



Government Engagement with Smarter Timetabling

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Executive Summary

This eBook positions itself in the debate around attempts by Governments' administrations globally in addressing the conflicting concerns of raising achievement and optimising progress for pupils; crafting curricular that address global employability, philosophical debates about the purpose of national and regional curriculum models and the balance of knowledge and skills; and the need to support an appropriately skilled and funded workforce to deliver these reforms and structures.

This eBook proposes a role for the Department for Education (DfE) in the UK as facilitator in the 'Servant Leadership' model for supporting schools and EdTech partners in mutually beneficial relationships.

This paper attempts to address current thinking around the opportunities educational technology organisations provide in supporting administrative bodies in gaining advantage in each of the three key areas outlined above.

The opening discussion acknowledges some shortcomings in recent attempts by administrations to manage such relationships and directly addresses how the DfE might nurture effective relationships with EdTech partners.

The author continues by addressing efficacy models, in particular the need to incorporate metrics and matrices against key performance indicators, in curriculum design and timetable efficiencies.

Further, discussion focuses on the role of the DfE in creating for itself a position in establishing a platform for greater dissemination of EdTech solutions and supporting schools in an audited 'open source' and 'paid for' marketplace to access EdTech solutions, with efficacy studies supporting impact claims and fitness for purpose.

An important section deals with issues around support systems and CPD models, training and conferences for EdTech,

particularly timetabling. The author proposes that the DfE can have a significant role in relation to the burgeoning self-help models created by school leaders, specialist teachers and informed influencers, such as through Leadmeet, Teachmeet and round table models.

The paper discusses how the DfE might engage in sharing benchmark data, reporting to schools on efficacy models, identifies a variety of sources to support evidence-based research case studies, and goes in depth to point out a wide range of lesser considered benefits of workforce reform through EdTech solutions.

A section considers models for funding of EdTech research and development, citing examples of research case studies developed by Edval in the UK and globally.

The paper considers a range of ways in which the DfE as influencer, supporter and challenger might work with schools in curriculum, organisation and timetabling solutions.

The author provides a wealth of cases in which Edval Education have engaged with

administrations around the world in such examples of efficacy models, research models and programmes to support specific and wider government initiatives around curriculum, school organisation reform and with staff wellbeing, recruitment and retention projects.

The paper concludes by citing examples of where administrations have failed to engage effective partnerships between school communities, and lessons that have been learned from these failures.

This eBook illustrates some big picture areas where EdTech vendors can engage collaboratively with government, to achieve significantly improved outcomes for staff and students.

Concerns around combining politics and commercial interests should not overshadow and deny schools the amazing benefits that can be achieved with valuable EdTech that is fully supported by governments and larger organisations.

Notably, there have been some large disasters in government projects, when attempting to

The focus of this book is to help advise government and large education entities, to innovating with EdTech and drive school improvements, while mitigating the risk, and not making the same mistakes again. Ever!

introduce EdTech to schools, without engaging properly with existing vendors. This has caused considerable financial costs, political embarrassment, and has directly harmed the education quality delivered to students as a result. EdTech offers many benefits, but there are pitfalls if you don't get it right.

See the section at the end of this book titled **When things go wrong**. This details observations about some major school technology projects, such as the Ultranet (**£100 million** complete write-off), and the LMBR (**£430 million**). The focus of this book is to help advise government and large education entities when innovating with EdTech. The aim is to drive school improvement, while mitigating the risk, and avoiding the same mistakes.

Many issues discussed here may be seen as opinion, but this is largely the point. We need independent, large scale, quality educational research. Edval has vastly more experience in this field than any single educator in a school, as we have collectively completed a hundred more timetables than any individual in a school, including cross-sector exposure, deep user engagement and high level consultation. Yet we are a commercial vendor, in a poorly understood, and undervalued industry.

The greatest need for both vendors and schools alike is **quality research**, to help guide improvement into the very blueprint that drives schools, and manages all resources - the timetable.

How Can Government Help EdTech?

Keen to protect our valuable education budget, it is understandable that governments might sometimes regard commercial vendors with suspicion. Concerns around data privacy are also common. The *previous* failures in Australia have highlighted some of the unfortunate outcomes that result from a lack of industry engagement.

Other governments seem blissfully unaware of the large ecosystem that is unofficially partnering with their schools. Neither for or against, they are just there. Schools seem happy, so largely, they leave the vendors alone. A status quo, but perhaps also in blissful ignorance of the opportunity cost.

Then there are supportive governments, who see EdTech as the future. They actively engage with vendors, listen to them, investigate their methods and outcomes at schools using the technology. They encourage vendors in various ways, and foster a solid partnership. The vendors are commercially motivated, and the government is politically / mission motivated, to improve outcomes.

Both have a common goal to drive school improvement.

Together, a solid partnership

can be a win-win. Vendors can increase revenue, which will further fund their innovation, while Government benefits from a third party to help schools. Commercial motivation coupled with government support can yield strong results. Yet each on their own is limited.

Experience shows governments are not effective in developing end-user EdTech as they have no commercial drivers and are separated from the action. The larger the government tender, the worse the outcome it seems, while vendors who sell school-by-school have a strong commercial motivation to make each and every one happy, not just the tender assessment committee.

Below are some of the areas in which a supportive Government can assist EdTech, with a focus on timetabling.

Independent Review & Promotion of Methods

Innovative methods bring significant benefits. This is distinct from technology. Schools are often unaware of new methods, and assume their buying decisions are technology focused. Methods are technology agnostic. Examples of innovation in methods which UK schools



could consider – if they even knew they existed – include:

- Automated, algorithmic rooming, staffing, or timetabling. This includes dynamic adjustment mid-year, which is a large area that SIMS NovaT, doesn't support re automation/algorithms.
- Automated, algorithmic class list population (social links, size, gender, structurally based).
- Automated, algorithmic allocation of home rooms to teachers, as surprisingly this offers many (small, but noticeable) benefits; increase home room occupancy, reduce movement, give one home room to two part time staff who share the room, etc.
- Generation of option blocks with algorithmic focus on reducing classes running, to save money, or catering better to part-timers within the block generation process.
- Parents' evening scheduling (vs. booking).
- Multi-date parents' evenings, vs. single year, single date events.
- Algorithmic grouping of teachers at parents' evenings, to reduce movement.
- Dynamic slot sizes for parents' evenings, determined after parents have submitted.
- Many innovations in option blocks, such as linking classes to e.g. support streaming French, as both French classes are in the same block. This doesn't usually happen or isn't a focus.
- Reclassifying rooms – breaking the faculty ownership paradigm, which offers benefits.
- Generating timetables without periods assigned, or part-timers assigned.
- Automated, algorithmic yard duty scheduling.
- Focus on teacher quality as an issue in timetable generation. Ensure teacher wellbeing issues, such as equity and balance in PPA's, less teaching every period of the day, reduced movement and more.
- Consideration of movement as an issue in timetabling, as something which can be reduced.
- Innovation in split classes, which has major benefits. Reduce unwanted split classes by 20-40% or more, improve split ratios, reduce some students having all classes split while their peers have none split (a big area missed by schools), having teachers split more than one class with a colleague, instead of one class each with four colleagues. This can lead to significant workload reduction.
- Consideration of timetable support services, audit services, timetabler-in-residence services. There are many services that UK schools are not even aware of, and many can be provided by a range of

vendors. In some cases, third party providers can generate timetables at lower cost than the allowance for internal staff to complete this task. Yet the quality is better, the timetable staffing costs may be lower, the process is completed faster, and the key internal staff don't require release to do the job.

The above areas are very timetable related, but of course innovation in methods applies to all areas, such as student learning, engagement and behaviour strategies. Rethinking the problem is a key area, and should be seen as a separate focus and awareness to the technology used to support the method.

The Department for Education (DfE) might investigate these areas, discover they have merit, and promote to schools for consideration. They might also seek EdTech providers who could service these areas. But the focus is *method* and *philosophy*. Changing mindset of schools is not easy. The DfE could use its influence, and non-commercial focus, to aid schools in becoming aware of entire areas of administration management that can bring significant benefits.

