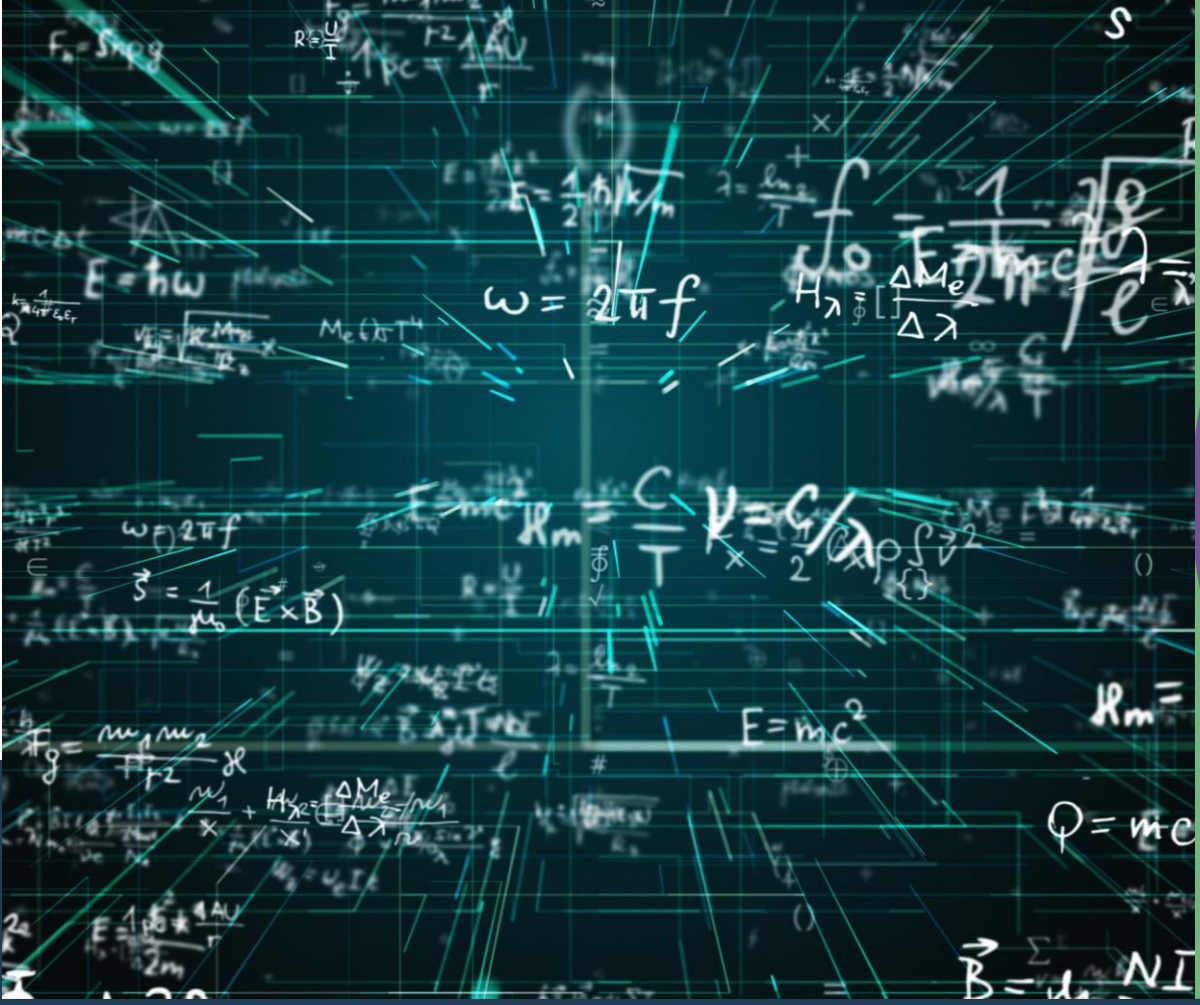

The Place of Learning Analytics in Educational Evaluation and Planning

Points of Convergence and Divergence in European Countries

Erasmus+ QUALAS
(Quality Assurance and Learning Analytics in Schools)

Work Package 3
Final Report

VUB VRIJE UNIVERSITEI BRUSSEL
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About QUALAS – Quality Assurance and Learning Analytics in Schools

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Attribution

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LIST OF ACRONYMS

ADM	Automated Decision Making
CS	Case Study
DEIS	Delivering Equality of Opportunity in Schools
DIDM	Data Informed Decision Making
DigCompEdu	Digital Competence Framework for Educators
EU	European Union
GDPR	General Data Protection Regulation
HE	Higher Education
ICT	Information and Communications Technology
LA	Learning Analytics
LMS	Learning Management Systems
OECD	Organisation for Economic Co-operative Development
PD	Professional Development
QA	Quality Assurance
QUALAS	Quality Assurance and Learning Analytics in Schools
SE	School Evaluation
SEN	Special Educational Needs
SIP	School Improvement Plan
SSE	School Self Evaluation
UNESCO	United Nations Educational, Scientific and Cultural Organization
VET	Vocational Education and Training
WSE	Whole School Evaluation

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We look forward to continuing our work together in the pursuit of inclusive, equitable, and culturally responsive education for all students in Europe and elsewhere.

Executive Summary

EXECUTIVE SUMMARY

The purpose of this report is to provide a comparative cross case analysis of how Learning Analytics (LA) is being adopted and integrated into Quality Assurance (QA) / School Self Evaluation (SSE) in secondary schools across four European jurisdictions: Belgium (*Flanders*), Ireland, Italy and Spain (Castilla y León) (Castilla y León) (*Castilla y León*). All four countries are engaged in digital education and SSE reforms, yet they exhibit varying approaches to SSE and by association, levels of readiness to enhance SSE with LA in secondary education. However, it is also noted that terms such as QA, SSE and LA have different meanings and purposes across jurisdictions.

In most European countries, QA in educational settings is understood as an umbrella term that encompasses the policies, structures, and evaluation processes designed to maintain and enhance the quality of research, teaching, learning and engagement in a particular organisation (European Commission/EACEA/Eurydice, 2015; OECD, 2013). It includes both external mechanisms such as inspectorate led evaluations or other forms of external school review and internal mechanisms, including systematic SSE and internal reviews conducted by internal staff members that collectively form an overarching framework for evaluating and improving school quality (European Commission/EACEA/Eurydice, 2015; OECD, 2013).

SSE, a core element of internal QA, is generally perceived as a school led, participatory process in which members of a school community systematically reflect on the schools practices and performance to identify strengths and areas for development (Brown et al. 2016a, 2017, 2021; OECD, 2013). The primary purpose of SSE relates to that of intelligent accountability and school improvement, fostering a culture of continuous learning and data informed decision making (DIDM) by using evidence such as student outcomes and stakeholder feedback to inform planning and teaching strategies (Murphy & Brown, 2022; OECD, 2013).

SSE is generally formative in nature and is conducted by the school, for the school, with the goal of enhancing quality rather than solely serving accountability purposes (Brown et al., 2021; European Commission/EACEA/Eurydice, 2015; OECD, 2013). Across Europe, this approach is embedded in diverse ways. For example, Ireland promotes SSE and school inspection as complementary to each other (Brown et al. 2017). Similar to Ireland, Italy mandates a formal SSE report as the first phase of its national school evaluation cycle (Poliandri, 2019).; Belgium (Flanders) encourages autonomous SSE as part of its quality culture (Faddar et al., 2021; Vanhoof & Van Petegem, 2011); and Spain (Castilla y León) (Castilla y León), depending on the autonomus communities, requires schools to implement SSE plans together with external evaluations (Brown et al. 2021).

The research base also highlights that school evaluation is recognised as a mechanism both to monitor performance and to enhance the quality of teaching and learning through internal improvement processes (European Commission/EACEA/Eurydice, 2015; OECD, 2013). Taking the above into consideration, for the purposes of this report, the term SSE is used as an all encompassing term to include internal evaluation, SSE, and related QA activities together with their diverse aims (except where original terminology is retained in direct quotations).

By association, a wide range of definitions for LA have also emerged, reflecting the diversity of its applications and plasticity of its objectives. Chatti et al. (2012) conceptualise LA as encompassing six objectives: monitoring and analysis, prediction and intervention, tutoring and mentoring, assessment and feedback, adaptation and personalisation or recommendation, and reflection.

Within the framework of Work Package 2 of the QUALAS project, and for the purposes of this research; in the context of SSE, LA is defined as 'the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs' (Long & Siemens, 2011, p. 34). In practical terms, LA involves the systematic collection of digital data such as assessment results, online activity records, and attendance data and the subsequent analysis of these data points to support pedagogical or organisational decision making.

Over the past two decades, LA has attracted considerable attention for its potential to make education more evidence informed, offering opportunities to personalise learning, enhance student support, and to guide both pedagogical and administrative practices (UNESCO, 2012; Wise & Jung, 2019). LA applications, for example, can help identify learners at risk of disengagement or underachievement by recognising early patterns in their performance or participation, thereby enabling timely and targeted interventions (Kew & Tasir, 2022). More broadly, LA supports evidence-informed decision making by allowing teachers and school leaders to complement their professional expertise with empirically grounded insights (Wise & Jung, 2019). Within the context of SSE, its core value lies in its capacity to advance educational quality and equity by using data to highlight effective practices and areas requiring improvement, thereby informing strategies that are better aligned with learners' needs.

The QUALAS (Quality Assurance and Learning Analytics in Schools) project that started in October 2023 and concludes in September 2026 aims to explore the affordance and constraints relating to the enhancement of SSE through the use of LA, as well as building capacity for DIDM and LA and consists of five distinct work packages.

- Work package One (Project Management) – led by Vrije Universiteit Brussel, Belgium (Flanders)
- Work package Two (Indicators framework) – led by Vrije Universiteit Brussel, Belgium (Flanders)
- Work package Three (Case studies) – led by Dublin City University, Ireland
- Work package Four (Tools and Training Module) – led by University of Valladolid, Spain (Castilla y León) (Castilla y León)
- Work package Five (Quality Assurance of Project activities) – led by Istituto Nazionale per la Valutazione del Sistema Educativo di Istruzione e di Formazione (Invalisi), Italy

As previously stated, this report describes the findings derived from work package three that consisted of case studies in twenty secondary schools across Belgium (Flanders), Ireland, Italy and Spain (Castilla y León) (Castilla y León). The report documents stakeholder experiences (school leaders, QA/SSE coordinators, ICT coordinators, teachers, and in some cases (Ireland and Italy)

parents and students) and key findings relating to the adoption, implementation, challenges, and opportunities of LA in SE across the four cases, highlighting emergent themes and comparative insights.

The report is structured across ten interrelated chapters. Following the Introduction and Background, Chapter 2 outlines the Research Design used in the Study. Chapters 3 and 4, entitled Setting the Scene, examine The Place of LA and SSE in Case Study Schools. Chapter 5 explores The Role of School Culture and Context in Shaping the Use of LA for SSE, while Chapter 6 considers The Affordances and Constraints for the Use of LA in the Process of SSE in Case Study Schools. Chapter 7 addresses The Impact and Use of LA in the Process of SSE while Chapter 8 focuses on Stakeholder Capacity and Involvement. Chapter 9, LA and SSE: Moving Forward – Issues and Concerns, identifies emerging challenges and opportunities, while Chapter 10, Discussion and Conclusion, synthesises the findings and presents a set of actionable recommendations for educational policy and practice

A note of caution, however, is that due to the sample size and variability of participants across countries, caution should be taken when making inferences relating to a particular countries readiness for the use of LA in SSE. Instead it is suggested that findings derived from this report should be used as a *Futures Thinking* resource for countries who are considering the ways and means in which LA can be used to enhance an aspect of Evaluation in their respective organisations or countries. Nonethleess, the following themes emerged.

Adoption and Implementation of LA in SSE

Across all cases, the integration of LA into SE processes is sporadic. Each country has established SSE mechanisms to drive school improvement and accountability (e.g. mandated SSE in Ireland and Italy). However, widespread use of LA in these SSE processes remains limited or at an early stage of development. In Ireland and Italy, national policies explicitly require schools to use performance data in SSE reports and improvement planning. For example, Italy, makes extensive use of standardized test data (INVALSI) as part of SSE, linking results to school improvement strategies and resource allocation. In Ireland, schools, explicity use an inspectorate devised process of SSE to drive improvement where schools use as part of the SSE process, data from various sources such as state examinations and attitudinal surveys to drive improvement.

In Belgium (Flanders) and Spain (Castilla y León) (Castilla y León), SSE is more decentralised. Belgium (Flanders) grants autonomy for schools to define quality policies within broad frameworks, and Spain (Castilla y León) (Castilla y León) shares SSE responsibility at national and regional levels. While these systems collect multitudes of student data (for example, attendance rates), no formal regulations or guidelines currently direct schools in Spain (Castilla y León) (Castilla y León) or Belgium (Flanders) to integrate LA in decision making. As a result, the use of LA in SSE tends to be sparse, and in the case of all countries tends to be driven by individual school initiatives or specific projects rather than system wide practices.

Within schools, the implementation of LA typically revolves around existing digital platforms and data practices, but with limited analytic sophistication. All four countries use various Learning Management Systems (LMS) such as electronic grade books (For example, *VSware* in Ireland, *Smartschool* in Belgium (Flanders), *registri elettronici* in Italy, and *STILUS* in C*astilla y León*) that are used to record grades, attendance, and other student information. These systems provide a foundation of data that can support LA.

Indeed, many case study schools report using platform data for monitoring: tracking attendance, highlighting at risk students, or viewing examination results. For example, many Irish schools analyse cognitive ability tests such as CAT4 tests[1] to identify learning issues and inform support strategies. In the case of Spain (Castilla y León) (Castilla y León), some school leaders report using data, for instance, to detect learning needs and struggling students, in order to inform teachers and develop specific strategies to support them and in some Belgian (Flanders) schools internal surveys are used to guide policy and identify problems at the school level.

Whilst the availability of data sets and various data management systems is promising, the case study analysis also reveals that LA in the sense of a sophisticated analysis of learning process data to drive pedagogical or organisational decision making is generally not yet embedded in everyday school practice. For example, across all countries, many educators are unfamiliar with the term *LA*, indicating that it remains more of a theoretical concept than a routinely applied practice to enance an aspect of education.

Implementation of LA is often restricted to micro-level uses (e.g. teachers using data to adjust instruction for their class) rather than systematic integration into whole school SSE cycles. Furthermore, across all cases, any significant use of LA tends to depend on what could be referred to as enthusiastic individuals (such as ICT or SSE coordinators) rather than broad staff engagement. In summary, based on the case study findings, the adoption of LA for SSE across these countries is at the very most in its infancy. While schools have a strong culture of SSE and recognise the abundance of data available, it is apparent that they lack the structures, skills, and sometimes the mandate to translate LA data into actionable insights for school wide improvement. This is unsurprising as the cross case analysis reveals a set of common challenges that hinder the integration of LA into SSE, despite differing contexts:

- Limited Data Literacy and Skills: A significant barrier identified in the case studies is a capacity deficit among educators in collecting, analysing, and interpreting data. Many teachers and school leaders feel underprepared to engage with data beyond basic use. For example, in the case of Italy and Spain (Castilla y León) (Castilla y León), only a minority of staff had any formal understanding of LA, and some viewed the concept with skepticism or confusion. In the case of Ireland and Belgium (Flanders), whilst digital tools appear to be frequently used, participants noted that teachers often rely on intuition and experience (*gut feeling*) over data

1 The Cognitive Abilities Test (CAT4) is an assessment that is designed to help students and their teachers understand how they learn and what their academic potential might be. It assesses how students think in areas that are known to make a difference to learning.

analysis, due to quite possibly their lack of training or confidence in data interpretation. This low data literacy means that schools struggle to transform raw data into meaningful insights for QA. Developing staff competencies in Data Informed Decision Making (DIDM) is therefore a critical need across all cases.

- Cultural Resistance and Change Management: School culture emerged as a critical factor for the use of LA in SE. In many schools, for example in the case of Belgium (Flanders) and Italy, SE and data analysis are seen as the domain of management or a small "data team," with limited teacher involvement. Many teachers do not perceive SSE as a collaborative, whole-staff process, sometimes dismissing it as bureaucratic or outside their classroom concerns.

  This cultural ambivalence can impede LA implementation if educators view data initiatives as a top-down compliance task and, as a result, they are less likely to engage meaningfully in the process. Moreover, a wariness concerning data replacing human judgment is prevalent across all cases. Teachers and school leaders in all cases voiced concern that an over-reliance on numbers, if used incorrectly, has the potential to "dehumanise" education. This reflects an underlying cultural tension that exists across all cases. While staff seek objective evidence to improve practices, they resist any notion that data should replace professional intuition and a holistic understanding of students. Overcoming this resistance requires careful change management, building trust that LA can enhance (not diminish) professional practice, and embedding data use into a positive, improvement oriented school culture.

- Technical and Infrastructural Barriers: From an Infrastructural perspective, fragmented or underutilised systems pose significant challenges. All countries have multiple data platforms (academic results systems, attendance registers, LMS, etc.). However, they are often not fully utilised to provide a coherent analytic picture of an aspect of educational quality. Participants, in particular in Spain (Castilla y León) (Castilla y León), highlighted the need for unified platforms or dashboards that aggregate data for '*easy*' analysis. The lack of such integration means that data appears to remain in silos (one system for grades, another for absences, etc.), making the process intensive to compile and analyse data for QA and SE purposes. Furthermore, schools often lack dedicated tools for LA beyond generic spreadsheets or basic LMS systems. This technical gap is compounded by the absence of on-site data experts where, except in rare cases, schools do not have data analysts or similar roles for staff. As a result, educators themselves must do resource intensive tasks with data, which, without training, is overwhelming for many educators. In Spain (Castilla y León) (Castilla y León) for example, respondents explicitly suggested having a *data specialist* to support schools in advanced data analysis and interpretation. Indeed, time is also a significant constraint where teachers and school leaders juggle many responsibilities, and as a result, time to fully engage with data (for example, for SSE analysis or LA initiatives) is limited. In fact, across all cases, without dedicated time within the school schedule, it is apparent that data tasks are considered an added burden that is difficult to sustain.

- Privacy, Ethics and Data Security Concerns: Ethical considerations relating to student data use formed another dominant theme in the Cross case analysis. Educators in all four countries are conscious of the sensitive nature of educational data and the need to handle it carefully. In particular, privacy concerns were raised in all cases regarding the use of LA platforms (for example, inappropriate use of platform data or communication channels leading to breaches of privacy). In this regard, it is apparent that school communities are in need of guidelines on how LA data can be used, shared, and protected.

  Across all cases, there is also fear of misinterpretation or bias, where data has the potential to label students unfairly and reinforce biases. Participants caution that test scores must be contextualised to avoid stigmatising students or overlooking personal circumstances. Unlike Higher Education (HE), where most institutions have LA policies, schools operate in a much greyer area with only general data protection laws (for example, GDPR in Europe) to guide them.

  This uncertainty makes schools understandably cautious about fully embracing LA, and especially any tools that track detailed learning behaviours of students. Addressing ethical and privacy issues through clear policies, stakeholder consent, and transparent communication is therefore critical to advancing LA in QA.

- Balancing Accountability and Improvement: A subtle but important challenge that emerged from the cross case analysis relates to that of maintaining a balance between using data for improvement or accountability. As previously stated, SE processes serve both purposes; they drive internal improvement and also serve (as is the case in Ireland and Italy) external accountability (to inspectors, policymakers and the public). In this regard, educators across the cases noted a “fragile balance” between accountability and improvement that exists.

  If LA is perceived primarily as an accountability mechanism (for example, to monitor and judge teacher or school performance), it can be met with defensiveness or, in the case of high stakes accountabilty systems, the manipulation of data. Indeed, numerous interviewees stressed that the goal should be a formative process that uses LA to help students and teachers improve, rather than using LA for punitive or purely performance ranking. However, external pressures (inspection regimes, publication of test scores, etc.) have the potential to push data use toward compliance and comparison. Furthermore, in many cases QA is perceived as *compliance-oriented*, with some interviewees fearing that data-driven evaluation has the potential to become a bureaucratic checklist rather than a genuine tool for learning. The challenge, as seen with SSE in countries like Ireland, is to utilize LA in a manner that both empowers schools to enhance their performance and meets accountability requirements. At its core, accountability should focus on the concept of "intelligent accountability." This means that accountability is not merely about justifying results; rather, it emphasises improvement, professional growth, collaborative practices, and the use of multiple sources of evidence to support both accountability and learning (Brown et al. 2021).

Benefits and Opportunities: Despite the challenges identified, the cross case analysis highlights significant opportunities and potential benefits of integrating LA into SE processes in schools. Indeed, stakeholders across all four countries expressed optimism about what LA could offer, even if current practice falls short of the ideal.

Key opportunities include the following:

- Personalised Learning and Student Support: The most frequently cited benefit of LA across all countries is its power to identify individual student needs and inform targeted interventions. In all countries, educators gave examples and aspirations of using data to highlight students who are underperforming, disengaged, or at risk, so that interventions can be provided at an early stage. For example, an Irish principal described using CAT4 test scores and exam results to pinpoint students who were significantly underachieving in particular subjects, leading to focused support for those students. Belgian (Flanders) and Italian teachers also see potential in LA to enable differentiation, "tailoring to each student" with objective data to inform decisions.

  LA can also highlight patterns (e.g. a drop in a student's performance or attendance) that might otherwise go unnoticed. Through data dashboards or reports, teachers can gain a more granular understanding of learners, allowing them to adjust instruction, provide personalised feedback, or arrange extra supports. In the long term, this granular approach that recognises the uniqueness of each student has the potential to lead to improved learning outcomes, equity of participation and the prevention of Early School Leaving (Brown et al. 2025). In this regard, LA has the potential to move beyond a one size fits all process of teaching, that can contribute to a more responsive and inclusive education.

- Evidence-informed Decision Making and School Improvement: Another signfiicant opportunity that emerged in the case study findings relates to that of strengthening evidence informed decision making at the school and system level. QA processes are most effective when they are grounded in robust evidence of what is working and what is not. LA can enrich the evidence base available to school leaders and QA teams. Participants noted that data provides a factual lens that can focus discussions on school improvement strategies. For example, in the case of Ireland, a significant majority of school leaders were of the view that robust data analysis enables more targeted school improvement planning. For example, identifying high failure rates in certain subjects or exams and then initiating improvement strategies in response. LA can therefore function as a compass for school improvement, pointing educators toward areas in need of attention and helping to track progress on improvement goals.
  It also enhances intelligent accountability where, rather than relying solely on anecdotal evidence and external data sets, staff can use data to justify initiatives and to monitor the impact of interventions objectively.

For example, in Belgium (Flanders), interviewees emphasised that having "numbers or evidence to put on the table" is increasingly crucial not only for SSE, but also to satisfy external audits and the needs of inspectors. Overall, LA is viewed as a means to ground the SSE cycle (Plan, Do, Check, Act) into a robust evidence process, potentially making SSE more rigorous and improvement plans more effective.

- Enhanced Stakeholder Communication and Engagement: LA can improve communication with stakeholders particularly students and parents by providing clear, data-based insights into student progress and school performance. In the case studies where parent and student interviews were conducted, case study evidence suggests that when used appropriately, data visualisations and reports can help teachers to convey to students and parents where a student stands and what their needs are. For example, Irish schools reported using attendance and assessment analytics to highlight issues to parents and to discuss students' progress during parent-teacher meetings, that added depth to these conversations.

  LA can also enhance student and parent voice by highlighting areas of concern that students and parents raise (for example, via survey data) and ensuring those are factored into school evaluations. In Italy and Ireland for example, schools use online surveys to gather student and parent feedback on various aspects of school quality, that is used in SSE reviews. Therefore, LA has the potential to make stakeholder feedback more systematic and evidence-based. While currently parents and students in most cases have only limited awareness of LA (often just checking grades online), expanding the use of analytics could result in greater transparency and engagement (for example, by sharing user-friendly data dashboards with the school community or involving students in interpreting learning data related to their performance).

  Used in this way, LA has the potential to make SSE processes more participatory and to strengthen trust, as decisions and progress can be communicated through factual, accessible evidence.

- Driving a Data-Informed Culture: Finally, some participants see LA as a catalyst for developing a more reflective, data-informed culture in schools. The process of engaging with data in incremental steps can encourage teachers to question assumptions, collaborate on solutions, and adopt a learning mindset about their own and their schools practice. In the cross case analysis, some schools that had started to use data regularly (for example, through SSE teams reviewing exam results or digital learning platform analytics) experienced a cultural shift where decisions were increasingly "guided by data" rather than intuition alone. Over time, such practices can standardise the use of evidence in pedagogical discussions and planning. Some stakeholders also referred to LA as a potential paradigm shift in QA and SSE if there is broad consensus among staff, suggesting that it could transform how schools operate by embedding continuous feedback loops into teaching and leadership.

In effect, LA tools combined with professional development (PD) can empower educators to engage in ongoing inquiry: identifying problems, implementing changes, and checking the impact of these changes in a cycle of continuous improvement. This opportunity, however, is contingent on addressing the identified challenges addressed in these case studies and in the broader literature so that the shift to a data-informed culture is both widespread and sustainable.

In summary, five overarching themes emerged from the comparative analysis that were prevalent across all country cases:

- Convergent understanding of LA and QA: All four countries acknowledge the importance of QA/SSE in driving school improvement and accountability, and there is a growing realisation of the importance of data-informed decision making in SE. However, the actual place of LA in SE is marginal. While basic data use (test scores, attendance) form part of the SE process, based on this case study analysis, LA is not yet systematically embedded within and across all countries involved in the process. On the one hand, while educators conceptualise QA as continuous improvement and reflection and that SE should ultimately enhance student learning outcomes. On the other hand, and in the main, the integration of LA into SE is aspirational at this stage, with many schools only experimenting or exploring possibilities rather than having established coherent school-wide LA practices.

- School Culture and Readiness: The culture of a school, including leadership, openness to change, and attitudes toward data, heavily influences LA usage. Schools with a supportive culture (strong leadership commitment to evidence-based improvement, collaborative staff ethos, clarity of vision) appear to be more ready to embrace LA. By association, where SE is seen as bureaucratic or where teachers feel uninvolved, LA initiatives tend to be faced with apathy and, in many cases, strong resistance. For example, in the case of Belgium (Flanders) and Spain (Castilla y León) (Castilla y León), activities appeared to be often management-driven, whereas in countries such as Ireland and Italy, there appears to be a push for whole staff involvement, but they still encounter concerns such as the dehumanisation of education in line with the other case study countries. Furthermore, data culture remains underdeveloped in many schools, with few incentives or expectations for teachers to use data beyond or even within their classroom. However, building a positive data culture requires, in line with the purpose of SE in Ireland data to be treated as a tool for learning and dialogue rather than judgment is a prerequisite for successful LA integration into the SE process.

- Affordances and Constraints: Each context has presented affordances (enablers) and constraints (barriers) for using LA in QA. Common affordances include the availability of digital infrastructure and data (all schools now generate digital data as a byproduct of teaching and administration) and supportive policy frameworks (for example, national QA guidelines that emphasise data use, funding for technology, etc.). The enthusiasm and skills of certain staff (ICT coordinators, data champions) also enable the integration of LA in schools.

On the other hand, constraints are extensive, particularly where there is a lack of PD, time constraints, insufficient tools or integration, and privacy concerns across all countries. Notably, the literature suggests and the cases affirm that these challenges mirror those seen in HE that is only amplified by the school context (younger learners, tighter resources,PD, etc). Indeed, a significant constraint is the gap between the potential of data and the practical capacity to use it, where schools have more data than ever before, but often 'don't know what to do with it' as one participant stated, highlighting a significant need for capacity-building.

- Impact and Current Use of LA: A review of the case study data strongly suggests that there are transformative changes attributable to LA where participants shared isolated positive aspects of using it, such as better identification of struggling students, more evidence-based discussions. Advantages of using LA that were identified include more informed decision-making, support for at risk students, personalised approaches, and providing accountability evidence. Disadvantages or concerns include the risk of dehumanising education by over reliance on data, data quality issues (for example, misleading averages) and added complexity or stress for teachers. Ethical issues, particularly concerning data privacy and fairness, also mitigate the impact of LA. In all countries, the reflection on LA's impact was limited, as LA is not yet embedded enough to have a discernible effect on school outcomes. Indeed, it would be reasonable to suggest that at most, the use of LA in schools remains experimental and supplemental, where it is generally viewed as an aid to existing QA, SE and teaching practices, rather than a core element of the process. Participants generally agree that the potential impact is significant if LA were to be fully harnessed. However, at present, that potential is unrealised due to the identified constraints.

- Stakeholder Capacity and Involvement: There is wide variation in capacity and involvement of different stakeholders in LA for SSE. School leaders and certain middle leaders (QA coordinators, ICT coordinators) tend to be the primary drivers of LA initiatives and usually have greater awareness of data use. Many of these stakeholders recognise the importance of building data use skills and attempt to champion this in their schools. However, teachers are the main target for capacity building where many teachers feel that they lack competence in data analysis (with some explicitly requesting PD in "data collection, data analysis and how to use the data") and hence their involvement in LA-related QA and SSE tends to be passive and at most, minimal.

However, when teachers are given support and see the value of LA (for example, how data can directly inform their teaching), their engagement increases. On the other hand, without support, LA can be perceived as extra work or an aspect of education beyond their remit.

Students and parents also appear to be largely on the periphery of LA usage in SSE. Interviews with parents and students in Ireland and Italy suggest that awareness among parents and students about LA is generally very low, where they mainly view personal metrics (test-based results, reports) on portals but do not engage with broader analytics. Indeed, in the case of this study, it is apparent that few schools actively involve students or parents in analysing and discussing the findings derived from the analysis, although most schools gather their input through, for example, surveys.

The cases strongly suggest that improving stakeholder involvement and demystifying data for students/parents and, by fostering, collaborative data discussions among staff could enhance the effectiveness and acceptance of LA in SSE.

Moving Forward: Stakeholders across all countries highlighted issues and concerns that need to be addressed as LA in SE evolves. A paramount concern is ensuring that the introduction of LA does not erode the humanistic aspect of education, where participants strongly suggest that there is a need to maintain a student-centered approach and to use data as a tool, not as an end in itself.

Ethical use of data also remains a significant issue, with calls for clearer policies on data privacy, security, and ethical boundaries for LA in schools. Workload and sustainability are also concerns, as teachers are concerned that engaging with complex data will increase their already heavy workload. In this regard, any LA initiative needs to be implemented in parallel with time allowances, simplification of processes, and automation where possible. The lack of integration and standardisation is another future challenge where. without coordination (for example, a unified data system or framework provided by educational authorities), efforts can remain fragmented. For example, some participants suggest that government investment in a centralised LA platform, together with guidelines, would greatly help schools move forward.

There is also a call for ongoing support and PD that requires continuous PD, sharing of best practices, and possibly the creation of new roles or networks (such as regional data coaches or inter school collaborations) to sustain momentum.

In summary, stakeholders see promise in the use of LA in QA/SE, but one that must be navigated carefully, addressing technical, ethical, and human factors addressed in an integrated manner.

Finally, the cross-case analysis reveals that all four countries are grappling with how to make effective use of the power of data to enhance SE, each from different starting points. On the one hand, there is widespread agreement on the potential value of LA to personalise learning, inform decision-making, and strengthen a culture of continuous improvement. However, its practical implementation in secondary school QA and SE is still in its preliminary stage.

Systemic factors (such as policy support, infrastructural integration, and PD) and local factors (such as school leadership and culture) heavily influence progress. Common themes across the cases also highlight the importance of building capacity (both human and technical), fostering a positive data culture, and ensuring ethical and purposeful use of data. The findings point to a need for strategic action by policymakers and practitioners to address current gaps.

Ultimately, advancing the integration of LA in SE and QA will require coordinated efforts in PD, infrastructure, cultural change, together with policy framework efforts that, if successful, can translate the promise of LA into tangible improvements in SSE across European schools and beyond.

Chapter 1: Introduction and Background

1.1 Introduction

This report as part of work package three of the Erasmus+ QUALAS (Quality Assurance and Learning Analytics in Schools) project, provides a cross case analysis of how LA is being adopted and integrated into SSE processes in secondary schools across four European countries: Belgium (Flanders), Ireland, Italy and Spain (Castilla y León) (Castilla y León).

The Work Pacakage's goal is to understand current practices, school culture and readiness, as well as perceived benefits and challenges of using LA for SSE in schools. Each country's case study involved five diverse secondary schools, documenting stakeholder experiences (including school leaders, QA/SSE coordinators, ICT coordinators, teachers, parents and students) through interviews and document analysis. The overarching research question asks how LA can be used for SSE purposes in schools, and how the experience of using LA can lead school personnel to reflect on and enhance key policies and practices relating to and improving an aspect of quality in their schools. By employing qualitative case studies in multiple contexts, the purpose of this case study was to build a comprehensive picture of the conditions and practices of LA influenced SSE in participating countries, identifying points of convergence and divergence across different contexts that can be used by practitioners and policy makers as a futures thinking resuorce to consider the challenges, opportunities and benefits of using LA as part of the SSE in their respective countries.

1.2 Learning Analytics: Concepts and Potential in Education

According to Kew and Tasir (2022), numerous definitions for LA exist. This is unsurprising given the various applications and objectives of LA within the field of education. For example, Chatti et al. (2012) state the LA can deconstructed into six core areas:

1) Monitoring/analysis,
2) Prediction/intervention
3) Tutoring/mentoring
4) Assessment/feedback
5) Adaptation
6) Personalization/recommendation and Reflection

Taking these perspectives into account and within the context of Work Package 2 of the QUALAS project; for the purpose of this research and within the context of SE, **LA is referred to as 'the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and environments in which it occurs'** (Long & Siemens, 2011, p.34).

In practice, LA involves gathering digital data generated by learners (for example, assessment results, online activities, attendance records) and analysing this data to inform interventions or decision-making.

LA has over the course of the last twenty years, garnered significant interest for its potential to transform education into a more evidence-driven endeavour where it is suggested that LA can provide actionable insights to personalize learning, improve student support, and inform pedagogical and administrative decisions (, e.g., UNESCO, 2012; Wise & Jung, 2019). For example, LA tools can help identify students at risk of underachievement or dropping out by detecting patterns in performance or engagement that can enable timely and targeted interventions by educators (Kew and Tasir, 2022), contributing to educational success and personal development (Pandolfi, 2019). At a broader level, LA promises to facilitate evidence-informed decision-making in education, allowing teachers and school leaders to complement their professional judgment with - insights from (self-collected) data (Wise & Jung, 2019). Ultimately, within the context of SE, the potential of LA is its capacity to enhance educational quality and equity by using data to highlight what is working and what is not, and from here, to tailor strategies to meet learners' needs.

