



Digital Transformation in Education

# Predictive Analytics



# Table of contents

## Introduction

Current Educational Outlook	3
Microsoft Expertise and Experience in Analytics	5

## Future Ready Skills Through Analytics

Build reporting systems	7
Provide customized support	8
Manage performance and measure success	9

## Cortana intelligence suite

Transform educations-relevant data into intelligent action	10
Where student analytics can take you	11

## Case studies

# Education as we know it today

Every 26 seconds, another student drops out of high school. That's 7000 students a day. Over 1.2 million students every year in the US alone.

Those students will earn \$200,000 less throughout their lifetime than if they would have graduated high school.

Statistics also show that high school dropouts commit 75% of all crimes.

These dismal realities do not paint a positive picture of the future of education.

But Microsoft believes it doesn't have to be this way. It's possible to change the future for these students and their communities.





# Education as it can be now

Microsoft is focusing efforts on tools that help streamline low-impact tasks so teachers can dedicate more attention to high-impact, student-focused work.

Predictive Analytics help identify at-risk learners earlier to get a clearer understanding of why they are struggling, making it possible to implement programs and interventions that positively impact their learning experience.

# Microsoft expertise and experience in analytics

Microsoft is in over 191 countries around the world with 20,000-plus employees. Our teams of architects, engineers, consultants, and support professionals have the deepest expertise in the areas of data architecture, data science and the education industry.

Expert technical architects have implemented data warehouses and modeling solutions for customers all over the worldwide.

**Our data scientists are experienced in designing advanced analytic solutions from proof-of-concept all the way through operationalization.**

Together, with our decades of work devoted to empowering young people through computer science education, Microsoft has the expertise to deliver accurate and reliable data for your schools worldwide.





# Future-ready skills right now

## **Our children's future can be bright with the right tools.**

Tools that streamline offline efforts, support teachers in the classroom, and provide them with actionable information can change the trajectory of struggling students. The following pages focus on three core areas Microsoft believes can positively impact at-risk students:

- ① Build reporting systems that identify and predict student performance
- ② Provide customized classroom support
- ③ Manage performance and measure success

We believe in a world where our tools can help improve the performance of not just at-risk students, but all students.

# Predict, identify, support

Smart reporting systems can change lives

**Student analytics** is the process of understanding the big picture performance of students.

With student analytics, you can identify performance gaps, view grades, and assess scores and attendance records in order to identify underperforming students.



Student analytics can predict dropout profiles as well as academic excellence indicators.



It can also show teachers who might be likely to struggle in different academic areas and which concepts a student has mastered.

From year to year, student profiles can be used to track their progress and immediately intervene if a problem occurs.

# Customized support: when and where it matters

Student analytics are useful tools to inform teachers or stakeholders what to do next. It allows a teacher to customize the support they give each student based on real time predictors and indicators.

**Early-preparation activities** can help at-risk students and more advanced material can be used to deepen the knowledge of more advanced students.

**Teachers can use data** to track each student's progress and clearly understand which subjects they have mastered and which they struggled with.

**From there, teachers can tailor** their learning activities toward the areas that are more likely to help students master certain concepts.





# Manage performance and measure success

**Using student analytics** to manage and measure performance ensures that students stay on the right path to achieve more. Teachers, school leaders, and parents can ensure that students stay on track a number of different ways.



Data can be used in one-on-one discussions to agree on goals for improvement



Student grades and summative assessment data can indicate where the student ended the year



Data is available for teachers in the next grade to continue the process with a new personalized learning plan for each student



School leaders and teachers can use the data to identify where teachers may need additional support through coaching, professional development, or participation in a Professional Learning Community

Of course, no technology system can implement change on its own – to truly improve student success requires the use of data to inform intelligent action.

# The Power of Cortana Intelligence Suite.

## Transform education-related data into intelligent action

Cortana Intelligence Suite delivers an end-to-end platform with an integrated and comprehensive set of tools and services to help build intelligent applications that let schools easily take advantage of advanced analytics and intelligence capabilities.

### Capturing and managing data

Cortana Intelligence Suite provides services to bring data into the system, so that a teacher or administrator can analyze it.

