



## Gwinnett County gains award-winning insight into school performance

*With IBM Predictive Analytics solutions*

---

### Smart is...

**Predicting student performance and taking timely remedial action to get failing students back on track**

To improve student outcomes, Gwinnett County Public Schools (GCPS) needed better insight into school performance. In particular, the organization wanted to adjust results to account for economic and demographic disparities among schools, in order to reveal which were truly adding value and which were under-performing. It also wanted the ability to benchmark performance figures against other high-performing large school districts nationally.

GCPS deployed IBM® SPSS® Predictive Analytics software to provide insight into student and school performance, normalized to take into account the negative effects of indicators such as the proportion of economically disadvantaged students at a given school. The solution will provide daily dashboards to teachers, enabling them to see how their students are progressing against normal expectations.

---

Gwinnett County Public Schools (GCPS), located in the metro Atlanta area, is the largest school system in Georgia. The school district serves more than 162,000 students in 133 educational facilities, and one in every five Gwinnett County residents is a GCPS student. GCPS has undergone enormous change over the past few decades, transforming from a rural school system to a large urban school system. The district was one of the fastest growing school systems in the US during this time period.

“In the past, we knew which schools were ‘good’ – in the public school system, there’s a tendency for schools to pick up labels based purely on test scores,” says Colin Martin, Gwinnett County Public Schools (GCPS). “What we didn’t really understand was precisely why they were performing well or badly. More importantly, we didn’t know if the highest-performing schools were actually under-performing compared to their national peers, or compared to what might be possible given their resources and the quality of their initial student intake. By the same token, we didn’t know to what extent the lowest-scoring schools could or should be doing better.”

To evaluate school performance in a more rigorous and equitable way, and to get a better understanding of how to improve that performance, GCPS needed to gain new technology capabilities and become a knowledge-driven organization.

### Becoming world-class

“When our current School Superintendent was appointed, he had a gut feeling that not enough schools were over-performing and that too many were under-performing,” recalls Martin. “At that point, we were simply collating test scores, and were unable to see any deeper. We understood that there was a correlation between performance and factors such as the demographics of the school and the economic status of students. However, we had no way of understanding which schools were out-performing expectations or how they were achieving this.”



---

## Business Benefits

- Enables fair comparisons between schools with radically different student populations, ending the historical tendency to treat schools as 'good' or 'bad' based purely on test results.
  - Identifies students who are statistically likely to fail or drop out, allowing teachers to make timely interventions to get them back on track.
  - Measures the effect of remedial actions taken by teachers, so that the system learns which interventions have the most positive effect in any given scenario.
- 

The new Superintendent gave GCPS a mission to focus absolutely on improving school performance, and introduced the Results-Based Evaluation System (RBES). This is the primary accountability system currently in use at GCPS, alongside the provisions of the 2001 No Child Left Behind (NCLB) Act and a state-level variant of NCLB called Investing in Educational Excellence.

“Our key aims were to introduce greater fairness and accountability into measurements of school performance,” explains Martin. “We wanted an improved ability to identify where there is room for improvement, and we needed a common tool and baseline for understanding the business. All of this stemmed from our vision of becoming a ‘system of world-class schools’. There’s an important distinction to make: we didn’t set out to be a ‘world-class school system’ – rather, it is the work of our schools that truly makes a difference and at the system level we work to support schools in their efforts to increase student achievement.”

## Closing the gaps

The logical first step in improving school performance is to measure and understand the existing levels of performance. As Colin Martin remarks, “You need to understand where you are, to be able to get where you’re going. We also wanted a much better understanding of how students progress during the year, rather than having to wait for the results of end-of-year assessments. And in order to be able to tackle gap closure – between different ethnic and economic groups – we needed to understand the current and historic gaps in performance between different groups of students.”

When the time came for GCPS to select a partner to implement the statistics software it needed, IBM was the clear choice. GCPS has long benefitted from a successful partnership with IBM: it has implemented numerous IBM hardware solutions (including IBM System x®, IBM

---

## Smarter Education

## Improving school and student performance with analytics



### Instrumented

Test data from 133 educational facilities is combined with other indicators such as stakeholder surveys to create a composite view of school performance. In the context of the external economic indicators, this reveals the ‘value-added’ factor for each school.



### Interconnected

Results are shared with school principals and teaching staff, enabling them to identify areas for improvement. New teacher dashboards will provide timely granular information on individual student performance.



### Intelligent

New dashboards will propose targeted remedial action for failing students, monitor their subsequent progress, and create a learning loop such that the most successful remedial actions are promoted in future.

