and trends regarding professional development and technological training for teachers, this proposal calls for the use

of focus groups and digital teacher forums to abstract themes from teachers about their preferences and shortcomings with technology and its associated training. Then, the data can be compiled into a prescriptive list of criteria for trainers and districts to consider when training teachers to use technology in the classroom.

Model of Analysis

Thanks to the narrow scope of this study (with a focus on the perceptions of teachers towards their professional development), we have the ability to examine several potential contributing factors. As a result, the *Behavioral Engineering Model* (BEM) serves as a simple yet comprehensive system for considering several possibilities and structuring our data collection in an appropriate way to garner meaningful data.

The BEM focuses on six primary areas influencing subject performance. The first three (Information, Instrumentation, Incentives) allow us to analyze the degree to which the environment provided by the schools impacts teacher perceptions. The final three areas (Knowledge, Capacities, Motivation) can direct our focus towards trends in the individuals that make up our teacher data. The combination of these six areas should cover the majority of significant trends that impact teacher perceptions, helping schools to adjust accordingly and improve their professional development experience.

As an example of some hypotheses that could come about using this model, examine the chart below:

<p style="text-align: center;"><u>Data</u></p> <p>No access to supplemental instruction or materials</p>	<p style="text-align: center;"><u>Instruments</u></p> <p>Google Classroom requires additional supplies not provided by school</p>	<p style="text-align: center;"><u>Incentives</u></p> <p>Teachers are punished for taking risks such as integrating Google Classroom</p>
<p style="text-align: center;"><u>Knowledge</u></p> <p>Unaware of the value that Google LMS brings</p>	<p style="text-align: center;"><u>Capacity</u></p> <p>Unable to navigate online courses to self-train with Google</p>	<p style="text-align: center;"><u>Motives</u></p> <p>Teachers believe that Google LMS is only for young people</p>

Figure 1.0: Behavioral Engineering Model

Data Collection Tools - Macro

Since the selected context for this topic is K-12 schools in general, it is important that we have rigorous and standardized study data from a national perspective from which we can benchmark individual schools' performances.

Fortunately, major research firms such as Simba Information, IDC Government Insights, and GfK Verein have studied these trends using a historical and well-documented approach going back as far as 1998. They provide a reasonable assurance that our benchmarking procedures will be a useful indicator of a school's individual performance with regard to their historical trajectory.

Data Collection Tools - Micro

The actual materials for collecting teacher data will vary based on the specific professional development offerings that the schools provide. In addition to the macroeconomic research and literature review mentioned above, we plan on utilizing teacher surveys, teacher interviews, focus groups, administrator observations, documentation of technology use, and the observations

of third-party instructors (with no affiliation to the K-12 school in question) to gather data related to the six areas of the Behavioral Engineering Model.

To illustrate specifically how the data collection process will cover every area in the BEM, please examine the chart below:

<p style="text-align: center;"><u>Data</u> Literature Review Teacher Surveys</p>	<p style="text-align: center;"><u>Instruments</u> Technology Use Documentation Third-Party Observations</p>	<p style="text-align: center;"><u>Incentives</u> Administrator Interviews</p>
<p style="text-align: center;"><u>Knowledge</u> Teacher Surveys</p>	<p style="text-align: center;"><u>Capacity</u> Live Observations / Rubric Administrator Interviews</p>	<p style="text-align: center;"><u>Motives</u> Teacher Interviews Focus Groups</p>

Figure 1.1: Data Collection Tools With BEM Approach

Since the focus of this analysis is on understanding teacher perceptions of their schools' professional development offerings, we can confidently rely on teacher surveys and interviews as the primary set of data. When cross-referenced with administrator statements on the instruments, information, and incentives provided to teachers, we will have a total picture of what all parties perceive as important or influential to their perceptions of their technological training.

Possible Causes and Solutions

For the sake of this paper, we will imagine that we have completed the qualitative analysis of surveying, interviewing, and coding statements from the teachers and administrators of a particular K-12 school. Thanks to the BEM, we can organize our potential causes and solutions with an organized system. We have provided 12 such threads (potential cause and solution), two (2) for each of the six areas:

Data

- *Schools do not adequately promote their professional development programs, so teachers are unaware of them.*
 - ◆ Survey teachers on their desired methods of communication and create a rigorous protocol for PD promotions.
- *Schools do not provide teachers with materials that reinforce the values and applications of their training for daily use.*
 - ◆ Create simple, actionable resources for teachers to refer to when they are not in PD sessions.

Knowledge

- *Teachers don't know where they can interact with other trained teachers.*
 - ◆ Create a communication network (e.g. a Google Group) for teachers to reinforce their learning with peers.
- *Teachers overestimate the time cost of integrating new technologies in their classroom.*
 - ◆ Host a demo day where teachers from the school showcase newly-integrated technologies and discuss how they integrated them.

Instruments

- *Teachers need more reliable internet connections to utilize their training resources while in the classroom.*
 - ◆ Replace the network routers and internet coverage and conduct weekly maintenance tests.
- *Teachers need more storage space to store a certain device they use with their students in instructions.*
 - ◆ Build additional storage space, or create share programs for teachers to collaborate on storage and device use.

Capacity

- *Teachers can't fit the use of a particular technology within their pedagogical style.*
 - ◆ Provide mentorship or personal support staff that can discuss how the teacher's pedagogy can make use of the technology.
- *Teachers have little experience with the technologies they are being trained to use.*
 - ◆ Re-evaluate the choice in technology or find remedial methods for inexperienced teachers to practice utilizing said technologies.

Incentives

- *Schools implicitly punish teachers for opting-in to professional development by assigning them*

additional unpaid tasks related to the PD programs.

- ◆ Survey teachers on their desired compensatory system and negotiate a reasonable strategy for incentivization.

→ *Schools fail to recognize or praise teachers that excel in the use of technologies.*

- ◆ Create an authentic recognition system that will allow teachers to feel respected for their work.

Motivation

→ *Teachers don't care about the role technology plays in improving student learning.*

- ◆ Attempt to host frank discussions with teachers about their motivations for teaching and developing professionally. Consider changing personnel to align with school's mission.

→ *Teachers are biased against change due to a recent historical event.*

- ◆ Open a forum to teacher discussion on the event and attempt to abstract themes from the conversation. Clearly communicate how the PD is different from that negative experience.

Figure 1.2: Proposed Causes and Solutions

Conclusion

While many FEA plans concerning technological integration will focus on the explicit impact administrative changes can have on student performance, I have selected for this project to consider the possibility of exclusively examining how those decisions impact teacher perceptions and 'buy-in.' The result is a FEA plan that, thanks to the Behavioral Engineering Model, has the capability of looking at all six areas in any environment to uncover a comprehensive set of proposed causes and solutions that will be relevant to the administrators and instructors attempting to achieve higher rates of satisfaction with their professional development offerings. If a school were to implement this FEA plan successfully, they would expect to uncover deep insights into specific and actionable ways they can help their teachers to become excited about and engaged in the technological onboarding process. It is a central assumption of this paper that when teachers become enthusiastic about learning to integrate new technologies that they will find ways to improve their takeaways and output from a school's

professional development. My hope is that administrators will find increasingly powerful ways to ally with teachers in equipping leaders in education capable of responding to the rapidly changing needs of the 21st century.

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