Children's services digital dashboard

Dorset County Council's digital dashboard project directly supports the county's 'Forward Together for Children' transformational change programme of work. This programme is made up of a series of projects which aim to:

- allow children to live safely

- enable children to achieve their highest potential

- deliver services through a skilled, competent and sustainable workforce.

The programme aims to reach a state where the outcomes are achieved through prevention and early intervention rather than late intervention, with digital technology and approaches playing a crucial role.

Digital Transformation Programme

The work on this project undertaken by Dorset County Council has been funded through the Digital Transformation Programme, which is managed and overseen by the Local Government Association (LGA).

The programme was set up to help councils and their partners develop digital solutions to support their work on national programmes of transformation including the integration of health and social care, Troubled Families, welfare reform and public health.

The aim is for the digital tools and solutions created through the programme to be reused by other councils and contribute to the wider work to transform local public services.
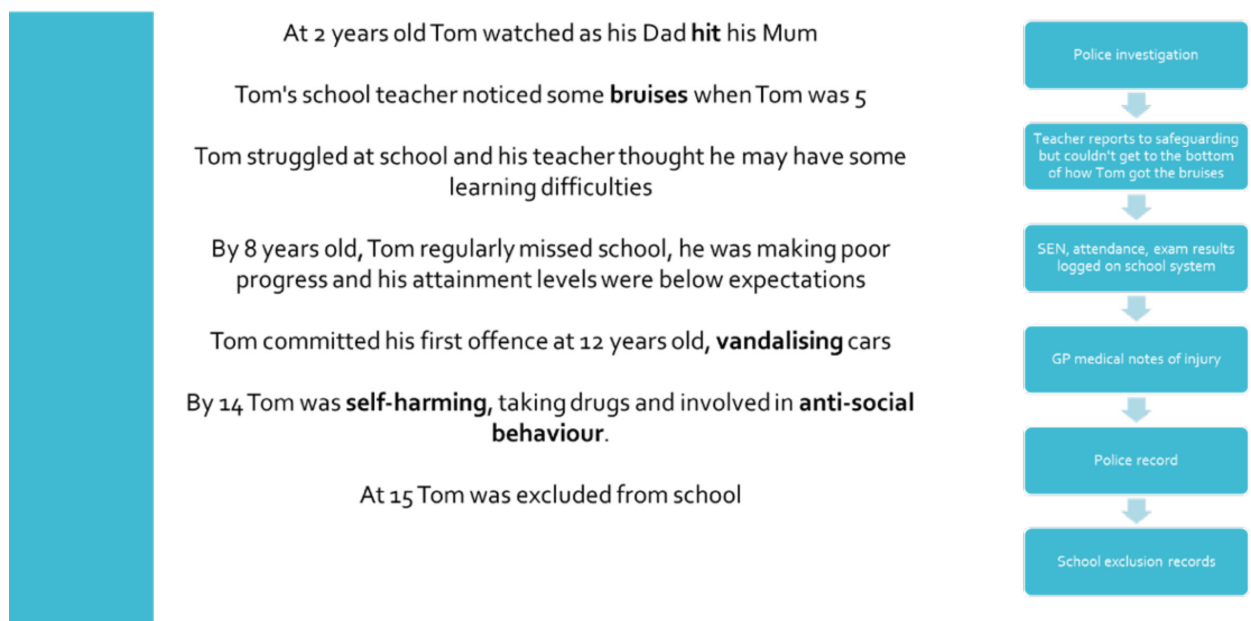
The issue and context

Dorset County Council's children's services face two major challenges – increasing demand and a reducing budget.

Both these challenges relate, in part, to the fact that intervention typically happens once there is a known problem or an incident has occurred, resulting in a situation where the root causes of problems are not dealt with earlier. Evidence shows that prevention and early intervention give better results for children and young people because issues are addressed before they become serious. Hence, over the long term, early intervention is much less costly than late intervention.[1]

In Dorset, problems such as substance misuse, domestic violence, child sexual exploitation and parental mental health issues have had a significant impact on the number of children who are subject to a child protection plan or taken into care. Not only is this bad for Dorset's children and young people, but it also costs more money.