Despite this promise, it is widely acknowledged that the implementation of LA in schools is at an early stage of implementation (Aguerrebere et al., 2022; Liu et al., 2024). Unlike in HE, where LA adoption has progressed more rapidly, most primary and secondary schools have only experimented with basic forms of data use and have yet to integrate and at time resist the use of LA in everyday practice (Tzimas & Demetriadis, 2025). Nonetheless, the potential benefits provide a strong basis for use when used appropriately, LA can support personalised learning, whereby educational content or support is adapted to individual student needs and with empirically sound data, can also supply objective evidence to inform school improvement plans and policies. There are however, challenges and varying degrees of readiness for the adoption of LA in schools.

1.3 Adoption of Learning Analytics in Schools: Challenges and Readiness

Implementing LA in school environments presents significant challenges, and current adoption across schools is limited. Research points to several persistent barriers. A primary issue is low data literacy and analytics capacity among educators, where many teachers and school leaders feel underprepared to make sense of complex data sets (Mandinach & Gummer, 2016; Young et al., 2018). Although a few interesting attempts have been made to provide PD programmes that encourage teachers to adopt LA (Gabbi, 2023), educators often lack PD on how to collect, analyze, and interpret learner data in pedagogically meaningful ways. For example, in a study of Irish secondary schools, teachers were generally "starting on a journey" of data use for SSE, with many still developing the skills and confidence to engage in data informed decision-making (O'Brien et al., 2019).

Building on these international findings, the Italian case provides further evidence of how the development of evaluation culture and data literacy has evolved within a national policy framework.

Similarly, for the Italian case, even before the implementation of the National Evaluation System, studies had highlighted the difficulties school staff faced in becoming familiar with self-evaluation tools and in analysing available data to identify possible paths for improvement (Muzzioli et al., 2016). Although knowledge about what can and cannot contribute to the success of self-evaluation has expanded in recent years, it has not been an easy task for schools to implement cyclical and systematic self-evaluation processes and adapt them to their own context (Vanhoof & Van Petegem, 2011) or language (Quadrelli et al., 2018).

The issue of supporting staff to develop data reading and interpretation skills to strengthen both self-assessment processes and the development of the National Evaluation System itself has received considerable attention. This effort reflects a broader transition from a culture of accountability to one of improvement, where the effectiveness of self-evaluation increasingly depends on teachers' and school leaders' interpretive competences rather than on external expertise (Giampietro et al., 2016). The peripheral and district offices of the Ministry of Education have also been involved in supporting the implementation of the National Evaluation System (Fiore et al., 2020; Perazzolo & Giampietro, 2021).

Understanding the challenges schools may encounter and providing them with guidance and assistance in interpreting and implementing evaluation and self-evaluation processes has been described as a key support function (Fortini et al., 2016).

Research in this field has explored various aspects of implementing self-evaluation within recently established evaluation systems. Some studies have examined school staff attitudes towards self-evaluation (Vanhoof et al., 2009; Epifani et al., 2016; Sette et al., 2019) and the relationship between internal and external evaluation data (Giampietro et al., 2024). Training initiatives for school staff aimed at developing self-assessment and evaluation competences,conceived as forms of professional support,are generally viewed positively by participants (Poliandri et al., 2022; Perazzolo et al., 2023; Giampietro et al., 2023; Litteri et al., 2024).

This mirrors international findings that teachers' capacity for data-driven decision-making is frequently limited, and targeted PD is needed to build these competencies (Datnow & Hubbard, 2016). Additionally, new challenges present school personnel in preparing to take advantage of the opportunities offered by technology

Without sufficient PD and support, the abundance of data now available in schools (from test results, learning platforms, student information systems, etc.) remains underused or , in many cases, overwhelming to schools.

Another significant challenge relates to cultural resistance and concerns about the role of data in education. School culture plays a pivotal role in whether LA is embraced or ignored. In many cases, and regardless of the level of education, educators can be skeptical of data initiatives, perceiving them as a bureaucratic burden or, in the case of using data for Automated Decision Making (ADM), a threat to professional autonomy (Herodotou et al., 2019; Selwyn, 2022). There can be a fear that an over-reliance on numbers will dehumanize education or reduce students to statistics, neglecting the qualitative aspects of teaching and learning. Indeed, numerous studies have found that teachers can be cautious or even technophobic about LA, often due to low self-efficacy with technology and a lack of clarity on how it will genuinely benefit teaching (Valtonen, 2025; Paolucci et al., 2024).

Gaining staff buy-in requires addressing these concerns and framing LA as a tool to support teacher judgment, formative assessment, and personalised learning (Fulantelli & Taibi, 2014). Futhermore, developing a data-informed school culture is crucial one that values collaborative inquiry and continuous improvement, as opposed to viewing data use as merely a compliance or accountability exercise.

In other words, change management and clear communication are needed so that educators see LA as aligned with their core mission and values of helping students, rather than as an externally imposed accountability measure.

There are also technical and infrastructural barriers impeding LA adoption in schools. While schools are increasingly inundated with various forms of data, these data often reside in disconnected systems and formats. Many schools use electronic gradebooks, student information systems, or learning management systems (e.g., Moodle, Google Classroom, Microsoft Teams) that collect raw data on student activities and outcomes. However, without integration or more advanced analytic tools, it is difficult to combine data from different sources or extract actionable insights for improvement. Case studies across different countries have noted that data frequently remain in silos (attendance records in one database, test scores in another, etc.), requiring manual effort to compile and analyze (see for example, Schildkamp, 2019). In this regard, integrating different platforms has been identified as a future challenge for educational research involving LA (Ranieri, 2015).

Indeed, very few secondary schools, if at all, employ dedicated data analysts or have tools beyond spreadsheets and basic dashboards. This lack of accessible analytics tools means that even willing educators face practical hurdles in using data effectively. Moreover, as with most initiatives, time constraints will always be an issue where teachers and school leaders are busy with daily responsibilities, and engaging deeply with data analysis can be time-consuming without clear institutional support or allocation of time for these activities (Young et al., 2019).

Crucially, privacy and ethical issues form another significant challenge for the implementation of LA in Schools, where in most jurisdictions they are required to navigate data privacy laws, such as in the case of Europe, General Data Protection Regulation (GDPR) (European Union, 2016), when implementing LA. There is often uncertainty or anxiety in school communities about how student data may be used, who has access, and how to ensure that data is not misused to unintentionally label or disadvantage students. However, unlike HE, where many institutions have formal LA policies, schools rarely have explicit policies governing LA usage (Slade & Prinsloo, 2013; Tzimas & Demetriadis, 2021). Participants in studies across countries express concern that analytics could lead to “profiling” students or unintentionally reinforcing biases if data are not contextualized (Cerratto Pargman & McGrath, 2021). There is also a fragile balance to maintain between using data for improvement versus as opposed using data for high stakes accountability or punitive measures (Mandinach & Schildkamp, 2021; OECD, 2013).

If teachers suspect that LA will be used primarily to monitor or judge their performance (for example, ranking schools or classrooms), they may resist its implementation. Therefore, careful attention to ethical safeguards and ensuring that LA is implemented with a formative, enhancement-oriented approach is vital. International guidelines highlight the importance of transparency, stakeholder consent, and placing human values at the center of any data-driven educational innovation (Tsai et al. 2020).

In response to these concerns, the concept of "human-centred learning analytics" has emerged, which advocates designing LA systems in collaboration with educators and learners, ensuring that analytics tools augment human decision-making and respect the complexity of teaching (Shum et al., 2019).

In summary, the current state of LA adoption within schools may be described as being at an early or emergent stage of development. Many secondary schools are only beginning to explore how data might inform teaching or school improvement. The literature and preliminary evidence from the QUALAS cases suggests that significant groundwork in building staff capacity, developing supportive tools and policies, and nurturing a data positive culture is needed before LA can be deeply embedded in everyday school practice. These challenges form the backdrop against which the four countries' case studies were undertaken.

1.4 SSE in Education: Frameworks and Data Use

All four countries in this study have established SSE frameworks or school evaluation systems aimed at monitoring and improving educational quality. SE in education typically encompasses both external evaluations (such as inspections) and internal evaluations, often referred to as SSE. These mechanisms serve a dual purpose: fostering ongoing school improvement on the one hand and ensuring accountability to authorities and the public on the other (Brown et al., 2017). International analyses have noted that effective school evaluation systems strike a balance between these aims, using data and evidence to drive improvement while also maintaining transparency about performance (OECD, 2013). In practice, this means that schools are encouraged to continuously reflect on their teaching and learning outcomes, develop improvement plans, and report on progress, while external bodies set standards and review schools' results to hold them accountable.

However, the approaches to SE differ across the jurisdictions involved in this case study, that reflecting varying governance structures and educational traditions (European Commission, 2015). Ireland and Italy have relatively centralized education policies that include clear expectations for SSE and improvement planning, albeit still allowing considerable school autonomy in implementation (Brown et al. 2021, Poliandri, 2019).

In both Italy and Ireland, national guidelines mandate that schools engage in cyclical SSE and planning, and importantly, that this process incorporate analysis of student performance data. For instance, Italian schools are required to produce an annual or biennial Self-Evaluation Report (*Rapporto di Autovalutazione, RAV*), which is updated every three years and serves as the basis for a subsequent Improvement Plan (*Piano di Miglioramento, PdM*). This process, established within the National Evaluation System, makes extensive use of standardized test data as key indicators of school performance (Poliandri, 2019). These test results are used not only for diagnosing learning outcomes but also for policy decisions such as allocating additional resources to schools with greater needs or performance gaps as a strategic tool for guiding school policies at the national level (Poliandri, 2018; Poliandri and Romiti, 2020). Similarly, in Ireland, every school must conduct a SSE on selected aspects of teaching and learning each year and develop a School Improvement Plan. Within this, and in parallel to school inspection, the Department of Education provides a standardized SSE framework and requires schools to gather evidence – including exam results, assessment data, and stakeholder feedback as part of this process (Brown et al. 2021). Furthermore, Ireland's national Inspectorate uses data such as attendance figures, and the schools' own SSE reports to inform external evaluations and inspections. In other words, data informed decision making is formally built into the evaluation cycles in these countries where schools are expected to use data to identify strengths and weaknesses and to monitor progress on their improvement targets (European Commission, 2015).

This policy context creates a conducive environment for LA, at least in principle, since schools are already tasked with using data for SSE. Indeed, recent studies in Europe have highlighted a trend toward more evidence-informed SSE, with capacity building efforts to help schools make better use of data in their SSE practices (European Commission, 2015; Mincu and Romiti, 2022; Murphy and Brown, 2022).

In contrast, in Spain (Castilla y León) (Castilla y León) and Belgium (Flanders), the structure of educational governance is more decentralized, which leads to more variation in SSE practices. Spain (Castilla y León)'s education system delegates significant authority to its autonomous communities (regions) (Brown et al. 2021).

While there are national education laws and broad objectives for quality improvement, each region implements its own approaches to SSE. In general, Spanish schools are not uniformly required to produce annual data-driven SSE reports to the same extent as in Ireland or Italy.

However, Spain (Castilla y León) employs certain quality indicators at the system level (for example, tracking such as early school leaving rates, graduation rates, and students' results on diagnostic assessments), and some regions, such as *Extramedura* and *Castilla y León*, encourage schools to undertake quality improvement projects that involve SSE.

External inspection in Spain (Castilla y León) exists but tends to be often advisory, varying by region (Simeonova et al. 2020). In the case of Spain (Castilla y León) (*Castilla y León)*, schools are encouraged to engage in SSE, but there is a lack of a clearly defined mandate to use learning data in these processes compared to Italy and Ireland.

This is also the case in Belgium (Flanders). The Flemish education system grants high autonomy to schools and networks of schools; the government sets out a broad framework for quality, next to the formulation of minimum targets which are translated in a curriculum. However, schools themselves have primary responsibility for ensuring and evaluating internal quality (European Commission, 2015, Faddar et al. 2021). An external inspectorate in Belgium (Flanders) conducts periodic school inspections, focusing on whether schools have adequate internal QA processes and are meeting the required standards. Schools in Belgium (Flanders) are expected to minotor their own quality and have a school development plan, but the specific methods on how to put this into practice is not mapped out by the government and falls within the autonomy of the schools. Often, schools are supported in this monitoring process, and their use of data therein by the umbrella organisation they belong to. .

Belgium (Flanders) does not currently have a central directive for schools to implement LA or specific data-driven practices for SSE; rather, schools may choose their own indicators and tools to monitor quality, within a general culture that values self improvement while considering the legally anchored quality framework. However, there is a resistance regarding overt accountability pressures by for example, public reporting. In both Spain (Castilla y León) (Castilla y León) and Belgium (Flanders), therefore, the adoption of LA in SSE tends to depend on local initiatives; for example, an enthusiastic school leader or regional project might introduce data dashboards or analytics for school improvement, but these are not yet system wide requirements.

Notably, surveys show that while nearly all European countries collect student data at the central level, only about half explicitly require SSE, and even fewer provide guidelines on how schools should use data for SSE (European Commission, 2015). This helps to explain why Spain (Castilla y León) and Belgium (Flanders) currently lack formal policies on integrating data into SSE, even though the infrastructure (in terms of data systems) may be in place at the central level.

In all four countries, external QA mechanisms exist alongside SSE. Ireland, for instance, has a well-established Inspectorate that conducts comprehensive school inspections and subject inspections, increasingly adopting a risk-based approach whereby national data sets help prioritize which schools to inspect (Simeonova et al., 2020). Italy also has an Inspectorate, albeit with limited resources, and external student assessments such INVALSI tests feed into national monitoring of school performance. Spain (Castilla y León) and Belgium (Flanders) similarly have inspectorates or external review bodies, though with varying frequency and emphasis.

These external evaluations often highlight the importance of data (such as standardized test outcomes, surveys, etc.) for identifying where intervention or support is needed. The feedback loop between inspection and SSE can be enhanced by LA if schools use analytics to continuously monitor progress on key indicators, they can be for example, better prepared for inspections and less surprised by findings.

However, a long held tension between improvement and accountability within the discourse of evaluation relates to the purpose of data, which can be used for improvement and punitive accountability measures (OECD, 2013). Indeed, it is apparent that, at a policy level, all jurisdictions are mindful of avoiding a culture where data is used merely to rank schools or impose sanctions; instead, the overarching policy and practice rhetoric for data use, relates to that of using data as a tool for reflection and growth. This is an important point for the widespread use of LA in educationat a system level. If LA is introduced in a high-stakes manner, teachers' cooperation may diminish, whereas if introduced as part of a supportive improvement-oriented framework, buy-in is likely to be significantly greater.

1.5 Policy Drivers: Digital Education and Analytics in Schools

The context of LA in schools cannot be separated from broader digital education initiatives and policies. Over the past decade, and especially following the COVID-19 pandemic, there has been a strong policy push across Europe to digitalize education and improve the use of technology and data in teaching and administration (European Commission, 2020). The sudden shift to remote and hybrid learning during COVID-19 illustrated the importance of digital platforms for delivering education (Brown et al. 2021). In the post-pandemic recovery plans, investments in educational technology and digital skills have accelerated. For example, Italy's National Recovery and Resilience Plan (PNRR), launched in 2021 as part of the EU recovery funding, explicitly earmarks funding for digital transformation in schools and references the need for improving teachers' digital competences, aligning with European frameworks such as DigCompEdu (European Commission, 2021). The *Digital Competence Framework for Educators* (DigCompEdu), developed by the European Commission, includes competencies related to using digital tools and data to enhance assessment and personalize learning (Redecker and Punie, 2017).

LA skills, the ability to analyze and interpret student data fall within these digital competencies that policymakers seek to develop among educators. In Ireland, the Digital Strategy for Schools to 2027, published by the Department of Education, also highlights the role of data and LA in supporting teaching and learning improvements. This national strategy envisions schools leveraging tools like analytics dashboards to track student progress and inform decision-making and calls for PD to help teachers gain proficiency in data use (Department of Education, 2022). Thus, both at the EU level and within individual countries, there is policy momentum to integrate data-informed practices in schools as part of the wider digital education agenda.

It is also worth noting that trans national organisations such as the OECD and UNESCO have, for a long time now, advocated for effective use of educational data and analytics, framing it as key to innovation in schooling. The OECD's Digital Education Outlook reports discuss how data, AI, and LA can be used to support personalized learning and early warning systems, while also cautioning about equity and ethical implications (OECD, 2023). Furthermore, UNESCO, as early as 2012 released a policy brief on LA, recognizing its potential to transform educational planning and calling on policymakers to develop strategies to implement LA in an ethical and learner-centric way (UNESCO, 2012).

Moreover, the UNESCO Beijing Consensus on Artificial Intelligence in Education states that there is a need to adopt 'AI platforms and data-based LA as key technologies in building integrated lifelong learning systems to enable personalized learning anytime, anywhere and potentially for anyone, with respect for learners' agency' (UNESCO, 2019, pl5).

These international policy documents add impetus and legitimacy to national efforts in that they highlight that moving toward data-informed education is part of a global trend in improving quality and equity. Schools and systems are encouraged to innovate with analytics, but also to share best practices and establish guidelines so that the use of data is transparent, fair, and aligned with pedagogical goals (UNESCO, 2019). Across Europe, various projects such as the EU-funded QUALAS project, are essentially responding to this international call by developing frameworks and collecting evidence on how LA can be practically and effectively implemented in educational institutions.

Against this backdrop, all four countries in the study are experiencing a converging trend, which is a recognition that better use of data in schools could enhance SSE and learner outcomes, coupled with policy initiatives to boost digital capacity, yet tempered by the reality that on-the-ground practice lags behind policy ideals.

The COVID-19 pandemic served as a catalyst that accelerated the adoption of digital tools in most countries (for example, most schools in Europe now use some form of Learning Management System (LMS) or online learning platform), thereby creating more opportunities for collecting learning data. However, the availability of data does not automatically translate into effective analytic use. The key challenge for policymakers and educators is how to move from having data to using data wisely. This involves investing in teacher PD, developing user-friendly analytics dashboards, ensuring data interoperability among school systems, and establishing clear ethical guidelines, all of which, in the proceeding sections of this report, have been highlighted by participants in the QUALAS case studies as necessary supports for advancing LA in schools.

1.6 Conclusion

In summary, a review of the literature suggests that the integration of LA into SSE is at an early stage in Spain (Castilla y León), Italy, Belgium (Flanders), and Ireland, as it is in many parts of the world. Each country has taken steps to embed data use in their SSE policies to varying extents with Ireland and Italy providing more explicit mandates and supports for data driven SSE, and Spain (Castilla y León) (Castilla y León) and Belgium (Flanders) adopting a more decentralized, locally driven approach. All jurisdictions, however, face common hurdles in translating the abundance of educational data into meaningful actions for school improvement.

The comparative analysis reveals that while digital infrastructure (such as electronic grade books, attendance tracking systems, and examination databases) is largely in place in schools, the practice of conducting deeper LA, such as analsing online learning behavior or using predictive models to inform interventions, is generally rare in everyday school operations (Young et al., 2018; Namoun & Alshanqiti, 2020).

When data is used, it tends to be for relatively basic monitoring (e.g., highlighting students with numerous absences or identifying overall test scores) rather than for enhanced pedagogical decision making. As the QUALAS case studies will show, stakeholders reported isolated instances of using data dashboards or statistical analysis, but not at a systematic, school-wide level. This aligns with prior research indicating that learning analytics is presently applied mostly at the micro level (for example, a teacher adjusting instruction based on quiz results), and has not yet scaled upto to the macro-level of informing whole school or system level evaluation in a sustained way (Wise and Jung, 2019; Ifenthaler & Drachsler, 2020; Ifenthaler and Yau, 2020).

Nonetheless, there is an increasing momentum and optimism about the role that LA can play in SSE. Across the cases that will be discussed in the next chapters of this report, stakeholders expressed interest in using data more effectively, and some schools have begun pilot initiatives. For example, a Belgian (Flanders) school developing an internal survey-based analytic tool to gather student and parent feedback, or an Irish school experimenting with comparing incoming assessment scores (such as CAT4 cognitive test results) to predict which students might need additional support in certain subjects. Such early adopters in the field of practice demonstrate the potential benefits: more targeted interventions for students, evidence to inform teaching strategies, and a factual basis for discussions during inspections or SSE planning meetings. They also illustrate what conditions help LA efforts succeed which is typically, a supportive leadership, one or more “data champions” on staff, and a collaborative culture open to innovation.

Policymakers have also highlighted these factors. Reports at the European level call for capacity-building interventions such as establishing data coach or analyst roles in school districts, providing PD modules on data use for teachers, and creating national platforms or dashboards that aggregate key data for each school (OECD, 2023). Some countries are already moving in this direction, for example, the Netherlands and parts of the United Kingdom (UK) have experimented with school data teams and analytics tools for schools. In the study countries, similar ideas have also been raised, where the case of Spain (Castilla y León) (Castilla y León), participants advocated for a centralized

dashboard to simplify analysis for schools and in Ireland, educators suggested that having accessible templates or software for SSE data analysis can be helpful.
In the case of Italy, proposals mainly stressed the need to reinforce schools' internal capacity to interpret and make sense of available data, particularly through professional learning, peer collaboration, and network-based support among schools. The emphasis was placed on strengthening teachers' and school leaders' data literacy rather than introducing additional external expertise. . In summary, the successful integration of LA into SSE will likely depend on a coordinated approach that addresses technical, human, and policy dimensions.

Technically, improving data integration and providing user-friendly analytics platforms at the school level is also crucial, where investing in developing educators' data literacy and fostering a positive, inquiry-oriented mindset towards data is fundamental (Mandinach & Gummer, 2016; Datnow & Hubbard, 2016). Policy wise, clear guidelines and supportive frameworks (as opposed to overly punitive mandates) can encourage schools to engage with analytics confidently and ethically. The countries in this project each offer learning opportunities for each other; for example, Ireland's structured SSE process and teacher guidelines could inform Spain (Castilla y León)'s more emergent approach; conversely, Flanders' autonomy and bottom-up innovations can offer ideas on how to involve teachers more organically in data use without imposing top-down requirements. All four countries acknowledge that building a data-informed education system is a journey; one that requires time, experimentation, and continuous refinement. The present cross case analysis serves to shed light on where schools currently stand on this journey, and to provide evidence-based recommendations for policymakers, educators, and researchers that are interested in using LA to improve an aspect of SSE.

The next sections of this report will delve into the detailed findings from each country case, comparing adoption levels, challenges, and good practices, followed by a discussion that synthesises these insights together with a set of recommendations aimed at advancing the effective use of LA in schools in an equitable and sustainable manner.

Chapter 2
Research Design used in the Study

2.1 Introduction

As previously stated, the purpose of this Case Study output was to ascertain the **adoption and integration, school culture and readiness, perceived benefits and challenges of LA for SSE** in schools. Within this, a Case Study Protocol (Appendix 1) was developed with reference to the indicators framework (Figure 1) that formed part of Work Package 2 of the QUALAS Project.

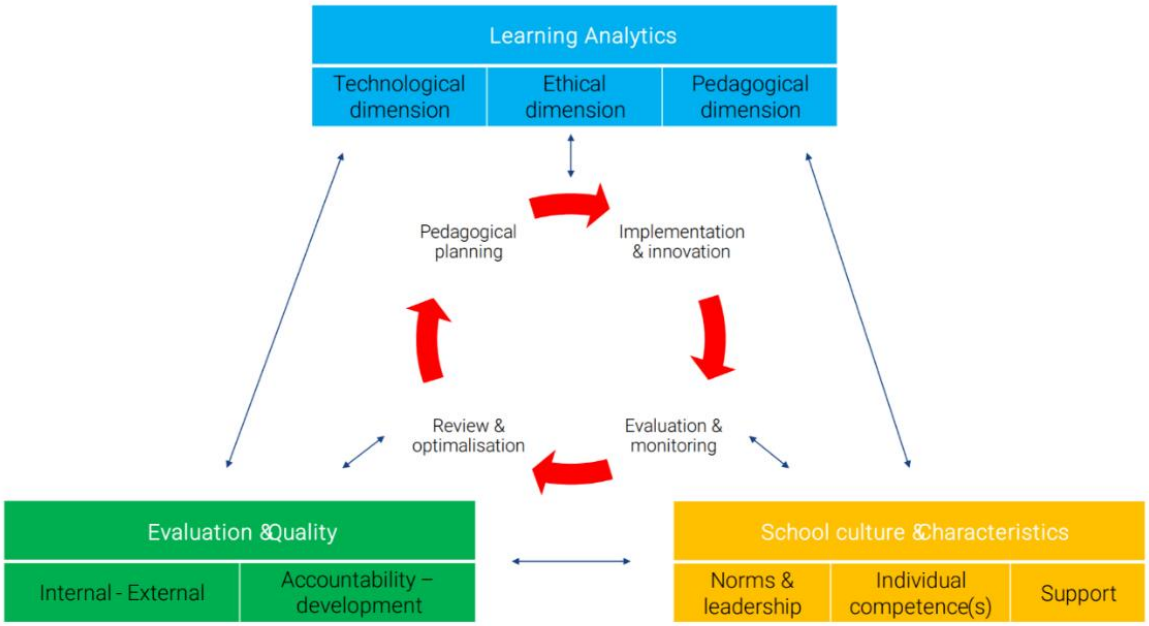

Figure 1: QUALAS Quality Indicators Framework

2.1.1 Case Study (CS) Goals

This multi-modal case study of five schools per country (Table 1) chosen from a pool of schools across the socio-economic divide, sought to elicit the experiences of stakeholders (via interviews with school leaders, class teachers, parents and students (depending on the country) and those school personnel with responsibility for an aspect of QUALAS (for example, Planning and Evaluation Co-ordinator, Digital Technology Co-ordinator).

Focus on Specific Roles*:* Teachers with specific responsibilities, such as those related to QA, SSE, Digital Technologies, and Special Education Needs, were sought for interviews across all countries, highlighting their crucial role in the QUALAS framework.

Diversity in School Types and Locations: The case studies intentionally included a variety of school types (general secondary, technical, vocational, comprehensive) and locations, from central urban areas to semi-rural or peripheral industrial zones.

Targeted Participant Roles: Across all countries, interviews consistently targeted school leaders (principals, directors, deputy principals) and teachers with specific responsibilities, such as those for QA, SSE, ICT coordination, data management, or digital technologies

Emphasis on Digital/ICT Roles: Most schools, regardless of country, included interviews with staff responsible for ICT, digital technologies, or learning platforms, reflecting the central role of technology in the discussion of LA.

QA/SSE Specific Roles: Roles explicitly linked to QA or SSE (e.g., QA coordinators, SSE teachers/leaders, evaluation coordinators) were interviewed.

Experience Levels Among Teachers: There was a mix of veteran/senior teachers and newly appointed/junior teachers.

The special potential of the CS can be described as follows. The case studies should allow:

- The collection of documents relevant to the goals of the study (not only record verbal accounts of this practice), as Health and Safety guidelines permit.
- The collection of views of different actors concerning exactly how they use (or perceive the use of) QUALAS.
- The study of QUALAS—by asking more thorough and process-related questions (which qualitative approaches allow)—confronts these accounts to arrive at a more comprehensive image of a school's practice.

2.1.2 Case Definition and Overarching Research Question

The case which will be focused on, by the CS research, in the conditions and practices of **QUALAS** in participating countries. The overarching research question for this case study analysis is as follows:

> *How can Learning Analytics be used for SSE purposes and how has the experience of Learning Analytics led school personnel to reflect on and enhance key policies and practices concerning SSE in their school?*

Country	Description of schools	Location	Features	Participants (Interviewed)	Roles/Types of Participants
Belgium (Flanders)	3 Secondary Comprehensive schools (academic, technical and vocational tracks) 2 Secondary schools (only academic tracks	3 Urban 2 Rural	1 Low diversity 1 Medium diversity 2 high diversity 1 unknown	19	**8** teachers (5 have also other roles (see below), **4** QA Coordinators, **4** ICT Coordinators (1 also a teacher), **2** Department Heads (all also teachers), **2** Student Counsellors (all also teachers), **4** Principals
Ireland	2 General Vocational Secondary Schools, 3 Secondary Schools	1 Large Urban 1 Rural 3 Medium Urban	2 ETB DEIS Schools 1 Minority Language School (Gaelcholáiste). 2 Secondary Schools	35	**15** Teachers inclusive of Teachers with responsibilities for SSE and Digital Technologies, **5** Principals, **5** Deputy Principals, **5** Students, **5** Parents
Italy	Scientific General high school, Comprehensive school (academic & technical tracks), General upper secondary school (humanities & sciences), Technical and vocational school, Secondary school (technical & vocational tracks)	1 Metropolitan 2 Rural 2 Urban	1 Highly academic school 2 Socioeconomically Marginalised Vocational schools 2 Innovative Vocational Schools	40	**25** Teachers (including **5** responsible for digital technologies, **5** for school evaluation, **5** mentor teachers, **5** newly appointed teachers, and **5** elected to the School Board), **5** School Principals, **5** Students (elected to the School Board), **5** Parents (Chair of the School Board)
Spain (Castilla y León)	3 Secondary Education Institute (IES) 2 Integrated Centre for Vocational Training (CIFP)	2 Metropolitan 2 Large Urban 1 Medium Urban	2 Technologically advanced Vocational School 2 Highly diverse Schools 1 Academic Secondary school	27	**10** Teachers, **13** Teachers with specific responsibilities (**4** ICT Coordinators, **3** Quality Coordinators, **1** Training Coordinator, **5** Senior/Department Heads), **4** Centre Principal

Table 1: School Profile Characteristics

2.2 Data Collection Coding and Analysis

Data was collected by individual interviews, which were organised by a shared interview guideline, and were digitally recorded and transcribed. In total, 121 participants were interviewed, and additional documents were collected by each country.

For school case studies, data was analysed using deductive coding and inductively developing additional codes. However, due to the sampling strategy, the results are not intended for generalisation.

The analysis is therefore intended to identify and discover phenomena and constellations related to present and future affordances and constraints of LA for SSE (at least in individual schools) without assuming that this is the case in many and a certain percentage of schools or countries.

The cross-school analysis was carried out through a procedure suggested by Feldman et al. (2018), which focuses on analytic statements describing important patterns, processes and conditions of the present and future affordances and constraints of LA for SSE in schools in which the individual case schools converge or differ.

- These **statements** are highlighted in the text.
- Each statement identifies the school and participant who made the statement. For example, a teacher with responsibility for SSE in School 1 in Ireland would be coded as follows:

> *It can be difficult to get staff to agree on the place of Learning Analytics in School Self Evaluation* (T_SSE_S1_IE)

Finally, following draft cross case analysis of the individual country reports, partner countries were also invited to add to the report and: to check whether these statements are also relevant to their cases; to rephrase them to make them more precise with respect to processes, conditions, etc., or complement or replace them with statements that are more appropriate to the cases.

A note of caution however is that due the sample size and of participants involved in the study (e.g., teachers) caution should be taken when making inferences relating to a particular countries' readiness for the use of LA in SSE.

2.3 Limitations and Reflective Note

We explicitly acknowledge the limitations of this design. The sample is small and purposively chosen; thus, findings are not generalisable to all schools or countries. The variation in how countries collected and analysed data (e.g. interview formats, coding choices) also means that some differences between countries may reflect methodological diversity rather than substantive variation.

This was mitigated by using the cross-case harmonisation steps described in the previous sections of this chapter. However, it is acknowledged that some heterogeneity remains. Finally, the analysis is primarily based on self-reported practices and perceptions, which may not capture all aspects of how LA and QA function in schools.

Despite these limitations, the qualitative case-study approach adopted in this Work Package provides in depth insights into complex processes. By systematically describing the methods used in this work package and reflecting on epistemological and practical choices, this case study adhered to established standards to ensure the rigour of qualitative research. In summary, the resulting findings should be interpreted as evidence-informed portraits of the participating schools and their contexts that may inform practice and further research in comparable settings.

Chapter 3: Setting the Scene - The Place of SSE in Case Study Schools

3.1 Introduction

This chapter examines how SSE is perceived and enacted in the case study schools across Belgium (Flanders), Ireland, Italy, and Spain (Castilla y León). SSE is broadly seen as an integral part of internal QA, aimed at fostering continuous improvement in teaching and learning through reflective practice. The analysis explores common understandings of SSE's purpose as a driver of improvement, the formal policies and processes in place to support it, the challenges schools face in implementing SSE, and the opportunities and benefits that effective self-evaluation can bring. It also considers the role that data and evidence play in the daily operations of schools, providing insight into how deeply (or not) data informed practices are embedded in everyday decision making.

3.1.1 SSE as Continuous Improvement and Reflection

Across all four regions, SSE is understood as a process geared towards continuous improvement through critical reflection on practice. Schools view self-evaluation as an opportunity to honestly assess their current state, celebrate strengths, and pinpoint areas needing development. As one Irish principal explains, SSE is about "reviewing areas and striving to improve upon the current situation" [IE: P_S5]. Similarly, an Italian school leader describes it as "a moment to take stock, to critically assess what has been achieved and what still needs to be improved" [IT: T_SSE_S4], with a focus on learning from experience to *"readjust [our] actions"* [IT: T1_Dig_18]. For some, this reflective process is explicitly linked to strategic planning and goal-setting. In Belgium (Flanders), for example, a QA coordinator emphasised *"formulating objectives that we as a school want to stand for"* [BE: SBC_QAO] as a key outcome of self-evaluation. Another interviewee summed up the essence of QA/SSE as *"analysing the quality of your school, drawing conclusions from it and then adjusting your policy accordingly"* [QA_T+SC]. In short, the core purpose of SSE in these schools is improvement-oriented; a continual cycle of inquiry, evidence gathering, and informed action to enhance educational quality. In the Italian case studies, some schools explicitly frame SSE as a metacognitive lever for transformation rather than compliance.