Promote EdTech

It is unfortunate that the government is adverse to any sort of promotion which may favour commercial interests.

This is despite the fact that lack of awareness may be significantly harming schools in lost opportunity. A balance can be struck, where DfE is not so politically risk averse that it is able to communicate some innovation that schools may benefit from, even if there is a commercial element.

An example may be DfE communication that some schools have enjoyed significant benefits from updating their timetable provider, as assessed by DfE as an independent party. This may continue with '*Some of the providers active in the UK market include Edval, SIMS and Timetabler*'.

By merely listing the vendors, and noting broad benefits, schools may be promoted to investigate further. There are many UK schools who are so entrenched in the 'one big system' (known in the UK as SIMS NovaT6) that they are completely unaware there may be alternatives to consider. So while SIMS could be listed, its inclusion in a list from DfE gives legitimacy to schools to consider other technologies which the DfE has independently assessed as having value, and being suitable for UK schools to consider.

SIMS NovaT6 is actually powerful, and while other technologies like Edval may be superior in some aspects, the knowledge of how to make the most use of NovaT6 (or any system) is another problem quite separate to any

debate on superior functionality or timetabling algorithms. Training, support, roles and valuing of this critical area within schools is as important as updating the technology.

There are a few EdTech promotion platforms coming online soon, but there is certainly space for the DfE to manage some sort of curated list of vendors, which have demonstrated success in schools, and are active in the market. Schools struggle to know what is available, and sometimes don't go seeking. DfE could assist – even just encourage schools to 'go looking' instead of simply carrying on.

Promote Outcomes

There are many examples of schools reporting impressive results in various areas. Timetabling is a lever for school improvement, but one that very few understand. DfE could review schools that have undergone change in their EdTech, such as for timetabling, and report outcomes objectively. The focus here is the school's journey, the benefits and the outcomes.

In this approach, the mention of the vendors involved can be quite incidental – the department is reporting primarily on outcomes. If they are made aware of the size and scope of outcomes possible, schools will be more motivated to seek technology to address their own challenges in various areas.

This comes back to the big myth in most schools, that timetabling is a task, not an opportunity.

A key area in promoting outcomes is to help schools realise the lesser-known benefits of timetabling.

Promote Training

In many EdTech areas vendors provide training, but this is very technology specific. Knowing how to configure the settings on a system is helpful. However, what about learning how to best employ the technology? Timetabling is a good example. The domain is so very complex, that it takes a lot of training to drive the scheduling software. But what about the big picture?

Which methods, business processes and philosophies should you employ here? We may know how to code up a curriculum in the software, but what are the most effective ways to structure before we even begin with the software?

There is a deficit in training for schools which is more abstract than a pure technology focus. Schools don't know how to think about some of the big picture areas. If you ask a school when they last reviewed their timetable grid, to ensure it was still serving them well, they would not understand. Ask when they last considered the method they use to schedule parent teacher evenings, and they would have

no idea. The belief is there is only one method.

Training on timetabling is either given by vendors (some are expensive) or, more commonly, with a hand-over from a departing colleague. The timetabler at a school may know two or three colleagues in other schools, and may have timetabled one or two schools beforehand. Concerningly, it is not uncommon for a timetabler to be new to the post, and have virtually no training at all.

This is the person who will be preparing the blueprint for the entire school – dictating what every single teacher and student does all year, and how rooms and other resources are deployed. They are responsible for the multi-million school budget, as well as the ability of students to access desired courses, or staff to set their class lists as they feel best suits. This person is either poorly trained, or has very limited exposure to timetabling.

The bursar or school manager is often rightly required to have a finance degree, and yet there is no such degree for a school timetabler. Despite this, the

timetabler has a great impact on the budget, academic outcomes, HR retention and staff wellbeing – all of which are directly linked to the timetable. There are even student behaviour, attendance and enrolments which are directly impacted by the quality of the timetable.

In a major day long presentation on timetabling which has CPD accreditation, a school organisation chart is shown to the trainees. Headteacher at top, followed by SLT, Department heads and then staff. Then, the next slide show the same with one exception: the timetabler. As may now be expected, the timetabler sits on top of the Headteacher, being in effective charge of the school. This may not be directly or immediately obvious or visible. But as soon as the Head wants to innovate in some way, they are often told "No, can't be done." Why? "Because of the timetable." and there the conversation ends.

With someone in a position of such power, it is vital that they are trained. Not just on using the software, but understanding and managing the entire process. Training here, is critical, and yet

DfE should be ensuring schools have access to quality training, either delivered by recommended vendors, or done in-house... You would not have an unqualified person take over the school accounts with a few days hand-over, yet this is what is happening with timetabling.

currently there is no awareness of the importance.

The DfE could ensure schools have access to quality training, either delivered by recommended vendors, or done in-house. Either way, the notion of a 'hand-over' is woeful as training – yet this is the most common form of training many get. You would not have an unqualified person take over the school accounts with a few days hand-over, yet this is what is happening with timetabling.

DfE should actively promote timetable training. It should require schools to cover this area in some way, or adopt minimum training standards. Schools should be encouraged to adopt a professional approach, and to actively support timetablers with good personal development, and appropriate release to take courses. Schools should not have only one trained timetabler; a minimum of two is critical for business continuity, transparency, support and relieving the burden. There is always a co-pilot flying a big plane, yet one timetabler has an enormous responsibility in any sizable school. They need help.

Edval is qualified to train at the [Leading teacher level](#) in Australia, and is certified for [CPD in the UK](#).

Promote Conferences

There are many conferences for various roles and subjects within education, from headteachers' conferences to bursars' meetings

to science CPD days. Yet there are no timetabler conferences. The professional development provided to timetablers is limited, and their ability to network is also limited – governed by their own social ability and geographical locations.

There are no *professional* conferences, where those preparing the school blueprints can meet others, share skills and resources, and learn more about their craft.

DfE could organise conferences, with speakers and vendors. A catered conference could attract many and help educate these key people in how to properly manage school resources. Solving the school deficit crisis could be addressed in part, by actively gathering timetablers together and teaching them their role in *saving money through timetabling*. There is an [Edval eBook](#) covering this topic.

It's interesting to note Edval can often save schools hundreds of thousands, so this would be seen as a compelling sales benefit. However, promoting the cost savings in timetabling have been shown to dissuade timetablers. Indeed, it can be seen as a disincentive. They might feel they are not responsible for the savings and it's not part of the role. They may also fear that savings may result in fewer staff, which could lead the job to be (slightly) harder to schedule, or be seen negatively by their peers in some ways.



The school manager is expected to save the school money, as this is one of their job areas. It is regretful that timetablers are not similarly motivated to save money, as they have a uniquely easy way to achieve this.

The disconnect between timetablers having the ability to save a lot of money, but no incentive, is the sort of area that professional industry conferences could help to adjust. The DfE might become involved in educating timetablers in new areas and helping to understand the association of staffing costs and timetabling. For a small cost to arrange conferences, DfE could enjoy greater wins, simply by fostering understanding and innovation amongst the key staff who actually manage school resources on a regular basis.

The difficulty of vendors in engaging with school timetablers would be mitigated if there were dedicated DfE involved conferences. Visibility is a problem, and schools are missing out as a result. The promotion of such conferences has double benefit: professional development for key staff, and allowing vendors to connect with the target audience gathered together with a common interest in the area. All too often the school secretary will shield the timetabler or deputy from marketing flyers, so it's difficult to connect with them, not to mention help to show the considerable benefits they could bring to their school.

Promote Benchmarks

DfE should understand and promote *benchmarks* for quality in school timetables. Some schools have very large numbers of undesirable split classes in junior years, while others have very few. Some have science classes regularly out of labs, while others don't.

Some have a large imbalance in class sizes for a given subject across different option blocks, and others have high rates of unnecessary movement by students and teachers – governed by the timetable. Some have a fully trained timetabler at the helm, while others do not.