It also provides information management capabilities so can be pulled from any source in an automated, scheduled way, and then performs the necessary data transformations, like setting certain data columns as dates, benchmarks, or grades.



### Create, model and track

Cortana Intelligence Suite has a wide range of analytics services to analyze the stored data. This means schools can create models specific to their needs, like tracking student progress across a number of different data points. The results can be shared as dashboards and visualizations with Power BI.



### Noting patterns and anomalies

These same analytics services and models can also be integrated into various different user interfaces. End users can naturally interact with them and be proactively notified if the analytics model finds a new anomaly, like a sudden decline in grade or attendance.

### Designed to make a difference

Cortana Intelligence Suite is a highly customizable system that can be modified to meet specific educational needs. Taking random data points and creating usable, relevant information that a school can turn into actionable intelligence can impact student progress.



## Where student analytics can take schools

Student analytics is a rich fountain of information. Guided by enhanced insights on student performance, teachers and administration can implement a culture of data-driven decision making to better **improve the school and the learning experience** for every student.

A data-driven environment gives teachers the necessary information to personalize their learning approach for each student. **This method can improve both the students' achievement rates and their overall education experience.** Teachers also experience success with higher levels of collaboration and better teacher/student engagements.

The overall educational excellence of the school is also impacted. When decisions are made based on readily-available and reliable student information, everyone feels more confident in the decisions being made. Also, more **timely interventions can lead to more effective student advising** at the time of greatest need.

Overall, analytics can help your school improve students' scores and retention rates. Custom programs can increase the ability to stage early interventions to keep students on track while also helping teachers reduce reporting times and promote their professional development and success.

A young woman with curly hair, wearing a white and black striped shirt and a white headband with a black pattern, is sitting at a desk. She is looking thoughtfully to the right, with her hand resting on her chin. In front of her is a dark blue laptop. To her left, another person's hand is visible, holding a blue pen and writing on a tablet. The desk is cluttered with various items, including a stack of colorful sticky notes, a blue notebook, and a water bottle. The background shows a window with a view of greenery outside.

# Case studies



## Tacoma Public Schools increase graduation rates with analytics

Is it possible to predict whether students are at risk of dropping out of school? The Tacoma Public School district thinks so. Armed with analytics tools and data, educators and administrators work to help more students succeed.

### **Problem:**

A 2007 national study dubbed the 30,000-student Tacoma Public School District's five high schools "dropout factories," where many freshmen never made it to graduation.

### **Solution:**

Using predictive analytics tools based on Microsoft cloud technologies, the district is providing comprehensive data snapshots of student success indicators and has already helped to improve graduation rates from 55 to 82.6 percent. Today, the district is recognized nationally for its educational achievements.

"By using predictive analytics, we thought we would be able to intervene earlier and work closer with those at-risk students. Then, we would be able to reach our ultimate goal: getting that graduation number close to 100 percent." —*Shaun Taylor*





## Denton Independent School District enhances student success with actionable education intelligence

### **Problem:**

K-12 schools have countless data points for students, but vital records are often housed in various formats and across diverse systems, with no way to consolidate them. This makes it difficult to find valuable information and apply it to achieving student and campus goals.

### **Solution:**

Education Data Management (EDM) is a decision support system designed to meet and exceed institutional goals, while addressing federal, state, and organizational mandates. The Dell EDM solution can help schools cleanse, integrate, identify, and analyze data to improve institutional efficiency, which empowers educators to inspire student success. As a result, administrators are left with a dashboard of accurate, actionable data that will help monitor student performance.

“We’ve armed our teachers with a tool that’s going to allow them to make the most informed decisions for their students each and every day, based upon all the information that’s available. Our teachers and principals are seeing what real-time data can do to prepare our students. Education data management will soon be an imperative for school districts across the country.” —*Dr. Jamie Wilson*

*Superintendent, Denton ISD*

# Get started

Predictive Analytics are the future of modern education and are within your reach.

1

Identify your priorities for predictive analytics

2

Choose solutions that best fit your needs

3

Talk with your Microsoft rep who can connect you with the right partners

# Sources and References

"11 Facts About High School Dropout Rates," DoSomething.org, <https://www.dosomething.org/facts/11-facts-about-high-school-dropout-rates>