---

## Solution Components

### Software

- IBM SPSS® Statistics
- IBM SPSS Modeler

### Services

- IBM Global Business Services®
- 

BladeCenter®, IBM Power Systems™) and hundreds of IBM software packages (including Lotus Notes®, Domino®, DB2® and WebSphere®). GCPS also continues to work with IBM consultants from both IBM Global Business Services® and IBM Global Technology Services. IBM and GCPS have a signed Strategic Partnership in place, and the relationship was further strengthened by IBM's acquisition of SPSS, GCPS' standard for statistical analyses.

GCPS typically sources its IBM products through Emtec, an IBM Premier Business Partner. Emtec provides full service support, from requirements analysis and planning, to procurement, deployment and subsequent technical support. The company also has well-developed capabilities in serving the US education sector, with extensive experience of integrating curriculum software and tailoring solutions to meet both student and institutional needs.

“IBM SPSS provides much of the software power behind RBES, which is a weighted assessment of school performance,” explains Martin. “SATs and other standardized student tests account for 70 percent of the score, to which we add a number of process indicators, such as stakeholder surveys. A strong advantage of using SPSS is its production capability. Once we figure out which data we want to use to show student performance – for example, performance controlled by the number of students who are eligible for subsidized meals – we can use SPSS to model that data and carry out simple linear regressions. The residuals give us an estimate of the overall effect of that factor on the school's performance. Once we have the design nailed down, we can then run it for all schools, and send detailed reports to principals for sharing with their teaching staff.”

GCPS then uses SPSS Statistics to compare its own results with results from schools around the country. By normalizing its data against a national baseline, established using data from 25 high-performing, large school districts, and by looking at historical data, the organization can then begin to see the value-added factor for each school. Martin

### ► The Inside Story: Getting There

The initial impetus for the smarter education project at Gwinnett County Public Schools came from the current superintendent, who has worked hard over a number of years to transform the district into an information-driven organization. A key element was working with IBM to develop new predictive analytics capabilities and tools. Gwinnett already had IBM SPSS software and internal experience in using it; IBM was able to provide a fresh perspective and a bigger-picture view gained from its work with clients in other sectors.

---

*“SPSS gives us the ability to look for correlations across large sets of performance data, revealing relationships between data that we can then analyze more thoroughly. This is all about using predictive analytics to enable us to intervene in a timely, effective manner.”*

— Colin Martin, Gwinnett County Public Schools

---

explains, “We can start to say things like, ‘if you have x percent of students on subsidized lunch, you should have y percent of students at a certain achievement level’. Schools that out-perform the estimate are clearly adding value beyond what we would expect. We can then look at how they’re doing that, and try to share the knowledge across our other schools.”

### **Getting performance back on track**

GCPS relies on IBM SPSS as a key strategic tool for enhancing the quality of policy decisions. It will use SPSS Modeler to try to understand the paths that children take all the way through education. “We are building the ability to understand what path a child is on, and how far they might be straying from a path that is deemed to be successful,” says Martin. “SPSS gives us the ability to look for correlations across large sets of performance data, revealing relationships between data that we can then analyze more thoroughly. This is all about using predictive analytics to enable us to intervene in a timely, effective manner.”

GCPS is currently working on a project to predict 8th-grade math achievement for children entering the 6th, 7th and 8th grades. “We’re working with the local IBM team to organize data views and get them into the model,” says Martin. “This will be part of a broader set of predictive analytics tools that will give teachers granular daily status updates on each child with regard to the outcome of interest. This will help the teacher answer questions such as: ‘Will this child graduate with her cohort? Will she pass 8th-grade math? Will she move through the 1st year of high school?’ Based on the predictions, the system will identify the children who require more targeted support, and suggest the appropriate remedial actions.”

He adds: “We are building in ‘learning loops’ and the system will measure the effectiveness of those remedial actions over time, learn which actions are best, and promote those in future. And since the data will be shared across all of our schools, all children will benefit from improved insight into which teaching methods are the most effective at getting failing students back on the right track.”