There is no guidance from DfE, or OFSTED to schools, about what constitutes good vs bad timetabling. While it's up to the school to manage timetables, DfE should provide benchmarks to help the school figure out where they are, and more importantly, which areas they could consider improving on.

Promote Reporting

At present, schools have no real idea how they fare in comparison to others. There is no independent, objective way to measure this. No published standards or metrics from schools that would enable them to see if they are doing well, or poorly, in how they schedule their resources.

OFSTED provides clear and

transparent reporting of schools from an outcome perspective. How much did they spend, what was the quality of their academic results, or what problems have been identified in the school.

However, this reporting is all *after the fact*. There is no OFSTED-like public reporting on timetable statistics, which would enable a crystal ball view into which schools are likely to perform poorly, before it actually happens.

A *Minority Report* style technology could easily use big data analytics on school timetable metrics in order to predict problems very early on. However, this requires public reporting by schools, of timetables in some agreed format. Then, research can be done to assess and identify outliers. Knowing a school is an outlier enables proactive investigation and/or support which can be provided to the school early on.

A very simple example could be split class reporting. Any school that has a Yr7 English class split between three teachers is regarded as very bad. And yet it happens a lot more than it should. Usually due to poor timetabling, but in some very rare cases it may actually be forced. If a school was to have two or more instances of a three way junior class split, in an academic subject – this would be immediately flagged by the reporting system.

Generally this problem can be easily solved with good timetabling or consultant

assistance, but identifying which school has this problem is not easy. The school itself may not recognise this as a problem as they have “*always had a bunch of classes split three ways each year because... we have a lot of part timers... or (insert some other incorrect excuse)*”.

Promote Lesser-Known Benefits

Schools are somewhat insular, and focused on their own challenges. Innovation however, sometimes needs a big picture. By using its considerable resources, influence and experience, DfE is well placed to bring lesser-known benefits to notice. This is where EdTech is seen by schools to perform one specific task, when the reality is there are many other flow on benefits, which can be greater than the main focus of the technology.

A good example is timetabling. Schools see this as an administrative task; to schedule classes. To consider technology worth investigating, schools would first need to realise they have a problem. Here's the first issue, as schools are unaware of missed opportunity, so by not knowing what they are missing, they don't realise they even 'have' a problem.

Next, the school will likely want 'faster horses' instead of a motor car... they will want a nicer looking phone without ever asking for

one that has a touch screen. While it seems logical that users know what they want, experience of many vendors is quite the opposite. Feature requests are often denied, on grounds they are trying to fix a problem the wrong way. Vendors often innovate and deliver what schools were not even asking for, but clearly appreciate. There are many examples of this in EdTech, such as gamification, virtual reality and timetabling.

Schools may assess timetabling software as 'better' by the following metrics: cheaper, easier to use, nicer colours, delivers a result faster, better support, more flexible. These are all classic faster horses improvements. What you won't see is schools actively requesting: new methods to schedule parent evenings, new ways to allocate rooms, algorithmic assistant on staffing and class list setting, algorithmic cost optimisation in option blocks... the list goes on.

Why? They haven't dreamed these things were even possible, or else they have long ago dismissed them as not working effectively – and a waste of time considering. Long ago, washing machines were invented. The first cost so much, took as much time to operate as doing it manually and really didn't do a great job. If we stop considering innovation at the first wave, we may miss the revolution.

Not only is there a whole host of revolutionary new ways of doing things in timetabling, there is

a whole host of lesser-known associations. These are not readily believable. Schools are often a bit suspicious of new EdTech, and it's difficult to market these new associations – certainly without reliable education research. But who will pay for the research? An individual school would not – it would be fanciful, expensive and take a long time to generate results. Which may be results showing no benefit. Too much risk.

The lesser-known *associations* in timetabling relate to what *other benefits* can be derived from improved quality and focus in timetabling. These can include:

Lesser-Known Benefits for Teachers

- Improved teacher attendance.
- Increased staff retention / Less HR loss.
- Reduced teacher workload.
- Reduced split classes.
- Reduced teacher-teacher relationships due to reduced splits.
- Happier teachers.
- Reduced teacher movement, more lesson prep time, less disruption.
- More periods allocated to home rooms.

Lesser-Known Benefits for Students

- Improved student attendance.
- Increased academic results.

- Better satisfaction in option choices.
- Increased enrolments and student retention (better option block satisfaction + others).
- Reduced student movement.
- Reduced [student bullying](#) and other negative behaviours (reduced unsupervised movement).
- More punctual student attendance to class (more often same room next lesson, or nearby).
- More consistent rooms for classes (better learning, ownership, reduced vandalism, confusion).
- More balanced class sizes (easier peer work, less crowding, better social mix in class).
- More likely in good rooms (equity in specialist room allocations i.e. Science).
- Reduced teacher relationships (fewer split classes).

Lesser-Known Benefits for Schools

- Savings on [staffing costs](#) (significant £100k+ pa).
- Savings on supply teachers and other resources.
- Flexibility to rearrange the curriculum easily.
- What-if scenarios generated quickly (Hire that part-timer? Give a period to History in Yr8?).
- Clear, easy visibility on the dark

- art of timetabling – instantly see which class has the worst rooming, or worst staffing. Ranked metrics for all timetable quality areas is a revolution.
- Timetables done quickly (often same day) and changed easily (often same day). Not months.

Lesser-Known Benefits for Education Departments

- Global timetabling benchmarks on what makes schools good vs. bad.
- Ability to crystal ball gaze into the future re bad schools identified, allowing proactive support.
- Ability to dramatically reduce the UK teacher deficit, with smarter timetabling.
- Address core DfE focus points like *increase flexible working and reduce teacher workload*.
- Be seen as a leader & innovator, not a stuffy, change adverse government department.
- Reduced effort for OFSTED. Whole classes of reporting can be more automated if timetable data standards are enforced and big data used effectively to replace manual reporting.
- Big data analysis of timetabling metrics to guide funding and national curriculum adjustments.

Lesser-Known Benefits for Parents

- Parent evenings run more to time.
- More compact parent evening

schedules, meaning less time on-site.

- Interview slots slightly longer than before, as allocation is priority based, not numbers based.
- Guaranteed bookings with most important teachers (no first-in best dressed time-bias.)
- (Multi) Date flexibility to attend interviews, with [preferred start](#) times closely adhered to.

These positive outcomes need help from a bigger player, able to help fund, conduct, or facilitate a longitudinal study into various areas of benefit from smarter timetabling. Schools readily acknowledge these outcomes with pleasant surprise. They recognise the timetable had something to do with it, but without a big research project, results are always anecdotal, albeit clearly reported by many.

A DfE grant funded study would provide many benefits, but critically would enable schools to recognise the much wider, lesser-known benefits. In many cases, schools are already struggling to address these core areas, and spending big to do so with various initiatives. Oddly though, the biggest lever of improvement may be the timetable, and if managed correctly, this may also result in significant savings. As such, the improvements could easily be cost negative, and realised easily. We can't quantify exactly how significant

these benefits are, but we know there are direct relationships – and some schools are even on [video record](#), explaining the benefits they have achieved with smarter timetabling.

Promote Research

EdTech can bring impressive results, and often in lesser-known areas. However, it is not easy to confidently report benefits which may be tangential, or unable to be directly measured. Vendors spend a lot of their budget in building the tech, some in marketing their tech, but usually there is little if any allocated to formal research. With business drivers, research is seen as a very ‘long game’ bet – there is no quick win from research.

You have to spend a lot to do it. You may or may not find compelling associations, and even when you do find some positive outcomes, you still need to ‘sell’ these to schools. At present, most schools don’t consider EdTech very strongly, and it is perhaps challenging for them to accept research-based evidence, as part of their buying decisions. More often, buying decisions are

based on appearance or ease of use, rather than complex, longitudinal studies.

Similarly, vendors are well experienced in creating EdTech, marketing it, selling and supporting it. However, they are not usually qualified and experienced in education research. This is a whole new area, that requires different skills.

