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Unlocking the Potential of Data Analytics to Improve Student Outcomes

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You need good information to make good decisions. It's true in life, business, and education. But many educational institutions, particularly K-12 schools, have been slow to embrace data analytics. Without analytics, they miss out on opportunities to develop insights that will improve educational outcomes and streamline school administration.

I teach biology at Hale School, an independent Anglican day and boarding school in Wembley Downs, a suburb of Perth, Western Australia. Founded in 1858, we are the oldest all-boys school in Perth and home to 1,650 students from preschool to Grade 12. We have a tradition of excellence in academics, music, and sports at our 20-acre campus, and a substantial outdoor education programme that includes camping and expeditions throughout Australia.

I am also the school's Director of Learning Technology, serving as a bridge between our IT staff and teachers. I'm always looking for new ways to integrate technology into our educational and managerial activities, and am lucky to work for an administration that is open to change.

An Inefficient, Dispersed Data Problem

A few years back, we had a data problem. We collected all kinds of student data, but there was no central place to access or process it.

We assign each student to a pastoral care provider who looks after a student's personal and academic well-being and liaises with parents. When a parent had questions about their son's performance, they would contact their pastoral care provider, who would then send out multiple emails to obtain grades and progress reports from teachers, advisors, and other staffers. They had to look through all of this before going back to the parents to say, "Your son's doing great," or "Your son needs some help with his saxophone lessons and algebra."

It took us three or four days to compile specific information for parents. This dispersed data model was inefficient and a real burden on staff.

A Mandate to Use Analytics

I first read about data analytics in the 2013 NMC Horizon Report, a yearly publication that showcases notable trends and emerging technologies and practices in higher education. It was a watershed moment because I realized we could clean and warehouse all our data and make it instantly available by authoring customized dashboards.

This insight coincided with an invitation to contribute to our school's strategic three-year plan at the executive level. So, I wrote up a broad directive: "Use data and research to inform teaching and learning practices." It was as simple as that, but it gave me the mandate to seek out technology that would allow me to achieve this goal.

We didn't realize this vision put Hale School ahead of the curve in the K-12 learning space at the time. We asked other schools what they were using for data analytics and drew blank stares. A school in Queensland was working toward a similar goal but hadn't gotten very far yet. It was hard to find a ready-made solution in 2014.

We brought in Datacom, one of Australasia's most prominent IT consultancies. They came back with three options: IBM Cognos, Microsoft PowerBI, and Qlik. Being a Microsoft shop, we explored PowerBI, but considerations like pricing and product maturity swung the decision in Qlik's favor.

Datacom had already deployed Qlik for another school and negotiated an excellent price for Qlik licenses and the servers to run them on. We thought we'd give the platform a try.

The More We Did, the More We Wanted to Do

In the beginning, we didn't quite know what we were doing. The concept of creating a data warehouse was foreign to Hale's executive team, but we knew enough to clean up all our data and consolidate it on a single SQL Server. We were lucky that most of our data—including students' grades, their families' contact information, and financial details—resided in a SQL database that was part of the Synergetic SIS (school information system). So it was simply a matter of making everything available in Qlik.

Adding an in-house data specialist can increase self-sufficiency and lead to new uses for analytics.

SHARE IT   TWEET IT

Once we cleaned and warehoused our data, we built a student assessment dashboard in Qlik View. It was rudimentary (and fairly ugly), but it got the job done and gave us instant access to students' cumulative results. We could see their most recent marks and track their progress across the academic year.

This dashboard was a step in the right direction. It showcased the power of analytics and the potential of Qlik, but it also revealed our shortcomings. We lacked the internal resources to make the most of analytics, so we created a full-time Database and Analytics Administrator position in our IT team and trained that person in Qlik. It was a bold decision that increased our self-sufficiency and ability to find new uses for analytics dashboards.

The more we did with Qlik, the more we wanted to do. We forged ahead, and now we use Qlik to share data with different audiences, including school administrators, teachers, pastoral care staff, and students and their families. Each of these audiences sees different dashboards on different devices.

Migrating to Qlik Sense with Boon

As we moved along, we realized that parents in particular often use mobile devices to follow their child's progress. We needed to move our data to the cloud, update it to Qlik Sense, and incorporate responsive design into our dashboard to facilitate that behavior.

Around the same time, our internal Qlik specialist joined the Western Australia Qlik User Group, which is where he learned about optimization and met the team from Boon Solutions. Boon helped us migrate our dashboards to Qlik Sense, link our user database to a single login credential, and optimize our dashboards for mobile. They also provided coaching, support, and performance enhancements to improve the Qlik experience for thousands of users.

We also received some help from Hale's non-IT teams, including the graphic designers from our marketing department. They helped colour code and strengthen the aesthetics of our dashboards.

Using Qlik Sense Dashboards to Improve Educational Outcomes

Over the last few years, we have retooled and refined our Qlik Sense dashboards, but one that stands out is our Live Assessment Results dashboard. When our teachers mark assignments, exams, and other student assessments, they enter the results into Synergetic.

Those results are then routed to Qlik Sense, but we don't publish them to a dashboard for another 48 hours. This grace period gives our teachers the time to address any issues before sharing marks with students or parents. It's often best to sit down to chat with a student who scored poorly on an exam and take remedial action before sharing their grade.

We also use Qlik Sense to better prepare our students for university entrance exams and align their educational outcomes with their actual skill level. Our dashboards allow us to perform variant analyses of students' results on standardized tests like the NAPLAN exams that measure basic competency in years 3, 5, 7, and 9.

Manually tracking student progress is limiting. Using analytics provides visibility that was previously impossible.

SHARE IT TWEET IT

We use our dashboards to see when a student is underperforming in class despite high NAPLAN scores and vice versa. We can then work with teachers and department heads to apply corrective measures. We couldn't do this with manual calculations. Analytics has given us the visibility we didn't know we needed.

Bringing Analytics into Schools

Qlik Sense has given Hale the data we need to make meaningful changes to our programmes and create new opportunities for our students. We use analytics to weigh the risks and benefits of altering our curriculum and outdoor education programme. We are also using dashboard-based analytics to help our academic, pastoral, and administrative staff better serve our students.

We want to do the best we can for our students, and data helps us see where we excel and where we need to improve. Qlik is helping Hale School unlock the potential of our data and can do the same for other K-12 schools.

About Boon Solutions
Boon Solutions is a consulting company providing end-to-end data analytics and process automation solutions. The company delivers bespoke solutions meeting business outcomes with a practical combination of applicable best practices and industry experience. Boon Solutions is a Qlik Select Solution Provider based in Perth, Western Australia. boon.com.au

About Qlik
Qlik's vision is a data-literate world, where everyone can use data and analytics to improve decision-making and solve their most challenging problems. Qlik provides an end-to-end, real-time data integration and analytics cloud platform to close the gaps between data, insights and action. By transforming data into active intelligence, businesses can drive better decisions, improve revenue and profitability, and optimize customer relationships. Qlik does business in more than 100 countries and serves over 38,000 customers around the world. Qlik.com