3.1.2 Focus for Improvement through Data

Interviewees frequently associate QA and SSE with the systematic use of data to identify needs and guide decision-making. In Flanders, *"the first word that comes to mind when you talk about quality assurance is data"* [BE: AA_ICT], highlighting a widespread belief that evidence should underpin school improvement efforts. Irish educators similarly note that data, including emerging tools such as LA, can help sharpen the focus of improvement initiatives: LA allows schools to *"focus and target things a little bit more succinctly"* by providing concrete evidence for decision-making [IE: DP_S2].

Data-based evidence is valued because it is *"very difficult to argue… when the data is there"* [IE: P_S2], lending objectivity to discussions about performance. In Italy, one principal went so far as to say, *"Data is what guides me in all my decisions"* [IT: P_S1], highlighting that reliable data can act as a compass for school planning. Across cases, there is a common aspiration for SSE to be data-driven and student-centric, using quantitative and qualitative evidence to pinpoint where changes are needed and to monitor progress toward goals.

3.1.3 Improving Student Outcomes and Equity

QA is consistently articulated as being ultimately about improving student outcomes and meeting students' diverse needs. This includes a focus on student academic development, wellbeing, and inclusion through differentiated support. For example, one Belgian (Flanders) teacher describes QA as *"achieving goals with as many students as possible, [so they get] the opportunities they deserve"* [BE: PS-SL]. Italian educators echo this sentiment, emphasising the need to recalibrate assessment and evaluation *"in favour of a more equitable and educational vision"* [IT: P_S1]; in other words, using SSE to ensure fairness and support for every learner. In Ireland, participants see SSE (and the use of LA within it) as an opportunity to better support each student by identifying their strengths and weaknesses at an early stage of the student's education. This enables differentiation, personalised learning plans, and timely interventions for those who are struggling with a particular aspect of education. As one Irish teacher noted, the use of data can *"help inform our teaching and learning in the classroom and help us to identify where students' strengths lie and also areas that need to be developed."* [IE: T_SSE_S4] Such data-informed insights allow teachers to tailor their approaches to individual student needs. A Spanish teacher also affirms that continuous evaluation is key to providing the best for students: *"For me, quality means that I have all the means available in the classroom so that my students have the best working conditions"* [SP: T1_Dig_S5]. These perspectives show that a driving rationale for SSE is the improvement of learning outcomes for all students, ensuring that no students are overlooked and that support is distributed in a way that promotes equity.

3.1.4 Accountability versus Improvement Orientation

While improvement is the central goal of SSE, participants involved in the case studies acknowledge a tension between using SSE for genuine improvement versus treating it as a compliance or accountability exercise. Ideally, SSE processes should create the conditions necessary for better learning outcomes, *"creating the conditions in such a way that all students learn better"*, through attention to differentiation for all learners (including those "very often forgotten" as one Flemish QA officer described [BE: PS-QAO].

However, concerns emerge when SSE is perceived as a bureaucratic requirement rather than a transformative practice. In Italy, some respondents warn of the risk that SSE gets *"reduced to a formal compliance exercise"*, noting that *"evaluation is still a very scary word"* in some school cultures [IT: T1_SSE_S1]. This suggests that if SSE is imposed via a top-down way without buy in from staff, it may be done perfunctorily to satisfy external demands. The same sentiment is echoed in Ireland, with one principal stating that if SSE is viewed as a hierarchal process, it has the potential to be viewed by staff as an *"additional burden, a 'tick-box exercise'"* [IE: P_S5] amid many other initiatives. On the other hand, most participants involved in this case study describe a more constructive, structured understanding of SSE that balances accountability with improvement.

As one Spanish principal explained, *"For us, quality is planning the actions we want to take in the educational process, acting on them, and checking that we are doing them correctly. Quality is doing what you write and writing what you do"* [SP: P_S5]. One Spanish teacher also noted: *"It is not easy to evaluate objectively whether what we are doing is going well. […] It is a matter of specifying what the things are that are susceptible to improvement and being able to improve them"* [SP: T5_NOV_S5]. This underscores that Spanish educators view evaluation as an opportunity to identify areas for improvement. In this view, accountability (ensuring you do what you set out to do) is built into the improvement cycle. Overall, the cases illustrate a spectrum of response: from schools that fear SSE as a top-down audit, to those that embrace it as a tool for internal development. In other words, maintaining SSE as a meaningful improvement focused practice (rather than a paperwork exercise) is an ongoing balancing act for many school leaders.

3.2 The importance of Data Literacy and Capacity

All four cases highlight that data literacy among staff is crucial if SSE is to be effective, yet it is often lacking. While there is a general acknowledgement of the value of data-informed decision making (DIDM), many teachers, especially in Italy and Spain (Castilla y León), have limited familiarity with the concept of LA or sophisticated data analysis in education. In Italy, the term itself is often unfamiliar, with only a minority of respondents demonstrating any theoretical knowledge of the concept. Some teachers openly express *"scepticism about the real applicability"* of such data-driven approaches in the classroom [IT: T1_Dig_S5]. Crucially, Italian interviewees emphasised the need for interpretive training,how to read and discuss data, rather than only basic tool use. Similarly, a number of Spanish teachers stated they had never heard of the term before and were unclear on its meaning or relevance: *"That term… It's the first time I see it… I'm still not very clear what the equivalent is in my mind"* [SP: P_S2].

This point is further illustrated by another Spanish teacher who also stated: "*Besides, we teachers don't have much training either… about data collection, data an*alysis and where to find these data" [SP: T2_TC_S1].

This highlights to a significant gap between the aspiration of data-driven SSE and the practical capacity or willingness of all staff to engage with data. On the other hand, there are educators who advocate for improving data literacy. For example, a Belgian (Flanders) teacher argued that everyone in education, the teaching staff, administrative staff, etc., should become *"a little more data literate"* and understand what data analysis entails, beyond just looking at test scores. *"Look around you to see what's happening in your classroom… that is also data analysis. You need that to be able to do quality care in a good way"* [BE: AA_ICT].

The dominant message is that building staff capacity to collect, interpret, and use data is essential. Without it, schools may collect lots of information as part of SSE, but struggle to translate it into meaningful action. This need for PD in data literacy emerges repeatedly across the cases as both a priority and a challenge.

3.3 Formal SSE Policies and Processes

Each country in the case study has policies and processes to support SSE (often linked with external evaluation requirements), though the specifics vary by jurisdiction. These frameworks shape how schools conduct SSE, what data they collect, and how they plan for improvement. Despite contextual differences, there are similarities in the tools and structures used.

All case study schools also employ a wide array of data collection methods to inform SSE. These include standardised assessments (for example, INVALSI tests in Italy, or CAT4 cognitive ability tests in Ireland) together with internal exams and continuous assessments. Schools also gather stakeholder feedback through surveys of students, parents, and staff to gain insights into areas like school climate, teaching effectiveness, and wellbeing. In terms of technology, various digital platforms and management information systems are central to data collection and record-keeping in each country. For instance, secondary schools in Belgium (Flanders) commonly use platforms such as *Smartschool* to track grades, attendance, and other metrics. Irish schools similarly use systems such as *VSware* and *Microsoft Teams*, while Italian schools use electronic registers (e.g. *ClasseViva, Argo, Spaggiari*) and Google Workspace tools, which are widely used but mainly in a managerial rather than pedagogical way, with limited systematic decoding of the data they produce.

In Spain (Castilla y León)'s *Castilla y León* region, platforms such as *Microsoft Teams*, *Moodle*, and the *STILUS* system are fundamental for managing attendance, academic records, and other student information. These technologies enable the routine gathering and storing of large amounts of data on attendance, behaviour, and achievement. Across all four contexts, the flow from data collection to planning for improvement tends to follow a similar pattern: quantitative data (test scores, attendance rates, etc.) and qualitative data (survey comments, observations) are collected regularly, and these feed into periodic reviews or reports.

In summary, schools are not lacking in data; they consistently collect multifaceted information as part of the SSE process. However, the challenge, as later sections of this report will discuss, lies more in making sense of this data and using it to drive change.

3.4 Planning and Reporting Requirements

Schools are generally required to produce structured plans and reports based on their SSEs, often on an annual or multi-annual cycle. These planning and reporting requirements formalise the SSE process into documented commitments. For example, in Italy the national school evaluation system (SNV) mandates a sequence of official documents where each school must compile a Self-Evaluation Report (*Rapporto di Autovalutazione*, RAV), use it to develop a subsequent Improvement Plan (*Piano di Miglioramento*, PdM),. The SNV also foresees an external evaluation conducted through school visits by a team led by an inspector, who, based on the school's self-evaluation, produces a report identifying strengths and areas for improvement. However, in recent years, the number of schools actually visited has significantly decreased, making this component largely theoretical in practice. In Ireland, schools conduct an internal review and then produce an SSE Report and School Improvement Plan (SIP), which are often made available to the school community and are expected to align with external inspection criteria.

These documents set out the school's chosen improvement objectives and the actions it will take to achieve them, based on the evidence gathered. Other countries have analogous practices: Belgian (Flemish) schools, while having significant autonomy, are encouraged to have development plans as part of their quality policy, and many participate in projects that require writing up plans and results. In Spain (Castilla y León), some schools (especially those that are part of QA initiatives or holding an ISO 9001 certification) create detailed procedural documentation and publish the results of their internal evaluations.

The Spanish case includes an example of a school that adopted the ISO 9001 quality standard: *"Thanks to the ISO 9001 system, we have been able to establish a series of procedures and protocols for each and every action in the educational process, from admission to complaints"* [SP: P_S2]. This shows how external frameworks can drive very structured internal processes.

Overall, planning and reporting are integral to SSE, ensuring that SSE leads to concrete action plans and that there is transparency/accountability for the improvement journey. However, the mere existence of plans and reports does not guarantee change; what matters is how they are developed (for example, inclusively or hierarchically) and used thereafter.

3.5 Leadership and Delegated Responsibility

Leadership plays a central role in steering School Self-Evaluation (SSE), shaping not only how processes are organised but also who participates and to what extent engagement is genuinely collaborative across the school. Across the case study systems, SSE and broader Quality Assurance (QA) processes are predominantly initiated and overseen by principals or senior leadership teams, often supported by designated coordinators, committees, or working groups. Typically, an individual such as a QA Officer or SSE coordinator is tasked with organising data analysis, drafting reports, and guiding implementation. This illustrates the central responsibility of leadership not only to initiate SSE but also to structure and sustain it over time.

While leadership structures provide coherence and direction, they also markedly shape patterns of participation. In policy, Ireland places considerable emphasis on SSE as *"a whole school initiative involving all staff members"* [IE: P_S2, T_SSE_S2, T_YH_S1, T_SSE_S4]. In practice, Irish case study schools attempt to engage teachers, students, and, in some cases, parents in SSE activities where Leadership arrangements frequently reflect this orientation. For example, leading SSE emerged as a key responsibility for Deputy Principals, frequently undertaken in collaboration with an SSE committee of teachers and, in DEIS case study schools, aligned with the role of a DEIS Coordinator [IE: S1, S5]. These structures suggest a more distributed model of leadership, where responsibility is shared, and participation is actively encouraged, although the depth and consistency of engagement can still vary.

By contrast, in Belgium (Flanders), SSE and QA processes tend to be more explicitly associated with leadership and designated roles. QA is generally perceived as something *"steered by the school management, the QA coordinators or staff members with QA responsibilities"* [BE: SBC_SL].

This perception is reflected in teachers' accounts, with several reporting that they *"did not consider themselves… to be participating in the school's QA processes"* [BE: CL_T, CL_T+SC, SFC_T+ICT, SFC_ELO, AA_ICT], instead viewing QA as primarily a management responsibility. Even where participatory structures exist, leadership retains strategic control. One school described a central "*quality board"* that consults representatives of different staff groups, yet "*the agenda is set by the school management"* with teachers contributing indirectly through representation [BE: SBC_T+SP]. This illustrates a semi-distributed model in which responsibilities are delegated but authority remains concentrated, leading to perceptions of QA as something done to teachers rather than with them.

A similar pattern is apparent in Italy, where leadership responsibilities are strongly determined by system-level requirements. The National Evaluation System (SNV) mandates a formal evaluation cycle, requiring schools to produce a School Self-Evaluation Report (RAV) and an associated improvement plan. This effectively positions school leaders as accountable for coordinating SSE processes and responding to their outcomes. While such structures ensure procedural compliance, they do not necessarily support collaborative engagement. In some cases, *"self-evaluation does not emerge as a collaborative effort"* [IT: T2_Dig_S5], remaining sporadic and individualised, often delegated to a small team or managed solely by the principal. This organisational configuration reinforces the perception of SSE as an administrative requirement rather than a shared professional practice.

In Spain (Castilla y León), leadership similarly plays a central coordinating role, often within the context of formal quality management systems such as EFQM or ISO frameworks. These systems provide structured procedures and clearly defined roles for evaluation and improvement. As one principal noted, *"Thanks to the ISO 9001 system, we have been able to establish a series of procedures and protocols for each and every one of the actions of the educational process, from admission to complaints"* [SP: P_S2]. While these frameworks support organisational consistency, they do not necessarily ensure broad-based participation. Evidence from the case studies indicates that, although substantial data are collected through examinations, surveys, and internal assessments, the analysis and discussion of this information are not always institutionalised across the whole staff. Consequently, teachers may remain peripheral to decision-making processes. As one teacher explained: *"From management, questionnaires are sent out, but we don't always know what happens next with that information"* [SP: T1_BITS_S1]. This reflects a disconnect between leadership-led evaluation activity and wider staff engagement.

Across all contexts, leadership practices in SSE are similarly shaped by the extent to which evaluation processes translate into meaningful pedagogical action. While leadership structures and delegated roles support the formal implementation of SSE, using evaluation findings to inform teaching and learning remains a consistent challenge. Evidence from Italy, for instance, indicates that although data are collected and analysed as part of the SSE process, their practical application is limited. As one teacher observed, *"There is little correlation between the theoretical and the practical world"* [IT: T3_S5]. This highlights a gap between evaluation processes and classroom-level change, suggesting that leadership effectiveness cannot be assessed solely in terms of coordination or compliance.

Overall, the findings point to a consistent pattern across systems: leadership is central to the organisation and sustainability of SSE, yet the degree to which responsibility is genuinely shared varies considerably. Ireland, particularly in DEIS contexts, comes closest to a model of distributed leadership combined with broader stakeholder engagement.

In contrast, Belgium (Flanders), Italy, and Spain (Castilla y León) illustrate more centrally directed approaches, where SSE remains closely aligned with leadership authority and formal roles. These patterns imply that, in the absence of deliberate strategies to extend participation, SSE risks becoming a predominantly top-down process. Where this occurs, ownership among teachers and other stakeholders is limited, and the potential of SSE to function as a meaningful, practice-oriented process of school improvement is correspondingly reduced.

3.6 Challenges in Implementing SSE

Despite strong policy frameworks and the best intentions of school leaders, the case study schools identified a number of recurring challenges that hinder the effective implementation of SSE. These challenges often mean that SSE is not as impactful or ingrained in practice as it could be. Key barriers include heavy workload and time constraints, limited data expertise among staff, resistance to change, difficulties with data access, and various ethical concerns surrounding data use. Each of these is discussed below.

3.6.1 Time and Workload Pressures

Significant time pressure and heavy workloads emerged as a universal challenge, causing SSE activities and data analysis tasks to be de prioritised or handled in a superficial way. Some teachers across all four countries reported that engaging deeply with SSE is difficult on top of their day-to-day teaching and administrative duties. In Ireland, every participant highlighted lack of time as a barrier where teachers feel they do not have sufficient time for data analysis, reflection, and planning of SSE initiatives while also planning lessons, grading, and managing classrooms. Consequently, some SSE tasks either *"are not being prioritised or [are] being rushed"* [IE: T_YH_S1]. Irish participants also noted a sense of "initiative overload," where multiple initiatives compete for attention which dilutes focus and buy-in [IE: T_SSE_S4]. Italian teachers also highlighted that their heavy workloads prevent full engagement with data. One Italian interviewee commented that managing regular teaching alongside remedial activities and SSE duties requires *"an unsustainable planning effort"* [IT: T_SSE_S4].

In Spain (Castilla y León) on the other hand, a common refrain was the excessive bureaucratisation of quality processes. Teachers complained that while working toward common goals is important, *"We teachers complain a lot that it adds a lot of bureaucracy… sometimes this generates a lot of administrative work"* [SP: T4_NOV_S2], that detracts from time with students. In all cases, the implication is that, unless time is specifically allocated and workload adjusted, teachers find it difficult to invest time in SSE. In other words, the pressure of day to day responsibilities have the potential to reduce SSE to a cursory checkbox exercise rather than a deep, collaborative inquiry into improvement.

3.6.2 Limited Data Literacy and Skills

A second pervasive challenge is the lack of specific skills and PD among teachers to effectively collect, interpret, and using data as part of SSE. Many educators have not received formal PD in data analysis or quantitative research methods, and they may feel unprepared to draw meaningful conclusions from quantitative information.

A principal in Ireland highlighted that some staff who trained when data use was not emphasised, or those without postgraduate qualifications, are not equipped in data analysis, interpretation, or applying data insights to their teaching practice [IE: P_S4]. An Irish deputy principal also added that ensuring the accuracy and consistency of data entered by staff can be a struggle, given varying levels of technical proficiency and understanding of data systems [IE: DP_S3].

The situation is comparable in Italy and Spain (Castilla y León). As noted earlier, only a minority of teachers in these contexts demonstrate familiarity with concepts such as LA, where the majority do not feel confident in using digital data beyond basic tasks. Many Italian and Spanish teachers reported a lack of specific skills for interpreting data outputs or linking them to pedagogical strategies. In Spain (Castilla y León), for example, teachers can receive platform data (grades, attendance, etc.) but *"are not yet aware of what kind of information… what kind of data [they] can extract to analyse"* or how to do so in a pedagogically meaningful way [SP: P_S2]. These skills gaps inevitably limit the extent to which SSE can be truly data-informed.

In practice, schools are gathering more data than ever, but without building teachers' data literacy, much of this information appears underused, with all countries recognising that this as a capacity issue and CPD and support is needed to empower teachers (and school leaders) to engage with data critically and confidently as part of their routine practice.

3.6.3 Staff Hesitancy and Resistance to Change

Implementing SSE often requires shifts in school culture and teacher practice, and not all staff are immediately receptive. Resistance to change and hesitation to adopt new, data-driven practices were noted as significant hurdles. In each country, there are teachers who prefer to rely on traditional methods and personal experience rather than systematic data or new technologies. For example, a number of teachers believe in their professional intuition or "gut feeling" about students and remain unconvinced that data can add value to their judgment. In Belgium (Flanders) one teacher stated: *"I don't do my own QA based on data; I mainly learn from giving lessons differently, does this work or not and I draw conclusions from it"* [BE: SBC_T+LP].

This exemplifies a view that reflective practice is important, but it can be done informally and individually, without the need for structured data analysis. Similarly, other Belgian (Flanders) educators commented that a seasoned teacher *"must know his sheep,"* implying that knowing students well personally is more important than numbers on a spreadsheet [BE: LC_T+SC]. In the Irish context, some teachers were described as wary of over relying on data [IE: T_SSE_S4]. An Italian principal also noted that some staff still regard the whole SSE process as an additional bureaucratic burden or *"do not see the inherent value"* in it [IT: P_S4], which diminishes their engagement.

In Spain (Castilla y León), resistance is also tied to low digital confidence, especially among veteran teachers, there is a perception that new educational technologies and data tools can become “more of an obstacle than a help” if one lacks advanced digital skills. This gap generates resistance and practical difficulty in adopting digital data practices for QA. Teachers accustomed to doing things a certain way may feel threatened by new metrics or platforms that seem to quantify their work. In summary, obtaining full staff buy-in and overcoming reluctance to change surfaced as a major challenge. It highlights that SSE is as much a cultural process as a technical one, where building a positive, collaborative culture around quality improvement is essential. Therefore, schools may need to provide change management, clear communication of the benefits, and peer support to reduce fear and scepticism among staff.

3.6.4 Data Accessibility and Fragmentation

Even when teachers are willing to engage with data, accessing and managing that data can be challenging. Case study participants reported difficulties in acquiring the “right” data and in compiling information from disparate sources. In some schools, data exists in fragmented silos across different digital systems and databases, making it laborious to get a coherent picture for SSE. Irish teachers pointed out that relevant data is often spread across multiple platforms, and putting it together for analysis is time consuming. They also noted that the volume of available data can become overwhelming without tools to synthesise it.

Belgium (Flanders) teachers raised specific concerns about data alignment and timeliness. They receive a lot of data from the Flemish government (such as feedback from national tests or indicators), but this data is not always easily or quickly accessible to schools. Moreover, it may not align perfectly with the data the school collects internally, leading to discrepancies or confusion about which figures to trust. Italian and Spanish educators also described inconsistencies in data storage and access. In Italy, for example, some information might be kept on the electronic register, and other data in teacher files. Spanish teachers also reported that they often have limited permissions to extract data from school platforms, or they are not trained in how to generate useful reports.

This fragmentation means that opportunities for analysis are missed; teachers stick to what they can easily see (for example, class grades) and rarely examine broader data sets. In summary, technical and organisational hurdles in accessing data constitute a significant barrier to effective SSE, where solving this issue requires better data systems integration at the school level and user-friendly tools that present data in manageable ways for educators.

3.6.5 Ethical and Privacy Concerns

As schools increase their use of data for SE?, ethical considerations come to the fore, and these were acknowledged by participants, especially in Ireland and Italy. Irish educators, for example, expressed concerns about data privacy and the appropriateness of sharing certain personal information. They stressed the need to be cautious, particularly when dealing with data on minors (students under 18), and not to compromise data protection regulations or trust. There is also a worry about the potential stigma or negative labelling of students and schools based on data outcomes. Multiple Irish interviewees noted that care must be taken *not to label* a student as "failing" (just because certain data points are low), without context [IE: T_YH_S3, P_S2, DP_S2]. This perspective on the broader ethical balance between transparency and sensitivity; that is, using data to help, not to punish or shame.

Belgian (Flanders) teachers had a different perspective; the "dehumanisation" risk of using data. Some feared that an over reliance on numbers could overshadow the personal, human aspect of teaching and learning. They value professional judgement and worry that data systems might eventually supplant teacher intuition or even be misused to exclude or rigidly track students where there is a sense that if taken too far, data-driven approaches could treat students as statistics rather than individuals, or could be used in reductive ways (for example, to rank teachers or students unfairly).

One Italian participant also echoed that *"potential risks in storing data that, in effect, build cognitive biographies of students"* [IT: T2_SSE_S1]. Without strong safeguards, accumulating detailed performance data on each student could infringe on privacy or lead to unintended consequences if misinterpreted.

Concerns about misinterpretation and bias were also implied. A Belgian (Flanders) teacher noted that evaluation nowadays is *"sometimes more quantitative than qualitative,"* cautioning that a class's performance might be misrepresented if judged solely by numbers on isolated metrics [BE: T1_BITS_S1]. Data can carry biases (reflecting socio-economic, cultural or other factors), and if educators are not cautious, they might have flawed conclusions or reinforce stereotypes (for example, assuming a student is "weak" because of a low score without investigating underlying issues). The overarching message from participants is the importance of ethical literacy together with data literacy, where schools must ensure confidentiality, obtain consent where appropriate, and use data in a fair and context-sensitive manner. These ethical considerations form a background that sometimes makes educators cautious or ambivalent about fully embracing data-driven SSE, unless they feel that those concerns are addressed.

3.7 Opportunities and Benefits of Self-Evaluation and Data Use

Balanced against the challenges, the case study findings also highlight significant opportunities and positive impacts associated with effective SSE, especially when it is supported by meaningful data use. Participants identified a number of ways in which SSE and LA (where known) can benefit their schools, including improved student support, more effective DIDM, and a stronger culture of collaboration and shared purpose. These benefits, many of which are already being initiated across cases, present a compelling case for persevering with SSE and investing in its success.

3.7.1 Enhancing Student Learning and Outcomes

One clear opportunity is for SSE to directly enhance student learning by enabling timely, tailored support. In the Belgian (Flanders) schools, for example, teachers see value in using data to pinpoint which students need additional help and to provide remediation when and where it's necessary. They view SSE and other data tools as ways to better individualise instruction. Tailoring education to individual needs was frequently mentioned as something LA/SSE can improve in practice if used well [BE: PS_T, PS_QAO, AA_SL, SFC_SL]. As a Belgian (Flanders) quality coordinator observed, data allows schools to work in a more targeted manner for each student, ensuring differentiation both "upwards and downwards" (challenging high achievers and supporting those struggling) [BE: PS-QAO]. Spanish educators also recognise that systematically analysing educational data could optimise attention to students.

One Spanish teacher noted that *"we have always tried to individualise the student so that he or she is treated as well as possible"*, and that LA is simply *"one more way"* of doing this with greater rigour and breadth of information [SP: T4_EXP_S5]. In other words, SSE and LA offer an additional lens to make sure that no student "falls through the cracks," by identifying patterns or needs that might not be evident by intuition alone.

Furthermore, evidence gathered through SSE can provide a stronger basis to design interventions and allocating resources to benefit students. Irish school leaders gave examples of using assessment data to spot underperformance from an early stage (for example, identifying a student whose standardized test scores suggest that they should be doing better than their current grades indicate) and then forming a support plan for that student.

This proactive use of data leads to earlier interventions such as literacy or numeracy support, mentoring, or guidance counselling, which can improve student outcomes over time. In Ireland, in some case study schools, it appears that data-driven student tracking has become part of pastoral care, ensuring that "*students receive the help they need when they need it*" [IE: DP_S2, T_SSE_S2].

In summary, across cases, participants believe that when SSE is focused on learning outcomes and not just compliance, it can result in tangible improvements: raising achievement, closing equity gaps, and improving student well-being by responding to identified needs.

3.7.2 Data-Informed Decision Making

Another widely cited benefit is that SSE especially when used with rich data leads to more informed and evidence-informed decision-making at the school level. Having concrete data moves SSE beyond anecdotes or intuition, giving weight and credibility to improvement plans. In Ireland and Belgium (Flanders) in particular, participants noted that data provides a form of "hard evidence" that can justify new initiatives or changes. For example, a school could introduce a study skills program after the SSE data (exam results, study habits surveys, etc.) has revealed gaps in student study techniques. With empirically sound data, school management can more convincingly argue for the allocation of resources or policy adjustments, both internally and to external bodies, with one Irish principal stating that data is *"really, really helpful"* because *"it is very difficult to argue [with] the data"* when making a case for action [IE: P_S2].

Belgian (Flanders) interviewees similarly highlighted that decisions carry more legitimacy when used with robust data sets. A Belgian (Flanders) QA coordinator described the reality of external evaluations: you must be able to *"put it on the table… you have to be able to show something"* (BE: SBC_QAO) to auditors, and for that data is ideal, as it provides proof of what the school has achieved or where it is improving.

In practice, data can speak for the school, supplementing qualitative narratives with quantitative facts. Participants from Belgium (Flanders) also listed numerous ways that data have enhanced planning such as identifying problems that need addressing, consolidating practices that are working well, and offering new insights that might otherwise be overlooked [BE: SBC_QAO, SBC_T+LP, SFC_QAO]. Using data in this way also reinforces the concept of *intelligent accountability*, not in a punitive sense, but as a means of tracking whether strategies are effective. School teams can set targets (For example, raise attendance by X%, over a three year period) and then use data to monitor progress, thus closing the loop of the improvement cycle.

Perhaps most importantly, a data-informed approach grounds the school's improvement conversations in evidence, which can make discussions more constructive and focused where it shifts debates from opinion to analysis.

One Italian principal stated: *"Data is what guides me in all my decisions"* [IT: P_S1] and in many respects this statement encapsulates how a strong data culture can function where it is not viewed or should it be viewed as a replacement for professional judgement, but as a compass that helps navigate the complexities of school management and pedagogical choices. When SSE yields actionable data insights, it empowers school leaders and teachers to make strategic decisions confidently, knowing they are responding to actual evidence of needs and outcomes.

3.7.3 Fostering Collaboration and a Shared Vision

Participants also observed that when implemented in an inclusive way, SSE can promote a more collaborative school culture and build a shared vision for improvement. By involving various stakeholders in examining data and reflecting on practice, SSE encourages collective ownership of school development. In Ireland, there is a strong emphasis on collaboration in Department of Education SSE guidelines, and case study schools echoed this. They described SSE as a whole-school journey that ideally *encompasses the voice of all partners in the school community* (teachers, support staff, students, and parents where possible). Indeed, a number of Irish interviewees noted that this approach has fostered greater coherence among staff, where the vast majority of staff appear to be working towards the same goals and are aware of the school's key improvement priorities [IE: P_S2, T_SSE_S2, T_YH_S1, T_SSE_S4]. Regular SSE meetings, group data discussions, and staff workshops on teaching and learning appear to have created forums for professional dialogue that might not otherwise occur in a hectic school schedule. In Belgium (Flanders), some schools similarly view QA as an opportunity to unify the team. For example, a number of Belgian (Flanders) educators mentioned the need for a *"clear shared vision, [with] clear aims and guidelines"* to see the full potential of LA and QA realised in their school [BE: LC_QAO, LC_T+SC, PS_ICT, SBC_QAO, SFC_ICT, SFC_T].

The process of developing such a vision inherently requires conversation and agreement among staff, which can strengthen collegial relationships. Although achieving collaborative SSE in Italy has been difficult in some cases (due to factors such as teacher turnover and a tradition of individualism), Italian participants still regard the goal of SSE as a *"collaborative effort"* that can drive cultural change over time [IT: T2_Dig_S5]. They see value in building a culture where teachers work together on analysing results and innovating practice, rather than each teacher staying isolated in their classroom.

Spanish teachers also emphasised that SSE practices such as joint meetings to review outcomes or committees to evaluate programs create spaces for shared reflection and teamwork. These practices can serve as effective means of unifying educational criteria within a school, ensuring consistency in teaching approaches and expectations. As one Spanish teacher noted, *"Anything [involving] debate I think can be an opportunity. It is a place to get to know colleagues, their points of view, and to get to know more about the program of the management team"* [SP: T4_EXP_S1]. Through the SSE process, teachers not only discuss data and initiatives, but also learn more about each other's perspectives and the rationale behind school leadership's plans. Another teacher added that through QA activities, *"we try to unify the programme and more or less structure it, to have the same points for all teachers"* [SP: T3_HD_S5]. This illustrates how collaboration via SSE can lead to more aligned practice in schools.

In summary, when SSE is done in a participatory manner, it has the potential to break down silos and foster a sense of community, as well as collective responsibility for school improvement.

3.8 The Role of Data and Evidence in Daily School Operations

Beyond formal SSE cycles and improvement plans, the case studies also highlight how data and evidence are being used (or not used) in the daily operations of schools, both in management decisions and in classroom teaching. This provides context to understanding the practical integration of SSE into everyday practice. During the interviews, respondents connected questions about the use of data or evidence not only to quality assurance, but linked this rather automatically to ensuring or improving quality within the primary processes (i.e., instructional decisions). Generally, all schools collect plenty of data in their routine operations, and some of this data is used for immediate decision-making (especially at a management level). However, the extent to which data is systematically analysed for pedagogical purposes varies across cases and in many instances remains limited.

3.8.1 School Management and Organisational Planning

At the school leadership level, data is commonly used for monitoring and organisational planning on a day-to-day basis. For instance, in Ireland and Italy, principals highlighted the daily use of attendance data to track student absences or lateness, allowing for quick identification of potential issues (such as emerging patterns of non-attendance or punctuality problems). In Italian schools, the electronic *registro* (digital register) is used primarily for administrative record-keeping, marking attendance, logging behavior notes, etc. However, Italian respondents noted that there is often *"no systematic decoding of information generated by digital platforms"* for deeper pedagogical insights;

the data is available, but it's mostly used for managerial or compliance purposes rather than instructional planning.

In Ireland, some school leaders take a somewhat more analytical approach to daily data. Many Irish schools compile data from entrance assessments, standardized tests (e.g. CAT4 scores), ongoing class assessments, and even psychological or diagnostic tests, to build profiles of student(s). This information is used to track progress and to inform resource allocation, for example, deciding which students might need learning support, or which class groups might need additional teaching resources. Irish principals described using data reports when meeting with teachers or parents to discuss a student's progress, ensuring that conversations are grounded in evidence. At a broader level, aggregated data informs policy development within the school. If survey results show, for example, low student satisfaction with assessment feedback, the leadership might initiate a review of assessment policies. One Principal in Ireland stated that data from various sources (state exam results, literacy test scores, etc.) directly fed into the SSE process and influenced the drafting of the next School Improvement Plan.

Belgian (Flanders) schools also provide examples of data use in management. Many have developed internal surveys or audits (sometimes facilitated by external projects or networks) that produce data on school functioning – e.g. student engagement levels, teacher PD needs, or parental satisfaction. School leadership teams examine these survey results via data dashboards in tools like Smartschool to set priorities and identify problem areas that need attention. The data might reveal, for example, that students feel unsafe in the corridor areas, prompting a leadership decision to increase supervision. In these ways, data is feeding into micro-level management decisions and quality improvement actions in Belgium (Flanders).

In Spain (Castilla y León), digital management platforms, such as *STILUS,* are used to run the administrative and academic aspects of schools that handle aspects of education from student admissions and enrolment, to scheduling, grade management, and reporting to parents. These systems consolidate a wide range of operational data in one place. Some school leaders in Spain (Castilla y León) have started to explore trends (for instance, analysing dropout rates or exam failure rates across years or departments), with one Spanish school reporting efforts to use their platform data to spot patterns and underlying issues, with the management team seeking help to interpret the numbers. However, even in such cases, it was noted that there is an absence of an in-depth or institutionalised analysis of the data collected from virtual platforms for broader decision making where usage tends to remain at the surface level (monitoring and record-keeping) unless the school specifically invests time and expertise to further analyse the data.

In summary, data is present in the daily school management of schools across all cases, and it is used to inform certain decisions (particularly around student monitoring and some strategic planning). However, it is apparent that there remains considerable untapped potential in all contexts to use this data more powerfully for school-wide learning and improvement.