There is also the problem of independence. Who believes the outcomes from a detailed research study, completed by the vendor themselves? Surely, it comes as no surprise the cigarette industry research shows there is very little harm from smoking.

So while education research is valuable – it’s hard, it’s costly, and for best effect, it should come with a degree of independence.

This is where the DfE can assist. Engage with vendors. Identify some areas of likely interest in research, where positive outcomes proved would clearly influence schools to adopt the technology, or change their behaviour. DfE could then provide independent educational researchers to work with the vendor on a study. They could help fund the study with grants, and help promote the study so schools feel more comfortable engaging properly. Knowing it’s a DfE initiative, schools would be less likely to maintain the barriers – thinking it’s a commercial venture – and of little benefit to them directly.

It could be that DfE assist the school in some way to engage in any research, so the impact on schools is mitigated.

By closing the gap between schools wanting outcomes and vendors not being commercially incentivised to do research, DfE would provide a whole new insight into what works, and by how much. This would help influence schools’ buying decisions.

Edval is highly committed to Education Research, and was selected for the University College of London UCL Educate programme, has [won awards](#), and is engaging with the [UCL Knowledge Lab](#) project. Additionally, Edval has partnered with [Professor Chris Brown](#), who has published seven books on Education Research. This partnership is to conduct detailed research on UK schools embarking on timetable changes. With a strong company focus on research, Edval would welcome any engagement from Government on Education research projects, and be fully supportive.

The areas in the section Lesser-known benefits is where we ideally need good research data, such as attendance, behaviour, academic results, HR Retention and staff workload.

Research Example Project: Split Classes

There are many areas crying out for good educational research into the impact of timetabling.

One key area is split classes. This is where a class is shared between two (or three) different teachers.

In the UK, there are dozens of reasons schools actively want senior classes to be split. If interested, there is a detailed Edval eBook available on the whole topic of split classes. Generally though, schools don’t want to split *junior* classes, being Yr7 especially, but ideally also not Yr8, Yr9 or Yr10.

Undesirable split classes have a significant impact on students. This is known anecdotally from discussions with many schools, but also from some very limited research conducted at one school.

An anecdote. Mr Michael Cousins is [assistant Headteacher](#) at **Sacred Heart Catholic School**. (Michael.Cousins@shhs.org.uk). His title is Director of Achievement, responsible for assessment systems, data analysis and student tracking.

See www.southwarknews.co.uk/news/gcse-results-2017-sacred-heart-catholic-school

This school scored **15th in the entire country for Progress 8** in 2017.

Mr Cousins personally conducted data analysis over several years with regards to shared classes. His (limited) study showed a clear statistical correlation between reduced student grades and students being in shared classes. This association was better if students were in *equal*

So while education research is valuable – it’s hard, it’s costly, and for best effect, it should come with a degree of independence. This is where the DfE can assist.

split classes, as *non-equal* splits had closer to a full grade point drop in academic outcomes. A non-equal split class may have one teacher taking just one period in a 'babysitter' role, where an equal split has each teacher with ownership, or able to deliver each half in more topic based focus than an odd period.

As a result of his findings, he secured agreement from the Head to reduce shared classes (possibly to nil), where in previous years, it was accepted to a degree, simply because the strength of correlation of timetable information to student outcomes wasn't known to the school. Shared classes can be seen as a way to save costs, but it's not usually so clear what the 'cost' is in educational outcomes.

Was this limited research and focus by the school on lowering split classes, responsible for their incredibly high ranking on progress 8 scores? One can't be sure, the sample size was far too small - but it must surely be taken with some interest, and suggest a much wider (funded?) study be appropriate.

This phenomena is even more

the case when some students are 'unequally' placed into far more shared classes than others of their peers. This is another hidden area of opportunity. Edval has a report, with menu actually titled: '*Teacher forgets my name*', identifying students at significant disadvantage to others, by having far more relationships than their peers in the same year. Other timetabling systems don't hold student data for classes, and can't optimise or report on this area, or identify it when determining which class to split, or which class(s) to put a student in.

With split classes, the impact on students is known to be significant, but never properly proven by research. Edval is confident this little known area can be addressed easily, and make significant improvements to student behaviour, academic outcomes, attendance, as well as providing benefits to teachers in workload reduction and more. For reference, Edval is capable of reducing unwanted split classes by a minimum of 20% on average, and has reduced by 50% in quite a number of schools.

This is an area that is very poorly

understood (especially the long term impact), very poorly reported on, and rarely ever algorithmically optimised.

A longitudinal research study linking student outcomes to historical timetables (especially split classes) would be a defining moment in Education, and shine a light on one of the easiest levers to push, to drive school improvement.

Some technical metrics to consider in research with split classes include:

- Number of teachers. Usually classes are split between two, but sometimes three teachers.
- Split ratio. Is it equal? Or one teacher only takes one lesson of the class each cycle?
- Size of the class being split.
- Split lesson sequence. Teacher's lessons interleaved? Or 3 lessons teacher for A then 4 for B?
- Year that the split is in. Yr7 is very bad, Yr10 is bad. Yr8 is least bad - in general, say schools.
- Subject split. PE or Art may be fine, where Maths or Geography may not be fine.
- Number of different teachers a student has in a year. A pupil may have no classes split, where another in the same year may have all classes split, being double the teacher relationships.
- The cumulative effect of teacher relationships for a student across all years they are at the school.

Some may naturally have far more relationships due to splits, where others may not - including the scenario where a student has many of their junior class teachers also taking them for senior classes in later years, i.e. preserving some (more) of their pre-existing relationships.

Research Example Project: Class Sizes

Other areas of interesting timetable research include class size. **Mr Nick Cale** from the prestigious [Berkhamsted School](#) was commissioned to conduct a detailed internal statistical study (unpublished as yet), using data for several years. This research showed a *significant improvement* in academic outcomes for students in larger classes. This counters the assumption smaller class sizes are preferable.

The [Education endowment foundation](#) reports negligible benefits from small class sizes, unless they are quite significantly smaller, and the teacher is able to modify their teaching style to properly take advantage of the smaller size class. More research in this area, especially together with split classes, and more to a secondary focus than primary (as was a slight focus of the EEF studies) would be helpful. Class sizes directly affect staffing costs, as well as teacher workload - quite apart from academic outcomes.

Was this limited research and focus by the school on lowering split classes, responsible for their incredibly high ranking on progress 8 scores? One can't be sure, the sample size is far too small - but it must surely be taken with some interest, and suggest a much wider (funded?) study be appropriate.

**Research Example Project:
Thematic Subject Timetabling**

Prior research: <https://steer.global/research/Thinking-straight-or-true-1.2.pdf>

Smarter timetabling may focus algorithmic optimising of *lesson sequencing*. Maths and Science are logically equivalent subjects, and English and History are equivalent. Art and Drama are similar.

We can separate subjects into (say) three categories of Logic, Essay and Practical. There is friction in changing the cognitive

state, so good timetabling may aim to *reduce* the number of such changes.

In a standard six period day, we have three period pairs. Forget doubles, but for singles, there are three changes of subject that are not across a break. A break is a natural punctuation of mind, where sequential lessons are not. This requires more effort to mentally shift gears, even more so if the subjects are in different categories.

Which is the optimal timetabling arrangement for best academic outcome?

A longitudinal research study could match academic outcomes or large numbers of students, to their historical timetables. This would allow deep analysis of not only the impact of split classes, but also the impact of thematic subject changes. Note: this is a near identical area to a component of split class research, relating to the lesson sequencing. Are two teacher's lessons interleaved, or not?

If there is a correlation found, which seems quite plausible, there would be a new way to view and optimise timetables for improved outcomes. This would be an exciting area. Subtle changes to reduce thematic subject changes in a timetable could be done with trivial cost, as a slight addition to algorithms. Yet it could translate to a significant improvement in academic outcomes and others.