Despite these growing issues, the council's aspirations for children and young people remain constant. They want children to be safe, healthy and have access to good quality education, so they go on to lead happy and fulfilling lives. Therefore, Dorset has recognised the need to change the way that they achieve their aspirations in order to address these challenges.

Dorset explain the shortcomings of the old system by telling 'Tom's Story':

At 2 years old Tom watched as his Dad **hit** his Mum

Tom's school teacher noticed some **bruises** when Tom was 5

Tom struggled at school and his teacher thought he may have some learning difficulties

By 8 years old, Tom regularly missed school, he was making poor progress and his attainment levels were below expectations

Tom committed his first offence at 12 years old, **vandalising** cars

By 14 Tom was **self-harming**, taking drugs and involved in **anti-social behaviour**.

At 15 Tom was excluded from school

- Police investigation
- Teacher reports to safeguarding but couldn't get to the bottom of how Tom got the bruises
- SEN, attendance, exam results logged on school system
- GP medical notes of injury
- Police record
- School exclusion records

1 Early Intervention and Prevention with Children and Families http://ipc.brookes.ac.uk/publications/pdf/Early_Intervention_and_Prevention_with_Children_and_Families_June_2012.pdf

At 17 years old Tom was sent to prison for perpetrating significant **domestic abuse** against his pregnant girlfriend

Tom is currently serving time

Tom's story ....

Tom's story highlights a situation where even though a number of well-meaning individuals and organisations did their best within their own remit, overall they failed because they did not to take a coordinated approach due to organisational barriers and silo-based responsibilities.

In response to this, Dorset asked "What would have happened if…" they could use business intelligence to predict when early intervention could make a real difference to such scenarios?

Consequently, they undertook a whole-system review of the way that children are supported, covering all services for children and young people, including those provided by the council's partners and local communities. This review resulted in the Forward Together for Children programme and the creation of Family Partnership Zones (FPZs).

The new approach is based on two main principles. Firstly, the introduction of area working for children within each of the seven new FPZs. For children, these zones are organised around school pyramids – an arrangement of schools feeding up from infant through junior and middle schools to secondary level. Key children's services staff are assigned to work with these pyramids and the individual schools within them.

Secondly, the system is built on a change of culture from a previous process whereby potential problems went through a formal referral process to social services, to one where discussions (based on accurate and timely information) are held locally, responsibility is shared across the appropriate partner organisations and potential issues are 'nipped in the bud'.

The project objectives and targets

A key element of the new approach is the need for accurate and timely information to be made available to professionals dealing with issues on the front line.

Dorset County Council established a high-level data set for the pyramids including population and deprivation data and markers of development and attainment. The data set tells a story about the pyramids with the highest levels of deprivation and poorest outcomes for children. It is aggregated from existing data sets and can be interrogated within any pyramid to show school-level data or FPZ level data.

This enables staff in a pyramid or school to estimate numbers of children likely to require services across the continuum of need and identify populations with a pre-existing vulnerability due to deprivation. The council also holds data relating to individual children across a number of systems, including:

- Synergy (this is school data, including child detail, updated throughout the course of year by Dorset teams – admissions, special educational needs and disabilities (SEND) etc)
- School Census (attendance, SEND support and free school meals detail)
- Dorset Family Matters (troubled families – a separate data team pulls this information together)
- attainment data (a data analyst pulls this together from the Department for Education and Schools).

Historically, the council's approach to this work has been based on the use of spreadsheets to aggregate existing data. This is expensive and time-consuming and does not result in a product which is easily usable by either strategic or frontline staff.

To address this problem Dorset bid for a grant of £25,000 from the Digital Transformation Fund to enable them to develop the Business Intelligence Digital Dashboard Project – known as the BI Tool.