3.8.2 Supporting Teaching and Learning

When it comes to directly supporting teaching and learning in the classroom, data plays a role, though its integration is uneven and often used at a superficial level. Teachers use data such as assessment results or feedback from homework and quizzes to adjust their teaching; however, systematic or advanced data practices are not yet common. In Ireland, many teachers regularly use data on student performance to reflect on and refine instructional strategies. For example, in one case, after a round of exams or standardised tests, teachers analysed the results to identify topics where students underperformed and then modified their lessons and provided extra revision on those areas. Data also helps in feedback conversations where Irish teachers, for example, stated that they bring data into discussions with students and parents to illustrate progress or pinpoint issues, making these conversations more evidence-based, than conversational. This aligns with a culture of evidence-informed teaching where data is used not to penalize, but to guide learners with some schools encouraging teachers to set targets for their classes based on baseline data and to review these targets at intervals, fostering a cycle of data-informed teaching.

In Italy, the use of data in teaching appears to be growing, where schools are more digitally equipped. Teachers in technologically advanced schools make effective use of tools, such as Google Classroom and Moodle, to gather information on student learning in real time. For example, one Italian school systematically uses Moodle for conducting entry-level tests, periodic assessments in various subjects, and continuous tracking of student progress. This not only provides teachers with immediate results and item-by-item analysis of student responses but also enables students to engage in *self-assessment*, seeing their own progress charts, which can motivate them to improve.

Italian teachers also use applications such as *Kahoot!* and *Google Forms* to make formative assessment interactive, with instant data on which questions students struggled with. These practices help teachers adjust their methods; for instance, if most students miss a question, the teacher knows to review that topic.

In Belgium (Flanders), teachers report that data, such as test scores or evaluation rubrics, is used to monitor and improve teaching. However, some are sceptical about whether this represents a new way of working or simply *"the same as before, but in a different way."* Belgian (Flanders) teachers, in particular, argue that they have always gathered

data through observing their classes, grading, and knowing their pupils and that they do not necessarily need analytics to do their jobs well. As one teacher put it, they *"don't need data to do [their] jobs"* [BE: SFC_ICT, LC_T].

This highlights a significant divide where technically oriented teachers might be experimenting with data tools, whereas others remain with traditional, experience-based methods. Nonetheless, almost all schools involved in the case studies engage with basic data such as exam results and use it to guide remedial teaching for students who did poorly or required more support.

In Spain (Castilla y León), the prevailing use of digital platforms by teachers appears to be for resource sharing and tracking student work, rather than for deep data analysis of learning. For example, many Spanish teachers use *Microsoft Teams* to post assignments, record grades, and communicate with students and families. They maintain digital grade books and attendance records, which allows them to easily identify if a student is falling behind or frequently absent, and then take action (such as arranging a meeting with the family or providing extra help). They view this as just "one more way" of handling data which is essentially an electronic version of what they did on paper before.

Most participants however, stated that they do not perform systematic or advanced analysis of the available data. Indeed, it appears that few, if any, are generating detailed reports on class performance patterns, achievement gaps, or instructional effectiveness from digital data. Plausible explanations relate to the fact that there is a sense that while the tools exist to do more, teachers either lack time or know how to exploit them fully. In this regard, data use in teaching tends to centre on identifying which students need attention, informing everyday assessments, and providing personal feedback. The richer possibilities of data for pedagogical innovation (such as adaptive learning, predictive analysis of who might fail, etc.) are largely absent in daily practice as of yet.

3.9 Critical Engagement with Data

A significant cross-cutting issue is the extent of critical engagement with the data that schools collect. The case studies suggest that while data is plentiful, its pedagogical meaning often remains implicit or is interpreted in a narrow way. In Italy, for example, participants observed that data use tends to remain *individual* where a teacher might look at their own class's test results but rarely becomes a topic of structured, collective reflection. There is a recurring theme of needing to ask the *right questions* of the data to extract value from it. As the chair of an Italian school council poignantly asked, *"The real question is what kind of question the teacher poses to the data"* [IT: Par_S1]. This implies that data per se does nothing, where it is the inquiry and analysis by educators that matter. Without the capacity to frame relevant pedagogical questions (for example, "What might be causing our first-year students to have lower math scores than our

previous cohorts?"), data can easily become just an exercise in number-crunching. In fact, Italian participants warned that data can end up as *"an end in itself"* [IT: Par_S2] where it is something schools collect and report because they're supposed to, but in reality, does not feed back into teaching changes.

In Belgium (Flanders) many teachers, particularly those with extensive experience, remain to be convinced that delving into data analysis will substantially improve their teaching. As noted earlier, some feel that their professional expertise already captures what data would tell them. Moreover, as mentioned earlier, many Belgian (Flanders) teachers do not see themselves as involved in the school's QA processes, which implies that they might not be engaged in school-wide data discussions. The result is that a lot of data collected at the whole school level (surveys, exam scores, etc.) might sit in reports that only management or a small QA team reviews. Similarly, in Spain (Castilla y León), there appears to be an absence of in-depth or school-wide analysis of the abundant data collected through digital platforms. Indeed, teachers might not even be aware of the analytical tools at their disposal with one Spanish principal stating that *"we are not aware of what kind of information, what kind of data we can extract to analyse [from the platform]"* [P_S2], while a teacher from other school stated *"there is a great possibility of data analysis that we do not use, to tell the truth. Simply out of ignorance"* [T2_QC_S5]. These statements underscore the gap between the availability of data and teachers' skills to analyse it, especially since teaching is still largely traditional and face to face, and the concept of LA is new to them [SP: P_S2]. This indicates that teachers need guidance not just on technical data skills, but on how to reflect critically on data use.

3.10 Conclusion

In conclusion, across the case studies there is a clear recognition of the *potential* of SSE and data to inform practice, but also a realisation that this potential is not yet fully realised in daily school life. Large quantities of data are being collected as part of routine administration and periodic evaluations, yet much of it remains underused for improving teaching and learning. The lack of regular, critical engagement with data at the classroom level means that opportunities for intervention or innovation can be missed. The findings highlight a need for capacity building in schools: both in technical skills (data literacy) and in creating time and structures for collaborative data inquiry. Until teachers and school leaders can deeply integrate data insights into pedagogy, SSE will not achieve its full potential. Nonetheless, the growing awareness of this gap is a step forward and points to the next stage of development for some schools; one which the following chapter will explore by focusing on the introduction of more advanced data tools and analytics, and how they might enhance SSE in education.

Chapter 4: Setting the Scene - The Place of Learning Analytics in Case Study Schools

4.1 Introduction

This chapter explores how LA is understood, valued, and used across the case study schools in Ireland, Belgium (Flanders), Italy, and Spain (Castilla y León). The findings reveal a mix of optimism about LA's potential to enhance SSE and QA, together with significant concerns, scepticism, and varying levels of engagement among educators. Common themes include a recognition of LA as a promising source of objective evidence for school improvement, fears about data overload and relevance to everyday teaching, prerequisites for effective integration (such as vision and PD), and notable gaps in awareness and data literacy. The following sections present these themes in turn, using participants' voices to illustrate the convergence and divergence of perspectives across the four countries.

4.2 Optimism concerning Learning Analytics Potential for Improvement

Across all four regions, there is a positive sentiment regarding the potential of LA to inform school improvement and DIDM. Many educators and school leaders perceive LA as a valuable tool for providing objective insights that can support reflective practice. In Ireland, participants noted that data derived from LA can be *"really, really helpful"* for school leadership because it is *"very difficult to argue [with] the data"* when making a case for change [IE: P_S2]. Similarly, in Belgium (Flanders), having more quantitative evidence is seen as increasingly essential for accountability and improvement. As one Belgian (Flanders) QA coordinator put it: *"You can no longer make it with clean talk alone… you have to be able to show something and for that, Learning Analytics are actually ideal"* (BE: SBC_QAO). This highlights a view that decisions with the use of empirically sound data carry more weight in both internal evaluations and external audits.

Educators in Spain (Castilla y León) and Italy also acknowledge opportunities for LA to enhance educational outcomes. Spanish interviewees highlighted LA as a means to better individualise student support and ensure that no learner is overlooked. One experienced teacher explained, *"It is one more way of dealing with the data, we have always tried to individualise the student so that he or she is treated as well as possible"* (SP: T4_EXP_S5). In Italy, as in many schools in other case countries, while the term LA is not always familiar, some principals and teachers expressed the idea that *"data is what guides me in all my decisions"* [IT: P_S1], suggesting an implicit appreciation of data driven decision-making. Across the cases, this optimism reflects a hope that LA can complement educators' professional judgement with concrete evidence, thereby strengthening SSE and planning processes.

4.3 Data Overload and Workload Concerns

Participants also voiced concerns about workload and data overload associated with implementing LA. In Ireland and Belgium (Flanders), school staff cautioned that the sheer volume of data now available can be overwhelming for teachers with the worry that without careful curation, LA has the potential to generate more information than educators can realistically interpret, and use given their busy workloads. As one Irish principal noted, there is a need to ensure that data collection yields *manageable* and *meaningful* insights rather than drowning teachers in spreadsheets and numbers [IE: P_S5]. In other words, the challenge is to integrate LA in a way that supports daily practice without becoming an added burden.

Time constraints were also a recurrent theme, especially in Spain (Castilla y León) and Italy. Teachers in these contexts often struggle to find time for in depth data analysis on top of their regular teaching duties. Some Spanish teachers *"complain a lot that [quality assurance activities] adds a lot of bureaucracy"*, in particular, it is reinforced when new data initiatives are introduced in the process (SP: T4_NOV_S2). One teacher pointed out that with only an hour per week formally allocated to quality processes, *"it is impossible to meet all the quality needs of the centre"* (SP: T1_Dig_S5). This sentiment illustrates how, without dedicated time and support, even well-intentioned LA efforts may be perceived as *"just more paperwork"* [IE: P_S5] rather than as a powerful tool for teaching and learning. The concern is that overloaded teachers might disengage from LA activities unless data work is streamlined and clearly relevant to their classroom priorities and practice.

4.4 Teacher Scepticism and Reliance on Intuition

Despite the potential of LA, many teachers remain sceptical about its relevance to everyday practice, often relying on personal experience and intuition over data. In all four countries, there are educators who do not yet see LA as essential for SSE, sometimes viewing it as abstract or removed from the realities of the classroom. In Belgium (Flanders), for example, some teachers described LA as a "great unknown" and argued that their *"gut feeling"* and deep knowledge of students are sufficient for monitoring progress. *"A shepherd must know his sheep,"* noted one Belgian (Flanders) teacher, suggesting that good teachers intuitively understand their students' needs without needing numbers (BE: SFC_ICT). Another Belgian (Flanders) teacher stated: *"I don't do my own QA based on data; I mainly learn from giving lessons differently… and I draw conclusions from it"* (BE: SBC_T+LP). These views reflect a broader cultural hesitancy, where data is sometimes seen as an optional add on rather than integral to reflective teaching practice.

In Spain (Castilla y León) and Italy, teacher scepticism often stems from uncertainty about how to apply LA in pedagogical contexts. A Spanish digital coordinator appreciated the concept of LA in theory – *"I see it is very pretty"* – but confessed, *"I don't see it as real either"* in the current school context (SP: T1_Dig_S5). Italian participants similarly pointed out that having access to data is not enough; what matters is the capacity to interpret it effectively. *"The real question is what kind of question the teacher poses to the data,"* one participant observed, emphasising that without purposeful inquiry, data can end up being *"an end in itself"* rather than a tool for improvement (IT: Par_S1, IT: Par_S2). Across the cases, this reliance on professional intuition over LA highlights an underlying challenge where many educators remain unconvinced that LA offers new insights beyond what teachers already glean from their day-to-day interactions with students.

4.5 Conditions for Effective Integration of Learning Analytics

Participants across all regions stressed that certain conditions must be in place for LA to be effectively integrated into SSE. A clear, shared vision and strong leadership are seen as essential to the implementation of LA in Schools. In Belgium (Flanders), a number of school leaders and SSE coordinators argued that the *"seed"* for LA adoption needs to be *"planted with the school staff"* through a well-communicated policy and collective buy-in (BE: LC_T+SC). Schools that had articulated a common vision; for example, explicitly aiming to become more *"data-minded"* have found it easier to engage teachers with analytics. *"We want to use more data"* was a guiding vision in one Belgian (Flanders) school, which helped signal to all staff the importance of DIDM practices (BE: LC_QAO). Similarly, in Spain (Castilla y León) (Castilla y León), interviewees noted the opportunity to foster a more data-informed school culture if leadership provides clear aims and ongoing support for LA initiatives.

Another frequently cited requirement is targeted PD and capacity building for staff. Many teachers and principals lack formal PD in data analysis, which limits their ability and confidence to use LA tools. Irish participants noted that hands on experience over time is key to developing the skills needed to collect, analyse, and present data effectively in schools [IE: T_YH_S1; T_SSE_S2; P_S4]. Italian and Spanish case studies also emphasised the need for PD to build data literacy. For example, one Spanish teacher said, *"I would need training, of course, because it would mean continuing a bit of the work I am doing"* [SP**:** T3_exp_S3]. This quote vividly illustrates how Spanish educators believe that further training is necessary to effectively apply data.

Teachers must learn not only technical skills but also how to ask the correct pedagogical questions of the data, a skill that may require guided practice and exemplars of practice that form a core component of Work Package 4 of the QUALAS project. As one Italian student remarked, *"data is only useful if it leads to action… otherwise it's just empty numbers"* (IT: S_S3).

Ensuring that LA leads to actionable insights entails training educators to interpret analytics in pedagogically meaningful ways, rather than treating data as an end in itself. Participants across countries suggested that sustained, step by step PD and collaborative analysis (for example, in subject departments or SSE teams) can gradually build a comfort level with data use.

Crucially, overcoming cultural resistance was mentioned as both a condition and a challenge. School leaders in Ireland and Belgium (Flanders) observed that some teachers with less digital confidence *"very much need to be guided and helped"* in this space [IE: DP_S2]. In Spain (Castilla y León) (Castilla y León) and Italy, resistance to change or technophobia can hinder LA adoption; one Italian interviewee noted that when confronted with data reports, certain teachers *"are not interested, they get distracted"* (IT: T2_Dig_S4), while in Spain (Castilla y León) (Castilla y León), several participants highlighted the lack of digital skills among teachers as an obstacle to leveraging data coordinator noted: *"Many people have a huge problem with ICT, and that hinders the process"* [SP: T1_Dig_S5]. To counter this lack of knowledge and capacity, participants suggested cultivating a non-threatening environment for data use.

Rather than imposing LA as another top-down mandate, it should be introduced as a helpful tool to support teachers' own goals. For example, Belgian (Flanders) educators cautioned that LA should not become just *"another thing on the pile of things schools have to do,"* but rather, should be framed and experienced as an aid to improve teaching and learning. In practice, many case study schools found value in letting teachers lead by example. Identifying "early adopter" teachers who effectively use data and having them share their successes in staff forums can gradually shift colleagues' mindsets [IE: P_S3].

In summary, establishing a clear vision, building staff capacity, and nurturing a collaborative data culture are seen as essential steps to embed LA in school routines.

4.6 Teacher Awareness and Digital Literacy Gaps

The awareness of LA among teachers varies widely both between and within countries, often depending on educators' roles and digital literacy. In Ireland, there are indications that many teachers are at least aware of LA, or its potential uses in their school, thanks in part to involvement in SSE surveys, staff-meeting discussions, or exposure to data platforms [IE: T_YH_S1; T_YH_S3; DP_S3]. However, even in these cases, teachers' depth of understanding can be limited where they might know that data is being gathered and analysed at a leadership level without fully grasping how it feeds into strategic decisions [IE: T_SSE_S1].

In contrast, in Belgium (Flanders), Italy, and Spain (Castilla y León) (Castilla y León), teacher awareness of the concept of LA is generally low. Many educators stated they had never encountered the term before participating in the QUALAS project. In Belgium (Flanders), some interviewees stated they had to *"Google the term"* when they first heard of it, and others conflated it with basic statistics features in their school's digital gradebook (assuming that *"Smartschool analytics"* was all that LA entailed) (BE: PS_ICT; PS_QAO; SFC_ICT). Similarly in Italy, only a minority of staff had any prior understanding of LA until a definition was provided to them; for most, it was an unfamiliar concept and thus not part of their vocabulary or practice. This sentiment is echoed by a Spanish principal who stated that, upon first hearing about the QUALAS project's focus on LA: *"That term… it's the first time I see it. I understand it, and I'm still not very clear what the equivalent is in my mind"* (SP: P_S2). These comments highlight that the idea of systematically using LA for SSE is still at an early stage of implementation in many schools; this might be due to the fact that LA is a relatively new concept they are not very familiar with, rather than an established routine.

Notably, awareness tends to be higher among staff with specific responsibilities in ICT or evaluation. In each country, teachers or coordinators tasked with digital learning, data management, or SSE roles are more likely to be familiar with LA practices (even if they don't use that exact term). For example, Italian teachers who serve as technology coordinators described the use of digital tracking tools as part of their *"daily bread"* (IT: T2_Dig_S2), indicating that monitoring student progress through data is second nature for them. In Belgium (Flanders), it was observed that LA activities (such as data compilation and analysis) were mainly concentrated at the management or SSE coordinator level, with classroom teachers far less involved and less knowledgeable about these processes. This division suggests a siloed implementation, where a small team handles and analyses data.

The challenge moving forward will be to expand awareness and competence beyond specialist roles so that LA becomes more democratized across the teaching staff.

4.7 Barriers to Teacher Engagement with Learning Analytics

When asked why so many teachers have limited engagement with LA, participants across the case studies highlighted numerous interrelated factors:

I. Focus on immediate teaching duties: Teachers are often preoccupied with their own subjects, classes, and day to day workload, leaving limited time to engage with school-wide data initiatives. As one Belgian (Flanders) teacher observed, *"The last thing people will lose sleep over is data… The first concern is just your own lesson and your own workload."* (BE: PS_ICT).

II. Reliance on professional intuition: Many educators trust their experience and knowledge of students over external data reports. Some are of the view that they *already* know how their students are doing without needing additional metrics. In one school, a teacher argued that colleagues *"have such a strong view of their students that they know what to do, [and] they don't need the numbers for that"* (BE: SFC_SL). This belief that *"gut feeling"* suffices can lead to minimal interest in what LA can offer, moreover, their initial beliefs and attitudes hinder them in engaging with learning analytics unless it clearly provides new insights that intuition alone cannot.

III. Restricted access to data: In a number of cases, teachers do not have access to the full range of data that school leaders or SSE teams have. School management might limit sensitive information to a small group for privacy reasons where classroom teachers only ever view data related to their own classes or subjects. For instance, Belgian (Flanders) teachers reported that they mostly see their pupils' test scores in their subject but find it difficult to access broader performance or background data, which may also be a technical feature of the digital used rather than a management decision to limit teachers' access to those data (BE: PS_T+SG; PS_SL; SFC_ELO). This limited access means teachers may not be able to engage in whole school analytics or SSE data discussions.

IV. Unconscious data use**:** Some educators may be engaging in forms of LA without labelling it as such. In particular in Italy and Belgium (Flanders), teachers often use digital gradebooks, attendance tracking systems, or learning platforms in routine ways that generate data. These teachers might analyse their class test results or monitor who is failing (activities that fall under LA) but they consider it just part of teaching, not an LA practice as it's not specifically framed as LA, they might report *"never using Learning Analytics"* even as they engage with data

informally. This points to a gap in awareness and terminology more than actual practice in some cases.

Overall, these factors create a scenario where teacher engagement with LA remains sporadic. Unless teachers are given the time, tools, and clear incentives to integrate data into their teaching, many will leave data work to others. Recognising and addressing these barriers is therefore crucial for any initiative aiming to broaden the use of LA in schools.

4.8 Linking Analytics with Quality Assurance and Planning

Another theme in the case studies is the extent to which LA is (or is not) being connected to schools' existing SSE and planning processes. Here, national differences are more pronounced in comparison to other themes that emerged from the Case Studies. In Ireland, LA is most often discussed in the context of SSE and associated improvement planning (especially in DEIS schools). For Irish educators, using data for SSE is almost synonymous with doing SSE. One deputy principal explained that in their context, *"Where you see quality assurance, that's SSE, or in this school, [it's] really DEIS planning because [for us] SSE is DEIS"* [IE: DP_S2]. In practice this means that data such as standardised test scores, attendance figures, or survey results are reviewed by staff committees as part of setting annual goals and targets in the DEIS action plan.

Teachers in these schools become aware of LA through their involvement in these review meetings and discussions of progress data [IE: T_YH_S1; P_S4]. Thus, in Ireland there is a relatively explicit link between LA and cyclical SSE/QA planning, at least at the leadership and coordinator level.

In contrast, the Belgium (Flanders) case study suggests that teacher-level involvement in LA for QA is quite limited. School leaders and SSE coordinators in Belgium (Flanders) tended to be optimistic about using data, but the teachers themselves reported a different story. One Belgian (Flanders) teacher noted that, in reality, *"Not the whole school is going to work on it because the demand does not come from teachers. There are plenty of teachers who don't ask these kinds of questions and rarely, if ever, look for data to adjust something."* (BE: SBC_T+LP). This highlights a top-down pattern: while management might use LA to prepare for inspections or to identify school-wide issues, many teachers remain on the periphery of these efforts. Italy presents a similar picture; even in a technically advanced Italian school, the pedagogical use of data for QA remained mostly implicit and individual. Teachers might occasionally examine their students' test trends, or an enterprising staff member might run an analysis for a project, but there was little structured, school-wide strategy to connect those data insights to the formal SSE or planning process.

Spanish participants also reported only *"limited understanding and widespread uncertainty"* about how LA could feed into decision making and SSE where any data use tended to be *ad hoc* rather than systematic.

A recurring distinction in Italy and Spain (Castilla y León) (Castilla y León) was that available digital tools were used primarily for monitoring and administrative purposes rather than deep pedagogical reflection. For example, Italian schools universally employ a *registro elettronico* (electronic gradebook/attendance system). While this platform generates plenty of data (attendance records, grades, parent signatures, login frequencies, etc.), teachers and leaders stated that they mostly use it to log information and keep track of basic compliance (e.g. who is absent, or which parents have seen the reports). The data seldom goes further to inform teaching strategies or school improvement plans. An Italian principal described this as the *"systematic decoding of information generated by digital platforms"*; the data is there, but they are mined in a superficial way (IT: P_S1).

In summary, these schools collect plenty of information, but turning those numbers into meaningful insights for teaching and learning is still in embryonic form. Without deliberate efforts, much of the LA data remains underutilised in guiding pedagogical reflection or SSE.

4.9 Tension Between Data and "Gut Feeling" in Quality Assurance

A notable cultural tension identified in several cases, especially in Belgium (Flanders), is the perceived balance between data-driven SSE and the traditional "gut feeling" approach to teaching. Many educators value data, yet they are cautious about it overshadowing professional experience. In Belgian (Flanders) schools, this manifested as an insistence that human insight should not be discounted amid the drive for LA. Teachers frequently stated that good teaching is rooted in personal engagement and judgment. In one Belgian (Flanders) school, staff members repeated the phrase *'gut feeling'* as a cornerstone of their approach, implying that instinct born of experience is critical and must not be *"replaced by hard data"* (BE: LC_QAO; LC_T+SC). Teachers in these schools argued that because they chose this profession out of a desire to help students, they are *always* striving to do their best for each child (BE: AA_SL). From their perspective, extensive data analysis might be seen as redundant or even mistrustful of teacher expertise. As a Belgian (Flanders) language teacher put it, *"Ultimately, our greatest task is to educate children and young people. And those data and those points should play a little less of a role, I think."* (BE: SBC_T+LP). This highlights a worry that an over-emphasis on metrics could *dehumanise* education (as mentioned in earlier sections of this report), reducing students to numbers and teachers to data analysts.

Irish, Italian, and Spanish educators expressed similar cautions. Even those enthusiastic about LA often included a caveat that education should not become entirely data-driven or mechanical. An Irish teacher acknowledged the value of evidence but also paraphrased that *"not everything that counts can be counted"*, suggesting that qualities such as student motivation or classroom atmosphere defy easy quantification [IE: P_S5]. In Italy, there was hope that schools would adopt LA in a measured way, avoiding what some called a *"technocratic"* mindset. The effective use of data, they stressed, requires maintaining a balance between analytics and empathy, using data to inform teaching while still considering each student's unique context and needs. Thus, across countries, educators hope to integrate LA as one tool among many, complementing rather than supplanting the professional intuition and personal interactions at the heart of teaching. However, achieving this balance will depend on how school leaders frame LA initiatives, whether as supportive aids that empower teachers, or as rigid accountability measures that might be seen as undermining trust in teachers' judgment.

4.10 The Need for Critical Engagement and a Shared Vision

Finally, the case studies highlight that realising the benefits of LA for school improvement will require **cr**itical engagement with data and a shared vision for its use. Participants in all countries converged on the idea that data alone cannot drive change; it is the collective understanding and purposeful use of data that matters. In practical terms, this means that schools need to cultivate a *pedagogical culture* around data use. Teachers, support staff, and leaders should have ongoing conversations about what questions they want to answer with data, how to interpret findings in context, and how to act on insights. As noted earlier, Italian educators called for a *"mature"* use of LA; one where the quality of data is matched by the quality of questions asked, and where numbers are always considered alongside professional expertise (IT: T14_S4; IT: P_S3). In the same vein, Belgian (Flanders) respondents believed that without a clear and shared framework (e.g. common goals, definitions, and guidelines for LA), the full potential of LA would not be realised (BE: PS_ICT; SFC_ICT; SFC_T).

Building this shared vision often falls to school leadership and policy support. Several Belgian (Flanders) and Spanish interviewees suggested that guidance from education authorities could help, for instance by providing a unified platform or set of tools to make data analysis easier (BE: PS_SL; LC_QAO). An organized framework might also prevent each school from struggling in isolation with disparate systems. In Ireland, some principals hoped for more direction at a national level so that schools could compare data and learn from each other in a coherent way [IE: P_S4]. At the school level, leaders play a crucial role in communicating the purpose of LA and reassuring staff that the aim is to enhance teaching and learning and not to catch teachers out. When everyone in a school understands why data is being used and how it can help students, there is a greater chance of buy-in and meaningful participation among staff.

4.11 Conclusion

The place of LA in the case study schools is characterised by cautious optimism and gradual exploration. Educators see promise in using data to support student learning and school development, but this is hampered by practical challenges and cultural reservations. LA is not yet an integral part of most teachers' lexicon and practice; its use is often limited to a small group or to basic monitoring functions. Key conditions such as improving data literacy, providing time and tools, and fostering a collaborative data culture emerge as necessary to move LA to a more central role in SSE, with respect to a broader connection to a purposeful and pedagogical framing. Importantly, any advancement in this area will need to respect the professional values of educators, maintaining the human touch in education while leveraging data where it can add value to answering concrete questions or needs that need to be tackled. In the chapters that follow, specific opportunities that stakeholders envision for LA in SSE, as well as the challenges and ethical considerations that must be addressed to harness its full potential for QA in schools.

Chapter 5: The Role of School Culture and Context in Shaping the Use of Learning Analytics for School Self Evaluation

5.1 Introduction

This chapter examines how the internal culture and organizational characteristics of the case study schools influence the use of LA in their SSE processes. It explores the documentation and digital resources that evidence LA use, the conditions that facilitate or hinder data-driven collaboration among staff, and the capacities and dispositions of school personnel in engaging with data. Furthermore, the chapter considers the involvement and awareness of external stakeholders, namely parents and students, in LA-related SSE activities. These factors are analysed across the case studies in order to understand how school culture either supports or limits the integration of LA into continuous improvement practices, aligning with the themes and conclusions introduced earlier in this report.

5.2 School Culture and Characteristics

Within the case study schools, certain formal documents, tools, and routines highlight the presence of data practices tied to SSE, although the depth of LA integration varies. All schools produce official planning and SSE documents that include data analysis to some extent. For example, as previously stated, Irish and Italian schools are required to engage in SSE and develop improvement plans (known as DEIS action plans in Ireland) that incorporate student performance and often survey data.

This official documentation for SSE serves as tangible evidence of data use in SSE. Similarly, in other contexts, school improvement plans and inspection reports reference the analysis of student outcomes, providing a documented link between data and quality processes. While these documents indicate an existing culture of evidence-informed planning, participants suggested that they often capture relatively basic metrics or compliance data rather than advanced analytics. Still, having these official records sets a foundation: as one Irish principal noted, *"we have data in our SSE reports and annual plans that we look at each year"* [IE: P_S5], highlighting that data is at least being formally acknowledged in SSE cycles.

Beyond paperwork, schools have invested in digital platforms and tools that generate and store data, though these are often traditional systems rather than specialized analytics software. Teachers and leaders across the cases reported using platforms such as student information systems (e.g. *VSware* in Ireland) or LMS to track grades, attendance, and assessment results. In Belgium (Flanders), for example, the *Smartschool* platform is widely used, meaning that *"they know the school makes use of these tools and data"* (SFC_ELO, PS_ICT) through everyday digital interaction.

However, these tools are generally used for operational data tracking and reporting where the ability to perform deeper analyses is limited. In many cases the use of LA is limited and points to a technical gap in analytics capacity. However, the existence of school wide digital data systems has at least introduced staff to the practice of collecting and viewing data regularly. As one Irish teacher explained, data such as exam results are readily available on these systems, but more advanced analysis *"would require going further than what we currently do"* [IE: T_SSE_S2]. This suggests that, while technological infrastructure is in place, it is not yet used for sophisticated analytics in QA.

Schools also commonly gather stakeholder input through surveys and online forms, integrating these data into their SSE reflections. Many participants mentioned annual questionnaires to students, parents, or staff as part of self-evaluation. These surveys produce valuable feedback and basic statistics. For example, Irish schools include survey findings in SSE reports, and Spanish schools distribute annual surveys to their educational community as part of SSE. In Italy, such surveys are designed and managed by individual schools, according to their specific needs. These data collection practices indicate an awareness that qualitative feedback and basic quantitative metrics (such as satisfaction ratings) are important for QA. However, the potential of these data sources for deeper is not fully realised. Often, survey results are reviewed in aggregate and inform broad action points, but there is little evidence of more granular or predictive analysis. The data tend to be treated in a summative manner ("used for school improvement initiatives rather than explicit analytics" as noted in the Spanish case [SP: T1_BITS_S1]), reflecting a data culture that values feedback but has yet to embrace more complex LA techniques. Nonetheless, the presence of surveys and feedback loops is a positive cultural characteristic, highlighting that schools are open to data-informed dialogue when assessing quality and "thinking about continuous improvement" [SP: T2_QC_S2].

When it comes to organisational conditions for data use, the case study schools exhibit structured opportunities for collaboration, albeit with varying effectiveness. Participants highlighted scheduled meetings and committees where data is discussed for QA purposes. In Ireland, existing structures such as SSE and DEIS involve regular staff meetings dedicated to reviewing data on student outcomes and target attainment. These forums are a prominent feature of the school culture, with teams convening to examine results and plan improvements. Subject department meetings also provide a space to look at relevant data within each discipline, thereby normalising data discussions among teachers. As one Irish deputy principal described, SSE and DEIS activities are ingrained in the school routine, *"holding regular meetings"* where evidence is reviewed and goals are set.

This structured collaboration involving data helps to build a shared understanding among staff of where the school is succeeding or underperforming. Similarly, an SSE team is responsible for analysing school data in Italy. Furthermore, the results of INVALSI tests are commonly presented in general teacher meetings (Teachers' Councils) and analysed more in detail in subject department meetings. In contrast, the Spanish case suggested that collaborative analysis is less systematic; teachers were sometimes unsure *"if this information is collected by the management team for informed decision-making" [SP: T1_BITS_S1, T2_QC_S5, T4_Dig_S4],* implying that regular data-focused meetings were not firmly established. In Italy and Belgium (Flanders), some schools have introduced data teams or quality committees, but their functioning can depend on the enthusiasm of particular staff members. Overall, having formal meeting structures and collaborative processes is seen as a facilitator for LA in SSE; where these exist, the school culture tends to be more data-informed.

Leadership and institutional support emerged as critical factors in fostering an analytics-friendly school culture. Strong leadership can drive the adoption of LA by prioritising data use, providing vision, and allocating resources. Across all case studies, principals and SSE coordinators who champion DIDM were noted as key enablers for LA in their respective school. For example, an Irish principal emphasised aligning data initiatives with the school's existing SSE principles to ensure staff buy in [IE: P_S5]. In practice, this means school leaders not only mandate data for accountability but also encourage its use for genuine improvement, modelling a positive attitude toward LA.

Conversely, a lack of consistent leadership or high staff turnover can hinder the development of a strong data culture with one Spanish teacher stating that *"the problem we have is that the staff changes a lot […] so it depends on the professional who comes"* (SP: T1_BITS_S1) which indicates that frequent personnel changes disrupt continuity in data practices.

Without stable leadership or long-serving staff to maintain momentum, efforts to use LA for SSE may weaken. To counteract this, one Italian school adopted a rotating system of internal responsibilities, so that knowledge of digital processes is not the remit of one individual. This approach – *"rotating internal responsibilities"* was suggested to increase the number of staff with specific expertise . Indeed, as emerged in a rural school in particular, to ensure continuity in SSE activities there is a core staff, since the majority leave the school (IT: P_S5). These institutional strategies highlight that leadership is not only about one individual, but also about creating structures that sustain data use as part of the school's culture.

Despite these positive elements, and as with almost all new initiatives, participants in all contexts acknowledged time constraints and workload as significant challenges to using LA in practice. For teachers and school leaders with heavy workloads and administrative duties, there appears to be limited time for in-depth data analysis or reflection.

Many educators across countries feel that engaging with LA beyond basic record keeping adds to their workload, and thus, data discussions can be rushed or superficial. An Irish teacher and a principal both raised concerns that without dedicated time, even motivated staff struggle to delve into the data [IE: T_SSE_S2, P_S4]. This sentiment was echoed implicitly across the case studies where regular data meetings or professional learning sessions often compete with other pressing duties, and in some schools, data tasks are confined to a small SSE team to avoid overburdening teachers.

The culture of "busyness" in schools means that analytical tasks are sometimes postponed or given cursory attention. As a result, opportunities to extract insights from learning data can be missed simply because staff cannot allocate sufficient time. Recognising this, some school leaders have called for time to be formally allocated for data-related activities, such as by adjusting timetables or providing cover for teachers involved in analysis. While not yet common, these suggestions underline the need to treat data work as a core part of the job, rather than an extra responsibility to be handled on one's own time.