No Mind Changes	Three Mind Changes
P1 Logic	P1 Logic
P2 Logic	P2 Essay
Break	Break
P3 Essay	P3 Prac
P4 Essay	P4 Essay
Lunch	Lunch
P5 Prac	P5 Logic
P6 Prac	P6 Prac



Fund Solutions

Education departments can spend hundreds of millions on big tenders. Or, they can offer to contribute to technology they are confident will make a difference, without a large, expensive and risk exposed one-size-fits-all tender.

Matched funding, or other ways, could help encourage schools to move, when they may otherwise be lethargic and unwilling to change. The benefits of innovation can be large, so if DfE provide financial support to schools, it may tip the balance and unlock benefits.

One business model being discussed by Edval, is to charge schools nothing for their timetable, and the support - but instead levy a 20% commission on all savings derived (e.g. cost per pupil). Under this model, schools may end up paying more, but out of direct savings made.

A similar scheme could be employed where DfE provide some funding, but are able to recover it, or a portion of this if benefits are realised.

While schools already have their budgets and some autonomy to use it, DfE funding may speed up the transition to more modern approaches. It could be that funding is provided fully for a year or two, then half and eventually none - the aim being to gently encourage schools to innovate with EdTech, while not giving them ongoing additional EdTech funding forever.

Other possible parties to invest in this research could be the [Education Endowment Fund](#), [Innovate UK](#), [National Foundation for Education Research](#), or even [Horizon 2020](#).

Promote Industry Engagement

DfE has the ability to publically associate with quality vendors active in Education, in media friendly photo opportunities, conferences and projects. Vendor engagement can be promoted on DfE websites. By showing close association, a degree of goodwill rubs off on the department – appearing to be visibly innovative and industry friendly, actively seeking good solutions for schools.

The benefit for vendors is a higher visibility and increased confidence by schools. DfE doesn't need to actively promote vendors commercially as such, but can do so indirectly by way of association. Visibility to schools is part of the problem.

Any cold approach to schools is quickly met with the school secretary throwing out marketing materials before they reach the intended audience, as “they are very busy”. There is some benefit of this approach to shielding key staff from spam, but it does make it very difficult for real innovation to connect with those who would want it.

DfE grants, competitions, call for submissions, conferences, publications and other ways could all foster a very public, supportive relationship between vendors and government. Allowing formal advisory positions with key vendors appointed in DfE committees, may be beneficial.

DfE Promote Integration Standards

A key DfE role should ideally be one of setting standards. Like benchmarks to help identify schools in possible need of help (or outstanding), it would be so beneficial to have standards set. Currently schools use a variety of different products, and in different ways.

There is no standard format for timetable data, as historically it's been seen as an individual school management task. Keeping this information locked to the school site doesn't allow big data analysis, where others may benefit in aggregate, or visibility of issues at the site from external parties.

There are several widely used standards for school system data, such as [SIE](#) and [LISS](#) for example, and Edval has been directly and instrumentally involved in both.

Additionally, there are data aggregators active in the UK market like [Assembly](#), [Wonde](#) and [GroupCall](#). These have developed API's for school data and should ideally be involved. Capita SIMS and Assembly have both asked Edval for assistance in designing their timetable integration protocols. It's a complex area.

DfE could begin to engage with industry on data standards, and help align. This would facilitate many other long range projects such as country-wide reporting of timetable data to OFSTED and many large scale education

research projects that can spin off from big data analysis of timetables.

DfE Challenge Status Quo

One common complaint about schools is they are slow to change and adapt. There is a fear of change, or causing potential disruption. It takes strong political willpower and leadership to move an institution. All change is loss – the loss of what was, even if the end result is a greater improvement.

The role of DfE could be in part, to intentionally agitate and encourage schools to change – not for change's sake, so much as for disrupting the lethargy. For promoting adaptability and relevance. In any healthy business, the processes and operations are constantly evaluated to ensure they meet the needs best. Schools however, don't have the same business driver, and many adopt a general carry on mentality, even shunning consideration of change.

Because “We are too busy running our school... too busy teaching, to spend any effort investigating better ways. Besides, what we have works – we just need A) More Money, B) More Staff, C) More Time”. But is this really the case? When was the last time a school set aside time to consider changing their timetable grid, or the way they generate option blocks, or how they schedule

parents' evenings? It is easy for a school to fall into the 'carry on' mentality, and simply request more money, staff and time – when this is not what is needed. Smart timetabling is more likely the answer.

DfE could encourage schools to evaluate various processes and even business roles, on at least a sporadic basis. They could offer matched funding for consultants to engage with the schools, to discuss areas of improvement using EdTech. When was the last time an independent timetable consultant interviewed your department heads? Experience shows this process often reveals misunderstandings and resentment, which can be addressed easily.

“I thought you wanted doubles?”

“No, the timetabler told me I needed them.”

“We want to set French but the timetabler said we can't have both classes in the same block.”

“My two part-time staff end up walking all over the school as there are not enough base rooms to allocate to them – so my timetabler told me ten years ago, and it makes sense I guess.”

“I did ask, but was told no, so I've not asked again.”

All these misunderstandings (and a hundred more) may be present in the school, but nobody is questioning the status quo. It's a common problem that the one

timetabler is driving the school, complete with their limited knowledge, technology, support and in many cases, desire to improve. The timetabler can say no to hiring part-time staff, or say no to Fridays off for Jane, "Because of the timetable". If we want to drive improvement, things need to change. But sadly, timetables rarely do.

Timetabling Court of Appeal

DfE could provide a **Timetabling Court of Appeal**. Part tongue in cheek, this could be a valuable service, where the department subsidies in part (or whole in some bad cases), the cost of an independent timetable consultant to review the school. This would be supportive rather than adversarial. It could be simple changes that make a difference,

so DfE support could tip the balance. The school doesn't need to worry about changing their technology necessarily - though this is a potential outcome - rather it's a big picture view that helps schools better understand their opportunities.

In Australia, the education department actively funds Edval to go and help some schools in need. The Aurora program is a good example. Schools needed to be won over to the departments good initiative, but this was a massive change in timetabling.

The department funds Edval to not only support, but outright construct timetables in a number of schools. This isn't taking over control, so much as offering support. Edval is able to solve most of the problems in these difficult schools, thus ensuring the government's project is successful.

Without targeted support, some problem schools could have loud voices of complaint that it is too hard to timetable around the government program and encouraged dissent. Instead, the schools become appreciative of the special assistance provided to them.

DfE Change Challenge

DfE could challenge schools to actively consider change. All too often we only change when we see a problem. But what if the problem is missed opportunity? We don't know what we don't know. All too often schools report that their timetabling processes are fine. It gets done. It's never great, but it's done in time, it ends up clash free, and we just get on with it - why should we consider change, when there is no perceived problem?

A lack of leadership understanding means they may not be even seeing the problem. Regularly, schools who change their timetabling processes and technology discover great improvements in many areas they never knew was possible. They didn't expect this, so it was *lucky* they found some reason for change. Why wait for luck? Imagine how many schools are not enjoying the benefits, because they can't see the problem, or can't imagine timetabling could possibly be the answer.

Ask any school if their Parents'

Evening events run to schedule and they will smirk and reply "No". Despite well prepared schedules, the event never runs to time, parents are always late, or talk too much and the timetable quickly degrades into a free for all. Nobody is questioning if there is a solution to this problem, as schools are unaware they exist, dubious they could work, and comfortable that "it's always been that way", and "all my colleagues from other schools have the same problem". So they assume it must be an intractable problem. Nothing could be further from the truth.

Read the detailed Edval eBook about [parent evening scheduling](#) to discover that on-time running of events can be a solved problem by changing the method, not the technology. It's not about louder bells to move parents and more strenuous requests in writing asking all to keep to time. Instead, schools should look to a method-based solution of algorithmical scheduling, with a focus on keeping time. This is something a booking method can't do and is worse than teachers arranging interviews individually - where they could at least have some control over the schedules.