The BI Tool aimed to:

- enable local professionals to identify potential difficulties for individual children before they become serious problems
- inform decisions about where and how resources are used based upon evidence and real time data concerning the individual child
- identify beneficial and tailored local initiatives
- provide evidence of better outcomes for children and young people from the investment made
- provide a base from which subsequent phases could incorporate further data streams (including data from the county's partners) to further improve understanding of the issues and direct resources
- facilitate a connective role in bringing partners and their services on board and in line.

The approach and progress to date

In 2015 Dorset recognised that it needed to improve its methodology for presenting information to professional staff if it was to achieve its ambitions to introduce a new culture based on early intervention.

The Business Intelligence unit at Dorset County Council managed this initiative by working with a team of colleagues including end users, service managers, school representatives and technical staff. The team investigated the range of information that was currently available, defined the user requirements and specified a range of 'flags' that would appear on the BI Tool to quickly indicate to end users if something needed to be investigated.

This specification formed the basis of the bid for funding that was submitted to the LGA in December 2015. This bid was successful and £25,000 was allocated to Dorset County Council in March 2016.

The development was managed on a day-by-day basis by the senior manager for commissioning and business intelligence within children's services and followed an Agile protocol[2] which took an incremental and iterative approach.

The project was governed through an existing set of boards and groups. The director of children's services acted as the project sponsor and progress was monitored through the Forward Together Board (including members) and the associated steering group made up of officers from Dorset and partner organisations.

In order to move from a situation where staff utilise a mix of systems and spreadsheets to one which provides professionals with easy access to relevant information, Dorset utilised the Microsoft Business Intelligence toolset, incorporating SQL[3] Server Integration Services and SQL Server Analysis Services and data warehousing.

The funding from the Digital Transformation Fund enabled Dorset to buy in the necessary technical skills for this development. They shadowed this work and picked up valuable skills from this external source.

This approach allowed the development of dashboards which are accessed via Azure Portal and make use of SQL Server Reporting Services and the Microsoft Power BI (a screen shot of the dashboard is below).
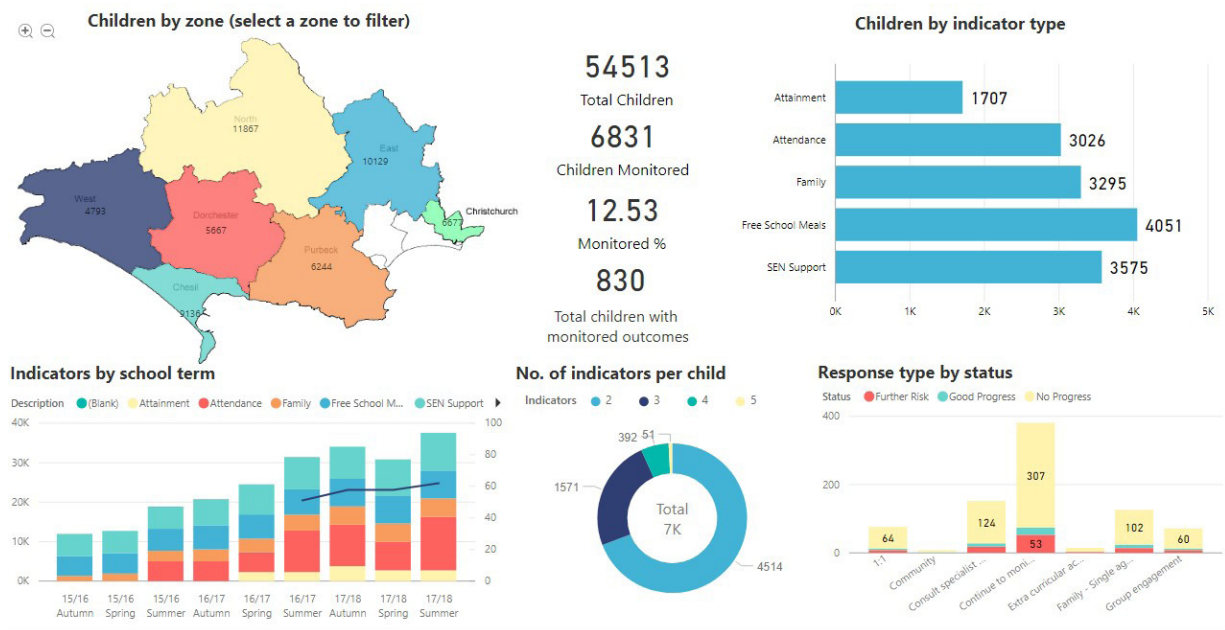
These technologies allow the relevant data to be made accessible to all in the form they need it, whilst retaining the data security and integrity needed.