5.3 Parent and Student Involvement

Beyond staff and internal processes, the case studies also shed light on the awareness and engagement of parents and students in the schools' use of LA. A consistent theme across countries is that the understanding of LA among these stakeholders is limited. In general, parents and students interact with school data primarily in the context of personal performance where they see grades, reports or feedback that relate to themselves. However, they are largely unaware of any broader data analysis undertaken for SSE purposes. This section examines the varying degrees of stakeholder awareness and the factors influencing their involvement, highlighting a notable gap between SSE practices and external engagement.

5.3.1 Awareness Primarily Linked to Personal Performance

In all cases, participants noted that parents and students tend to know about data use only to the extent that it affects individual outcomes. Their awareness of LA is often confined to using digital platforms to access their own grades, attendance records, or teacher comments. In Ireland, for example, students are generally more aware than parents because they directly engage with assessments and see results posted online. Both groups gain some awareness through tools such as the *VSware* portal (commonly

used for sharing exam results and reports), as well as through traditional channels such as letters home and parent-teacher meetings where data on student progress is discussed. An Irish principal confirmed that these channels make parents aware of student data being tracked, noting that regular communications ensures that parents know *"their feedback has led to changes"* when survey results inform school decisions [IE: P_S5].

Similarly, in Belgium (Flanders), interviewees reported that only a small minority of families are cognisant of LA beyond checking their *Smartschool* accounts for their own child's information. Using *Smartschool* gives parents and students a basic understanding that the school collects and uses data (for example, they see that test scores and attendance are logged in the system). However, this understanding appears to be at a surface level with one Belgian(Flanders) participant drawing an analogy to website cookies to illustrate the point: *"To what extent that data goes further to extract statistics, I don't think they [parents] will immediately think about that, but they don't do that either when they click 'I agree' on all those websites"* (BE: PS_ICT). In other words, parents and students might accept that data is being gathered in the school's digital systems just as they accept cookies online, but they rarely consider what deeper analysis might be occurring behind the scenes.

Overall, the Belgium (Flanders) case indicates that stakeholders' concerns extend only to their own data; they care about personal results and scores, and they do not really consider that these data points are part of a larger dataset that the school may be examining for SSE. This pattern of limited, individual-focused awareness was also echoed in the other country cases.

5.3.2 Fragmented or Unexplored Potential

Participants observed that the potential for engaging parents and students with data at a broader level remains largely unrealised and inconsistent. In Italy, for example, familiarity with digital tools and the willingness to use data varies greatly among different school communities. Some parents and students in technologically advanced schools use online gradebooks or e-learning platforms on a regular basis, yet even in these instances, data are frequently reduced to numerical scores, rather than interpreted as evidence capable of informing practice.

In many Italian schools, there is no structured program to educate families or students on understanding data trends or analytics where any engagement is *ad hoc* and dependent on individual initiative. As a result, large segments of the school community are unaware of the wider potential of LA at either the classroom or school level. The Spanish case similarly points to a culture of data use that is focused mainly on administrative or summative evaluation functions.

Digital platforms are used (for example, to record grades or manage attendance), but there is *"little systematic pedagogical analysis of the data"* [SP: T1_BITS_S1, T4_EXP_S1] and almost no communication of these analyses to families. In this regard, the Spanish case highlights that limited access and literacy among families often limit their involvement. For example, one Spanish teacher noted *"there are some [families] that have more problems with access […] they have no access"* [SP: T3_HD_S5]. Spanish teachers noted that they themselves often do not know if or how school leadership uses the data collected, making it *"even more unlikely parents and students will know either"* [SP: T1_HD_S3] about any LA driven insights or SSE decisions.

Moreover, the Spanish report explicitly highlights the conceptual and practical exclusion of families and students from the value of educational data where they are neither involved in discussions about data nor informed about its role in improving the school [SP: T3_nov_S1]. In summary, while digital data platforms exist and are used across all cases, their analytical potential remains fragmented or unexplored from the perspective of students and parents. The idea that LA could be used to enhance learning or inform school improvement is not to the forefront of most parents' minds and as a result, schools have yet to bridge that gap in understanding.

5.3.3 Varying Levels of Engagement and Polarised Views of Learning Analytics

The degree of engagement with school data among parents (and to some extent students) is not only low on average, but also uneven within and between schools. The Italian case highlighted stark internal differences where some teachers described *a complete lack of engagement by parents* in data-related matters (IT: T1_Dig_S1), whereas others schools or even within the same school reported that families that are highly informed and actively involved in school life. This suggests a polarisation that is likely shaped by families' social and cultural capital [IT Case Study pg. 45]. In communities where parents have more educational resources or interest, they may ask more questions about school results or seek out information, while in other communities, parents might not engage unless a pressing issue arises.

One Italian example was that families showed keen interest in data when it concerned a concrete change like a proposed four day school week. However, when it comes to the learning processes many parents showed *"zero interest in what their children are doing"* (T1_Dig_S4). At the same time, students' engagement with data can be similarly at the surface level. According to one Italian teacher, students often *"read data like they do on TikTok or Instagram – without really stopping to reflect on it"* (IT: T1_Dig_S2). These statements illustrate that even when data is accessible, meaningful engagement is not guaranteed.

Students may scroll through an online grade report as they would a social media post, focusing on immediate numbers (marks, points) without contextualising them or thinking about long term improvement. In some schools, student councils or focus groups are involved in reviewing survey feedback and thus get a glimpse of how data informs policy changes. For example, Irish schools sometimes involve the Student Council in discussing SSE findings, indirectly exposing students to the outcomes of data analysis [IE: S1, S2, S3, S4, S5]. However, this involvement tends to be the exception rather than the rule.

The general picture is that engagement with LA by students and parents is highly variable, where a small subset is engaged, and a majority are passively aware at most. However, some are entirely disengaged, reflecting broader inequalities in interest and capacity to engage with educational data.

5.3.4 Linking Learning Analytics to School Self Evaluation

Even among those parents and students who are somewhat aware of data being used by the school, the connection between LA and formal SSE is usually unclear. In Ireland, for example, parents and students are aware that the school conducts SSE and implements improvement plans (especially if they've responded to surveys or seen initiatives labelled as part of SSE), but they do not necessarily realise that LA could be underpinning those SSE activities. The data use is often conflated with general school improvement efforts rather than recognised as a distinct, analytics-driven process. As one Irish deputy principal explained, families understand that *"their feedback has led to changes"* after an SSE survey. However, *"they don't see behind the curtain"* to the data analysis that aggregates and interprets that feedback [IE: DP_S1, DP_S3, DP_S2]. In other words, the school might inform the community that "you told us X in the survey, so we did Y," yet not communicate that this was part of a structured LA or SSE process. Therefore, the link between LA and SSE remains implicit. Students on committees or councils may get some insight into outcomes of data analysis. However, even they appear in the main to be told that the school's quality monitoring or planning is explicitly driven by LA techniques. This lack of an explicit link means that from the parent/student perspective, any data-driven SSE work that the school does has the potential to merely blends into normal administrative decisions or one-off improvements, rather than standing out as a systematic approach to enhancing educational quality.

5.3.5 Focus on Personal Data

The prevailing mindset among parents and students appears to be a narrow focus on personal data, rather than a holistic view of data use at the school level. In Belgium (Flanders), for example, stakeholders were described as concerned almost exclusively with the information directly relevant to them (their own child's grades, their own performance and not with aggregated data or trends). As stated by one Belgian (Flanders) participant, they *"do not really consider their data as being part of the data being collected, analysed and used by schools for quality assurance"* (BE: LC_T, SFC_QAO, PS_QAO).

This suggests that parents see data in terms of personal accountability (is my child doing well?) but not as something that the school might use to identify areas for improvement or to compare outcomes across groups. This is understandable since schools seldom share analytics beyond individual report cards. However, it also implies a missed opportunity for broader engagement; if parents and students only care about personal data, they may not support or even understand school-wide initiatives that are based on broader analytics.

The Belgian (Flanders) case illustrates this well where the culture of a school does not encourage thinking about data collectively. Similarly, in the other cases, any attempt to involve families in SSE data would first have to overcome this predominantly personal lens through which parents and students view school data.

5.3.6 Levels of Engagement

The extent to which parents and students engage with available data for SSE purposes is sporadic and highly context dependent. In Italy, as previously mentioned, there are instances of proactive involvement, but without deliberate mediation by the school, data often remains a *"technical and opaque tool"* (Case Study pg. 52) accessible only to staff or those with specific knowledge. Even when parents or students have the technical means to access certain data (for example, being able to log into a national portal to see analytics dashboards or progress charts), it *"does not always translate into actual engagement"* (IT: T1_Dig_S2).

Cultural and communicative factors play a role; in some school communities where discussing data or metrics is not common practice. In this regard, even if information is available, stakeholders might not act on it. There were also suggestions that without guidance on interpretation, providing more data to families could inadvertently reinforce existing inequities where those with higher social capital might benefit and engage more, while others might feel even more alienated by complex statistical data sets.

Despite this, it is evident that engagement remains sporadic with a few engaged individuals, and in the main, many others disengaged, with engagement patterns differing from school to school. In this regard, any future initiatives towards integrating LA fully into SSE will require solutions and resources to address these inconsistencies in stakeholder engagement.

5.3.7 Conceptual and Practical Issues

Finally, a striking finding, most evident in the Spanish case, is that parents and students tend to be in the main, excluded both conceptually and practically from the school's LA endeavours. Conceptually, schools do not generally consider students and parents as part of the QA data cycle; they are seen as sources of data (e.g. via surveys or exam results) rather than as partners in analysing or reflecting on that data.

Practically, this means there are few if any mechanisms for families to learn about or contribute to the interpretation of data beyond their own child. In Spain (Castilla y León) (Castilla y León), for example, schools rely on annual surveys of parents and students to inform decisions, but based on the Spanish case study findings, they do not explicitly use LA platforms to present findings back to the community, as this teacher indicates: *"there is no return of information to the students nor a structured feedback channel"* [SP: T2_QC_S2].

The data that families provide feeds into school decision-making, yet the families do not appear to be brought into discussion of those insights. This one directional flow of data creates a gap in understanding where the school makes “informed decisions” internally; However, parents/students could attribute changes to general policies or intuition rather than decisions being made that are based on DIDM processes of which, this form of exclusion has both conceptual (not thinking to include them) and practical ramifications (no process to include them) for the present and future use of LA in SSE. Participants from Spain (Castilla y León) (Castilla y León) reflected that this gap undermines trust and transparency where if stakeholders don’t know that decisions are data-informed, they may undervalue the efforts or remain sceptical of initiatives. The same pattern, to varying degrees, exists in other jurisdictions where none of the case study schools have yet fully integrated parents and students into a collaborative interpretation of LA for SSE. Indeed, it would be reasonable to suggest that at present, engaging these groups in LA-based quality discussions remains an unrealised aspect of the culture of the school.

5.4 Conclusion

In conclusion, the culture in case study schools concerning LA use is still internally oriented and staff-centric, with limited involvement of the broader school community. Parents and students generally have low awareness of LA beyond their personal data, and their involvement in SSE processes via data appears to be minimal or incidental.

This indicates that while schools are slowly building internal capacity for data use, a parallel effort to foster a more inclusive data culture with external stakeholders has fallen behind. The findings in this chapter highlight the importance of both cultivating an internal data-informed culture (through documentation, tools, collaboration, leadership, and capacity building) and extending that culture outward to include parents and students. These cultural and organisational characteristics set the context for how effectively learning analytics can be used in SSE and more broadly in education. The proceeding chapters build on these insights, examining the affordances, constraints, and future considerations for integrating LA into SSE.

Chapter 6: Affordances and Constraints for the use of Learning Analytics in the Process of School Self Evaluation in Case Study Schools

1. Introduction

This chapter examines the key affordances (enablers) and constraints (barriers) that influence how LA is used in the process of SSE across the case study schools. All four contexts (Ireland, Belgium (Flanders), Italy, and Spain (Castilla y León) (Castilla y León)) exhibit a mix of factors that either support or hinder the integration of data-driven practices into SSE.

Common affordances identified include the increasing availability of digital data and platforms in schools, as well as the enthusiasm and skills of certain staff members who champion data use. Concurrently, pervasive constraints such as limited staff PD, time pressures, insufficient integration of tools, and concerns about workload and data literacy pose significant challenges to fully harnessing LA for SSE.

The chapter is structured in two main sections: first, it discusses issues related to competence and capacity building towards the use of LA in SSE, and from here, it addresses the resources and support mechanisms (infrastructure, PD, and policy supports) that can enable or limit effective use of LA in SSE.

2. Competence and Capacity Building

One of the most crucial factors in adopting LA for SSE is the competence and confidence of educators in working with data. Across all case studies, participants acknowledged the importance of using data for school improvement and for identifying students' needs. However,they reported varying levels of competence and confidence in data use. In general, only a minority of staff in each context have advanced data literacy skills, while the majority possess more basic abilities or are essentially "getting by" with average competencies [BE: PS_QAO].

For example, in Ireland all teachers routinely use the school's management information system (*VSware*) to access data, yet their proficiency in extracting, manipulating and analysing that data varies widely. Some Irish staff have become adept at creating their own spreadsheet tools to present data in user-friendly ways [IE: P_S5, DP_S4, T_SSE_S1], whereas others rely on only the simplest functions of the available systems. A similar pattern is observed in Belgium (Flanders) where a small number of "data enthusiasts" have good skills. However, most teachers engage with data at a very superficial level. Likewise, in Italy, digital tools are integrated into school processes (teachers commonly use electronic registers and learning platforms such as Google Workspace for Education), but many teachers utilise only the basic features of these tools despite having attended PD sessions.

Spanish participants also noted that although general digital competence among teachers has improved, particularly following the move to online learning during the COVID-19 pandemic, these platforms are still mainly used as repositories for content delivery and assignments, rather than generating actionable analytics.

In summary, there is a clear gap between basic use and deeper analytical capacity in all settings where, as previously stated, schools have more data than ever. However, stakeholders often "don't know what to do with it," highlighting a significant need for capacity building in data literacy.

Differences in individual background and roles help to explain some of the variability in competence. Educators with prior exposure to data analysis, for example, through postgraduate studiesor personal interest, tend to feel more confident in using LA.

In the Irish case studies, a number of interviewees mentioned having a Master's degree or a strong mathematics/science background, which equipped them with skills relevant to data analysis [IE: P_S2; T_SSE_S2; DP_S2; DP_S1; T_SSE_S1]. These staff members often take on leadership in data initiatives. Similarly, in Spain (Castilla y León) (Castilla y León) and Italy, those in managerial or ICT coordinator roles (or with accredited digital competence qualifications) demonstrated more advanced skills and willingness to engage with LA compared to many classroom teachers. For example, one Spanish school director with an officially accredited digital competence now actively trains other teachers in ICT use [SP: P_S5]. On the other hand, teachers who have no such background often feel less capable. As one Irish teacher noted, most teachers are subject specialists and trained in pedagogy, "not necessarily in analysing statistics" [IE: T_YH_S3]. This disparity creates a situation where a few technically competent individuals lead the way, but the majority of staff approach data hesitantly or only at a surface level.

Encouragingly, many participants across the countries expressed a desire to develop more advanced skills in data use, recognising that their current capabilities are limited. In Belgium (Flanders), for example, a number of respondents stated that they can only perform basic analyses at present and want to be able to "draw more detailed conclusions, do complex analyses and deliver thorough interpretations" of the data they collect [BE: LC_QAO, LC_T+SC, SFC_QAO, PS_SL]. Italian teachers similarly identified specific PD needs in data management (e.g. handling spreadsheets, basic statistics) and in interpreting and contextualising data to avoid misinterpretation.

Spanish teachers frequently voiced the need for PD in data analysis that is focused on practical tasks relevant to their work, with one teacher stating that "we teachers don't have much training... [in] data collection, data analysis and where to take these data" [SP: T2_TC_S1].

These comments highlight a widespread acknowledgement among educators that they require more support and education to build their confidence and proficiency in using data effectively.

Beyond individual capacity, the study examined how school staff are encouraged and supported to collect, interpret and use data for SSE. In all four countries, support mechanisms exist but tend to be a mix of formal and informal measures, with heavy reliance on peer learning. On the formal side, schools provide technological infrastructure (for example, Irish schools supply devices to teachers and maintain established platforms (*Microsoft Teams, Google Workspace, VSware*, etc.) for data input and access. Many schools also have committees or working groups (such as SSE teams) that periodically review data and plan improvements, embedding data use into their SSE processes. However, targeted formal PD specifically on LA is largely absent. An Irish principal pointed out the lack of any external PD focused on LA or data analytics for schools [IE: P_S5] of which, this sentiment was echoed in the other cases.

In Belgium (Flanders) external PD opportunities for LA were described in line with Ireland as “thin on the ground” or not sufficiently tailored to schools’ needs to attract participation (one interviewee noted that a session had even been cancelled due to lack of interest) [BE: SBC_SL; SFC_T; AA_ICT+DO; LC_QAO]. Italy and Spain (Castilla y León) (Castilla y León) similarly reported that schools typically do not offer regular courses to enhance teachers’ data use skills, where instead, most PD related to digital tools is concerned with operating platforms (for example, how to use an electronic gradebook or input data into a system) rather than analysing the resulting data for further insights.

In the absence of extensive formal PD, informal in-house support is crucial. Across the case studies, educators described learning to use data primarily through peer collaboration, mentoring, and “learning by doing” on the job. Belgian (Flanders) schools exemplify this, where ICT coordinators or self-taught data enthusiasts often lead short workshops for staff or individual coaching for other staff members.

One Belgian(Flanders) interviewee described this organic sharing of knowledge as the "oil slick principle," where a small core of skilled teachers informally disseminate their “know how” to others over time [BE: SFC_ICT]. Irish teachers also highlighted that much of their data-related learning happens through working in teams (for example, teachers meet in SSE working groups to examine assessment results together, which helps build collective confidence in interpreting data).

Similarly, in Italy any progress in LA use has tended to come from motivated individuals helping peers on an *ad hoc* basis. However, it was suggested that pairing teachers (especially a less experienced teacher with a more digitally fluent one) in co-teaching arrangements could facilitate the transfer of LA practices.

As with Belgian (Flanders) schools, Spanish schools (particularly, vocational training centres) reported creating internal documentation to guide teachers in using their platforms, and pairing new teachers with mentors as part of an induction process during which new staff learn about the school's data systems *"informally in the hallways, opening the computer... showing how to do something or enter data somewhere"* [SP: P_S2, P_S5]. Such peer to peer support is a recurring theme throughout the case studies where teachers trust advice from colleagues and often prefer informal support over formal workshops, especially given the time constraints they face.

As previously stated, workload and time constraints were consistently mentioned as barriers limiting teachers' engagement with data analysis and related PD. Teachers across all countries stated that their schedules are already overloaded with teaching, lesson preparation, and administrative duties, leaving little room for in-depth data work or extra PD sessions. In Belgium (Flanders) for example, school leaders acknowledged that any new initiative (including LA) must consider the "*time pressure, priorities, and [the] multitude of changes*" competing for teachers' attention [BE: PS_QAO; SFC_ICT]. Italian participants similarly reported a lack of time for additional PD, noting that PD on the use of digital tools is often perceived as an added burden that leads to "cognitive overload and fatigue". Spanish educators echoed these sentiments, with one principal stating that implementing more data-related tasks without removing others "would make our work more administrative and would add more work to what we already have" [SP: P_S4]. Teachers in Spain (Castilla y León) (Castilla y León) also criticised inefficient bureaucratic processes that "waste our time," implying that any PD or data initiative must be efficient and clearly beneficial to be worth doing [SP: T2_TC_S1]. These comments highlight that without allocating time and simplifying processes, even well-intentioned and high-quality PD LA initiatives may flounder because of practical constraints on teachers.

Despite the challenges, certain organisational roles have emerged as key in supporting other**s** to use LA. School leaders and coordinators often act as the champions and guides for data use in their institutions. In Ireland, principals and deputy principals, as well as middle leaders such as SSE coordinators or year heads, see it as part of their role to lead and mentor others in data-driven SSE. They convene and steer SSE groups, help colleagues interpret findings, and oversee the review process to ensure that data insights inform planning. As one Irish principal explained that their role involves looking at various data sets (such as CAT4 standardised test scores or educational psychological reports) and helping teachers use this information to set targets and improve practice [IE: P_S5].

In Belgium (Flanders) while the majority of teachers involved in the case studies do not perceive data use as their own responsibility, dedicated staff such as ICT coordinators or SSE coordinators take initiative in organising internal PD and encouraging teachers to, for example, analyse test results to identify learning gaps. In Spain (Castilla y León) (Castilla y León) more structured vocational schools, management teams and formal quality committees play a central role in managing and analysing data as well as identifying PD needs for teachers [SP: P_S2, P_S5]. Some vocational school directors appear to strategically select staff with strong data or ICT backgrounds to join the quality committee so that a diversity of competencies is present for internal capacity building [SP: P_S2].

In parallel to formal leadership structures, informal peer support appears to be a prevailing strength for LA use in SSE in all cases. Teachers frequently turn to each other for help in using data systems or interpreting results. Irish interviewees described how working collaboratively such as in subject teams or year group teams examining student outcomes not only distributes the workload of analysis but also builds collective skills as teachers learn from one another's perspectives.

In Belgium (Flanders) the earlier mentioned "oil slick" analogy [BE: SFC_ICT] captures how peer learning can gradually raise the overall competency of staff where one teacher's expertise spreads as they assist colleagues with tasks such "as creating a pivot table or extracting a report from the LMS" [BE: SFC_ICT]. Italian educators also rely heavily on colleagues for troubleshooting and advice, given the minimal formal support available. Often, "my predecessor taught me" how to use a particular digital tool or report format, was stated by one Italian teacher, highlighting an informal lineage of skills transfer [IT: T1_Dig_S5].

It was also suggested in Italy that co-teaching, pairing a teacher more skilled in digital analytics with one less experienced could be a way to transfer new practices in context. Spanish teachers similarly noted that much of the help with platforms and data entry happens through rapid consultations among colleagues during the school day, rather than through official PD sessions. Across countries, this collegial sharing is a crucial affordance where it builds confidence in a non-threatening way and creates a support network for data use that can often react faster and more flexibly to teachers' needs than external supports.

Those staff who are leading or enthusiastically supporting LA efforts also acknowledge their own limitations and the need for further PD to support others. In both Ireland and Belgium (Flanders) even staff classified as "data champions", state that they could benefit from more PD to guide their peers more effectively.

For example, an Irish teacher tasked with helping colleagues analyse assessment results was of the view that without additional training in data analysis, there were limits to how much guidance can be provided [IE: T_SSE_S4].

Another teacher who is often approached by peers for technology-related support reflected that they had learned by trial and error and would welcome more formal PD to be more confident in a mentoring role [IE: T_YH_S3]. Belgian (Flanders) "early adopters" similarly expressed a wish to "expand their skills and competences" so that they could perform more complex analyses and translate this new knowledge into clear advice for colleagues [BE: PS_T+SG; LC_QAO; LC_T+SC; SFC_QAO; PS_SL]. In Spain (Castilla y León) (Castilla y León), some teachers admitted that while they know how to use the technical features of the systems, they struggle with how to lead pedagogical change based on data: *"at a technical level I do know it is there, but at a didactic level I wouldn't know how [to do it]"* [SP: T4_Dig_S4]. These reflections highlight that PD efforts need to not only raise general teacher data literacy but also empower would-be mentors and leaders with deeper analytical and facilitation skills, so that capacity can be built among their colleagues.

The extent to which supporting others in LA is formalised vs. reliant on individual initiative varies between contexts. In Spain (Castilla y León) (Castilla y León) vocational schools (*CIFPs*), there is a more structured and planned approach where they have quality management committees and even formal "welcome protocols" whereby new staff are paired with mentors for guidance [SP: P_S2; P_S5]. One Spanish principal described how, as part of their certified quality system, *"every three weeks we have to hold a meeting within the commission [...] to see how the quality follow-up is going [...] what indicators we are complying with, what the procedure is"* – along with annual internal audits – thereby systematically embedding data review into routine practice [SP: P_S2].

In contrast, in Ireland, Belgium (Flanders) and Italy, support for LA often appears to depend on individual teachers' initiatives or informal collaborations rather than on institutionalised roles (beyond basic ICT support positions). Outside of leadership encouraging a general culture of SSE, there are typically no official roles such as a "data coach" in these schools; instead, it appears to be whoever has interest and ability and who volunteers. Whilst admirable with intent, this can lead to inconsistencies where some teachers receive a great deal of help if they happen to work with a data literate colleague, while others may receive little direct support. It also means that continuity can be an issue. For example, Spanish educators pointed out that high staff turnover can weaken an evolving data culture since *"the staff changes a lot [...] so it depends on the professional who comes"* whether data practices continue or not [SP: T1_BITS_S1].

A notable suggestion that emerged, particularly from Spain (Castilla y León), is the need for a dedicated data specialist role in schools. Teachers in one Spanish case argued that expecting every teacher to become proficient in data analysis is unrealistic given their other duties, and thus "a teacher cannot do it" alone [SP: T2_TC_S1]. In this regard, they advocated for having a person "dedicated only to that" task of managing and interpreting data [SP: T2_TC_S1] where the specialist could support the whole staff by preparing analyses, highlighting key insights, and perhaps providing PD to others, thereby addressing the overarching issue where only a few individuals have the expertise for advanced analytics. This idea reflects an understanding that while all teachers should have basic data literacy, the depth of technical expertise required for sophisticated LA may necessitate a focused role. Although this role does not formally exist in the schools at present, it points to a potential strategy to overcome human capacity constraints in the future.

Finally, participants were asked whether the use of LA for SSE has led to a re-evaluation of teaching, learning, and assessment policies and practices in their schools. At the school policy and planning level, there are some concrete examples where data analysis has triggered reviews and adjustments. One Irish deputy principal reported that LA prompted a "huge review of our assessment and reporting systems" [IE: DP_S2]. This review encompassed the types of assessments used, the accessibility of language in student reports, and overall assessment standards, ensuring that they were aligned with insights from data. It also led to revisiting certain procedures (for example, supports for language learning were reevaluated based on evidence of student needs) [IE: P_S2]. Data trends identified through SSE surveys have also informed school-wide improvement plans; for example, one school introduced a new study skills programme after analytics highlighted deficits in students' study habits [IE: P_S2]. Another Irish principal noted that feedback from an Evaluation survey on student wellbeing needs prompted the school to gather more data in that area and ultimately to strengthen its wellbeing supports [IE: P_S4].

Spanish school leaders also reported using data for strategic decisions, particularly in the vocational training sector. Management teams in Spain (Castilla y León)'s (Castilla y León) *CIFPs* analyse performance and enrolment data to make programmatic changes (for example, modifying vocational course offerings (VET cycles) if data indicates a mismatch with student demand or outcomes and they incorporate new indicators (such as student satisfaction metrics or job placement rates) into their quality management systems. These actions reflect a formal re-evaluation of curriculum content and quality frameworks driven by data.

However, it was noted that in general secondary schools, while individual teachers might adjust their classroom practices based on data, this information does not always systematically inform higher level management decisions or policies.

In Italy, there were fewer examples of broad policy changes attributable to LA use, which may be due to the relatively early stage of data driven practice in those schools. Some Italian principals and teachers are personally exploring digital tools and gathering data (for example, experimenting with online student feedback or using data to identify learning gaps), but without a shared school wide strategy, these efforts often remain isolated. However, an experienced school conducted an internal analysis of students' test scores to inform a reflective process. This process led to the decision to group students by skill level and mix classes for a period of time as an improvement strategy.

The lack of a coordinated approach means that innovative practice does not necessarily result in institutional policy. As one Spanish principal implied, the potential for LA to inform school policies is recognised, but its realisation is limited *when "we cannot control 100%; everyone uses what works for them"* [SP: P_S2].

In summary, the affordance of LA to spur whole school reflection and change is being realised to an extent in certain cases (especially where leadership is proactive). However, a common constraint is that many schools have yet to embed analytics deeply enough to prompt fundamental policy shifts. For example, one Irish principal described the changes so far as "minor changes" rather than radical transformations [IE: P_S5]. In contrast, another Irish school leader strongly asserted that data use absolutely requires educators to rethink and adapt their practice: *"the use of (data) has led to a re-evaluation of teaching, learning and assessment policies and practice. If our students are not attaining, we have to look at our assessment, and... if they're not attaining, we have to reflect on why they're not, and we need to change our practices; we have to!"* [IE: P_S2]. These divergent views (one cautious, one emphatic) highlight that in some schools LA is beginning to drive significant reflection, while in others its impact remains modest.

At the level of individual teaching practice, many teachers reported that using data has led them to reflect on and sometimes revise their approaches in the classroom. In Ireland, teachers state that LA gives them a greater understanding of individual student performance, strengths, and areas needing support. By analysing trends in results and comparing pupils' scores against their potential (for example, using standardised CAT4 cognitive ability scores as a benchmark), they can highlight which students are underachieving relative to their ability. This has directly informed classroom strategies such as differentiating instruction and targeting interventions. Teachers described how data helped them identify students who might otherwise go unnoticed and ensure those learners received extra support or challenge as needed [IE: T_SSE_S2; DP_S1; P_S4].

For example, tracking attendance and homework data in one Irish school brought to light a group of students whose frequent absences were causing learning gaps; in response, the school began using an online platform (*Microsoft Teams*) to share class notes and assignments so that absent students could keep up with their work [IE: P_S5].

Another school employed "Provision Mapping", essentially mapping student needs and supports through data, which heavily relies on analysis of assessment results. This process helped narrow the focus on specific interventions and adjustments in teaching strategies for students with additional needs [IE: DP_S1]. Spanish teachers also noted that they use data from their online learning platforms to monitor student engagement and performance. By tracking metrics such as task completion or quiz results, they can identify which students need extra help in particular areas and take action (such as offering remedial support or contacting parents).

The use of clear grading rubrics within these platforms also helps students understand how they are evaluated, contributing to a "more tailored learning" experience for each learner [SP: T2_QC_S2; T6_NOV_S2], as described by teachers in Spain (Castilla y León) (Castilla y León).

Teachers are also using data to reflect on the effectiveness of their assessment methods and instructional strategies. In Ireland and Italy, if students consistently struggle with certain topics or types of questions, teachers take this as a sign to reexamine how those topics are being taught or how assessments are designed [IE: P_S2; T_SSE_S1; T_SSE_S4; T1_Dig_S4].

Patterns in student performance can also spur the sharing and adoption of successful teaching strategies among staff. Irish educators gave examples of looking at comparative class or group data; if one class or teacher's students excelled in a particular area, others would inquire into what approach or resources that teacher used, with the aim of replicating those effective practices [IE: P_S3; T_YH_S3; T_YH_S1]. One Irish teacher, for example, described how they collected their students' own reflections on their exam performance (asking them which questions they found hard and why) and used those insights to evaluate the assessment's design and their instructional approach. Realising from student feedback that certain misconceptions were common, the teacher adjusted her teaching of that topic and modified the next assessment accordingly [IE: T_SSE_S4]. In this way, LA acts as a mirror for teaching practice, highlighting where changes might be needed and to facilitate peer learning by identifying exemplars of success.

In Spain (Castilla y León) (Castilla y León), the adoption of LA tools has also influenced teaching and evaluation processes by making them more efficient and continuous.

Teachers reported that using digital platforms for assessment allows for faster grading and more frequent check-ins on student progress, enabling a "more exhaustive follow up" through continuous assessment rather than relying solely on infrequent exams [SP: T6_NOV_S2]. They also observed that incorporating analytics can make certain aspects of evaluation feel "more objective or more mathematical" [SP: T3_NOV_S1], since the platform might automatically calculate scores or highlight trends, reducing some of the subjectivity in traditional grading.

Nonetheless, Spanish teachers acknowledge (as do their Irish and Belgium (Flanders) counterparts) that having more data or automated calculations does not replace the need for professional judgement. Instead, it provides an additional lens through which to view student learning.

Many educators emphasised the importance of balancing data informed judgment with professional intuition. In Ireland, teachers appreciate that analytics can reinforce their professional judgements with concrete evidence (For example, Highlighting a student who is consistently underperforming relative to expectations which can then guide interventions and facilitate more informed discussions with parents or the students themselves [IE: T_SSE_S4; P_S4; P_S2; DP_S2; DP_S3]).

However, they caution against relying solely on numbers. One Irish teacher reminded colleagues that exam results or analytics dashboards are just "snapshots" of a student's performance [IE: T_SSE_S2]. A Belgian (Flanders) teacher similarly warned that "there is much more to the evolution of a student than just numbers," emphasising that test scores alone never tell the whole story [BE: LC_T+SC]. In the case of Spain (Castilla y León) (Castilla y León) while teachers are increasingly open to using data, some voiced scepticism about trying to quantify every aspect of learning. They expressed a preference to understanding the deeper reasons, the *"why"* behind the results, rather than treating students as data points to be improved [SP: T4_EXP_S1; T3_HD_S5]. This perspective highlights an important affordance of maintaining a human centered approach; data can inform and enhance judgement, but it must be used thoughtfully so as not to "reduce the student to numbers" or undermine the deep rich qualitative understanding that teachers have of their pupils [SP_ T1_BITS_S1; T3_HD_S5].

Indeed, a common challenge is that much of the current use of data by teachers remains functional rather than analytical or transformative. Many teachers increase their use of digital platforms (for example, moving record keeping and homework tracking online) as part of adopting LA.

However, the sophistication of their data analysis for pedagogical re-evaluation is limited. In Italy, even with the provision of PD and new tools, many teachers appear to use only the most basic digital tools on online platforms such as Google Workspace and Moodle where advanced features, or in-depth analytics options remain underused.

Similarly, in Spain (Castilla y León) (Castilla y León), despite improved digital competence in platform use, the data extracted is in the main, not systematically used for DIDM in teaching practice. Often the platforms are used as content repositories or for administrative convenience, rather than as sources of insight about learning patterns [SP: T1_BITS_S1]. In summary, the potential of LA to catalyse significant changes in teaching is not yet being fully realised. However, the affordances are evident (rich data streams, improved tools, and some positive examples of data informed innovation).

Nonetheless they are counterbalanced by significant constraints such as insufficient time, skills, and sometimes a cautious mindset. Therefore, while participants across all countries see promise in using LA to enhance teaching and SSE, a significant amount of LA embedment remains across all cases to build the widespread capacity and comfort needed to turn data into actionable knowledge on a routine basis.

