



# Developing a new data and information ecosystem that supports the reformed school system in Wales – findings from a research study

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## Executive summary

### 1. Research objectives

- 1.1 The school system in Wales is undergoing significant reform. The [Education in Wales: Our National Mission](#) (2017) sets out a bold vision for transforming the curriculum and improving the skills and knowledge of learners. The Curriculum for Wales (CfW), a cornerstone of the reforms, has since been introduced, and will become statutory for all learners up to and including Year 8 from September 2023.
- 1.2 The CfW is underpinned by four enabling objectives that are central to realising the new vision for the school system and its learners – including the fourth objective, which is focused on creating ‘robust assessment, evaluation, and accountability arrangements.’ This study was commissioned to advance this fourth objective by defining a new data and information ecosystem for the school system in Wales that can support three core functions: self-evaluation and improvement, accountability, and transparency for wider citizens.<sup>1</sup>
- 1.3 This data and information ecosystem is broad and wide-ranging, encompassing the full range of information collected, processed, and used by stakeholders to accomplish the three core functions. This study therefore had several specific objectives. The first was to understand the various roles and responsibilities of stakeholders across the system in carrying out the core functions, map in detail the data and information they need to do this effectively and bring clarity and shape generally to what is meant by the data and information ecosystem.

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<sup>1</sup> It is part of a broader programme of evidence and research. For example, the [School improvement guidance: framework for evaluation, improvement and accountability](#) and accompanying [resources](#) (June 2022) sets out the Welsh Government’s expectations for creating a system focused on improvement. A separate [Scoping study for the evaluation of the curriculum and assessment reforms in Wales](#), was also commissioned by the Welsh Government.

- 1.4 Prior to the introduction of the CfW, there was also a disproportionate focus on learner attainment (i.e., Key Stage 4 qualifications) in the school system, which created unintended consequences including fostering a culture in which the use of quantitative data was skewed towards scrutiny and accountability. The new [school improvement guidance](#) sets out an alternative vision in which data and information should be used primarily for self-evaluation and improvement. The second objective was therefore to understand the kinds of data and information and ways it should be used that can continue to positively influence the attitudes and culture of partners and enable this vision.
- 1.5 Finally, the CfW is now both more flexible and more holistic than before, and prioritises – in its [four purposes](#) – aspects of learning such as wellbeing and creativity equally alongside attainment. The final objective of this study was therefore to make recommendations for changes to the way data and information is used in the school system so that the ecosystem reflects both the ethos and content of the CfW and can support its successful ongoing implementation.
- 1.6 **Scope:** The qualifications used within the school system themselves were not in scope. However, qualifications outcomes data is one of the most important parts of any school data and information ecosystem, so it was determined that performance indicators of the kind used to summarise qualifications outcomes data would be considered. And while the scope of the school data and information ecosystem is very broad and wide-ranging, this study focuses on where the data and information needs of multiple stakeholders come together, for example when data is collected and/or reported in a consistent and standardised way across multiple schools, then shared with other stakeholder groups (referred to as ‘standardised data’ in this report). By contrast, the information that schools and other stakeholders use on a day-to-day basis for operational purposes, was out of scope. The value of data linking research is recognised in the [scoping study for the evaluation of the curriculum and assessment reforms](#), but is not covered in this report specifically. Similarly, not every school policy area is covered: our findings and recommendations respond to those stakeholder needs that emerged as priorities at the time of research and writing; other areas that do not figure prominently in this report are of course still relevant, and since the data and ecosystem will continue to evolve as the CfW becomes more established, these areas could well be reviewed in future. Finally, most of the research was conducted during academic year 2021/22, which was a time of significant upheaval due to the coronavirus pandemic, and some of the pre-pandemic approaches to using data and information had been paused. This study therefore considered both the approaches in place at the time of the research as well as those pre-pandemic. Post-16 arrangements were not in scope.