### **Embracing digital content**

The use of analytics meshes with a broader GCPS initiative called eCLASS, which denotes ‘digital Content, Learning, Assessment and Support System’. eCLASS aims to deliver any-time, any-place learning through flexible, low-cost digital content. The district has partnered with Houghton Mifflin Harcourt for educational software development and IBM to launch this initiative. “eCLASS will enable teachers to build lessons with digital content,” says Terri Kimbrell, Executive Director of Information Systems & Support for the Information Management Division of Gwinnett County Public Schools. “It will also enable online assessments and assessment reporting that will be integrated with student demographic data, teacher certifications,

---

*“Gwinnett County’s stable leadership and singular commitment to ensuring every student has the skills and knowledge to be successful in college and in life makes it a model for other districts around the country.”*

— Eli Broad, founder of The Eli and Edythe Broad Foundation

---

credentials and experience, as well as digital instructional content. With the wealth of integrated data available, Gwinnett will be positioned to ‘mine the data’ and identify opportunities to address students’ specific areas of need. We believe our teachers will gain a lot of value through the application of predictive analytics.”

She adds, “With eCLASS we are looking to change the way teachers teach and students learn in order to leverage the power of technology and digital content. Change management is a major part of that, and IBM is facilitating the transformation. Our long and successful relationship with IBM gives us the benefit of their flexibility and bigger-picture oversight. IBM is truly an integral part of our transformation program; if you walked into our offices, you’d be hard pushed to say where their team ends and ours begins.”

### **Award-winning insight**

The use of IBM SPSS software is already bearing significant fruit as part of the broader program of focusing on school performance. “A large variety of our student indicators continue to improve, even as the diversity of our student population grows, and as the number of economically challenged students increases,” says Martin. “More than half of our students are eligible for subsidized lunches. And out of the 15,000 school districts in the US, we are the 26th most diverse. Nevertheless, we are achieving extraordinary results for a large urban school district. SPSS has made a substantial contribution to the overall improvements we’ve made in student achievement, by helping us to identify, analyze and resolve performance issues. In fact, our achievements were recognized by our receipt of the 2010 Broad Prize.”

The Broad Prize, the largest education award in the country, provides \$1 million in college scholarships for high school students. It is an annual award that honors the five large urban school districts that demonstrate the strongest student achievement and improvement while narrowing achievement gaps between income and ethnic groups. Districts cannot apply for or be nominated for the award.

“Gwinnett County’s stable leadership and singular commitment to ensuring every student has the skills and knowledge to be successful in college and in life makes it a model for other districts around the country,” says Eli Broad, founder of The Eli and Edythe Broad Foundation, which awards The Broad Prize.

Martin comments, “SPSS gives us confidence in our understanding of school performance. It enables us to extract meaningful and actionable information from the raw data, and that is leading to more effective practices for our students’ learning. Another major benefit is that it takes data mining out of the hands of statistics specialists. Perhaps the biggest praise I have for SPSS is that it allowed me as a non-statistician to have great success in a reasonable period of time.”

## About IBM Business Analytics

IBM Business Analytics software delivers actionable insights decision-makers need to achieve better business performance. IBM offers a comprehensive, unified portfolio of business intelligence, predictive and advanced analytics, financial performance and strategy management, governance, risk and compliance and analytic applications.

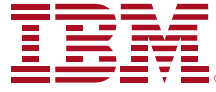
With IBM software, companies can spot trends, patterns and anomalies, compare “what if” scenarios, predict potential threats and opportunities, identify and manage key business risks and plan, budget and forecast resources. With these deep analytic capabilities our customers around the world can better understand, anticipate and shape business outcomes.

### For more information

For further information or to reach a representative please visit [ibm.com/analytics](http://ibm.com/analytics).

### Request a call

To request a call or to ask a question, go to [ibm.com/business-analytics/contactus](http://ibm.com/business-analytics/contactus). An IBM representative will respond to your inquiry within two business days.



---

© Copyright IBM Corporation 2012

IBM Corporation  
Route 100  
Somers, NY 10589 U.S.A.

US Government Users Restricted Rights - Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Produced in the United States of America  
January 2012

IBM, the IBM logo, [ibm.com](http://ibm.com), Let's Build A Smarter Planet, Smarter Planet, the planet icons, SPSS, Cognos, Lotus Notes, Domino, Sametime, WebSphere, Tivoli, FileNet, Maximo, DB2, BladeCenter, System x, Power Systems and Storwize and Global Business Services are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or TM), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. Other product, company or service names may be trademarks or service marks of others. A current list of IBM trademarks is available on the web at “Copyright and trademark information” at: [ibm.com/legal/copytrade.shtml](http://ibm.com/legal/copytrade.shtml).

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

The client examples cited are presented for illustrative purposes only. Actual performance results may vary depending on specific configurations and operating conditions. It is the user's responsibility to evaluate and verify the operation of any other products or programs with IBM products and programs. THE INFORMATION IN THIS DOCUMENT IS PROVIDED “AS IS” WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.



Please Recycle