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2   Agile delivery is a software development project management approach where planning, designing, building and testing are done in parallel, compared to sequentially. Source: www.gov.uk/service-manual/agile-delivery

3   SQL - Structured Query Language is a domain-specific language used in programming and designed for managing data held in a relational database management system.
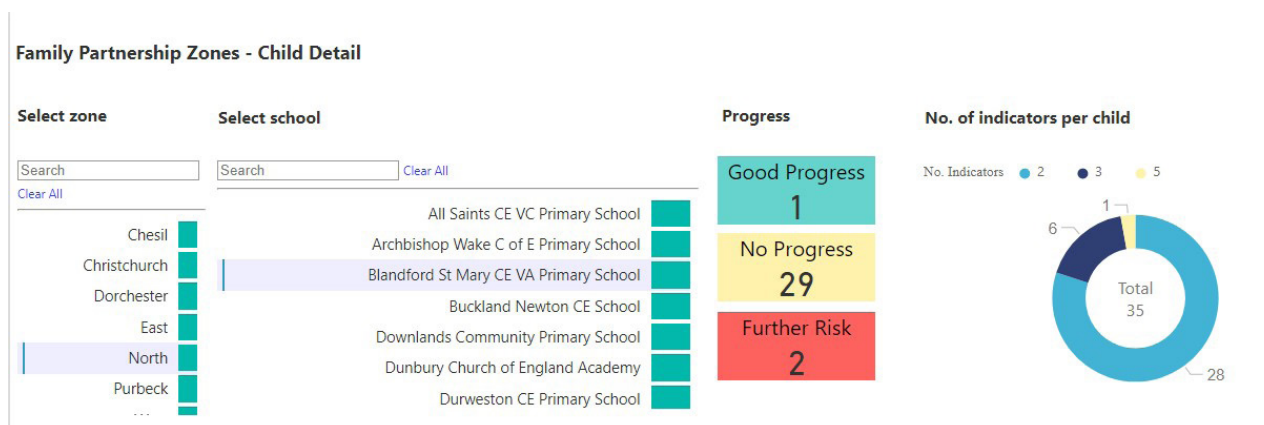
When a user signs in to the BI Tool they are able to access a number of screens. Information at the top level is presented graphically and contains information across the county and comparing against the Family Partnership Zones (FPZ):

Family Partnership Zones Dashboard

This view shows the total number of children within the system and reports the numbers being flagged for specific indicators – eg the number getting free school meals or receiving special educational needs and disabilities (SEND) support. It also shows how the indicators move over time.

From this point the user can drill down to obtain an overview of information for a particular school.

Family Partnership Zones - Child Detail

The professionals can then drill down further to access information on individual children and to review the flags raised for them. The flags identified within the system refer to:

1. attainment – examination and assessment results

2. attendance at school

3. family issues from the Troubled Families initiative

4. free school meals, which are seen as a potential indicator of deprivation

5. SEND (without an education, health and care plan).

Year Group	Last Assessment	Gender	Indicators	Attain	Attend	Family	FSM	SEN	Response	Status	Current Progress	Overall Progress	Enter Outcomes
NC Year 6	12/29/2017 11:20:51 AM	F	1				●		Family - Single agency	No Progress	↔	●	🔗
NC Year 1	6/27/2018 5:01:30 AM	F	3	●		●	●		Family - Single agency	No Progress	↔	●	🔗
NC Year 1	3/23/2018 12:00:00 AM	M	2	●		●			New				🔗
NC Year 4	12/29/2017 11:20:51 AM	M	2	●				●	1:1	No Progress	↔	●	🔗
NC Year 6	12/29/2017 11:20:51 AM	M	2			●	●		1:1	No Progress	↔	●	🔗
NC Year 2	12/29/2017 11:20:51 AM	F	2			●	●		1:1	No Progress	↔	●	🔗
NC Year 2	7/20/2018 5:01:21 AM	M	2		●	●			Continue to monitor	Further Risk	↘	●	🔗
NC Year 3	12/29/2017 11:20:51 AM	M	2	●				●	1:1	No Progress	↔	●	🔗

At present, the BI Tool focuses on information relating to children aged between five and 16 so it is not surprising that currently schools are significant users of the system. When potential problems arise for an individual child, rather than making a formal referral to children's services, school staff now work with a team of other locally based professionals (dedicated zone workers from children's services, health staff, police etc) to discuss the situation and agree a course of action.

In addition, regular (half-termly) 'huddles' take place where the range of professionals can review all the pupils in a school that raise a flag on the BI Tool.

Currently 279 school staff have access to the system. Dorset County Council has consciously attempted to limit the access to the staff that they believe will actively use the system (rather than just giving it to everyone). Typically, this might be a single person in a small school or up to five or six people in a larger school. In this way it is envisaged that there will be a very high percentage of these registered users that actively and appropriately use the system.

A wide range of other staff also utilise the system. These include 132 Family Partnership Zone staff (these are Dorset staff posted within the FPZs), three ICT staff and 14 other users (including other senior managers in children's services). Everyone accessing the BI Tool will have signed a Personal Information Sharing Agreement (PISA) which is part of the Dorset Information Sharing Charter as well as undergoing enhanced Disclosure and Barring Service (DBS) checks.

Although the system is being used by all schools in some zones, it is still being rolled out in others. Across all schools the current direct take-up is approximately 60 per cent however, in some areas the take-up is much higher. For those schools which have not yet started using the BI Tool, this work is undertaken on their behalf by the FPZ staff.

The outcome – successes and challenges

The digital dashboard allows professionals a more efficient way in which to access children's records. Consequently, it not only delivers direct time savings, and the associated avoidance of increased costs, but also provides a more effective service by allowing professionals to make earlier interventions and hence improve outcomes which reduce or avoid potential future costs.

Financial benefits

The new approach delivered by the Forward Together for Children programme has provided significant financial benefits to Dorset. It must be emphasised, however, that these savings are in reality costs avoided – ie Dorset is able to offer better targeted and more services with the same resources.

The savings are provided in a range of ways:

- Because professional staff within the zones are taking direct control of problems, rather than routinely referring them to social services, there has been a significant drop in the number of contacts leading to a referral. Prior to the introduction of the BI Tool these were monitored over an eight-month period and averaged 701 per month. In the eight months following the introduction of the BI Tool this figure dropped to an average of 452 per month. The New Economy Manchester research (www.neweconomymanchester.com) identifies the cost of handling each request for referral at £428. Hence the current drop in requests equates to a saving of £1,278,864 per annum.

- In addition to this drop in the number of referrals, there has been a corresponding drop in the number of contacts by professionals with the multi-agency safeguarding hub (MASH) because these area-based professionals are dealing with cases directly rather than having to chase progress. The number of recorded contacts to MASH dropped from 16,680 per annum before the introduction of the BI Tool to 13,192 afterwards. Based on the estimated cost of £2.83 to deal with a phone enquiry (SOCITM) this equates to a saving of £9,900 per annum.