## 2. Methodology

- 2.1 Social Finance began this research project in May 2021. Our approach was to work closely with stakeholders across the school system in Wales to co-create solutions that meet their needs. There were four phases to the research:
- 2.2 Phase 1 was a broad scoping phase to understand the policy landscape, roles and responsibilities of different stakeholders, current state and definition of the data and information ecosystem, and how it might change and evolve as the CfW is rolled out. Phase 2 was a more in-depth round of stakeholder engagement to understand the specific data needs of stakeholders, what is working well currently, and where there are perceived to be gaps. Phase 3 involved a synthesis of combined research and engagement to arrive at a combined set of user needs for the ecosystem as a whole, followed by an assessment of areas where some change or additional standardised data is required. We also carried out a semi-structured literature review to understand approaches in other countries. Finally, in Phase 4 we undertook a structured approach to develop recommendations, covering both specific recommendations that respond to current gaps and challenges and more general principles for continuing to evolve the ecosystem in future.
- 2.3 The approach to the research was iterative. Since the Welsh Government had not previously attempted to define formally the data and information ecosystem, it was necessary to continually pause and reflect on emerging findings, assess whether our methods were yielding the expected results, and adapt accordingly. We worked closely with members of the Welsh Government School

Information and Improvement Branch throughout and met quarterly with a Steering Group and Advisory Group, which included representatives from across the school system.

### **3. Findings – defining roles and responsibilities and key parts of the data and information ecosystem**

- 3.1 In our first round of engagement, we sought to understand key stakeholders' roles and responsibilities for carrying out the three core functions, and their current use of data. Estyn, for instance, need a range of data and information to carry out school inspections. Their primary source of information for inspections is always direct observations within schools, although standardised data is valuable for triangulating and challenging findings. Local authorities and regional consortia felt that there was value in being able to use standardised data to compare schools but acknowledged this may have driven some competition between schools and other unintended negative consequences in the past. Schools use data and information primarily for self-evaluation and improvement, and use a range of data for this currently, though also identified several areas where they felt additional standardised data would be useful. Finally, the Welsh Government need visibility across the school system as a whole and to understand the effectiveness of reforms, so find national-level data, aggregated from standardised data collection within schools most valuable.
- 3.2 Initial engagement and research also identified a huge amount of data being used across the ecosystem. We therefore created definitions for the different levels of flexibility for the collection and use of data, and subsequently decided to focus on more standardised data, since more flexible data used for operational purposes is governed by school improvement guidance. Another key finding was that the types of quantitative indicators used and how these are shared within the system can impact on broader culture. For instance, using indicators that ascribe significant value judgements (e.g., KS4 league tables, colour coding of results) and sharing these school-level indicators with both middle tier partners and the public has in the past contributed to a culture of accountability and scrutiny over self-evaluation and improvement.

### **4. Findings – stakeholder data and information needs**

- 4.1 A key objective of this research study was to map in detail the data and information needs of different stakeholders in the school system for carrying out their core functions, including where they perceived there to be gaps and challenges with current approaches.
- 4.2 **Key stakeholder groups:** we define key stakeholder groups – including Estyn, local authorities, regional consortia, Welsh Government, and schools – as those organisations that have the principal roles in carrying out the core functions of self-evaluation, accountability, and transparency. They also school data and information most frequently, and their needs most often interrelate.
- 4.3 Estyn were generally cautious about introducing any new quantitative indicators, which they recognised had driven perverse incentives in schools in the past (e.g., KS4 performance measures), however, they did feel that a more consistent approach to understanding learner wellbeing across schools would be valuable. Local authorities' feedback centred on learner skills development and progression, which are both new aspects of the CfW. Some local authorities explored the idea of introducing personalised assessments for skills (e.g., critical thinking, resilience) and to track individual learner progress. However, other local authorities were sceptical of the level of resource that would be required to develop and administer these assessments. Of the key stakeholder groups consulted, regional consortia were most satisfied with current levels of standardised data for carrying out their role supporting schools' self-evaluation and improvement. They were generally against the introduction of additional standardised data, whether that be assessments or surveys, which they felt would not be conducive to promoting a culture of flexible self-evaluation.
- 4.4 Schools also felt that the priority gaps in current data and information centred around aspects of the CfW that are new or different, namely experience, knowledge, and skills, learner progression, and wellbeing. Finally, while Welsh Government teams often had different perspectives on the use of data and information within the school system due to their various different policy responsibilities,

they generally called for greater levels of consistent, standardised data in the system relative to other stakeholders, due to their need for aggregate data at a national level.