The example above is one of many areas that the DfE 'Change Challenge' could inspire schools to change. Results could be published. Schools who don't engage in the change challenge should be noticed and better supported. The focus is *not* to



force change but to encourage a *consideration of change*. An acceptance that some ongoing change is good. The results in a particular school may be that they have evaluated options and decided they already have the right process in place. This is still very good. Waiting for a fire to start before considering changes to the fire prevention and escape systems is not good practice. So too waiting for a fire to be seen to consider change, while not being aware it's been smouldering underneath you for years - burning away your academic results, staff wellbeing and financial resources.

Evolution drives improvement, but it requires change. Nature forces change by errors in DNA. Errors (change) can be good. Mistakes are merely a stepping stone on the road to success. We don't want too much change, but if DfE could fire up schools to view *change itself as a goal*, this would be a strong driver for school improvement. The active, professional consideration of change, possibly with independent/external help to avoid the 'can't see the forest for the trees' problem. It's easy to not see the problem you've lived with for years, as it's become accepted as the status quo.

Some school reporting could be encouraged, where schools report specific key areas that they have either changed, or actively reviewed with open intent to change if it was discovered beneficial. Minimum standards could be published and monitored. Schools should review key areas for change on a regular basis. Not having actively

considered changes within a five year periods should flag some concern. For example, parent evening scheduling or option block processes or staffing or many other areas.

Change Challenge Areas

Some of the key areas DfE could prompt schools to *consider* change each year may include:

Parent Teachers' Evenings

Methods: Scheduling vs booking, single year evenings vs multi-date, multi-year evenings, teacher seating optimising, slot duration variations, better engaging interviews for non-custodial parents and more. What technology systems are used to manage scheduling these events?

Rooming

Base room assignment, movement optimising, room allocation methods, room classification (faculty ownership vs. school ownership), use of room sharing or use of rooms not considered before as possible to be used in timetabling e.g too small, when this can be solved easily and give more room availability to crowded schools.

Staffing

Consideration for algorithmic staff allocations, changes to how split classes are organised, to better suit teachers as well as students, ways to reduce unwanted split

classes, or to improve the balance in the ratio of split classes. See the Edval eBook on [Better Shared Classes with Smarter Timetabling](#).

Curriculum

When was the curriculum last reviewed? Can savings be made by restructuring practical classes? Or combining classes? What subjects want to be set? How can we better allocate teaching time when practical subjects want doubles, but others do not, yet they share the same block - this isn't possible is it? (Yes). What subjects would you like to offer? What subjects do students want?

Do you really think German is very popular this year as the class is full? Or is it that the students all dislike the other subjects on that block, and German was the least worst? Would German be as popular if you changed the method, so students could express free choice, and not be constrained by picking from fixed blocks? See the Edval eBook on [Better Option Blocks with Smarter Timetabling](#).

Resources

Do you really need to build a new science lab? Or is the solution smarter timetabling and curriculum restructuring? See the Case study from [Court Moor School](#), where they affirm Edval showed they didn't need to proceed with their already in progress plans to convert a teaching room to a science lab. Apart from a big cost, it would

have been a loss of a teaching room. Which other schools share these same problems?

Can you reduce student movement? Make better use of *all* school resources, by smarter timetabling?

Your timetabler has said they can't consider the seminar room in timetabling, as it's too small. It's only used on rare occasions, but is never planned to be used, due to its size. But smarter timetabling may unlock these resources and have them occupied consistently, reducing pressure on other teaching rooms.

Perhaps you could take on more enrolments, by reducing the number of classes running and making better use of existing resources. The timetabler may have said there are not enough rooms in the school to take on more enrolments. Are they correct? Or could there be more creative solutions?

Vendors could be seen as potential thought leaders and innovators, as opposed to commercial vultures profiteering from the valuable education budget.

Edval Engagement with Government

Edval has had direct engagement with government in many areas, with success showcasing the benefits of a healthy relationship between EdTech vendors, and government. Far from being just a software company, Edval is a thought leader in one of the most critical areas of school management - the timetable.

The timetable is the blueprint which directs what every teacher, and every student does, and directly impacts the budget, the academic quality, staff happiness and more. It's the very DNA of the school, but to date has received very little awareness, other than as a job to be done. A job where there is little feedback or association between the role and saving money, or using resources better - so long as all classes get scheduled clash free. It's a low bar.

While our focus is timetabling, there are many other vendors in EdTech which are similarly innovative, and would be able to offer many benefits in moving the needle forward, if only they could be given a voice. Vendors could be seen as potential thought leaders and innovators, helping schools to set expectations high.

Successful Edval + Government Joint Project Examples

Below are some areas Edval has engaged with government successfully. Seeing these may prompt other areas in which government may be inspired, seek to engage Edval or other EdTech leaders.

www.edval.education/what-we-do/enterprise/

Government Data Integration

Edval provided direct consulting advice to government, and has been a major influence in the standards being created for [SIF au](#) (relating primarily to timetabling daily changes and attendance). This is a government supported integration protocol and data schema.

Edval is currently the [only timetabling software vendor](#) integrated with the NSW Government.

Edval is a co-founding member of the [LISS Protocol](#), being the standard and now most common way school administration software is integrated in Australia, supported by a [wide variety](#) of major vendors.

As part of our work driving integration, Edval was the initiator of an [open letter](#) to the

NSW Department of Education, from all major software vendors active in NSW. This resulted in a beneficial meeting with the department regarding integration. The letter and meeting was well supported by the founders of companies such as Sentral, [Millenium](#), [FirstClass Human Edge](#), [TimeChart](#) and more - even though several of these are direct competitors to Edval.

A [press release](#) shows that vendors put aside commercial concerns in relation to integration, and support an open model which allows vendors to compete on functionality, not on access to a blocked system which only allows a single provider. Edval continues to be a leader in the integration space, which is critical for efficient enterprise services.

Work with Government Projects: Aurora College

Aurora College is a virtual selective high school for gifted and talented students in Australia.

Edval provided high-level consulting to the NSW Department of Education on managing a centralised, remote delivery timetable integrated with the respective timetables of 130 partner schools. We provided training and other resources to assist in generating the centralised Aurora College timetable.

We delivered training workshops to schools right across the state, including to many who were not yet Edval customers.

Work with International Governments: Brunei

We work with clients all over the world, including Australia, England, Ireland, USA, India, Singapore, Indonesia, Brunei, Bangladesh and more.

We won a national tender with the [Brunei Ministry of Education](#) to provide timetabling systems to all schools in the country.

We delivered in-country training to Brunei staff and local school administrators.

Government Consultancy

Board of Studies: State-Wide Examination Timetabling

We were contracted to assist the [Board of Studies](#) in generating Higher School Certificate (HSC) examination timetables that are taken by over 70,000 secondary students in New South Wales, over many weeks.

We developed enterprise examination timetabling functions to support large student numbers against complex requirements such as managing religious exclusion days, exam precedence rules, resource mapping, time preferences, date ranges and more.

We produced timetables that reduced HSC exam clashes *well beyond previous levels*, and schedules that were more spread-out for students, allowing more balanced study time and less pressure.

We provided consulting advice

to the Department on ways to improve the efficiency of the examination timetable, including marking. They provided us a [glowing testimonial letter](#).

New School Planning: Arthur Phillip High School (NSW)

Edval was contracted by Public Schools, New South Wales to conduct timetable modelling for NSW's proposed largest and first high rise high school: a [\\$100 million project](#) for a new 10x story, inner city school.

We generated a number of timetable scenarios based on architectural plans, catering for up to 2,000 students being delivered the Australian curriculum.

We analysed floorplans and lift access, and considered timetabling in the context of reducing student movement and pressure on limited lift availability for large volumes of students.

Edval provided consulting to the Department to give confidence the architectural plans would result in the school that could be successfully timetabled efficiently, and provided a number of recommendations about how efficiencies could be further improved at the design stage.

Many other large new government school developments have now included timetabling modeling by Edval as part of the architectural plans. It's seen as an important area, where problems are far cheaper to address in the

blueprints, before construction has begun.