- A further significant time saving is generated because of the new process for dealing with cases via regular 'round table' meetings rather than reacting to each individual case, whether or not this results in a formal referral. Across the county the number of requests for help with individuals has dropped from 2,556 per annum to 2,278 per annum and at £428 per request this equates to a saving of approximately £118,984 per annum. However, this must be offset by the cost of the new system that has been introduced. Each round table now deals with an average of 15 cases and requires three hours of a family worker's time at a cost of £60 (salary plus on costs at £20 per hour). There are six meetings per school per annum and a total of 174 schools giving an annual cost of approximately £62,640. So, overall this new approach delivers a time saving equivalent to £56,344 per annum (ie £118,984 – £62,640).

These savings, totalling £1,345,108 per annum, resulted from the overall changes of working practices, processes and ultimately the culture, in which the BI Tool proved to be a vital element. The BI Tool demonstrates the importance of access to a range of up-to-date related datasets to enable professionals to make informed decisions resulting in efficient and effective service delivery. It also underpinned the change of process and drove the associated cultural changes.

In addition to these direct efficiency savings, the new process, of which the BI Tool forms a part, results in a better service which has a knock-on effect across the public sector. If early intervention avoids future problems for a small number of children, then the potential future savings across the wider public sector could be significant.

For example, if 585 children have gone through the new system in the eight months since its introduction then it can be expected that 878 will have done so in a whole year. If just 2 per cent of these are helped in such a way that they do not become NEETs (not in education, employment or training), then (based on the Manchester New Economy research) this would avoid future costs of £81,000 per annum. (Note: this figure is not included in the savings identified above but is included to indicate the possible future implications of this work).

Operational benefits

The changes introduced to children's services by Dorset and underpinned by the BI Tool have directly led to an improvement in outcomes.

Under the old system when someone, such as a health visitor or a teacher, identified a possible problem they would refer the child to social services. However, in some cases they would wait until further evidence was forthcoming before making this a formal referral. This could result in considerable delay in dealing with problems or, at worst, result in a failure to deal with them at all.

If a formal referral is not undertaken it avoids a statutory process with lots of bureaucracy including specific case recording standards and mechanisms, formal decision-making processes and structured supervision.

With the new arrangements the individual identifying a possible concern can now take direct control and call upon a team of local professionals to discuss the issue and initiate the relevant response to these emerging issues. The action could involve a formal referral or the calling of a 'Team around the Family' meeting, or a specific action or decision to monitor the position.

Earlier in this case study we told Tom's story as an example of how things can go wrong. With the new system, including the BI Tool, we can now tell a different story:

At 2 years old Tom watched as his Dad **hit** his Mum

Tom's school teacher noticed some **bruises** when Tom was 5

Tom struggled at school and his teacher thought he may have some learning difficulties

Early Identification

Tom's teacher pulled together a team around the family

Extra support was given to Tom at school

His mum was given the support she needed to leave her abusive relationship and was helped back into work, so was able to support herself and Tom

Tom struggled at school, but he worked hard and left school with his GSCE's and an apprenticeship.

Tom's story ....

Tom is happily married with two children, in employment and saving a deposit to buy his first home.

Tom's story ....

The changes have not only resulted in better outcomes for individual children and families but are also very popular with the professionals who feel empowered by the new process.

Paul Absolom, SEND Coordinator, St Osmond's Middle School

The children flagged up by the system fall into three broad categories:

1. Those that we already knew about.

2. Those that are a bit of a surprise – eg where they are bordering on an SEND issue and we need to keep an eye on progress, offer some help and perhaps avoid the need for an education health and care plan.

3. Those where we say "Oh!" because we had no idea there was an issue – these have usually been flagged up by another agency (eg an eating disorder).

The result is that the system "keeps you honest and keeps you sharp" and "schools that don't use the BI Tool need to know that they are missing a trick".

The cross-agency input and the sharing of relevant information is essential to the process.

"The BI Tool shows me what is happening outside school that I didn't know about."

"The team approach is very useful and has resulted in a complete turnaround for several students that we were concerned about."

Richard Redwood, Assistant Head, Ferndown Upper School

"The real value is where the tool flags up situations that weren't expected so that discussions can take place and action taken."