6.3 Resources and Support Mechanisms

The effective use of LA for SSE depends not only on human capacity but also on the resources and support mechanisms available to schools. This includes the technical infrastructure (hardware, software, and data systems), the PD opportunities for staff, and broader supports or mandates from an education system. The case studies reveal that all schools now have some form of digital infrastructure in place and access to data which is a significant affordance. However, the effectiveness of these resources varies, and gaps in support can become major constraints.

6.3.1 Infrastructure and Learning Management Systems

Across all schools, a basic digital infrastructure is in place, which provides an important foundation for implementing LA. In Ireland, for example, participants reported a solid ICT infrastructure where teachers have access to devices (such as laptops or tablets) and reliable internet. Furthermore, most schools use platforms such as *Microsoft Teams* or *Google Classroom* for content delivery and communication. A dedicated student information system (*VSware*) is also used in schools throughout Ireland to gather, store and manage student data including attendance, assessment results and other records of which, this centralised system is in the main, viewed positively, as it makes data management more efficient and accessible. Some Irish schools have even developed bespoke tools or adopted additional software to extend their analytic capabilities.

One example is *Athena Analytics* an application used in some schools to compare their students' exam results to national averages and to help set target grades for improvement. However, in the absence of expensive commercial analytics software, many schools rely on the creative and at times cumbersome use of spreadsheets and the built-in analytic features of existing systems to meet their needs.

In Belgium (Flanders), schools similarly benefit from widely implemented digital platforms, notably *Smartschool*, which functions as both a learning environment and an administrative system. These platforms generate a wealth of data as a byproduct of daily school activities, and in principle they afford powerful analytics. However, the use of these systems in practice is limited by issues of access and expertise. According to Belgian (Flanders) interviewees, teachers in many schools do not have direct access to advanced analytics through the platform; instead, data tends to be reviewed by the management or a small, designated data team. As a result, most teachers only see basic information (such as their own students' grades or attendance trends) and are not actively using the fuller analytical potential of the system. This creates a situation where LA knowledge and technical ability are concentrated in one or a few individuals a "bottleneck" problem as one person described it with data skills residing primarily in roles such as the ICT coordinator or data coach, rather than being widespread among the staff [BE: SFC_ELO]. The presence of a comprehensive platform is an affordance, but if only the "data expert" in the school can operate it to draw deeper insights, the broader teaching staff remain removed from engaging directly with the data.

In Italy, the quality of digital infrastructure and platform integration varies significantly, reflecting disparities in resourcing and local initiatives. Most Italian schools in the study are relatively well equipped; they use integrated suites (In particular, *Google Workspace* or *Office 365*) together with electronic registers (such as *Argo* or *Spaggiari*) that combine attendance, grading, and other student information as well as having stable internet connectivity in classrooms. In these more resourced schools, a digital culture is emerging, and both teachers and administrators find it easier to collect, access, and share data. Other schools, however, face significant infrastructural challenges from unreliable internet to a variety of platforms that are not interoperable. Although an electronic gradebook is universally used, Italian respondents stated that the data recorded are *"not yet being systematically analysed"* to inform teaching or policy decisions [IT: T2_S1]. In other words, data collection could be happening by default but turning that raw data into actionable insights is not yet a routine practice. A lack of unified, user-friendly systems was identified as a key constraint; teachers may have to consult multiple systems (one for attendance, and assessment results, another monitoring student tasks or for survey feedback) making it cumbersome to get a holistic view of a class or a student.

This fragmentation can discourage teachers from proactive analysis, since it requires considerable extra effort to compile and interpret the information.

The Spanish case also highlights similar issues of ICT fragmentation and integration of digital platforms. Schools in *Castilla y León* typically use a combination of tools, for example, *Moodle* or *Microsoft Teams* for coursework and a separate student information system (such as *STILUS*) for official records and grades, without a single unified LA platform. Teachers and school leaders in Spain (Castilla y León) (Castilla y León) stated that this makes it difficult to obtain a "global vision" of student learning or to track progress seamlessly, thus DIDM at an institutional level [SP: T5_NOV_S1]. On the positive side, since the COVID-19 pandemic there has been a notable improvement in general digital competence and comfort with online tools among both teachers and students.

This means more teaching and learning activities are generating digital data than in the past, providing raw material for analytics. However, the lack of platform integration means much of that data remains siloed. Additionally, Spanish participants pointed out the ongoing digital divide outside of school where not all students have equal access to devices or stable internet at home, which affects the completeness and fairness of data (for example, homework completion or online engagement data may reflect technology access issues as much as student effort) [SP: T3_NOV_S1; T3_HD_S5]. Indeed, the preceding example is a reminder that resource constraints are not just concerned with what the school provides, but also about the broader context in which students are using these digital tools.

6.3.2 Individual and Organisational Learning and Capacity Building

While technology infrastructure is essential to the use of LA, equally important is the organisational capacity and culture to use technology effectively. As discussed in the preceding sections of this report, capacity building occurs through internal collaboration and informal learning opportunities within schools. Ireland's schools rely heavily on staff collaboration and reflective practices that are built into their SSE processes. For example, SSE task groups act as an internal mechanism where teachers come together to discuss data findings (from exam results, surveys, etc.) and propose actions. This collaborative approach was praised by teachers, one of whom stated that working in teams "makes it a lot easier for teachers to participate in [data analysis] and get familiar with it and then use it in the classroom ... to improve their teaching and the learning in the classroom as well" [IE: T_YH_S3]. In other words, when time is allocated for teachers to collectively examine data (often facilitated by school leaders or coordinators) it can help to demystify numbers and turns data review into a shared learning experience rather than an isolated task.

Belgian (Flanders) interviewees also emphasised the importance of internally organised PD and knowledge sharing among "in-house" experts. Typically, ICT coordinators or members of a school's data/SSE team will lead short sessions for staff, which might range from a 15-minute presentation during a staff meeting to a longer workshop on a PD-day. This cascade PD model is intentional where a core group receives PD (or develops expertise by experimentation) and then disseminates the knowledge to colleagues. The "oil slick principle" mentioned earlier (knowledge spreading outward from a central source) is one way Belgian (Flanders) schools described this phenomenon [BE: SFC_ICT]. Another Belgian (Flanders) coordinator highlighted that building a data culture often requires patient individual work with teachers with one coordinator stating that you must often guide a teacher through the data "face to face" and say *"See what I see here? ... Now think, can you explain that?"*, rather than just handing them a report, in order to foster real understanding [BE: LC_QAO].

These examples illustrate that an important affordance is the presence of internal collaboration and support structures which help demystify data for teachers.

In Italy and Spain (Castilla y León) (Castilla y León), teachers similarly rely on informal learning and peer support to navigate new data tools. However, these efforts can be undermined by a lack of systematic support and occasionally by cultural resistance. One Italian teacher conveyed how much he depended on a colleague for learning digital skills: *"my predecessor taught me [how to use Google workspace and other tools],"* indicating that any competence he had was thanks to informal mentorship rather than formal training [IT: T1_Dig_S5].

Italian and Spanish participants also noted a degree of scepticism about the usefulness of "all this digital data" among some staff, especially experienced teachers [SP: T1_Dig_S5; T2_TC_S1; T4_EXP_S1]. In environments where teachers already feel overloaded, there is a perception that diving deeper into data analytics could be an additional cognitive burden, a sentiment that was repeated across all countries. Spanish participants also highlighted that some schools lack an institutional drive or shared vision for data use where much depends on whether individual staff members champion it. One structural issue in Spain (Castilla y León) (Castilla y León) (also relevant to Italy) is high teacher turnover, which undermines continuity [SP: T1_BITS_S1], even more so if emphasis is placed on data analysis.

This means that even if one cohort of teachers is trained or gets used to a system, a new set of teachers may arrive who have to start from the beginning, preventing the maturation of a data-informed culture. In contrast, vocational training centres (CIFPs) in Spain (Castilla y León) (Castilla y León), which often have more stable staffing and formal

processes (due to quality certifications such as ISO 9001:2015), showed more consolidated PD routines and standardisation in procedures.

However, even in these centres, a Spanish principal noted that having structures "doesn't guarantee effective pedagogical use" of data [SP: P_S2], highlighting that individual teacher agency and willingness play a significant role, and not all will engage fully even under a structured system.

A significant constraint across countries is teachers' perception of work overload, which limits the institutional development of data-driven processes. Previously in this report workload was discussed in relation to PD. However, it bears repeating here as it affects day to day implementation of LA as well. If using data is seen as an "add-on" responsibility rather than integrated into existing practices, teachers may approach it as a low priority or even with resistance. As stated previously: *"Yes, it could be done [using data analytics], but ... it would make our work more administrative and would add more work to what we already have"* [SP: P_S4].

Furthermore, a Spanish teacher stated that he did not have more to say SSE "because quality does not depend much on me" [SP: T1_DIG_S5], implying that she felt disconnected from whatever data or SSE initiatives the school management might be doing. These perceptions illustrate a gap if teachers don't see data use as part of their professional remit or as something beneficial to their core mission (teaching students), then technology or external policy will have a limited effect on inducing teachers to engage with data in a deep way. Therefore, one of the tasks of capacity building relates to that of cultural change; helping teachers to see view the connection between LA and improved outcomes for their students, so that data use is not viewed as an extraneous bureaucratic exercise but as an integral component of effective teaching and school improvement.

6.4 External Support and Policy Frameworks

At the system level, external supports and policies shape what resources are available for LA. Participants in all countries reported that direct system-level support for LA in schools is relatively limited. In Ireland, while schools are required to conduct SSE and are encouraged to use data as evidence, there is no specific PD dedicated to LA in schools. There are, however, some supports tied to initiatives, for example, the state's support service *Oide* assists schools in using data to set targets under the DEIS programme (Delivering Equality of Opportunity in Schools) and certain initiatives, such as "Provision Mapping" workshops, assist schools with planning for special educational needs using data. However, these are isolated supports. One Irish principal expressed concern that there are "numerous top-down initiatives and requirements" which sometimes paradoxically impede the spirit of SSE by overwhelming schools [IE: P_S5].

In the case of Belgium (Flanders) there is also no external programme for building schools' analytics capacity. Belgian (Flanders) schools have autonomy in how they approach SSE, and while inspectors expect to see data use as part of a school's quality evidence, there isn't a dedicated government funded PD course on LA for school teams. External PD sessions that touch on data (for example, offered by pedagogical guidance services or HE institutions) were considered as too broad or not directly aligned to schools' local needs. As one Belgium (Flanders) educator stated, good training should not "remain too vague", where instead of abstract PD, they prefer a hands-on approach: *"start from a question and… you immediately get started. I like that."* [BE: LC_QAO].

This suggests that if support agencies were to offer PD on LA, it would be most effective if it was practical and problem-driven, directly addressing questions that schools have.

Italy's education system has begun to acknowledge digital innovation through national programs (for example, funding from the National Recovery and Resilience Plan for technology in schools, and integration of digital competencies in teacher PD curricula). However, these efforts appear not to have been translated into strong support for LA in day-to-day school practice. Many PD sessions offered (or mandated) by the Ministry focus on broad digital literacy or specific tools such coding, robotics, etc., rather than on using educational data. Moreover, because Italian teachers' participation in PD is often voluntary (beyond some required basic PD), even when initiatives are well-funded, the impact depends on teacher motivation. Principals in Italy expressed the view that making data related PD compulsory for all teachers can backfire – *"PD should not be made mandatory, as imposed courses risk being ineffective"* [IT: P_S1] since teachers who feel forced may not engage deeply. In practice, therefore, much of the system driven PD appears to be a top-down strategy to promote digitalization in schools rather than an initiative that changes practice unless teachers themselves are motivated. In this regard, while the policy environment in Italy is supportive of digitisation; in general, a targeted support for building analytics capacity in schools is still lacking.

In Spain (Castilla y León) (Castilla y León), a range of PD opportunities exist through regional teacher training and educational innovation centres (e.g. the *CFIE* in *Castilla y León*) and online courses, including PD on how to use various educational platforms. However, these are typically optional, and the number of educators attending these PD courses is inconsistent. Spanish educators in this case study expressed a strong desire for PD that is practical and immediately useful. However, there was frustration with the formal courses that prioritise administrative processes or theoretical knowledge. For example, one interviewee argued that current PD approaches waste teachers' time with bureaucracy: *"we do not want to waste time doing a stupid task for you to certify me…*

what they want are useful and practical things to use tomorrow. ...people have just enough time and want to go to the course but don't want to waste time" [SP: T2_TC_S1].

This highlights that an overload of administrative requirements (for example, producing documentation to prove that an educator has completed a PD course) can affect the enthusiasm for PD.

Moreover, because the PD concerning LA is not mandatory, often it is the interested teachers who attend, and those who can benefit the most from upskilling in data use may opt out. Some Spanish participants suggested that data collection and analysis would be more effective if managed at a higher, systemic level, for example, if regional authorities provided more unified tools or even did certain analyses and fed results back to schools, as expecting each individual school to develop sophisticated analytics on its own can lead to duplication of effort and unevenness of quality. They contrasted the structured approach in vocational schools (with ISO certified quality management) with the looser approach in other schools, implying that more guidance and standardisation from the system could be beneficial.

6.5 Professional Development: Current Effectiveness and Future Needs

6.5.1 Perceived Effectiveness of Professional Development

The consensus among case study participants is PD related to LA is not sufficiently available. In Ireland, for example, interviewees were of the view that the PD sessions that they had attended did not go far enough in fostering "a more analytical review of teaching and learning" in their schools [IE: P_S5]. Some specific high-quality PD, such as SSE courses for school leaders or PD on the Athena data tool, were considered very useful as far as what was provided. However, these remain isolated and reach only a subset of staff. Belgian (Flanders) educators similarly lamented that existing professionalisation efforts concerning data are often uninspiring or lack alignment with what is required from teachers. They described PD sessions as too abstract or not addressing the practical questions and interests that teachers have in their classrooms (finding many workshops "too vague" or not relevant to their context) [BE: LC_QAO; SFC_T+SC; SFC_T; SBC_SL; PS_T+SG]. In Italy, interviewees indicated that despite public funding for innovative courses, there is a constraint due to teacher work overload and a lack of trust in digital data, leading to scepticism about the effectiveness of one-off PD sessions. Some Spanish participants were also critical of the transformative impact of data-related PD to date, suggesting that digitalisation in schools has often changed the resources (moving to electronic registers, online reports, etc.) rather than underlying cultural practices [SP: T5_EXP_S2; T2_HD_S4].

PD is deemed ineffective when it is focused on bureaucratic checklists or obtaining certificates rather than practical application. As one Spanish coordinator put it: *"what they want are the papers, [but] what we want are useful and practical things to use tomorrow. Don't waste our time because we don't have it..."* [SP: T2_TC_S1]. This sentiment, shared by participants, illustrates how traditional PD formats have failed to resonate with teachers attending courses (sometimes out of obligation) but not necessarily finding them helpful or feasible to implement given these constraints.

6.5.2 Desired Professional Development and Support

Despite criticisms of the PD offered, educators voiced a strong consensus on the need for more practical, relevant, and sustained PD to support the use of LA. Across all countries, participants converged on a number of ideas for future PD improvement. First, they want PD to be hands on and context specific with Irish teachers suggesting that teachers attending PD workshops should use actual data from their own school to explore how analysis can lead to improvement, rather than relying on generic examples. In Italy, the recommended approach to teacher PD is to build on the platforms and software that schools already have and offer guidance on how to use existing data. By working with familiar data, teachers can immediately see the relevance and learn by doing, with expert facilitators guiding them through interpreting that data and drawing inferences and conclusions.

Secondly, PD should be an ongoing process rather than a one-off event. Belgium (Flanders) participants, for example, advocated for cyclical or longitudinal PD, a series of PD sessions spread over time, with opportunities in between to apply new skills in the classroom and then to reflect on the experience. They suggested having follow up PD workshops or check-ins to monitor implementation, which not only reinforces learning but also holds teachers (and the school) accountable for actually using the PD provided. This approach acknowledges that changing practice is gradual, where teachers may need to try out a data-informed strategy, encounter difficulties, and then get further advice in a subsequent PD session. Furthermore, spreading PD over time can also assist with workload management, as it becomes less overwhelming than a heavily laden one day PD seminar with no follow up activities.

Third, PD must respect teachers' time and integrate into their work schedules. Participants consistently highlighted that without dedicated time, even the best PD ideas will not take hold in schools. Irish participants suggested "adequate time within the school day" to be allocated for data analysis and reflection. This could mean using some of the existing "croke park hours" (in Ireland, set hours for staff development and

planning) or equivalent meeting times in other countries specifically for LA work, so it becomes part of a regular routine.

Spanish teachers similarly stated that PD should avoid extensive learning curves or large additional workloads where in practice, this could involve providing easy-to-use tools and templates as part of the PD, so that teachers do not need to spend a significant amount of time figuring out how to implement in the case of this study, an aspect of LA as it relates to evaluation and planning. The idea of simplicity came up quite frequently where teachers prefer solutions that simplify their tasks (for example, an app that automatically visualises test results for them) rather than ones that add complexity.

Fourth, many educators suggested that peer involvement would greatly enhance PD. Some Italian teachers have suggested that PD programs should include collaborative activities in which teachers work together to analyse and discuss data, thereby encouraging professional dialogue and teamwork. Irish and Belgian (Flanders) teachers proposed that those staff who are already comfortable with data (the "data champions") could be engaged to deliver or co-deliver PD or serve as on-site coaches where this peer led approach can make PD feel more relevant and less intimidating. It also builds internal capacity when a school has a number of teachers trained to high proficiency through attending external courses or special projects, those teachers can then coach their colleagues over the long term. In Spain (Castilla y León) (Castilla y León), some teachers expressed a wish for a more formal role, such as a "data coach" or specialist who could take on the heavy analysis tasks [SP: T1_BITS_S1; T1_HS_S2; T3_NOV_S1]. In the absence of new appointments, this could be addressed by upskilling an existing teacher or coordinator and allocating dedicated time within their workload to focus on data support.

Fifth, connecting PD to real school objectives and problems was seen as crucial. Belgium (Flanders) interviewees emphasised that any PD should tie into the school's vision or improvement plan; for example, if a school's goal is to improve literacy for refugee students, PD can show how to use reading assessment analytics to identify gaps and monitor progress of this cohort of students. When teachers see a direct link between PD and solving a problem they care about in their classroom or school, they are far more likely to invest in the PD.

In Italy for example, raising awareness of data's usefulness is itself a part of what future PD should address, essentially making the case to teachers that using data can help their students. One way to do this is to showcase exemplars of practice, for example, to demonstrate how a small change that has been informed by data has led to improved student outcomes. In this regard, a common expectation is that PD could support data interpretation, through the development of practical guidance.

Sixth, participants noted that PD should cover not just technical skills but also issues of ethics and interpretation. Irish teachers, for instance, wanted guidance on ethical questions related to student data such as privacy, data protection (especially under GDPR), and avoiding biases in interpretation. Incorporating these topics into PD would help build teachers' confidence that they can use data responsibly and fairly. It also reinforces the perspective that teachers should learn not just to run analyses, but to question data quality, to contextualise numbers, and to be mindful of not unintentionally stigmatizing students with labels.

Finally, and moving forward, both Italian and Spanish participants stated that the advent of AI in education is a "huge challenge but also a potential support" in data analysis [SP: T2_TC_S1; T1_BITS_S1]. They anticipate that AI tools can soon assist in processing and interpreting educational data, which could be a significant innovation to easing teachers' workload. Therefore, they suggest that PD should begin to introduce how AI, in parallel with advanced analytics tools, could be used in schools and to train teachers in basic understanding of these technologies. For example, a workshop could explore an AI tool that predicts students at risk of early school leaving and discuss its benefits and limitations. Embracing AI as a topic of LA in PD could prepare teachers to challenge the reliability of AI while at the same time ensuring that they remain at the center of interpreting and acting on data insights, rather than in many respects being bypassed by technology.

6.6 Conclusion

In conclusion, educators in this study appear to require PD that is practical, ongoing, and integrated with their everyday work, and for PD to clearly demonstrate how LA can contribute to better outcomes for students. They envision support that not only builds individual technical skills but also fosters a collaborative data culture and provides the necessary time and tools to put learning into practice. By addressing these needs (such as investing in CDP, providing integrated systems and specialist support and nurturing a positive, inquiry-driven attitude towards data, schools can be better positioned to translate the promise of LA into tangible improvements in teaching, learning, and overall school quality.

Chapter 7: Impact and use of Learning Analytics in the process of School Self Evaluation in Case Study Schools

7.1 Introduction

This chapter examines the impact and use of LA in the process of SSE in the case study schools. The findings highlight that LA's primary benefits as perceived by the participants involved in the case studies relates to that of identifying at risk students, personalising learning, and informing decision-making. On the other hand, persistent concerns emerge include the over reliance on data, dehumanisation, and data privacy. The chapter also highlights reported changes in school practices (e.g., new support systems, technology use, and policies) that can be attributable to LA. As is viably possible, these themes and inferences with the broader report's cross case findings.

7.2 Impact of Learning Analytics on School Self Evaluation

Across the case study schools, interviewees consistently reported that LA enhances student support and personalisation of instruction. A key advantage is the early identification of students who are not meeting their potential or who have specific needs (e.g., academic, behavioural, attendance, or special educational needs). For example, an Irish principal explained that when a student's standardised cognitive test score (for example, CAT4) is average but their subject score is below expectations, "that would be a cause for concern. We look at their trajectory over time as well. We use that then to form a profile of the students". This data driven profiling allows schools to target interventions before problems are exacerbated.

In Belgium (Flanders) and Italy, interviewees also noted that LA enables more differentiated teaching by revealing individual student profiles. As one Belgian (Flanders) teacher put it, LA lets schools "work even more tailored to each student, and that we can actually also start from objective data". In practice, schools reported using LA to identify to those students who are not performing to their true potential, to track progress, and adjust teaching to meet diverse needs. An Irish deputy principal observed that LA makes teachers "aware of who's in front of you and what their needs are", enabling teachers and students to "best get the most out of the class." In summary, LA was widely seen as supporting inclusive learning by highlighting students who need support and by helping teachers adapt their teaching.

Another important benefit is that LA underpins more informed DIDM and accountability. By grounding discussions in empirically sound data (e.g., attendance, exam results, survey feedback), LA has the potential to move SSE beyond anecdote or intuition. School leaders described using LA data to detect patterns (for example, failure rates, resource gaps) and to justify improvement plans.

Some principals in Ireland stated that analytic evidence supports teacher accountability and provides "a data-driven basis for discussions and decisions." Belgian (Flanders) participants also stated that having "hard evidence" (valid data) makes it possible to develop and defend policies and easier to demonstrate effectiveness to inspectors and the school community. For example, one Belgian (Flanders) SSE coordinator stated that with good data, "you can no longer make it with all talk alone. You also have to be able to put it on the table". This highlights that LA strengthens the continuous improvement cycle of SSE where initiatives can be monitored and adjusted based on measurable outcomes; a common feature of most education systems SSE processes

Despite these advantages, schools also raised significant concerns about LA. A pervasive worry is that over reliance on data could dehumanize education by overlooking contextual or qualitative factors. Interviewees repeatedly stressed that "schools work with and for people," and that data should never replace professional judgment. A Belgian (Flanders) teacher warned emphatically that "just basing something on numbers, that's never going to work out… There is much more to the evolution of a student than just numbers". Similar sentiments emerged in Italy and Spain (Castilla y León) (Castilla y León), where educators cautioned against reducing students to metrics or stigmatising them based on data without context, what is frequently referred to as value added data. These interviewees highlight that while LA can inform decisions, it must be used in tandem with teacher insight, and not as a decontextualised instrument.

Closely related is concern over data quality and interpretation. Respondents pointed out that invalid, incomplete and unreliable data can lead to misleading conclusions. For example, Belgian (Flanders) coordinators noted that a platform only yields useful insight "if you put it in well first: garbage in, garbage out". There is also the problem of outliers skewing averages (for example, one student's difficulties inflating failure rates in a class) if not checked against qualitative information and using value-added measures. Teachers in Spain (Castilla y León) (Castilla y León) noted that raw data may not "match the student's reality" without teacher context. Across cases, many interviewees implicitly identified a need for greater data literacy; the ability to critically interpret analytics so that insights are not overgeneralised or misapplied.

Ethical issues were another common theme that emerged. In a number of Spanish schools, interviewees described incidents that raised privacy and security concerns. For example, staff reported cases where online platform chats inadvertently exposed sensitive information to parents or students, prompting complaints in their schools. These experiences highlight gaps in access control and data protection, with Spanish participants stating that there is a need for clearly defined policies to safeguard student privacy.

In Ireland and Italy, while privacy concerns were also acknowledged (especially given GDPR regulations), many interviewees were of the view that existing safeguards (such as restricted user permissions) were generally adequate. A recurring observation was that schools and education systems support the various modes of data use in principle but sometimes faulter in implementing best practices to protect privacy and prevent surveillance. Collectively, these perspectives highlight a "privacy paradox" where educators recognise the importance of confidentiality and bias prevention, yet routine practices often remain more focused on using available data.

In summary, the perceived impact of LA on QA is mixed but largely positive. It provides and has the potential to further provide robust processes to identify student needs and to make SSE processes more evidence-based. It also fosters innovation in school development planning and accountability. However, all case study schools balance these benefits against valid concerns relating to depersonalisation, data reliability and validity, and ethics.

These findings as will be shown are consistent with the cross-case themes identified in Chapter 10 of this report, which similarly highlights that LA's strengths relate to that of supporting at-risk students and data-driven improvement, whereas its pitfalls include the potential to reduce students to numerical conjectures of quality.

7.3 Learning Analytics in School Self Evaluation Processes

Beyond impact, this section of the report highlights how LA is actually embedded in SSE activities at each stage of an SSE cycle and includes (1) planning and gathering data; (2) evaluation and analysis; (3) innovation and improvement planning; and (4) implementation and monitoring. The case study evidence reveals significant variations across cases with, on the one hand, Irish schools demonstrating highly systematic data use at all of these stages, whereas Belgian (Flanders) and Spanish schools tend to use LA more sporadically. Italy appears to fall in between, with exemplars of structured use but also many gaps at the classroom level.

7.3.1 Planning and Implementation

During SSE planning, LA primarily helps identify focus areas for improvement. All schools stressed that data analysis is crucial to highlighting areas for improvement. In Ireland, school leaders regularly review diverse data sets (examination results, attendance, behavior, student and parent surveys, etc.) to decide what aspects of education to prioritise in their SSE plan. Belgian(Flanders) participants similarly link LA to internal surveys and data analyses that determine policy priorities or areas for "troubleshooting" school-wide.

Spanish school leaders rely heavily on annual community-wide surveys: with one Spanish principal stating that “If I don’t have data, I can’t make reasoned decisions”. In Italy, SSE is data-driven, with the INVALSI student achievement test playing a central role in the development of improvement plans. In all contexts, LA is valued for moving beyond anecdote; it ensures that improvement plans are driven by evidence (student outcomes or feedback) rather than solely by intuition.

Data gathering methods are mostly common across countries. As previously stated, all case study schools use digital platforms or information systems to collect and store student data. For example, Ireland uses *VSware* (a learning management/administration system) to record for example, test results and attendance with Belgium (Flanders) using *Smartschool* for similar data. Italian schools use electronic registers to track attendance, behaviour & academic data. These system types are typically the main source of quantitative data. In addition, most schools conduct surveys or questionnaires; Irish, Italian , Belgian (Flanders) and Spanish schools use for example, staff, student and parent surveys to elicit perceptions on a specific area that can require improvement. Schools also gather qualitative data; for example, teachers in Spain (Castilla y León) (Castilla y León) record descriptive observations in apps such as Moodle or STILUS. In summary, LA data in the main appears to be derived from routine administrative systems and from deliberate survey processes.

Once data is collected, schools appear to hold review meetings. In Ireland, SSE data appears to be discussed in multiple groups, such as year-head meetings, departmental meetings, staff-wide meetings, and by the senior leadership of the school. Reviews focus on both school-wide trends (to refine improvement plans) and individual cases (to identify students needing support). Belgium (Flanders) appears to have similar practices: with school teams analysing data to determine “what works” and what needs revision. In Spain (Castilla y León) (Castilla y León) and Italy data from surveys and platforms are also reviewed in working groups to make decisions on student progression or to diagnose causes of underperformance. These review activities are typically recurring and are essential for closing the loop between data and action.

Despite these common practices, the level of integration differs significantly by context. In Ireland, the use of LA in planning is structured and systematic. Schools explicitly map out which data (from local platforms, national exams, etc.) feed into each aspect of their SSE process, and responsibility for reviewing evidence is assigned (to year heads, subject teams, etc.). In contrast, Italian and Spanish schools generally show a more fragmented approach. References to LA in SSE appear to be limited, where participants view SSE often being a bureaucratic requirement rather than an integrated practice, resulting in data not always being systematically incorporated.

A common challenge is that many teachers appear to lack confidence or PD in interpreting the data that they have.

As one Italian teacher observed, teachers may not have the competence to use data effectively for SSE, resulting in data being collected in an ad-hoc way with little follow-through. On the other hand, the Italian Ministry of Education provides schools with a set of SSE data, so most schools don't feel the need to collect and analyse their own data.In the case of Spain (Castilla y León) (Castilla y León), leadership teams in the Spanish case study use LA (especially survey and platform data) for strategic planning. However, most classroom teachers involved in the case studies do not with a number of Spanish teachers stating that, beyond using the platform to post grades and assignments, they "do not use the data systematically" (SP: T2_TC_S1). Contributing factors include limited resources or documentation on how to use platform data, and a desire for consolidated tools (For example, a unified digital gradebook rather than multiple apps). In summary, Spanish schools demonstrate moderate integration at the top level but often lack the support and PD to use LA consistently at the teacher level.

7.3.2 Evaluation and Analysis

In the evaluation phase (analysing data and making judgments), LA's role is similar to the benefits described previously but with attention to different analytical levels. In Ireland, the primary goal of LA in the process of evaluation tends to relate to that of student support where LA is used to pinpoint students requiring interventions and to track change over time. This was illustrated by the repeated example of the Irish principal forming a student profile from test scores. This focus on individual needs enables more personalized teaching, as noted previously. On the other hand, Irish school leaders and teachers also use LA to evaluate school-wide outcomes (for example, examination performance and progression rates) with one deputy principal stating that knowing where students struggle allows for targeted system changes (for example, adding a study skills program). In this regard, SSE in Ireland tends to combine micro (individual) and macro (cohort) analysis, supported by LA data.

Belgian (Flanders) interviewees similarly view LA as aiding evaluation and decision-making with most participants describing LA as an aid to, not as a replacement for, professional judgment. They typically analyse aggregated data to ask, "what is working and what isn't?" and then explore potential approaches and actions. A Belgian Flanders participant stated that LA lets teachers implement actions "tailored to what students need" (BE: SFC_QAO). In practice, Belgian (Flanders) schools appear to review internal survey results and student outcome data to calibrate policies or instructional strategies.

In Italy, schools acknowledge the potential of LA for monitoring progress and differentiation. However, these ideas remain largely aspirational.

Although INVALSI data on student achievement tests are widely used as a reference point, other data that is available (for example, electronic registers of grades, student attendance) appear to be analyzed for SSE less frequently. Moreover, the evaluation system in Italy is still heavily compliance-oriented. As a result, LA is not yet seen as a core part of making judgments where data analysis tends to be isolated by certain enthusiastic teachers rather than as widespread process.

In Spain (Castilla y León) (Castilla y León), the management evaluation process also uses LA selectively. School leaders do analyse LA data (for example, examination results and attendance rates) when writing reports or deciding on school-wide interventions. Furthermore, teachers appear to often review their own class data for formative purposes. For example, one Spanish teacher described routinely checking platform logs "to see who enters, who doesn't enter, who [does not do the work], who does it" (SP: T2_Dig_S3), which helps identify individual students who are disengaged. However, most Spanish teachers were uncertain as to whether their day -to day platform data was ever used by school management. In general, as with other cases, Spanish participants pointed to a need for better PD in data analysis for teachers and also a clearer school-wide vision for data use, with one participant explicitly stating that many teachers are not sure if the information they post is reviewed at all. Therefore, while LA data can inform evaluation at multiple levels, the challenge is aligning teacher and management, where on school leaders demonstrate a strong motivation for insights on an aspect of teaching and learning, but teachers vary in data awareness.

7.3.3 Innovating Improvement Planning

LA can have a significant role in innovating improvement planning, especially in schools where it is more embedded. In Ireland, numerous examples were given of LA driving new programs and policy changes. For example, one school used analytics to identify a gap in learning skills, which prompted the introduction of a vocational program and a study skills curriculum (IE: S2). In another case, a principal stated that the LA findings led to a "huge review of our assessment and reporting" procedures to ensure reports clearly support student improvement. In fact, LA appeared to challenge some Irish schools to re-evaluate policies and practices (for example, SEN support) of which, more were updated based on data insights. These changes illustrate how LA outputs were directly incorporated into school improvement plans and discussed with staff and school communities.

Belgian (Flanders) participants also viewed LA as a driver of improvement where participants emphasised the importance of setting numerical improvement targets ("getting things right") so that staff see the point of the data.

For example, one Belgian (Flanders) participant stated that clear action plans keep teachers engaged, as they must see how data can "take your students to the next level". In practice, some Belgian (Flanders) schools appear to use LA findings to fine tune pedagogical approaches and support programs. For example, if survey data showed a need for better literacy interventions, the school would include that in the next SSE cycle.

In Spain (Castilla y León) (Castilla y León), LA has also appeared to lead to specific innovations in some instances. Teachers reported modifying their instructional methods and evaluation criteria in future courses based on platform data (for example, discussing which tasks students did not understand). At the school management level, survey data also appeared to influence strategic decisions in some cases, with one Spanish principal describing how survey results led the school to reimagine its student recruitment strategy, where they appeared to focus less on open days and instead to start conducting more individual interviews to improve enrolment (SP: P_S2). More broadly, LA also appeared to help schools identify the PD needs for staff and students. For instance, data showing students' low digital skills led some schools to focus on digital literacy. These examples show that LA informs not just classroom practice but also higher-level planning and program design.