New School Planning: Albert Park Secondary College (VIC)

We were contracted by the Victorian Dept of Education to conduct a timetable modelling project for [Albert Park Secondary College](#). This was based on architectural plans on this inner-city school that was still at the planning stage when the timetable modelling project was raised.

We generated multiple timetables based on architecturally advised room sizes and layouts, mapped against the standard Victorian curriculum. We also highlighted issues that we believed may negatively impact the ability of the school to support the total proposed student numbers, being a lack of general teaching rooms and (unusually) an oversupply of specialist rooms.

Several years after the school was built and had been operating, this school came to Edval for their core timetabling, citing issues that were impacting their ability to support the total proposed student numbers, as our modelling predicted many years earlier. The architectural plans were never changed at the time, despite the concerns raised by the Edval report.

NSW Public Schools

As at 2018, Edval services over 65% of the [NSW State high school](#) market in timetabling, including daily organisation, exam and



parent teacher night software.

Despite having a majority share of the market, our client retention rate for schools using our timetabling product over the last five years is 98% (global). This shows an unusually high degree of client satisfaction with our technology.

While Edval tried to engage with a major tender for the LMBR, it was blocked as the tender was invite only. In September 2018, [the government announced](#) that it was discontinuing providing the department technology for timetabling to schools, despite hundreds of millions of dollars being spent on the project, and their resultant technology having available free to all schools.

While the government offered funding and provided several alternatives commercial timetabling products, it advised schools they needed to ensure the technology was integrated

with the government. As at 2018, Edval is the only provider which is fully integrated with the Australian government, as advised to schools in a government memo.

UK Department for Education (DfE)

Active in the UK market, Edval has engaged with schools and run widely acclaimed leadership training in timetabling. This is not training in any software, but is core training in the *process and philosophy of timetabling*. This training is [certified professional development accredited](#). A particular focus being [supporting flexible working and women](#) in education.

Additionally, Edval has been engaged by [TeachFirst](#), and delivered professional training there, which has been [well received](#).

Edval has attended a DfE Conference with 50 senior leaders including the UK

Education Minister, and spoken on timetabling and its role in supporting flexible working. Edval was [recognised by DfE](#) in its pledge on flexible working – being a core DfE focus.

Edval has also engaged with DfE on reducing teacher workload, including submitting a very lengthy proposal, covering 33 different points – all related to timetabling. These included referenced case study examples, and written evidence, or [video testimonials from schools](#). A shorter version of these points is now available as an Edval eBook on [Reduce Teacher Workload with Smarter Timetabling](#).

Multi-School Groups

While not government as such, the following groups are quasi government or large, and show a deep engagement at a high level, including consultancy.

Catholic Education SA
[Catholic Education South Australia](#) (CESA) educate 46,000 students across 103 Catholic schools. Edval won CESA's recommendation as the preferred timetabling software supplier to all their schools.

Edval provides timetabling systems to over 75% of CESA's secondary schools.

Edval provided consulting to CESA at the time of the implementation of the new South Australian Certificate of Education ([SACE](#)).

One School Global

Deliver Enterprise timetabling services to each [multi-campus school](#) in this group. Provided consulting advice and assisted in the generation of centralised timetabling within the group.

Sydney Anglican Schools Corporation

Deliver timetabling services to all [schools in this group](#). Conducted group training and consulting to deputy principals from group. Actively generated timetables collaboratively with some schools from this group. Assisted the group in switching all schools to 'timetabling' of parent teacher interviews (instead of older 'booking' method).

Christian Community Ministries

Deliver timetabling services to all [schools in this group](#). Conducted group training and consulting to all deputy principals. Actively generated timetables collaboratively with some schools from this group.

Northern Territory Christian Schools

Deliver timetabling services to all [schools in this group](#). Conducted group training and consulting to deputy principals. Actively generated timetables collaboratively with some schools from this group.

When things go wrong

By highlighting what went wrong, we *should* be empowered and aware, so as to not keep making the same mistakes in future!

LMBR

The Department of Education in NSW, the largest state of Australia, began a massive project in 2006. This was to build a complete IT system for all schools. Originally, the advice from the department was that all third party software in use in schools today would be replaced, and no integration of other systems would be supported. It was an *all or nothing* bet... one that has so far cost close to [\\$800 million](#).

A massive tender was released. Edval tried hard to submit, but was blocked, despite having strong market share. The government said the tender was 'Invite only'. None of the existing Australian MIS vendors active in the market were invited. Edval then learned timetable generation wasn't in the scope. The government assured twice, that timetable generation was definitely in scope. This proved to be false, and the tender scope was then increased at large cost, still without Edval or other timetabling vendors able to engage.

The tender was won by UK based Tribal, despite them not having

one single school using their system anywhere in the world. They were a higher education system provider, with no school experience or school software.

In 2012, the NSW government [reported this](#) to schools: **Third Party Software:** *The school solution products have been chosen because they provide equal or better functionality to existing 3rd Party products in schools. Consequently there is no intention to integrate 3rd party software into the SALM part of the school solution.*

Edval warned the government in many ways, such as this article:

www.liss.org.au/media/big-admin-systems

And an [open letter to the government's LMBR team](#) by Chris from Edval, and signed by the main EdTech vendors at the time, who were competitors to each other. We were aligned together – to try to collaborate and get the attention of government.

The LMBR team were forced by school principals to meet with vendors. It was a somewhat hostile meeting, and still years after this they continued to officially advise schools not to adopt any third party EdTech solutions despite agreeing to integrate. [Here's a photo of many \(competing\) vendors](#) attending the government office for the meeting.

The auditor's report was scathing: www.audit.nsw.gov.au/news/news-archive/2014/learning-management-and-business-reform-lmbr-program

Noting: *'For large, long-term and complex IT projects work should be segmented so that deliverables are achieved and benefits commence accruing within a three-year timeframe.'*

The CEO of Tribal sadly [passed away](#) just days prior to an announcement by the government on timetabling, believed to be partly related to the stress of the LMBR contract problems.

In September 2018, news was finally released that the [NSW Government had given up timetabling](#) as a technology, as per a widely circulated [department memo](#). They had spent many millions developing a new system, which they gave to all state schools free. Schools however, reported it was completely unfit for purpose and most had retained third party software.

Edval is the only timetabling provider [integrated with the NSW government](#) in Australia, with 65% market share of NSW schools, prior to the collapse of the governments foray into *developing* EdTech.

What Went Wrong?

The government took the role of a developer of EdTech *for schools*.

The government *mandated* a

system, forced on all schools. (The UK has moved from this model)

The government's initial project reference group was selected to be favourable to the project, with *very few of these using third party software*. Without knowing what was available commercially, at the time of the tender specifications being prepared, it is little surprise the specs were well below what many other more forward thinking schools were using on a regular basis, and viewed as critical.

The government failed to heed industry advice, such as do not mandate [one big system](#), and focus on integration. The government failed to listen to the EdTech industry, and actively shunned them, and repeatedly [and openly \(in writing\) advised schools against employing any third party EdTech systems](#).

The government (at the time) shunned integration standards. Now they have embraced them, and Edval (incl. Dr Tim Cooper) has been a key player advising government on data standards, which have now been developed collaboratively with industry.

The government had little understanding of timetabling – and also how critical timetable generation is for schools. That this was left out of the largest tender in the department's history is unfortunate, as was excluding all the timetabling vendors, claiming (falsely) it was in the tender scope, and then not engaging with them

even after it was discovered timetabling was critical but wasn't in the original scope.

Personal Impact of LMBR Failure in Timetabling

As author of this eBook, I am also a father. My daughter, Jet Cooper, was attending her final year of high school in 2018, at a performing arts school in the Campbelltown area of NSW. With the introduction of the LMBR's timetabling module, my daughter's school adopted the government developed SchoolEdge system. The school was not a client of Edval, nor had prior contact with us.

As a result, the 2018 timetable came out with every single lesson as a double period. It's normal for performing arts schools to have more doubles, but it's unheard of that every single lesson be a double, including English and Maths and History etc. The students were distressed, the issue was raised several times and parents complained. The school put it down to teething issues with the new timetabling system and carried on.