- 4.5 **Other important stakeholder groups:** many other stakeholder groups have an important stake in the school data and information ecosystem. For example, Diocesan authorities need similar information to local authorities about the individual schools they are responsible for, but this is not always made available to them in a timely manner. For Education Other Than at School, while there is a consistent baseline of data collected from and provided to all providers, since provision varies across Wales (e.g., urban versus rural areas) the availability of additional data is often inconsistent.
- 4.6 Further education and employer representatives were consistent in calling for a stronger emphasis on destinations in the data used to assess the effectiveness of secondary education. For example, they suggested schools could collect data on learners' intended destinations to understand how well the system is supporting learners to both go into and sustain their preferred future destination. Learners themselves were generally keen to have access to a broader range of information about their local school environment – wellbeing and equality were top priorities – and also want a better mechanism for having their voices heard in their school. And it is interesting to note that, of all the stakeholder groups we engaged with, parents and carers voiced perhaps the greatest desire for more and better-quality information about local schools and the school system. This ranged from learner wellbeing to school funding and cost effectiveness to teacher skills and training.

## 5. Findings – assessments of areas where changes are needed

- 5.1 We summarised the combined information about stakeholder data and information needs into a longlist and assessed for each whether some change to the data collected and/or how it is used is necessary to address current gaps and challenges. This is summarised in the table below. Our recommendations then focused on areas where change is required.

Priority data and information need	Description	Assessment
KS4 performance indicators	Arrangements for reporting on KS4 qualifications were paused during the pandemic. Whilst publication of pre-2019 KS4 performance measures created some negative consequences, stakeholders reported some gaps in their understanding without it.	Change required
Cross-curriculum development	The CfW prioritises a broad range of cross-curricular skills; schools and other partners need to understand skills development for self-evaluation and improvement purposes.	Change required
Progress	Progression is a defining characteristic of the CfW. Schools and other stakeholders need to understand learners' progress throughout education to ensure they are prepared for assessments at Year 11.	Change required
Wellbeing (learners and staff)	Wellbeing is another key part of CfW (the fourth purpose, 'healthy, confident individuals') with commitments in the national mission to invest in and improve understanding of learner and staff wellbeing.	Change required
Learner behaviour and attendance	While most aspects of learner behaviour can be understood by schools through observation and day-to-day processes, stakeholders other than schools require robust, comparable data about key events (attendance, exclusions, pupil moves) for accountability purposes.	Change required
Characteristics and Equity	Stakeholders need to understand the demographics of the learner population to assess whether the school system is equitable, and to adjust approaches, funding, and analysis accordingly.	Change required
Schools causing concern	Schools and middle-tier partners needs to be able to identify areas of concern where improvement is necessary, in order to identify effective responses and monitor progress.	No change required
Support and improvement services	Local authorities and regional consortia need to be able to review and interrogate the quality and impact of their support services as part of their own self-evaluation and improvement activities.	No change required
Wellbeing of Future Generations Act /	Under the Wellbeing of Future Generations Act, local authorities will set objectives across a range of topics, which schools may need to	No change required

Cymraeg 2050 targets	report on. Similarly, schools need to report on levels of Welsh speaking under Cymraeg 2050.	
Communication	Welsh Government need to be able to communicate the journey and success of the CfW to the public to build confidence in the reforms.	<i>Considered in other needs</i>
Wellbeing and attitude to learning	Estyn need to evaluate schools' Wellbeing and Attitude to Learning approaches as part of their Inspection Framework.	No change required
Professional learning and wellbeing outcomes	Developing a high-quality education profession is one of the four enabling objectives of the <i>National Mission</i> . There are several questions within this, including the attractiveness of the teaching profession, and whether teacher skills match demand.	No change required

5.2 Many of the areas where we concluded that change is required naturally align to aspects of the CfW that are new or different. We therefore conducted more detailed research for these areas to understand the specific challenges involved and to inform the development of recommendations:

5.3 KS4 qualifications outcomes data: pre-pandemic approaches to reporting on school-level KS4 attainment created perverse incentives for schools. Indicators that made definitive judgements about school performance were especially problematic. Stakeholders instead expressed preferences for indicators that place equal value upon different subjects/qualifications, capture progress throughout education, and that emphasise the importance of subsequent destinations. Any indicators should also be properly contextualised, and while comparisons between schools are deemed to be useful, they should be meaningful and made available only to schools themselves.

5.4 Cross-curriculum skills development: there was a general consensus that there are currently gaps in stakeholders' ability to understand how and whether learners are developing the broad set of skills prioritised in the CfW. It was suggested that more a consistent approach to assessing learner skills development would be valuable, although it was also recognised that measuring these skills within schools in a way that does not introduce significant new burdens would be challenging.