"It is particularly good at picking up situations where there are family issues at home that the school wasn't aware of. In several cases we have been able to intervene early and deliver successful outcomes."

Steve Cox O'Rourke, Zone Leader, Christchurch Family Partnership

The new approach, underpinned by the BI Tool, has empowered frontline staff because they can now take direct action and deliver real results. It has also re-invigorated social workers who can now work on the front line rather than simply following a bureaucratic process.

"We used to be in a rut. Everyone thought the council always had to be involved and a formal referral made. Now we are able to be family friendly, relying on professionals that know the family and take swift and effective action."

Louisa Payne, Family Partnership Zone leader, Dorchester

The school was surprised when Sophie (not her real name) showed up on the BI Tool. She had perhaps been a little quiet lately but there was no real indication of a problem in her school work. However, information from other agencies showed that both her mother and her brother were disabled and that her father was struggling to cope resulting in Sophie being under considerable pressure. With the introduction of some family support, that relieved this pressure, a potential problem was avoided that could have resulted in Sophie needing help for mental health or other issues

An example shared by Tracey Connelly and Louisa Payne, Family Partnership Zone Leaders, Dorchester

Organisational benefits

The BI Tool is essential to the successful implementation of Dorset County Council's transformational change towards a service that is based within Dorset's communities and relies on local contacts rather than strangers parachuted in from social services.

This project has helped to strengthen relationships between the communities to whom these services are offered and the partner organisations that help to deliver them. In particular, it has changed the way the council and its partners consider the use of its data as one of its main assets. This includes the sharing of data, which is key to a number of government policies and to the safeguarding of children.

Key learning points

Now that the system is in use, a significant shortcoming has been identified, which is that some of the data it utilises is not always current or up-to-date. For example, some of the data relating to schools (eg attendance) is based on termly census data from the schools and hence normally relates to the previous term.

Although the use of the census data provided an obvious and simple starting point, this shortcoming can be easily addressed to allow schools to provide data as often as they wish – perhaps weekly or even daily (with overnight updates). The more up-to-date the information provided by the school is, the more up-to-date the flags identified by the BI Tool will be and the earlier the relevant interventions can be made.

Other key lessons learnt during the roll out of this project to a wide and varied group of users relate to the importance of managing the implementation process:

- It is vital that the purpose and benefits of the project are communicated clearly, and repeatedly, to the end users so that buy-in to the change can be assured.

- The effort needed to train users with such a wide range of skills, interests and job pressures should not be underestimated. Training should be appropriately planned and resourced. In Dorset the use of short training videos proved to be a successful addition to the training. These were efficient in the use of resources and most importantly allowed end users to manage their own training timetable.

- In retrospect, some staff at Dorset highlighted that it would have been beneficial to offer a 'help desk' facility to support the system – especially during the roll-out phase. This would have enabled users to get real-time assistance with any problems or issues they encountered.

Next steps

The future initiatives for the BI Tool fall into two main areas. First, to extend the area that it covers and secondly to improve the facilities it offers.

To extend its coverage it is necessary to enhance the involvement of partner organisations and the range of data incorporated within the system – which currently covers five to 16-year-olds. There are plans to investigate the inclusion of:

- data on 0 to five-year-olds obtained from health services and early years settings

- more data from partner organisations, such as the police and welfare services (eg information on anti-social behaviour and NEETs)

- data from related areas such as safeguarding information from the proposed introduction of My Concern software

- data on post-16s.

To improve the facilities offered by the system, Dorset plan to:

- review the flags used to identify possible problems in light of experience and feedback

- monitor re-referral levels to ensure the process is working in the long term

- enhance the system to allow for forecasting and trend analysis

- evaluate whether there would be a benefit to allowing users greater scope to record ongoing progress and steps taken in cases which are not simple problems requiring a single action.

Further information

This is a well-documented system and Dorset County Council is willing to share its knowledge and experience with other public-sector bodies.

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