However, not all intended innovations have been sustained. Ireland and Belgium (Flanders) appear to exhibit more systematic follow through, integrating LA findings into their formal SSE reports and improvement plans. In contrast, in Italy and Spain (Castilla y León) (Castilla y León), the use of LA for planning appears to be on an ad hoc basis. For example, Italian respondents noted that although some improvement plans alluded to data priorities (For example, reducing early school leaving, achieving core curriculum standards), these were isolated instances rather than part of a consistent data driven cycle with"LA, in the strict sense, does not yet appear to represent a structured driver for SSE" (Italian case study, p. 48). In other words, while LA insights occasionally give rise to new insights and ideas, they are not yet embedded within routine school planning processes.

7.3.4 Implementing and Monitoring

Finally, in relation to the implementation and monitoring phase of SSE, as with other phases of SSE, responses varied across cases. In Ireland, LA appears to feed directly into monitoring with participants reporting the use of analytics to track if initiatives are being implemented as intended (for example, checking attendance rates when a new policy is enacted). Crucially, they then compare pre and post data to assess impact. For example, if a mentoring program is launched for struggling students, teachers and year heads use LA data to ascertain if those students' trajectories improve over time with one participant stating that management use the system to "monitor whether planned actions are having the desired effect" and adjusting strategies when they see it is not.

In summary, Irish schools appear to view LA as an ongoing feedback mechanism for SSE initiatives where it closes the loop of SSE by providing evidence on implementation and outcomes.

Belgian (Flanders) schools similarly rely on LA for accountability in implementation. As one SSE coordinator put it, LA provides "valid data" that allows a school to demonstrate its effectiveness. In Belgium (Flanders), data are routinely collected during interventions (For example, logs of student progress) and then reported in external audits or inspections. Within this, LA ensures that claims concerning "what works" can be validated with empirically sound data with one participant stating that schools can't "make it with all talk alone", they must "put it on the table" with data when reporting on policies. This attitude is reflective of Belgian (Flanders) participants who described monitoring implementation by checking data reflected in their agreed improvement indicators and using analytics to report on progress to various stakeholders such as inspectors.

In Spain (Castilla y León) (Castilla y León), LA appears to be used for monitoring in the classroom and in administration. However, it is used to a lesser extent in systematic way. On the one hand, while teachers appear to view platform analytics for assignments (for example and as noted previously, who did or did not log into the system), and use this information to intervene (providing extra help and interventions, etc). Data from these platforms are also used to report to families and for internal accountability purposes. with SSE coordinators explaining that they are "constantly looking for all the information" (SP: T4_NOV_S2) to track whether school processes (e.g. curriculum delivery) are on track. In summary, Spanish appears to use LA during the implementation of SSE. However, this is very often done so in a decentralized way with teachers dealing with student-level monitoring and committees or coordinators using school-wide data.

In Italy, some schools reported tracking students' attendance at school-to-work programs, as a certain number of hours is compulsory for students. Also, student attendance and grades are monitored throughout the school year in some schools.However, there are also signs that LA use in implementation can be superficial. For example, many interviewees from Spain (Castilla y León) (Castilla y León) stated that although digital platform use among teachers and students has grown (especially since the pandemic), the data generated by those platforms are not always fully used. In practice and as previously stated, platforms often serve mainly as content repositories or communication tools, rather than as LA tools with some Spanish participants stating that they merely upload test results but do not analyse trends in achievement level. Overall, these findings suggest that while the capacity for LA supported monitoring exists, schools may need significant PD and a stronger data culture to use LA consistently and insightfully in the process of SSE.

7.4 Conclusion

Overall, the case studies highlight a spectrum of LA integration in SSE. Irish schools tend to generally apply LA across planning, evaluation, and monitoring, supported by structured processes and active staff engagement. Belgian (Flanders) schools use LA strategically (especially at the leadership level), emphasising evidence for policymaking and accountability. Spanish schools appear to use LA in pockets (notably through data-driven decisions by management and teacher reflection on assignments) but use by many teachers remains uneven. Italian schools, in contrast, appear to be often limited to basic data collection with little formal analysis. However, a cross-cutting challenge across all cases appears to be that of capacity, where many teachers in all cases appear to lack specific PD in data interpretation of which those involved in the case studies, recognise the need for data specialists or unified systems to make full use of LA in SSE. These capacity issues, together with workload pressures and cultural scepticism, are discussed further in Chapter 8 of this report.

In conclusion, the use of LA in SSE processes mirrors the patterns seen in impact. By way of explanation, where LA is embedded, it strengthens SSE through focused planning and evidence-informed improvement. However, where it is less systematic, its influence on SSE is questionable. Nonetheless, and highlighting the potential for LA in SSE, isolated uses of LA also appear to have driven tangible innovations in support systems, pedagogies, and policies in many of the case study schools. Indeed, these findings align with the broader QUALAS report that LA has clear potential to enhance school evaluation (both internal and external) and planning (by highlighting at risk learners and informing decisions). However, to reach its full potential LA must be implemented with attention to teacher PD, ethical safeguards, and respect for the strongly held belief all participants involved in the study that there is a need to maintain the human dimension of education.

Chapter 8: Stakeholder Capacity and Involvement

8.1 Introduction

This chapter examines stakeholder capacity and involvement relating to the use of LA for SSE. Across the four case study contexts, these stakeholders exhibited varying levels of awareness and capacity. In general, teachers' awareness of LA was closely tied to the routine use of digital platforms, but deep understanding on how to use the true potential of LA to improve an aspect of quality was uneven, with in particular, parents and students remaining on the periphery of data-driven processes. These findings mirror the broader findings of this report, where LA initiatives are often led by school leaders or data or ICT specialists, many teachers (and almost all parents and students) have limited involvement of which the capacity and involvement of stakeholders is described below.

8.2 Overarching Capacity of School Personnel

Among teachers, awareness of LA varied by context and by individual roles. In Ireland, most teachers were at least somewhat aware of LA as they regularly use various LMS systems (for example, *VSware*) to access student data on performance and attendance. Staff meetings and discussions that reference student data also tend to keep teachers informed.

Similarly, in some Italian schools' teachers are beginning to use data from platforms such as *Google Classroom* to support feedback and adjust teaching strategies (for example, checking the most frequent student errors or pacing teaching). In Spain (Castilla y León) (Castilla y León), teachers routinely use digital tools such as Microsoft Teams and STILUS for daily tasks (for example, entering grades or comments). However, these tasks do not translate into a deep understanding of the potential and use of LA, with one Spanish participant stating that teachers "*haven't talked to the school to know if they are using learning analytics either*" (SP: T4_DIG_S4), which indicates a gap between the use of LA tools and analytic understanding. In Belgium (Flanders), awareness was also limited, where only a small minority of teachers engaged with LA, and most were concerned only with their immediate classroom responsibilities. As one Belgian (Flanders) teacher put it, "I think most are aware of it. But the first concern is just your own lesson and your own workload… the well-being of your own students and yes, the results of your own students." (BE: LC_T) This comment suggests that unless LA clearly impacts daily teaching tasks, many teachers have limited interest in the potential of LA in SSE.

More generally, teacher understanding of LA was often fragmented between and within cases. In Italy, for example, the case studies identified three distinct teacher groups that resonate with other countries: (1) those who are unaware of LA's potential; (2) those actively using data; (3) those with a basic engagement (for example, some teachers analysed students' subject results to monitor progress and set targeted actions).

Spain (Castilla y León) (Castilla y León) shows similar patterns of use where the culture of data use appears to be mostly administrative, with many teachers reporting no discussion of analytics at the school level. In summary, while a minority of participants were starting to explore LA, the majority of teachers tended to have a superficial or incomplete view of how LA could support teaching, learning and boy association, SSE.

A related question is whether or not teachers knew that LA was being used in formal school improvement processes (SSE). Here again, awareness depended on how integrated LA was in policy discussions. In Ireland, for example, teachers' participation in SSE committees, working groups, and DEIS planning appears to have made them aware that student data is being used to inform school objectives. In one Irish school elements of LA had been explicitly woven into the SSE cycle, so that staff naturally encountered LA as part of the process. Furthermore, In Italy, one highly digital school ("School 3") stood out in particular and used its LMS to track student assessments and inform internal monitoring and linking digital technologies and analytics in the QA process. In contrast, in Belgium (Flanders) and Spain (Castilla y León) (Castilla y León), most teachers had a limited perspective on how LA is embedded into SSE. As previously stated, Belgian (Flanders) teachers tended to focus on classroom tasks, where it is apparent that LA for SSE appeared to be the remit of a few coordinators (with limited to no teacher interest). In Spain (Castilla y León) (Castilla y León), leadership teams appear to use data to guide school improvement (for instance to identifystudents who need support). However, most classroom teachers were unaware of *"these behind the scenes"* uses, with one Spanish teacher stating that *"the data from the platform doesn't help me much to make decisions"* (SP: T4_nov_S2), which reflects an overall frustration that analytics did not readily inform their teaching. These observations indicate that even when school leaders use LA for SSE, insights derived from LA data do not often filter through to teachers who may therefore remain unsure of LA's role in SSE.

In practice, few teachers appear to be of the view that they have the capacity to use LA effectively, where a pervasive finding was that most teachers lack specialised training in data analysis and do not have the time to work with detailed analytics (see also Chapter 6). For example, Irish participants stated that "*most teaching staff have their qualification based on their subject … and not necessarily qualified to analyse statistics or to compile data, or to do that in a way that's effective and appropriate*" (IE: T_YH_S3). This observation was also echoed in Spain (Castilla y León) (Castilla y León) with one Spanish teacher emphasising that *"we teachers don't have much training … about data collection, data analysis and where to take these data. So, there are many, I see many difficulties"* (SP: T2_TC_S1).

In all cases, respondents highlighted the need for more accessible PD and resources to build teachers' skills. As with almost all new initiatives, time and workload were all pressing concerns for those interviewed with teachers repeatedly stating that the existing workload leaves limited time and the capacity for data analysis. For example, an Irish principal and teachers stated that busy schedules and other responsibilities limit time for SSE analysis. By association, a Spanish principal also warned that using LA for SSE has the potential to make work *"more administrative and would add more work to what we already have"* (SP: P_S4). As previously stated, without dedicated time or support, detailed LA is generally perceived as an additional burden for many teachers. However, individual differences also emerged within cases.

In many schools, teachers with mathematics or science backgrounds (or those in roles such as SSE coordinators) were generally more comfortable with the use of LA. In Italy and Spain (Castilla y León) (Castilla y León), for example, schools or those with a strong technologically advanced infrastructure described instances of where staff comfortably use data. However, most schools showed less advanced use. Some teachers expressed cultural resistance to LA use with the perspective that if they already knew their students well through personal experience, they are of the view that certain types of LA data are unnecessary. In Belgium (Flanders), for example, one teacher observed that knowing students personally means that they "don't feel the need to rely on LA data for QA" (BE: SFC_T + SFC_ICT). As previously stated, other teachers worried that over reliance on numbers could de humanise education.

In summary, the findings indicate wide variation of use where school leaders and certain staff members often drive LA initiatives. However, most classroom teachers appear to be at a low baseline of awareness and skill in LA usage. In this regard, without clear value and support (including training, time allowances and tools), teachers' engagement in LA for SSE tends to be minimal.

8.3 Parent and Student Involvement

Parents and students were generally only indirectly involved in LA processes. Across all cases, their awareness of LA was limited to using online portals for personal information (such as checking test scores or attendance). In Ireland, for example, students regularly view their test results, and parents often view attendance through, for example, *VSware*.

Furthermore, engagement levels of parents were often highly uneven within the same school, with the Italian teachers stating that here was a "lack of engagement" by many parents in school matters, while others noted families who were "highly informed and actively involved".

However, few parents and students knew about any analytical use beyond this. Similarly, in Belgium the common understanding is that parents and students know that the school has digital systems (they see their Smartschool account and click agreements, much like website cookies), but they rarely think about what further data the school might be extracting.

In effect, families focus on individual metrics. One Belgian (Flanders) participant summed up this perspective as follow "m*ost parents and students are only concerned about their own data (results, scores) but do not really consider their data as being part of the data being collected, analysed and used by schools for quality assurance*" (BE: LC_T, SFC_QAO, PS_QAO). This illustrates that for most families, data use is viewed through a personal lens rather than as part of SSE.

In some cases, families showed interest when data related to immediate concerns (for example, attendance under a proposed change to the school week). In general, however, many Italian teachers felt that students themselves tend to glance at data without reflection. According to one Italian interviewee, students "read data like they do on TikTok or Instagram,without really stopping to reflect on it" (IT: T1_Dig_S2). By contrast, in the most digitally advanced Italian case, students have taken a more reflective step in their use of data, developing the ability to critically assess and self-evaluate their own performance. This exception highlights how structured digital practices can foster deeper data awareness among students. Yet, such conditions remain rare, and in most schools the challenge extends to families as well. These insights suggest that without a concerted at a whole school level, many parents remain unfamiliar with LA data beyond for example, checking student test scores. This is apparent for a variety of reasons, where a critical issue is the difficulty that families have in interpreting LA data by themselves.

Indeed, Interviewees in Ireland emphasised that while elementary data (such as raw test scores or attendance figures) are generally understandable, more complex analytics can considerably confuse families. As stated by an Irish teacher in relation to basic data use: "*they're kind of fine with it… if I say to you this is what the attendance is for your child… you get that*" (IE: T_SSE_S1). However, deeper insights require explanation, with an Italian interviewee stating that this challenge is attributed to both "cognitive and cultural difficulties." Students accustomed to short, visual content can even a brief textual report difficult to interpret with most participants stressing the need to accompany data with clear explanations and according to an Italian participant, while visual charts can assist with data interpretation, there needs to be a "presentation of the data explaining its meaning…to ensure that they are understandable even for people without prior experience" (IT: Par_S2).

In Belgium (Flanders), schools have already embraced visually clear reporting (for example, through *Smartschool*). However, parents often still prefer a teacher's interpretation. One Belgian (Flanders) participant stated: "A number is just a number, but it's about what evolution do they see" (BE: PS_T+SG).

Similarly, in Spain (Castilla y León) (Castilla y León) one participant stated that "*parents would need training so that they would understand the meaning of all that we could bring to them*" and added humorously, "*if we ourselves as teachers have a hard time, imagine the parents!*" (SP: T1_HD_S3). These comments highlight that without guided mediation, technical barriers (and the home/school digital divide) will leave families struggling to engage with analytics in a meaningful way beyond that of looking at, for example, raw test scores.

Finally, awareness of LA's role in SSE was limited among parents and students, where none of the cases showed that families explicitly connect data use with formal SSE. For example, Irish parents can possibly know about general school feedback mechanisms (such as surveys). However, the case studies reveal that they are generally unaware of any data-driven evaluation processes behind the raw data that they have access to. Similarly, for example, Belgium (Flanders), it is apparent that most parents do not think of their children's data as contributing to a larger picture of school improvement. The Italian case study data also reveals that even when data is technically accessible, students and families often lack the initiative or support to use this data, effectively excluding them from the SSE process. In Spain (Castilla y León) (Castilla y León), schools relied on broad surveys to inform SSE, but did not involve parents or students in analysing analytics outputs. In practice, across all cases it is apparent that LA for SSE is an internal staff activity. As a result, parents and students tended to see SSE as a process involving school staff only, with their own role being limited to providing input via questionnaires or receiving feedback.

8.4 Conclusion

In conclusion, the capacity and involvement of stakeholders in LA-based SSE varies significantly. School leaders and specialist staff most often initiate LA initiatives and are aware of its use. However, many teachers' involvement is generally passive. Parents and students generally have only peripheral awareness of LA, that is focused on personal data, but also need support to engage data. These findings highlight the importance of building data literacy and inclusive practices to realise the potential of LA for school improvement, where schools with support, need to extend PD and communication efforts beyond core staff to include all teachers and other members of the school community as appropriate.

Chapter 9: Learning Analytics and School Self Evaluation Moving Forward: Issues and Concerns

9.1 Introduction

This penultimate chapter summarises stakeholders' perspectives on the challenges of using LA for SSE and outlines considerations to develop supportive resources to enhance LA in and SSE moving forward. Across the case study countries, teachers and school leaders identified a range of concerns (see also Chapter 6 regarding constraints) that need to be addressed if LA is to be a core element of teaching and learning and by association, evaluation and improvement. These include ethical and privacy issues; data accuracy, interpretation, and bias; workload and time constraints; trust and surveillance; data literacy and capacity; equity and access; and the importance of maintaining a human centred focus in evaluation and planning.

9.2 Ethical considerations, privacy, and security

A significant concern across all cases relates to that of the potential misuse of data. Participants involved in the study frequently highlighted that analytics has the potential to lead to incorrectly labelling students (for example as underperforming) in the absence of human intuition and value-added indicators and as result, risks stigmatisation or unfair judgments (IE: P_S4, T_SSE_S4). A number of Irish participants highlighted there is strict data protection in place (e.g., GDPR). For example, one principal questioned as to whether or not parents are fully aware of how student data is shared and used in schools. Italian interviewees also expressed similar concerns concerning responsibility and consent and at core, participants emphasised that confidentiality and informed consent must be upheld whenever LA is used in the future.

9.3 Data quality, misinterpretation, and bias

Educators across all four countries stated that LA can oversimplify the complexity of students and learning with Irish participants stating that out of context data (for example, league tables that are used in some jurisdictions) can be misleading with one teacher stating that there is a need to make feedback non-threatening for the purpose of ensuring that "*the information isn't skewed because people are afraid… it has to be non-threatening… for it to be honest*" (IE: DP_S2). Similarly, Italian and Spanish participants cautioned against reductionism with one teacher in Italy stating that "*competencies cannot be reduced to quantitative data*" (IT:T2_SSE_S1), stressing the need to interpret numbers with context to the fore. Another teacher in Spain (Castilla y León) (Castilla y León) said "*I think the main issue is the tendency to quantify everything — to reduce students to numbers and data points. Sometimes we rely on totals that don't reflect the student's reality*" (SP: T3_HD_S5)

Belgian (Flanders) teachers as stated throughout the interviews also strongly stated that there is a need to preserve the human dimension of assessment and evaluation. For example, a Belgian (Flanders) teacher warned, “We must not lose [the humanity of children] by wanting to look at that data” (BE: SBC_ICT).

In summary, participants urged that data must be interpreted carefully, and that LA should supplement (not replace) teachers’ professional judgment.

9.4 Time constraints and workload

A common theme, in particular, among teachers in Belgium (Flanders) is that implementing LA could add to an already heavy workload. Many Belgian (Flanders) participants stated that teachers, school leaders and coordinators have limited hours, and introducing new data tasks can easily overwhelm them (IE: PS_T, PS_T+SG, SBC_SL, SBC_QAO, SFC_T). One Belgian (Flanders) teacher voiced a typical concern that innovations “only add and add and add” to teachers’ work, rather than relieve it (BE: PS_T). In addition, Italian and Spanish participants highlighted concerns that LA can require additional paperwork or “administrative tasks” that does not meaningfully and necessarily improve the quality of teaching provided with participants emphasising that LA initiatives must be designed to save time or integrate into existing schedules and not to create added burdens to an already busy workload.

9.5 Trust, control, and surveillance

A number of respondents were concerned that LA can be an at times, unwelcome form of surveillance rather than as a process for school improvement. For example, in Belgium (Flanders), numerous participants were of the view that LA data can be used for punitive accountability measures either internally via, for example, the management of a school, or externally via, for example, the inspectorate. As one interviewee stated: “I do indeed think it can be used against you by higher authorities” (BE: LC_T). Indeed, a related concern relates to that of a loss of trust with one Spanish participant stating that teachers could potentially perceive LA as “*excessive surveillance*” (SP: P_S5) if the use of data is not clearly explained from the outset of LA implementation in schools. As a result, there is a need for transparency and trust building, where teachers should see LA as a tool for improvement and not as a punitive measure.

9.6 Data literacy and capacity

A significant barrier as highlighted throughout this report relates to the fact that LA use is significantly limited to some educators. In Italy and Spain (Castilla y León) (Castilla y León) for example, some teachers were unfamiliar with the term "learning analytics" with confusion and scepticism about its relevance to enhancing a particular aspect of teaching and learning with one Spanish teacher stating: "we teachers don't have much training either… about data collection, data analysis and where to take these data" (SP: T2_TC_S1). In the Italian case, participants also stressed the importance of developing interpretative rather than merely technical data literacy, focusing on teachers' ability to read and make sense of data in context. In summary, the overall consensus among many participants across cases is that, without building capacity, LA initiatives will likely have limited impact on teaching and learning and by association SSE. I

However, and moving forward, one Belgium (Flanders) participant stated that: "*Everyone who is in education… has to be a little more data literate… you need that to be able to do quality care in a good way*" (BE: AA_ICT). In other words, stakeholders were of the strongly held view that all school staff, not just data or digital experts need PD in basic data analysis if LA is to be used effectively and responsibly.

9.7 Equity, Access and the digital divide

Participants also raised concerns about the equity aspect of LA where, for example, in the Spanish case, respondents pointed out that not every student has reliable internet, devices, or a supportive home environment, and these disparities can considerably skew LA. Furthermore, using many different, non-integrated platforms can further complicate efforts to build a unified data culture, with some Italian participants highlighting similar issues. For example, if some teachers or classes adopt LA tools while others do not, unequal adoption can create unequal opportunities for students. In summary, therefore stakeholders emphasised that LA must be implemented in ways that are fair and inclusive; otherwise, already existing digital divides will be exacerbated.

9.8 Student motivation and human focus

Finally, many participants across all cases stated that LA should not distract from the relational and motivational aspects of education with, for example, Italian participants stating that LA does not necessarily address core issues such as student motivation, engagement, or well-being. Furthermore, an Irish participant similarly hoped that LA would not become a "classroom distraction" or detract teachers and students from their core teaching and learning roles. For example, a Belgian (Flanders) participant captured this concern by cautioning that over-reliance on data could "take away a bit of individuality as a teacher" (BE: SFC_ICT), drawing attention away from seeing each

student as having unique needs that data alone cannot provide. In summary and as mentioned above, many participants stated that teaching and learning at core, should remain as a human endeavour, with analytics used in service of this purpose and not at its expense.

9.9 Considerations for Future Resources and Professional Development

With respect to the concerns for LA highlighted throughout this report, participants were, moving forward, asked to consider what LA tools, resources, and PD is required to embrace LA for SSE in schools. Within this, convergent recommendations emphasised practicality, relevance, and ongoing support that has been embedded within consideration of: practical, clear, and user-friendly resources; hands-on, and collaborative differentiated audiences and support; concrete tools, templates, and exemplars of practice; data specialists and centralised support; Integration, unification, and alignment; ethical guidelines and realistic timelines for implementation.

9.9.1 Practical, clear, and user-friendly resources

Participants strongly suggested that any LA tools or guides are easy to use, with for example, Irish school leaders repeatedly stating the need for "simplicity" so as not to overwhelm teachers. They warned that the purpose of any resource needs to be clear, otherwise there is potential for teachers to disengage and become detached from the resource. Belgian (Flanders) participants made a similar point, suggesting that newly available resources concentrate on "the essential steps and skills" that a school needs to use data (BE: PS_SL, LC_QAO). In summary and as a starting point for whole-scale implementation of LA in SSE, there is a need to focus on essential user-friendly resources that are necessary to assist schools maintain clarity and purpose.

9.9.2 Hands-on, and collaborative Professional Development

Participants emphasised that moving forward the PD provided should be practical and directly linked to teachers' work. Irish school leaders advocated for clear instruction on how to evaluate and interpret data, for example, guiding teachers to ask the right questions and make sense of the data [IE: DP_S2, P_S4, P_S5]. They also stressed that it is necessary to show teachers "how LA makes a difference" to student learning, to ensure that staff see its value and not as, yet another initiative within the multitude of new initiatives that exist. By association, Belgian (Flanders) participants also suggested joint PD sessions where teachers can share best practices and learn from one another's experience. In other words, participants highlighted the need for LA PD to be continuous, collaborative, and relevant.

9.9.3 Differentiated audiences and support

Participants involved in the case studies acknowledged that staff have different roles, data skills and responsibilities. In this regard, it was suggested that future resources should be designed to align with the differing roles, skills, and responsibilities of staff. For example, Irish participants suggested allowing for different competence levels and user groups [IE: DP_S2, DP_S1, P_S5] where training could begin with a focused task (such as analysing data for a single class) and gradually expand as confidence grows [IE: P_S5]. Belgian (Flanders) educators also recommended designing materials for multiple stakeholder groups with one participant stating that there was moving forward a need to create resources that teachers, students, and parents can understand (BE: AA_ICT, PS_T).

9.9.4 Tools, templates, and exemplars

A significant theme that was evident throughout the case study analysis was the need for exemplars of practice, where participants stated that there was a significant need for case studies of analytics in action, together with templates and dashboards that are adaptable to the needs of the school community. For example, an Irish principal recommended providing illustrative examples of how LA has led to school improvements, together with user-friendly templates to structure LA and SSE (IE: P_S5). It was further stated that tools should be linked to the areas the school wants to improve and tailored to particular student groups (IE: T_SSE_S2). Similarly, a Belgian (Flanders) SSE coordinator suggested collecting exemplars of "good practices" from other schools together with offering a concise "starting guide" for teachers (BE: SFC_QAO). Indeed, and in line with other countries, an Italian participant similarly proposed that there was a need to compile a repository of practical examples and best practice guidelines to use data effectively (IT: P_S5). In addition, some participants suggested that LA could also support benchmarking and peer evaluation among schools, offering opportunities for shared learning and system-level improvement.

9.9.5 Data specialists and centralised support

Many participants recognised the benefits of having dedicated technical support. In the case of Spain (Castilla y León) (Castilla y León), participants explicitly advocated for each school to have access to a data specialist or shared service that could handle the analysis. An Irish principal similarly envisioned that there is a need for an internal or external "data consultant" that assists staff to analyse data and draw conclusions (IE: P_S5). In summary, across all countries, participants agreed that specialised support can alleviate

the technical burden of teachers and ensure that data is used effectively to improve learning.

9.9.6 Integration and alignment

Participants across all cases, stated that new tools and resources must be seamlessly integrated into the school's existing systems and processes. Indeed, Spanish participants advised that there was need to unify disparate platforms and relying on objective, reliable indicators for data to be used consistent and with trust. Similarly Italian participants suggested that PD should be based on the software and processes that schools already have in use (for example, their digital gradebooks and LMS systems).

Furthermore, in the case of Ireland, they also emphasized that LA resources should be integrated into the existing SSE cycles, rather than added as extra work (IE: P_S5). In other words, any LA initiative should support, not complicate, the school's SSE processes.

9.9.7 Ethical guidelines and timelines for implementation

Finally, participants strongly stated that those who develop should have and embed ethics and time considerations to the fore of development. An Irish participant explicitly advised that there is a need to include clear guidelines on data privacy, consent, and potential bias (IE: DP_S3) in order for questions of fairness and confidentiality to be addressed from the onset of the development of the new resource. Finally, participants stressed that sufficient time should be allocated for LA activities and noted that LA should be treated as "an ongoing improvement process" (IE: DP_S2, DP_S3), with dedicated time built into the school calendar for data analysis and follow through of the analysis or initiative with the emphasis being that LA needs be sustained and supported over time and not viewed as for example, a once off end of term activity.

In the Italian case, participants also noted that future developments in artificial intelligence are likely to intersect with LA, introducing new ethical and pedagogical challenges that schools will need to address as part of ongoing innovation.

9.10 Conclusion

In conclusion, participants involved in the case study strongly emphasised that moving forward with LA in schools requires careful attention to ethics, practicality, and capacity-building. These concerns raised from privacy to workload to equity and highlight the need for resources and PD that are user friendly, context specific and aligned with existing SSE practices. By addressing these issues proactively and from the onset of

implementation, schools can harness the potential of LA to support, rather than disrupt, ongoing improvement efforts.

Chapter 10: Discussion and Conclusion

10.1 Introduction

This final chapter provides a discussion of the findings derived from the four case study countries (Belgium [Flanders], Ireland, Italy and Spain (Castilla y León) (Castilla y León)) to make meaning of the overarching themes relating to the enhancement of LA for improved SSE and more generally, improved teaching learning and student outcomes. The discussion highlights points of convergence and divergence within and across the case study countries and leading on from this, the penultimate section of this chapter concludes with final remarks about the overall findings of the case studies which is followed by the final section of the chapter and report that provides recommendations for policy makers, teachers and other stakeholders with a vested interest in the future direction of LA in SSE.

10.2 Impact of Learning Analytics on Quality Assurance (Benefits and Concerns)

Across all four countries, educators saw numerous benefits of using LA to support SSE where an apparent benefit relates to that of early identification and support for students that need support. For example, Irish principals report using standardised-test data to identify students who are underperforming relative to their actual potential with according to one participant, "If there is a student who has a score of, say, 100... and their score in maths is 60 that would be a cause for concern. We look at their trajectory over time as well… to form a profile of the student" (P_S4, DP_S1). This type of profiling allows schools to focus resources on at-risk students before problems escalate or worse still, results in early school leaving. Similarly, teachers in Belgium (Flanders) see promise in LA as means to personalise teaching and learning, with a Belgian (Flanders) participant stating that LA enables schools to "work even more tailored to each student, and that we can actually also start from objective data". In Spain (Castilla y León) (Castilla y León), interviewees stated that LA is "one more way" to "ensure no one slips through the cracks". In essence, almost all participants agreed that data-driven insights derived from LA can highlight learning needs (achievement, attendance, engagement, etc.) that might otherwise go unnoticed, with the sum effect being that of providing more equitable support to those students, that are most in need of extra support.

Another perceived benefit derived from the case studies relates to that of DIDM and accountability. In Ireland and Belgium (Flanders), LA data appeared to be used to make improvement plans more empirically sound. Within this, leaders stated that having "hard evidence" (for example, on attendance, grades, behaviour) moves discussions for improvement beyond that of intuition alone. As stated by a Belgian (Flanders) participant, with data you can "put it on the table" and "show whether initiatives are working". In contrast, without data, schools can be left with "all talk alone".

In practice, this means that principals can justify new programs or policy shifts with data. For example, one Irish school introduced a study-skills program after LA revealed gaps in what might be referred to as students' self-regulation. Furthermore, in Belgium (Flanders) participants stated that shared data reports helped staff and inspectors to objectively review the school's progress. In Italy, reported benefits remained largely case-specific in highly digitalised schools, where LA insights supported targeted, context-bound interventions rather than system-wide change. Similarly, the integration of LA in Spanish schools is not widespread, and there is no formal regulation for its use in decision-making at the school level.

In this regard, participant responses generally suggest that LA can strengthen continuous improvement by monitoring trends and outcomes and from this, for schools to adapt teaching or policies with demonstrated intelligent accountability to stakeholders. However, throughout the analysis and across all cases, participants voiced significant concerns for the use of LA. A concern related to that of the "dehumanisation" of education if overreliance on numbers supplants teachers' professional judgment, with participants stressing time and time again that teaching and learning is a human endeavour. A Belgian (Flanders) participant warned that: "*Just basing something on numbers, that's never going to work out. (…) There is much more to the evolution of a student than just numbers*" (SFC_T). This sentiment was also echoed in Italy and Spain (Castilla y León) (Castilla y León), where teachers emphasised that competencies and student growth cannot be fully captured by data, with one participant stating that "competencies cannot be reduced to quantitative data". In Belgium (Flanders), one participant highlighted that "we must not lose [the humanity of children] by wanting to look at that data". In summary, while LA can inform decisions, it must not, according to almost all participants involved this research, overshadow the personal and relational aspects of education.

Linked to this is the fear of misinterpretation and bias, where participants stated that if data is incomplete, erroneous, or decontextualised, it can mislead the over analysis. A Belgian (Flanders) participant stated that a LMS platform "could yield powerful insights but you have to put it in well first". Others highlighted the risk that aggregate data or league tables could stigmatise students or schools further, in particularin disadvantaged communities. For example, one Spanish participant remarked that classroom data are "very relative" and not always a fair measure of individual learning. Similarly, Irish respondents stressed the need to "capture all voices" so that data isn't skewed by fear or bias. Indeed, all participants agreed that analytic outputs require cautious interpretation. In the words of one Irish principal, data must be used to complement, not replace, teachers' understanding of each student.

Beyond technical limitations, ethical and cultural issues emerged as an overarching theme in the study with for example, interviewees in Ireland and Italy highlighting the growing awareness of privacy and consent, questioning whether parents truly understand how much data schools collect and analyse. Spanish teachers also highlighted incidents of privacy breaches (unsupervised chats, accidental email errors, etc.), underlining the pressing need for clear data policies. While many interviewees in Belgium (Flanders) were of the view that existing controls were adequate, some educators wondered if students would be comfortable having their data scrutinised. In practice, few schools had formal protocols for sharing data with families or between systems, which participants highlighted as a gap that needs to be solved with the use of LA. In summary, across all countries, participants concluded that to prevent misuse, ethical guidelines must accompany any analytic system: as one Italian educator put it, LA is "neither good nor bad… it just has to be used properly".

10.3 Changes in Policies and Practice attributed to Learning Analytics

Where LA use has begun to be used in schools, a frequent outcome relates to improved student support systems. In Ireland and Spain (Castilla y León) (Castilla y León), schools reported developing routines to monitor and respond to at risk pupils. As highlighted throughout this report, participants from some Irish schools initiated processes to highlight students based on attendance, behaviour, or exam results, and created tracking systems to review performance across these areas over time, with one principal describing the use of automated alerts (for example, multiple low test scores) to initiate meetings and support plans. Spain (Castilla y León) (Castilla y León) used similar strategies where data from digital platforms and teacher observations were analysed to identify learning needs (for example, language support and behavioural interventions). These initiatives built on existing SSE cycles, where rather than for example, end of year events, schools began to embed LA results into regular middle management or pastoral care meetings.

Another change was the greater use of educational technology and LMS where, for instance Irish and Spanish participants stated that interest in LA has spurred their schools to invest more in data platforms and related digital skills. In Ireland teachers reported expanding the use of digital tools such as *VSware* or *Microsoft Teams*, where survey results prompted one school to train students in managing *Microsoft Teams* for homework. A Spanish teacher also praised the move to online tools where these platforms help to organise work in a "more interactive, easier" way.

These developments often built on pandemic era initiative where participants stated that familiarity with *Moodle*, *Google Workspace*, etc., had grown significantly, making it easier to collect and share data. In summary, the case-study schools in Ireland and Spain (Castilla y León) (Castilla y León), have begun to use LA partly as, following the pandemic, an incentive to streamline digital processes and improve data competence among staff and students.