5.5 Progress: stakeholder engagement identified concerns that progress is not understood consistently within schools. This could lead to variations in the effectiveness of teaching and learning and corresponding variations in KS4 attainment. While some stakeholders signalled that a quantitative assessment framework aligned to aspects of the CfW relating to progression (e.g., Principles of Progression, Progression Steps) would be valuable, others, including Welsh Government policy teams, felt strongly that this would be both impractical and contrary to the ethos of the CfW. Addressing this challenge through improved guidance and/or peer-led support appears more viable.

## 6. Findings – approaches to using data and information in other countries

6.1 There is much to learn from the approaches to using data and information in the school systems of countries that have undergone similar reforms to those in Wales. Finland, for example, is perhaps the leader internationally in using sampling approaches to understand learner progression. A range of frequent, focused assessments are conducted in relatively small samples of schools to assess learner attainment, which are combined with locally led longitudinal studies focused on longer-term learner progression. New Zealand, by contrast, is a leader in understanding learner wellbeing. There are two main learnings for Wales: first, the New Zealand school system dedicates significant resources to understanding wellbeing, involving collaboration between government departments and sector experts; and wellbeing is explored from a number of angles, including both national wellbeing surveys and more locally led learner voice surveys.

6.2 Singapore also provides a valuable lesson about how to maintain public confidence in the quality of education when implementing changes to the way school data is reported and shared. During recent education reforms, Singapore attempted to move partially away from its former focus solely on attainment data. However, this was met by scepticism from some parents and parts of the media, who were used to regular, detailed information about children's performance in assessments.

## **7. Findings – insights from testing draft recommendations**

- 7.1 Before finalising recommendations, we tested draft versions extensively. This surfaced valuable insights about how any changes should be implemented by the Welsh Government, both in the near term and in future. For example:
- 7.2 Tensions between data and information needs: generally, each stakeholder group appreciated how some specific data and information of value to them could come at a cost to other groups (e.g., additional school burdens from collecting new data). However, there were some tensions between the needs of different stakeholders, which had to be balanced in the final recommendations.
- 7.3 Culture and attitudes: recommendation testing suggested that the school improvement guidance has perhaps not yet filtered through to all parts of the system. For instance, there is still some nervousness amongst schools that, if they were to collect and share any new data and information, it would be used information first and foremost by other partners for accountability purposes rather than to support self-evaluation and improvement. Schools are also still under strain with the recovery from coronavirus and implementing the CfW, so reported that they have limited capacity for any thoroughgoing changes to how they use data and information in the near term.
- 7.4 Role of the media: some of the recommendations described below involve reducing the amount of school-level data that is made public as a matter of course, in particular KS4 qualifications outcomes indicators. If these recommendations are accepted, stakeholders anticipated that media outlets are likely to submit FOI requests to access this data (e.g., to publish league tables). The Welsh Government would need to prepare for this eventuality, for instance by preparing statements that emphasise the parity between KS4 attainment and other aspects of learning in the new CfW.

## **8. Recommendations**

- 8.1 Our recommendations are designed to respond to stakeholder needs as they are now but also to define the ecosystem in general terms so that it can continue to evolve over time. The overarching guide for these recommendations were the twin goals of: i) supporting the successful implementation of the CfW; and ii) developing the system's culture and practices around the use of data and information to achieve the vision of recent [school improvement guidance](#).
- 8.2 There are three categories of recommendations: general principles, which are intended to guide the overall approach to using data and information and which are extrapolated from the specific recommendations; specific recommendations, which respond to priority user needs and where gaps and issues were identified with current approaches (including consideration of KS4 qualifications outcomes); and two final recommendations for how the Welsh Government should think about continuing to evolve the ecosystem over time.
- 8.3 It should be noted that the recommendations do not cover every aspect of the data and information ecosystem. Specific recommendations in particular respond to those needs that emerged as priorities at the time of research and writing. This is not to say other areas should not be reviewed and revised on an ongoing basis. Indeed, recommendation 13 suggests a process for doing this. Similarly, recommendations are for changes to current approaches only, so by no means preclude the continued use of data and information for other parts of the ecosystem not explicitly mentioned.