Being the UK CEO of Edval, my brother/co-founder Dr Tim Cooper and I were very concerned. My daughter reported she was really struggling to study, as were her peers, as it was difficult sitting through over an hour and a half of academic



subjects without a break, for every single subject.

We approached the school though our state manager first, before then I attended the school in person. We offered the school that we would provide our technology, help and support, for as long as needed, free of charge. We made it clear that we could do so even if they wanted to stay with the government provided (free) SchoolEdge system, and not use ours.

Sadly, the school became very defensive, saw it as a commercial intrusion and a vote of no

On Mon, May 7, 2018 at 12:44 PM <[redacted]@det.nsw.edu.au> wrote:

Hi Chris

Thanks for your email. We appreciate you contacting us to discuss your concerns and offer support regarding our timetable.

In terms of our timetabling system, we have support to address the minor issues we have faced. The decision to move to double periods was a deliberate decision based on educational research, a not a case of the timetable determining our structure.

Again, we thank you for your offer of assistance. It is much appreciated but we will not be accessing it at this time.

Regards

[redacted]

confidence in the government technology. They were adamantly defending it, saying there was no problem at all with this system. Despite being extremely polite, I was asked to leave the school grounds very coldly, in no uncertain terms. It was clearly a very sensitive issue.

A follow up email from the principal claimed they had based their decision to go all doubles on 'Education research'. We politely asked if we could be made aware of this research, as this could be of value to the many schools we consult to – and that we had not seen this research despite being a major player in this space.

Sadly they didn't write back. There was no such research. But, there *should* have been – and this is precisely an example of where government needs to step in and assist schools with quality education research into such a critical areas as the timetable. Otherwise they are fumbling in the dark, doing their best, but certainly not doing at all as well as if there was sound research and standards to help.

What Went Wrong

The government had instilled to schools very strongly, *not to trust* third party technology. They advised the LMBR would be equal or better. There was fear mongering about the commercial profiteering that vendors make, as if commercial EdTech has no place in schools. The government actively advised schools not to purchase any third party technology and that it would not be integrated if they did, so would be a waste.

It's easy to see this school as being very misguided, and yet is this the case? They were diligently towing the party line, and doing their best to stick with what they were told to use, even in the face of such terrible results and complaints. Many other schools were more free thinking and had already ditched the poor system, or never engaged with it once they saw it was inferior to the technology they were already using to timetable.

My daughter's school was never previously exposed to innovative timetabling technology, so they

had no way of knowing how good things could be. They were indoctrinated by the government to believe they were getting a great system. There was misinformation, distrust, and the biggest problem of all – one big system mandated by the government. This stifles innovation, breeds contempt, and usually doesn't yield great results.

Competition is healthy. It promotes innovation. Commercial drivers are also important – similar to the democracy vs communism debate – but these drivers are simply *absent* once a big government tender is won.

My daughter has now finished school, having had a terrible last year, primarily due to the timetable. This was a wholly preventable problem. As the founders of Edval, neither myself nor my brother could fix this, despite being so very capable with technology and an experienced team.

It was ironic to read the government was discontinuing this system in the same month my daughter finished school. How many other students though, have been impacted like my daughter, through decisions made by governments – where industry was not consulted, and good,

innovative EdTech solutions were ignored. It's important to realise the real and significant impact this can have on our children.

Due to misunderstandings, distrust, political mindsets, or even fraud or backhanders in the tender process. Whatever the reasons, lessons have been learned. We hope this eBook will help encourage government and other leaders to what can be done, and what EdTech vendors want – as much as reminding of some very expensive clangers.

One key area that 'Went wrong' here, is that the poor school had no real access to any quality education research into timetabling, because quite frankly, there is none.

This is a problem. Knowledge is power. It's not really the school's responsibility to conduct research, and while it would be nice, it's not really easy for a vendor to conduct it either. Research in such an important area needs to be conducted at a large scale, by an independent educational authority.

This is one key area where the industry needs government help. Research.

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Parent Teacher Evenings

Edval developed a revolutionary method to parent teacher evening event management. There is a very big difference between *booking* events, and *scheduling* events.

Schools report considerable benefits. [One news story](#) showed parents were scheduled on average **within two minutes** of their preferred starting time for interviews. Note that inferior methods of scheduling (booking systems) don't even have a concept of a *preferred* starting time for each parent.

Schools find that this method, and preferential appointment times, results in significantly improved parental engagement. Teachers tell us that this an important issue of educational equity since parents' evening are too often the 'preserve of the more involved, middle class parents'.

Edval approached the Education Minister in 2011, seeking to engage the government to demonstrate the benefits of the new method in scheduling these events. Supporting letters were received from [Bowral High School](#) and [Chatswood High](#).

The response back from government at the time were dismissive, stating that if schools valued this technology, it would have been identified by the LMBR reference school group. Sadly, most of the schools in that group did not use any third

party software at all, believed to be intentionally supportive of the government's initiatives - and thankful for any software at all - as they really didn't have much to begin with. None of the initial tender reference schools were using a timetable scheduling method for interviews and it is suspected none were even using a basic online booking system either.

It was later discovered that while the LMBR was designed to replace ALL school administrative software, parent evening scheduling was left out of scope entirely - like timetabling - and has not been added to date. Innovation in parent evening scheduling is just one more casualty, one missed opportunity in the [widely publicised disaster](#) that has been the LMBR.

Dismissive letters from the government include: [Minister for Education Letter 1](#), [Letter 2](#) and [Letter 3](#).

Edval produced a dedicated [website](#) with some statistics, on many benefits of this technology - and the interview *scheduling method* which is now reasonably common in Australian schools using Edval.

A detailed and lengthy eBook covers the whole area in more detail:

[Boost Parent Teacher Relationships - With Smarter Timetabling](#)

What Went Wrong?

The government failed to understand the technology. They mistook booking systems for scheduling systems *as a method* and did not accept the benefits that can be achieved.

The government failed to listen to their own schools, and failed to investigate further, on innovative EdTech in this area, or make it more officially known to schools as a technology they should at least consider.

The government assumed incorrectly that the LMBR reference group of schools would have raised this as a need in the original tender, despite being advised that none of these schools had previously been exposed to this technology at the time. Also, almost none of these schools used an electronic booking system for interviews at all, even though this is quite different to a scheduling system.

UltraneT

In 2013, the Victoria government in Australia (second largest in the country) developed one big administrative system for all their schools. This was, like other similar projects in other government industries (Healthcare, Police), a complete disaster. www.liss.org.au/media/ultranet-big-system

Costing nearly £100 million, this system was a waste of taxpayers' money and a political hot potato. It was never used successfully and

was discontinued.

What went wrong?

The government attempted to be a developer of EdTech for schools.

The government didn't engage with industry.

The government mandated one big system, instead of modular integration of several vendor systems, to give schools choice, and to remove the monopoly lethargy that comes from a single, one size fits all solution.

The design of the technology was very unusable, not unlike the NSW LMBR. Schools complained it was designed to fit tender specifications, but was so inefficient, that they could not operate it at all effectively.

Summary

While the above projects were somewhat of a disaster at the time, and widely covered in the media, they do not necessarily reflect current government attitudes. The LMBR for example began in 2006, so has been active for twelve years now, nearing completion.

There were several different governments during that period. The current working relationship with Edval and the NSW Government is positive. Still, noting what went wrong can help all parties realise the mistakes we should never, ever make again. Knowledge is power!



Conclusion

This eBook has set out a strong rationale for why the DfE is an essential influencer in building effective and sustainable partnerships between schools and EdTech organisations.

By outlining the research methodology, aspects of development and research, and the scope of just one EdTech company, Edval has engaged with governmental bodies in

supporting sustainable solutions for problems that schools were not even aware could be addressed.

By working as influencer, advocate, facilitator, reviewer and arbiter, the DfE, this paper argues, has the opportunity to expand thinking and solutions that would benefit schools, EdTech organisations, and ultimately student experience and outcomes for the better.



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