Visualisation Platforms for Student Data

Platforms that visualise student data are becoming a hot topic in Australian schools. Gone are the days of teachers only entering data into a learning management system at reporting time; the increasing expectations on teachers to use and respond to student data (Australian Institute for Teaching and School Leadership, 2011; Education Council, 2019) mean that teachers are seeking ways to view their data quickly and easily. A question I am commonly asked by school leaders is "which visualisation platform is best for student data?". While there are plenty of platforms available, and all do similar things, each product has pros and cons. My response to the question about which is best is usually twofold: first, I do not think there is one set product that works best for every school and every context, and second, the platform is the least of your worries, it is what you do with the data that counts. Despite the fact that I believe it is not about which technology you choose – it is what you do with it – there are some key factors that you should consider when thinking about a solution for visualising student data in your school. Ultimately, you need the platform to be user-friendly for teachers, so that the data and visualisations are used and have an impact on student learning and progress.

Prior to considering the features you should look for in your chosen technology, it is important to first consider the three key elements that contribute to effective data in schools: data literacy, data visualisation, and data storytelling (Fisk, 2020). Data literacy is the first fundamental step, where we learn to understand the data, what the values mean, and what the data does and does not tell us. Without this critical understanding, it is unlikely that data will be used effectively by teachers and leaders, and it is highly unlikely that their practice will be evidence-informed. We do, after all, need to know what the numbers mean, to be able to use them well.

Once we have developed our data literacy, we can begin to develop and/or use data visualisations to help identify trends, bright spots, and areas of growth in the data. This is where data visualisation dashboards and learning management systems come in, as they convert the numbers and scores into colour-coded cells, graphs and other visualisations, which more easily allow us to identify trends in the data. Technology makes visualisations of the data more accessible, and trends more immediately identifiable. Visualisations could help show the students who are consistently doing it tough in our learning area, those who struggle with their writing, or show the spread of results in our class. Because we do not have to trawl through the numbers to ascertain these trends, technology and visualisations make our lives easier and make these trends clearer.

The most important step, however, in the effective use of data in schools is data storytelling. Good data literacy and beautiful visuals mean nothing without teachers looking for 'stories' in the data, and reflecting on what their students need them to know about their strengths and weaknesses, so teachers can plan clear, evidence-informed responses to the data. This step requires measured and considered System 2 thinking (see Kahneman, 2011), and it ensures our students benefit from our data collection and analysis, as it leads to tangible change. It means that students receive targeted intervention and support and that teaching and learning activities are planned for the needs of the individuals in the room.

For teachers to understand the stories truly and accurately in the data, and adjust their programs or practice based on what they learn from the data, we need great technological solutions to help. In my experience, I have found that the best data visualisation platforms do the following, they:

- present the data in a user-friendly manner (drawing together the information you're after, in a visualisation that helps your analysis);

- colour-code data to show trends (colours make the trends more visible);

- draw on three or more data points on the one page to provide a fuller picture of the student (so the data is triangulated and teachers do not consider only one piece of data in isolation);

- allow you to select the data that is included and excluded from the view;

- provide access for students and parents to engage with the data platform and view student results over time (both formative and summative results);

- draw the most important data sources together on one landing page to provide a summary picture of the student (academic overview, key student wellbeing data, summary of standardised testing results, attendance etc).

Unfortunately, even though there have been significant advancements in technology, there is no single 'best' option out there for a visualisation platform that suits all schools and contexts that does all of these things. It does not matter which platform you choose, if you continue to ask more and more of the technology, you will inevitably hit a roadblock where it cannot do what you need. Despite the best intentions of schools wanting platforms that suit their needs, and developers offering what they believe is 'the best product on the market', there are many criticisms that I hear in my work with schools. These include:

- developers not being prepared to make adjustments or build new views for a school unless multiple schools request it (and thus the time investment becomes 'worth it');

- a lack of automation and prompting for teachers (meaning that teachers must seek out data rather than being automatically updated when new/concerning information is added);

- limited or no ability for students to view a full range of results over time (for example, they may only be able to see semester results, or only summative assessment results);

- lack of training to support educators to use the data and the platform, to find out what it means and what changes could be made to their practice.

It is important that schools and leadership teams understand that there are limitations to all technology, but the most important role you can play in the decision-making process is to hear from as many stakeholders as possible to build an understanding of what is needed in your context. By knowing what your school needs when you enter the conversation with tech companies, you are more likely to get a product that works best for your context.

You also need to do your research. Companies will try to sell you their 'new', 'best', 'most utilised' platform and will likely provide a list of schools that have adopted their technology. When you are narrowing your selection down to a few options, reach out to schools who use the technology and ask about their experience. Don't be afraid to ask them about the challenges they have had with the platform, or the things that it *cannot* do. This information will only serve to help in your decision-making process.

Ultimately, teachers are busy, and technology should help and streamline the process of translating data into actionable insights and shifts in pedagogy; however, it is not always clear which technology solutions are best for visualising student data. Schools and school leaders can make better decisions about the right technology for their school, if they have a good understanding of what they need, what the limitations of the technology are, and if they are armed with their own independent research. Great technology and visualisation platforms should make trends easy to identify. It should empower teachers to make evidence-informed decisions in the classroom to support the learning and progress of every student.

References

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THE REFLECTIVE PRACTITIONER

• How effective do you believe your current school visualisation platform is? Why/why not? What are its strengths and weaknesses?

• What types of visualisations would support evidence-informed practice in your school? What do you need and why?

USE IT NOW

If you are looking to review technology and data visualisation platforms in your school, start by thinking about what you need the technology to do for you. Survey and/or use focus groups to find out what students, parents, teachers, and leaders in your school need. Contact similar schools and learn about their experience. Ask them about the limitations of the technology. Approach a range of tech companies and learn about their product – do not be afraid to ask the tough questions!

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