## Summary of all recommendations

### General principles

- 1. Types of indicators** – the Welsh Government should seek to avoid using indicators of individual school performance that rank schools or imply value judgments. Generally, the Welsh Government should use caution when devising and publishing any indicators that summarise complex information, and co-design them with the relevant stakeholder whose data is being summarised.
- 2. Approach to sharing school-level data** – the Welsh Government should continue to drive the culture of using data for self-evaluation and improvement by refraining from publishing school-level indicators. The Welsh Government should consider sharing the school-level data and indicators it collects and processes with respective schools only (e.g., KS4 qualification outcomes), and in the near term, schools should have discretion over sharing this information with middle tier organisations and school communities.
- 3. Using sampling to answer policy questions** – the Welsh Government should aim to employ sampling when seeking to answer policy self-evaluation questions to minimise the burden on schools of additional data collection. It should aim to distribute the burden of participating in sampled activities as evenly as possible amongst schools and make all research tools used available for other schools' optional use.
- 4. Transparency and communication with the public** – all system stakeholders should re-commit to the principle of transparency with the public, but in particular the Welsh Government and in the long term, schools. In the near term, schools should have some discretion over the scope and format of information shared with school communities (e.g., via MyLocalSchool), in line with general principal 2 above.

### Specific changes

- 5. Understanding key learner skills** – the Welsh Government should lead work to create learner assessments to capture a broader range of skills than numeracy and literacy for learners before KS4. Assessments could be conducted on a sampled basis as per general recommendation 2, with participating schools receiving their own results for self-evaluation purposes. Further research should be carried out to determine what skills to assess and how.
- 6. Supporting consistent approaches to learner progression** – the Welsh Government should consider commissioning further research to understand how to best support consistent approaches to learner progression across schools. The preferred option is that the middle tier delivers support to schools to develop consistent approaches to understanding and benchmarking progress – not the introduction of a consistent measure or indicator.
- 7. Learner wellbeing and voice** – The Welsh Government should continue to develop its approach to learner wellbeing surveys and explore whether and how learner wellbeing data might be generated annually, at levels that are both representative at the national level, and are useful for schools. Sampling may help to achieve this and should be considered. The Welsh Government should also continue to encourage participation and develop awareness of existing WG-endorsed surveys. It should also create guidance to support schools to implement an optional annual Learner Voice Survey and encourage its uptake, to complement the national picture with locally relevant themes.
- 8. Staff wellbeing** – The Welsh Government should introduce a system for collecting consistent, national level data on the impact of the reforms on staff wellbeing, which could be a new module within the School Workforce Annual Census or a separate staff wellbeing survey.
- 9. Contextualising school indicators and ability to interrogate equity impacts** – the Welsh Government should consider using the Welsh Index of Multiple Deprivation to provide more nuanced contextual information about individual schools and include this in any reports shared with schools and on MyLocalSchool. It should also consider collecting additional learner-level characteristics in the Pupil Level Annual Census to enable more granular analysis of curriculum equity impacts. This recommendation should inform the current Welsh Government review into how to best understand school-level deprivation.

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**10. Greater transparency with school communities** – the Welsh Government should conduct or commission a needs-led review of the MyLocalSchool system so that a broader range of school-level information is available to school communities, in the long term, in line with general principles 2 and 4 and recommendation 12. Including functionality for schools to upload their own information should be considered.

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**Specific changes – Key Stage 4 qualifications outcomes data**

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**11. Revise KS4 indicators and data sharing** – the Welsh Government should aim to create a basket of useful indicators for schools to understand their KS4 qualifications outcomes in a rounded, contextual way, for self-evaluation purposes. The Post-16 approach (i.e., consistent measures) is a useful guide. Indicators might include measures that summarise qualification outcomes, a destinations indicator(s), and qualification/subject level summary statistics. Reports provided to schools should be designed with them and include more detailed contextual information and comparisons they find most valuable for self-evaluation and learning purposes.

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**Continuing to evolve the ecosystem**

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**12. Roadmap for building a culture of self-evaluation and improvement** – the Welsh Government should phase in any changes to the data and information ecosystem resulting from this report (or otherwise) gradually. Indeed, it could potentially consider pausing any changes (incl. issuing new guidance around the use of data and information for a period) and instead focus on influencing the broader system culture by reinforcing current School improvement guidance to ensure it filters through to all levels.

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**13. Approach to ongoing review and development of the ecosystem** – the Welsh Government should conduct a short, annual review of the data and information ecosystem to identify and respond to any specific issues or gaps that may emerge, as well as to understand how the culture relating to the use of data and information is developing.

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Available at: <https://www.gov.wales/research-exploring-new-information-system-schools>

Views expressed in this report are those of the researchers and not necessarily those of the Welsh Government

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