Data-driven evidence has also led to refinements of policies and processes. In Ireland a number of schools reported that using LA resulted in formal policy reviews with one principal stating that presenting LA data resulted in a "huge review of our assessment and reporting" practices where reports were rewritten for clarity and greater focus on student learning. Similarly, standardised-test results prompted a revaluation of policies such as SEN, technology use, and assessment.

These changes reflect a shift from informal reflection to documented actions where an interviewee sated that their school went "beyond mere talk to concrete actions" as a result of LA. In some Spanish schools, data analysis has driven both classroom level and school level adjustment with some teachers using LMS generated reports to refine their teaching from the preceding year, while school leaders used survey findings to revise strategic plans (e.g., for the promotion of successful programs). Similarly, in Italy, there also isolated examples (often in highly digitalised schools) where LA insights led to targeted interventions (for example, changes in a vocational program curriculum). However, these were reported as case-specific rather than broad reforms.

Finally, systemic change is emerging in some contexts. For example, Ireland's strong SSE framework means that insights from LA can filter through the whole SSE cycle with a number of Irish participants noticing early signs that LA was gradually becoming embedded into the SSE cycle and influencing expectations for reporting. In Belgium (Flanders) for example, some schools have begun to pilot projects (For example, internal surveys for student/parent feedback) that indicates a shift toward a data informed culture, though national mandates remain limited. In contrast, Italy and (to some extent) Spain (Castilla y León) (Castilla y León) have showed only early signs of systemic change where their use of LA, while appreciated, appears to be peripheral to formal SSE with the Italian case noting that most changes were "specific cases rather than widespread".

In summary, integrating learning data has prompted changes in some schools in Ireland and Spain (Castilla y León) (Castilla y León) using LA to initiate new routines (for example, highlighting systems, digital platform usage) and policy updates (revised assessment/reporting protocols). These developments suggest a move toward more evidence-informed practice. However, the extent of change is uneven. In Ireland (with supportive policy) and some Belgian (Flanders) schools, LA use has started to align with broader SSE systems. However, in Italy and Spain (Castilla y León) (Castilla y León), it appears that LA driven changes tend to be fragmentary and driven by individual teachers or ICT coordinators, rather than systemic mandates for change. Therefore, while LA has catalysed improvements in some contexts a full shift to a DIDM school culture appears to be aspirational in others.

10.4 Integration of Learning Analytics into Schol Self-Evaluation Processes

A core theme throughout this research relates to the extent to which LA is integrated into the SSE cycle of schools. Based on a review of the case study data, the use of LA data is explicitly part of the SSE process in some countries and in others it is only loosely connected to existing processes. In Ireland, participants viewed LA as a core tool within the SSE process with teachers frequently using digital platform data (fe.g., attendance, test results, behaviour logs, surveys) to support the identification of areas requiring improvement. This also appears to be the case with Italy, with one Italianprincipal stating that "If I don't have data, I can't make reasoned decisions", highlighting the idea that data collection in some way appears to guide target setting. Similarly in Belgium (Flanders), one principal reported using student and parent survey results to set improvement priorities for the? school. In these settings, it appears that the surface level use of LA data has become part of the planning stage of SES? with SSE teams reviewing LA data to decide that reducing absenteeism rates should be a focus of the SSE cycle. However, this integration is not universal across countries. The implementation of LA in Spanish schools is still scarce, with micro-level experiences oriented to pedagogical innovation. There is no evidence of an institutional approach to the combination of QA and LA. In the Italian case, most schools collect digital data, but some rarely analyse it systematically for SSE with one participant noting that "LA is not yet systematically integrated into school practices, and its use remains marginal and fragmented". Although the SSE system is well established and genereates substantial data, LA has not yet been incorporated into these formal processes. In practical terms, this means that even when schools gather data, they often lack routines to discuss it regularly and collaboratively among staff. Similarly, in Spain (Castilla y León) (Castilla y León), some schools administered annual feedback surveys, yet many teachers "hadn't talked to the faculty to know if they are using learning analytics". A comparable pattern emerged in Belgium (Flanders), where awareness among teachers was often low; and where analytics were used (such as tracking exam results), they tended to be handled by individual specialists rather than integrated across the whole school.

Once improvement plans are implemented, using LA for monitoring and evaluation is also uneven. Where integration is stronger, schools draw on data dashboards or reports to track progress against improvement goals. In Ireland, for instance, some principals reported reviewing semester examination results to determine whether interventions were effective. However, in many settings this review process remains *ad hoc*. A significant limitation is that certain analytics (such as platform usage logs) are too rudimentary to indicate learning outcomes without careful interpretation. As a result, schools without sufficiently data-literate staff may often review charts in meetings but do not always translate them into action.

In the implementation phase of SSE, participants viewed that LA as a potential paradigm shift in planning, embedding continuous feedback loops. However, this requires buy in from staff with one Belgian (Flanders) interviewee stating that the LA tool that could "start to function as a tool for...control," which can result in power dynamics. Indeed, some Belgian (Flanders) participants feared that external authorities (inspectorates) could use analytics for top-down accountability purposes and as a result this fear for many staff has deterred some staff from fully embracing LA in some countries.

In summary, the extent to which LA is embedded into formal SSE cycles varies considerably across countries. In some cases, for example, in Ireland, learning data routinely informs the identification of priorities and a review of progress. In practice, this means that teachers discuss analytics at staff meetings and adjust plans. In contrast, in Spain (Castilla y León) (Castilla y León), the use of LA data in the implementation phase of SSE is "marginal and fragmented"; data exist but is seldom fully analysed in collaboration with the school community. In summary, a key factor emerging from this element of the case study concerns capacity and leadership: where school leaders champion data use, LA becomes an embedded feature of SSE; in their absence, it tends to remain peripheral to the process.

10.5 Stakeholder Capacity, Engagement, and Culture

An overarching insight derived from the case studies is that school culture and capacity strongly influence LA adoption. In almost all cases, LA use is driven by a motivated few such as school leaders, SSE coordinators, or ICT specialists. However, across all cases, many teachers are only superficially aware of analytics, and parents/students are even less engaged beyond seeing personal grades.

In Ireland, teachers generally report at least some familiarity with LA, in part due to mandatory SSE processes and use of LMS systems such as *VSware*. Staff meetings often review attendance or aggregated test scores with most teachers aware that data play a role in planning. However, actual competence varies across and within schools with the majority of Irish participants stating that they needed more PD to interpret analytics with confidence. In the case of Belgium (Flanders), awareness was often low. Many Belgian (Flanders) participants described a collective awareness of LA as "basic or non-existent," stating that teachers focus on their own classes first. As one Belgian (Flanders) participant stated: "I think most are aware of it. But the first concern is just your own lesson and your own workload… the well-being of your own students and… the results of your own students". This reflects a cultural resistance where, unless LA directly helps an individual teacher's immediate teaching, there is little intrinsic motivation to engage.

Italy and Spain (Castilla y León) (Castilla y León) also reported fragmented technical capacity, where some innovative teachers have learned to extract data from for example, *Google Classroom, Moodle*, and other LMS portals. However, most teachers rarely use these features. Indeed, as with other cases, Italian schools often lack structured PD in LA, and familiarity depends on the actual school. For example, one digitally advanced Italian school analysed subject results regularly, while others rarely discussed data at all. Spanish teachers, as with the other cases, know how to enter grades in platforms. However, they appear not to typically analyse trends. Across all cases, parents and students also have minimal involvement, where they mostly access data concerning their own progress (such as through report cards) but do not participate in interpreting school wide analytics.

Time and resources are another cultural factor where teachers across all countries highlighted significant workload constraints noting that using LA meaningfully requires the luxury of time that many participants do not have. Belgian (Flanders) and Spanish participants repeatedly stated that adding data tasks on top of a busy teaching schedule "only adds and adds and adds" to their work. A Spanish teacher stated that requiring statistics without support would be "a nuisance" that "would burden me a lot". As a result, without allocated time for staff to engage with LA, schools risk treating LA as a burdensome bureaucratic process rather than as an integral part of improvement.

The data culture within a school also matters. When transparency and collaboration concerning data is part of everyday practice, implementation is markedly more effective. For example, DEIS schools in Ireland quite frequently engage in regular data informed meetings, thereby establishing collaborative groundwork upon which LA can be meaningfully introduced. In contrast, where evaluation was typically individual or hierarchical, staff tended to view LA as an extra duty. As one Italian analyst participant observed, in most schools LA usage "remains sporadic and individualised," and is often confined to small groups. In summary, the cases highlight that human factors such as capacity, beliefs, and culture are as important as the technology being used. In Spain (Castilla y León) (Castilla y León), the available evidence indicates that, although institutions are making efforts to establish an organizational culture centered on data use, these efforts remain fragmented and largely reliant on individual initiatives rather than being guided by a cohesive, collective pedagogical policy.

In all four countries, LA implementation is spearheaded by a few technologically advanced teachers, leaders or coordinators. However, most teachers across all cases lack PD or confidence in data analysis, and together with time pressures limits engagement. Parental and student involvement remains marginal. Therefore, the current SSE culture concerning LA is generally what might be referred to as staff-centric where almost all stakeholders recognised that to move forward, schools need to build widespread data literacy, collaborative practices, and trust. In other words, integrating LA into QA will require not only tools, but also a supportive school culture and capacity building among all those using or affected by LA.

10.6 Ethical, Legal, and Practical Challenges

Finally, participants consistently identified broader challenges that must be resolved if LA is to be implemented successfully. These include ethical and legal considerations, as well as practical and equity-related issues evident across all cases.

As stated in previous sections of this report, concerns relating to GDPR and data protection are particularly pronounced and in particular in Ireland and Italy, with educators questioning as whether students and parents truly understand how their data is used. One deputy principal stressed that there was a need to embed bias and privacy considerations into all LA resources (e.g., PD, dashboards and policies) to avoid violations. Specifically in Italy, ethical concerns also include epistemological issues, with participants warning that educational competencies cannot be reduced to quantitative indicators alone. In practice, very few schools had formal ethical guidelines and, in this regard, there is a pressing need for clear policies on consent, data sharing, and responsible data management.

Participants also had concerns that analytics could inadvertently reinforce stereotypes or neglect systemic factors. For example, consistently low scores among disadvantaged pupils could lead to deficit-labeling if not contextualized with value added data sets. A Belgian (Flanders) participant warned of the “temptation” to profile students by ethnicity or background, which the particpant deemed an “ethical boundary”. There is also the risk of confirmation bias, as teachers who look only for expected problems may misread background data as evidence of an issue. These concerns suggest that any LA must include guidance on valid interpretations of results (for example, LA should complement, rather than replace other sources of evidence, rather than serving as the sole determinant of judgment).

A number of barriers linked to technical capacity and equity were also identified, as uneven digital infrastructure can lead to disparities in how analytics can be used by students and teachers. In Spain (Castilla y León) (Castilla y León), some students lack reliable devices or connectivity at home, limiting the data they can use. In Italy, when some classes adopt LA and others do not, students can receive unequal monitoring. Participants observed that the coexistence of multiple, often incompatible platforms, particularly evident in Spain (Castilla y León) (Castilla y León),fragments data and undermines the development of a coherent, data-informed approach to SSE. Addressing this challenge requires greater system integration and interoperability to ensure that LA captures the full picture of school activity.

Workload and change management present another pressing challenge, as the introduction of LA can easily be perceived as an additional administrative burden. Teachers across contexts cautioned that unless LA is well integrated into schools, it will be seen as “bureaucratic tasks” that don’t necessarily improve teaching. For example, Italian participants noted that engaging with LA entails a considerable time and cognitive cost, which can discourage teachers from sustained data use.

This reinforces the earlier point that the effective implementation of LA depends on the provision of dedicated time for staff to engage with LA. Indeed, many participants emphasised that effective use of LA must be an ongoing process built into the school year. As an Irish deputy principal put it, schools should allocate dedicated time for data analysis in their schedule. without this, even the most sophisticated tools are unlikely to be utilised effectively.

Student motivation and trust was also a pressing issue with some participants stating that data systems do not capture everything. For example, according to some participants, LA does not address very well, student motivation and emotional factors. Moreover, when students and teachers perceive data use as a form of surveillance, it can seriously diminish trust. As one Spanish principal observed, many teachers feel uneasy about the 'excessive monitoring' of classroom activity. Consequently, the wider adoption of LA must be grounded in transparent communication with school communities to explain its rationale and to protect professional autonomy.

In summary, participants involved in this study, stated that the use of LA is fraught with ethical and practical hurdles that need to be addressed. Privacy and fairness emerged as a significant concern where schools must ensure that data use complies with laws and ethical norms. Technical issues such as fragmented platforms and the digital divide also need to be resolved to enable meaningful analytics for all of the school community. Finally, implementation must not overburden teachers, where there should be an allocation of time and support for LA activities. Ultimately, the effective development of LA depends on the coherent alignment of ethical frameworks, infrastructure, professional learning, and workload considerations.

10.7 Conclusion

This cross-case analysis reveals a cautious optimism about the use of LA in SSE. Participants across Belgium (Flanders), Ireland, Italy and Spain (Castilla y León) (Castilla y León) were of the general view of LA's potential to improve school improvement efforts and support students. However, there is a disclaimer with a unified warning that: data tools must be used in service of students and teachers and not the other way around. In all cases, success depends on aligning technology with human needs. .

In summary, the findings derived from this research strongly suggest that successful integration of LA into SSE will rest on four pillars of enactment.

- Practical Utility: LA tools must be used to address genuine classroom needs without overcomplication
- Capacity Building: Teachers and leaders must be provided with relevant PD and time to use data effectively
- Ethical Safeguards: Clear policies must govern data use to protect privacy and equity
- Collaborative Culture: Analytics should reinforce whole school reflection and not individual blame

The experiences of each country case shed light on how these pillars can be improved or neglected. For example, Ireland's more systemic SSE framework has laid groundwork for collaboration, whereas Belgium (Flanders) fragmented adoption of SSE highlights the risks of leaving analytics to a selected few. Similarly, in Italy and Spain (Castilla y León) (Castilla y León), where SSE is already a well-established and structured process, LA has not yet been systematically integrated but could build on this existing evaluative culture.

10.8 Recommendations for Policy and Practice

Drawing on these insights, the final section of this chapter and report concludes with recommendations to enhance LA in SSE processes of which the recommendations are directly grounded in the themes that emerged throughout the analysis and aimed at guiding the development of effective LA resources, PD, and policies whose ultimate purpose is to ensure that LA should be used as an enabler and not as an imposition for schools to more critically engage with SSE and school improvement initiatives.

10.8.1 Accessible and practice-oriented tools

- Develop usable analytics dashboards and artefacts that present only the most relevant data, to avoid overwhelming educators. Provide clear templates or a concise “starting guide” with descriptors for how to use key metrics in context.
- Avoid requiring teachers to use multiple disjointed systems and instead, build or configure tools that align with existing school platforms and SSE workflows.

10..8.2 Professional Development

- Focus PD on hands-on, school specific issues where PD initiatives should illustrate how analytics can improve student learning
- Equip teachers with basic data literacy skills. For example, Irish educators suggested PD initiatives that shows “in what way you improve your educational quality” through LA data.
- Use peer-led workshops and collaborative PD sessions led by teachers.”.
- Provide differentiated support tailored to the varying levels of experience across the school community, from novice to experienced users.
- Encourage team approaches (such as subject group projects).

10.8.3 Examples and templates

- Provide schools with concrete case studies and exemplars.
- Share case studies of how LA led to specific improvements in context relevant schools
- Make ready to use templates available (for example, an easy-to-use dashboard or data review sheet).
- Similarly, make available “good practice” artefacts from various school type as sample policies or guidebooks. Likewise, Italian participants proposed compiling a repository of best practices and practical guidelines to help schools interpret and present their data effectively. These artefacts can inspire a school’s own analytics practices and reduce trial and error scenarios.

10.8.4 Support roles and structures

- Allocate resource positions (or central teams) to support schools in analytics use. For example, there was the suggestion in a number of cases that deploying a data specialist or coach to help interpret and present information. This could and ideally mean training existing staff or hiring a part time data coordinator who can assist teachers with analyses.

- At a minimum, ensure that each school has access to expert advice (for example, through the inspectorate or an education network) on using the chosen analytic tools.
- Set up professional learning networks/communities in which the necessary collective competency can be found. The role of boundary spanners can be given a place within these networks/communities to simulate exchange between different stakeholders in the field of practice and beyond.

10.8.5 Alignment of analytics with school planning

- Position LA as part of regular processes, not as an add-on task.
- Encourage schools to identify priority questions (e.g., "Which students are not meeting targets?") and collect data for those, rather than producing vast reports for unknown reasons. Participants stressed that LA resources should align with the schools' own SSE needs without creating unnecessary paperwork. In practice, this could involve integrating LA tasks into scheduled evaluation meetings or assigning responsibility to existing committees.
- Ensure that educators are given time for data work where support must include allocating adequate time for analysis.

10.8.6 Ethical practices and transparency

- Develop clear policies and PD concerning data ethics.
- Emphasise privacy protection (GDPR compliance) and protective measures to prevent bias. For example, integrate lessons on bias and consent into LA PD materials.
- Make data use transparent to the whole school community. inform students and parents what data is collected, who can see it, and how it will be used. Schools can adopt various protocols (such as opt-out options, anonymised reports) to build trust.

Provide a clear message to staff that analytics should enhance, not replace professional judgement and that data can be prone to error.

10.8.7 Equity and digital access

- Recognise and mitigate disparities with access to LA. Support students from less resourced backgrounds (for instance, provide devices or offline data entry options for student tasks) so that LA does not widen the digital divide.

- If family digital literacy is low, offer basic ICT classes on how to use the schools LMS.
- Where multiple platforms exist, advocate for interoperability or phased consolidation to give all teachers a common view of data (see 10.8.1). This way, no student is left out because they lack a home computer or because their teacher is unfamiliar with the system.

10.8.8 Staff awareness and commitment

- Keep stakeholders informed and involved. Share successes (e.g., how an intervention helped a struggling student) to demonstrate the value of LA.
- Encourage collaborative data discussions so that staff view analytics as a tool to support rather than to police. This collaborative aspect is crucial in fostering the collective competence in school teams. One approach is to involve teachers, parents, and even students in discussing what data mean for learning goals. For example, a few schools in the study began piloting student/parent surveys for this reason. By making LA relevant to everyone's interests (teachers' well-being, students' progress, parents' engagement), schools can foster a data culture that is empowering and nonthreatening.

By following these recommendations, derived directly from stakeholders' experiences and insights, educational systems can steer analytics toward its intended role: a facilitator of better learning outcomes and school development. However, the path forward will require ongoing iterations and will be part of an ongoing improvement process.Fundamentally, the QUALAS findings remind us that technology alone cannot guarantee quality; success lies in how people, practices, and policies evolve to make data work for all students.

Bibliography

Aguerrebere, C., He, H., Kwet, M., Laakso, M.-J., Lang, C., Marconi, C., Price-Dennis, D., & Zhang, H. (2022). Global perspectives on learning analytics in K–12 education. In C. Lang, G. Siemens, A. F. Wise, D. Gašević, & A. Merceron (Eds.), *The handbook of learning analytics* (2nd ed.). SoLAR. https://solaresearch.org/wp-content/uploads/hla22/HLA22_Chapter_22_Aguerrebere.pdf

Brown, M., McNamara, G., O'Hara, J., & O'Brien, S. (2016a). Exploring the changing face of school inspections. *Eurasian Journal of Educational Research, 66*(16), 1–26.

Brown, M., McNamara, G., & O'Hara, J. (2016b). Quality and the rise of value-added in education: The case of Ireland. *Policy Futures in Education, 14*(6), 810–829.

Brown, M., McNamara, G., & O'Hara, J. (2016c). Teacher accountability in education: The Irish experiment. In *Essays in the history of Irish education* (pp. 359–381). Palgrave Macmillan. http://dx.doi.org/10.14689/ejer.2016.66.1

Brown, M., McNamara, G., O'Hara, J., & O'Brien, S. (2017). Inspectors and the process of self-evaluation in Ireland. In J. Baxter (Ed.), *School inspectors: Policy implementers, policy shapers in national policy contexts* (pp. 71–96). Springer.

Brown, M., Gardezi, S., del Castillo Blanco, L., Simeonova, R., Parvanova, Y., McNamara, G., & Kechri, Z. (2021). SSE: An international or country specific imperative for school improvement? *International Journal of Educational Research Open, 2*, 100063. https://doi.org/10.1016/j.ijedro.2021.100063

Brown, M., Skerritt, C., Shevlin, P., McNamara, G., & O'Hara, J. (2022). Deconstructing the challenges and opportunities for blended learning in the post-emergency learning era. *Irish Educational Studies, 41*(1), 71–84. https://doi.org/10.1080/03323315.2021.2022526

Brown, M., O'Hara, J., Gardezi, S., McNamara, G., O'Hara, J., French, G., McKenna, G., Cassidy, A., Rowan, A. and McNamara, M. (2025). Early School Leaving by Design—Prevention, Intervention and Compensation—A Policy Analysis of Early School Leaving and Underachievement Interventions in Europe. Education Sciences, 15(12), 1618. https://doi.org/10.3390/educsci15121618

Cerratto Pargman, T., & McGrath, C. (2021). Mapping the ethics of learning analytics in higher education: A systematic literature review of empirical research. *Journal of Learning Analytics, 8*(2), 123–139.

Chatti, M. A., Dyckhoff, A. L., Schroeder, U., & Thüs, H. (2012). A reference model for learning analytics. *International Journal of Technology Enhanced Learning, 4*(5–6), 318–331.

Datnow, A., & Hubbard, L. (2016). Teacher capacity for and beliefs about data-driven decision making: A literature review of international research. *Journal of Educational Change, 17*(1), 7–28.

Department of Education. (2022). *Digital strategy for schools to 2027.* https://www.gov.ie/en/department-of-education/publications/digital-strategy-for-schools-to-2027/

Department of Education. (2022a). *Looking at our school: Quality framework for primary schools.* https://www.gov.ie/en/publication/b1bb3-looking-at-our-school-2022/

Department of Education. (2022b). *Looking at our school: Quality framework for post-primary schools.* https://www.gov.ie/en/publication/b1bb3-looking-at-our-school-2022/

Department of Education. (2022c). *Circular 0056/2022: SSE—Next steps, September 2022.* https://assets.gov.ie/232751/54405353-26ba-4aad-ac7c-4b15c822a88b.pdf

Department of Education. (2022d). *Inspection reports.* https://www.gov.ie/en/publication/b9e7d3-inspection-reports/

Department of Education. (2022e). *The refined DEIS identification model.* https://assets.gov.ie/220043/d6b98002-a904-427f-b48a-0fa0af756ea7.pdf

Department of Education. (2022f). *SSE: Next steps.*

Epifani, G., Giampietro, L., Poliandri, D., Prantera, E., & Sette, S. (2016). Il ruolo dei processi di autovalutazione. Il dirigente scolastico per il miglioramento della scuola. *Scuola democratica, special issue*, 2/2016, 439–450. https://doi.org/10.12828/84540

European Commission. (2015). *Assuring quality in education: Policies and approaches to school evaluation in Europe.* Publications Office of the European Union. https://op.europa.eu/en/publication-detail/-/publication/4a2443a7-7bac-11e5-9fae-01aa75ed71a1

European Commission. (2020). *Digital education action plan 2021–2027: Resetting education and training for the digital age.* https://education.ec.europa.eu/focus-topics/digital-education/plan

European Commission. (2021). *Italy's recovery and resilience plan.* https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/italys-recovery-and-resilience-plan_en

European Union. (2016). *Regulation (EU) 2016/679 ... (General Data Protection Regulation). Official Journal of the European Union, L119*, 1–88.

Faddar, J., Vanhoof, J., Brown, M., Figuereido, M., Cinkir, S., O'Hara, J., & McNamara, G. (2021). Drivers for student and parent voice in SSE activities: A cross-country analysis of Flanders (Belgium), Ireland, and Portugal. *Studies in Educational Evaluation, 71*, 101067. https://doi.org/10.1016/j.stueduc.2021.101067

Feldman, A., Altrichter, H., Posch, P., & Somekh, B. (2018). *Teachers investigate their work: An introduction to action research across the professions.* Routledge.

Fiore, B., Torelli, C., & Poliandri, D. (2020). The Multi-Speed and Non-Linear Process of Decentralization of Education: A Look at Italy. *Italian Journal of Sociology of Education*, 12(Italian Journal of Sociology of Education 12/2), 79–99. https://doi.org/10.14658/PUPJ-IJSE-2020-2-4

Fortini F., Muzzioli P., Poliandri D., Vinci E. (2016). Il Sistema Nazionale di Valutazione: conoscere le caratteristiche delle scuole per supportarle. *SCUOLA DEMOCRATICA*, vol. 2, p. 451- 466, ISSN: 1129-731X, DOI: 10.12828/84541

Fulantelli, G., & Taibi, D. (2014). Learning Analytics: Opportunità per la scuola. *Italian Journal of Educational Technology*, 22(3), 157–164. https://doi.org/10.17471/2499-4324/185

Gabbi, E. (2023). About or with Teachers? A Systematic Review of Learning Analytics Interventions to Support Teacher Professional Development. *QWERTY - Interdisciplinary Journal of Technology, Culture and Education*, 18(2), 88-109. https://doi.org/10.30557/QW000053

Giampietro L., Poliandri D., Quadrelli I., Romiti S. (2016). L'autovalutazione in Italia: istanza di rendicontazione o sfida per migliorarsi?. *SCUOLA DEMOCRATICA*, vol. 2, p. 467-479, ISSN: 1129-731X, DOI: 10.12828/84542

Giampietro L., Pillera G., Poliandri D. (2023). Pratiche di apprendimento collaborativo tra scuole: peer review e visiting a supporto dell'autovalutazione delle scuole. *Annali online della Didattica e della Formazione Docente*, 15 (26/2023), 206-225. DOI: https://doi.org/10.15160/2038-1034/2768

Giampietro, L., Bianco, P., & Poliandri, D. (2024). Autovalutazione delle scuole e valutazione esterna a confronto: Indicazioni e spunti di riflessione. *RIV Rassegna Italiana di Valutazione*, 2024/88-89. https://doi.org/10.3280/RIV2024-088007

GL Education. (2024, February 7). *About CAT4.* https://support.gl-assessment.co.uk/knowledge-base/assessments/cat4-support/general-information/about-cat4/

Herodotou, C., Rienties, B., Boroowa, A., Zdrahal, Z., & Hlosta, M. (2019). A large-scale implementation of predictive learning analytics in higher education: The teachers' role and perspective. *Educational Technology Research and Development, 67*(5), 1273–1306.

Ifenthaler, D., & Drachsler, H. (2020). Learning analytics. In H. M. Niegemann & A. Weinberger (Eds.), *Lernen mit Bildungstechnologien* (pp. 515–534). Springer.

Ifenthaler, D., & Yau, J. Y.-K. (2020). Utilising learning analytics for study success: A systematic review. *Educational Technology Research and Development, 68*(4), 1961–1990. https://doi.org/10.1007/s11423-020-09788-z

Kew, S. N., & Tasir, Z. (2022). Learning analytics in online learning environments: A systematic review on the focuses and the types of student-related analytics data. *Technology, Knowledge and Learning, 27*, 405–427. https://doi.org/10.1007/s10758-021-09541-2

Litteri, A., De Santis, C., Perazzolo, M., & Giampietro, L. (2024). Per una costruzione di competenze valutative decentrate nella scuola: Indicazioni dalla rilevazione della soddisfazione dei partecipanti alla formazione. *RIV Rassegna Italiana di Valutazione*, 2024/88–89, 188–208. https://10.3280/RIV2024-088010

Liu, Y., Ng, J. T. D., Hu, X., Ma, Z., & Lai, X. (2024). Adopt or abandon: Facilitators and barriers of in-service teachers' integration of game learning analytics in K–12 classrooms. *Computers & Education, 209*, 104951. https://doi.org/10.1016/j.compedu.2023.104951

Long, P., & Siemens, G. (2011). Penetrating the fog: Analytics in learning and education. *EDUCAUSE Review, 46*(5), 31–40.

Mandinach, E. B., & Gummer, E. S. (2016). What does it mean for teachers to be data literate? Laying out the skills, knowledge, and dispositions. *Teaching and Teacher Education, 60*, 366–376. https://doi.org/10.1016/j.tate.2016.07.011

Mandinach, E. B., & Schildkamp, K. (2021). Misconceptions about data-based decision making in education: An exploration of the literature. *Studies in Educational Evaluation, 69*, 100842. https://doi.org/10.1016/j.stueduc.2020.100842

Mincu, M., & Romiti, S. (2022). Evidence-informed practice in Italian education. In C. Brown & J. Malin (Eds.), *The Emerald international handbook of evidence-informed practice in education.* Emerald.

Murphy, G., & Brown, M. (2022). Evidence-informed practice in the context of the Republic of Ireland. In J. Malin & C. Brown (Eds.), *The handbook of evidence-informed practice in education: Learning from international contexts* (pp. 69–82). Emerald Publishing.

Muzzioli, P., Perazzolo, M., Poliandri, D., & Quadrelli, I. (2016). La qualità del percorso di autovalutazione. *Scuola democratica*, special issue, 2/2016, 421–438. https://doi.org/10.12828/84539

Namoun, A., & Alshanqiti, A. (2020). Predicting student performance using data mining and learning analytics techniques: A systematic literature review. *Applied Sciences, 11*(1), 237. https://doi.org/10.3390/app11010237

Organisation for Economic Co-operation and Development (OECD). (2013). *Synergies for better learning: An international perspective on evaluation and assessment.* OECD Publishing.

Organisation for Economic Co-operation and Development (OECD). (2023). *OECD digital education outlook 2023: Towards an effective digital education ecosystem.* OECD Publishing. https://doi.org/10.1787/c74f03de-en

O'Brien, S., McNamara, G., O'Hara, J., & Brown, M. (2019). Irish teachers, starting on a journey of data use for SSE. *Studies in Educational Evaluation, 60*, 1–13.

Pandolfi, L. (2019). Promuovere il successo formativo: Quale il contributo del Learning Analytics per la ricerca educativa? *Italian Journal of Educational Research*, 12, 217–228.

Paolucci, C., Vancini, S., Bex, R. T., II, Cavanaugh, C., Salama, C., & de Araujo, Z. (2024). A review of learning analytics opportunities and challenges for K–12 education. *Heliyon, 10*(4).

Perazzolo, M., De Santis, C., Litteri, A., Pillera, G. C., & Giampietro, L. (2023). Collaborare nei processi valutativi della scuola: Suggerimenti per lo sviluppo professionale dei docenti. *Lifelong Lifewide Learning*, 19(42), 120–134. https://doi.org/10.19241/lll.v19i42.729

Poliandri D. (2018). *Per un sistema nazionale di valutazione come strumento per il miglioramento delle scuole*. In M. Freddano & S. Pastore (a cura di) *Per una valutazione delle scuole oltre l'adempimento. Riflessioni e pratiche* (pp. 67-87). Milano: FrancoAngeli.

Poliandri, D. (2019). *The Italian national evaluation system: Obstacles and opportunities.* INVALSI National Institute for the Evaluation of Educational Instruction and Training. https://value.invalsi.it/portale/wp-content/uploads/2024/02/79_SICI%202019_POLIANDRI.pdf

Poliandri, D., Romiti, S. (2020). La valutazione esterna delle scuole in Italia: La selezione e la formazione di chi valuta. *RIV Rassegna Italiana di Valutazione*, 2019/73. https://doi.org/10.3280/RIV2019-073004

Poliandri, D., Perazzolo, M., Pillera, G. C., & Giampiero, L. (2022). Un'opportunità di formazione sull'autovalutazione delle scuole: Il punto di vista di insegnanti e dirigenti. *Annali online della Didattica e della Formazione Docente*, 14(23), 169–184. https://doi.org/10.15160/2038-1034/2413

Quadrelli, I., Perazzolo, M. (2018). *Analisi testuale delle motivazioni della rubrica. Risultati nelle Prove standardizzate nazionali.* INVALSI Working paper N. 34/218. https://www.invalsi.it/download2/wp/WP34_Quadrelli_Perazzolo.pdf

Ranieri, M. (2015). Linee di ricerca emergenti nell'educational technology. *Form@re - Open Journal per la formazione in rete*, 15(3), 67–83. https://doi.org/10.13128/formare-17390

Schildkamp, K., Vanhoof, J., Van Petegem, P., & Visscher, A. (2012). The use of SSE results in the Netherlands and Flanders. *British Educational Research Journal*, *38*(1), 125-152.

Schildkamp, K. (2019). Data-based decision-making for school improvement: Research insights and gaps. *Educational Research, 61*(3), 257–273.

Selwyn, N. (2022). Less work for teacher? The ironies of automated decision-making in schools. In S. Pink, M. Berg, D. Lupton, & M. Ruckenstein (Eds.), *Everyday automation: Experiencing and anticipating emerging technologies* (pp. 73–86). Routledge. https://www.taylorfrancis.com/chapters/oa-edit/10.4324/9781003170884-6

Sette, S., Bianco, P., Russo, S., Poliandri, D., & Epifani, G. (2019). Atteggiamento verso l'autovalutazione e percezione degli effetti sulla scuola: Uno studio sui membri dei nuclei di autovalutazione. *RIV Rassegna Italiana di Valutazione*, 2018/71-72. https://doi.org/10.3280/RIV2018-071013

Shum, S. B., Ferguson, R., & Martinez-Maldonado, R. (2019). Human-centred learning analytics. *Journal of Learning Analytics, 6*(2), 1–9.

Simeonova, R., Parvanova, Y., Brown, M., McNamara, G., Gardezi, S., O'Hara, J., & Blanco, C. (2020). A continuum of approaches to school inspections: Cases from Europe. *Pedagogy, 92*(4), 487–506.

Slade, S., & Prinsloo, P. (2013). Learning analytics: Ethical issues and dilemmas. *American Behavioral Scientist, 57*(10), 1510–1529. https://doi.org/10.1177/0002764213479366

Tsai, Y. S., Perrotta, C., & Gašević, D. (2020). Empowering learners with personalised learning approaches? Agency, equity and transparency in the context of learning analytics. *Assessment & Evaluation in Higher Education, 45*(4), 554–567.

Tzimas, D., & Demetriadis, S. (2021). Ethical issues in learning analytics: A review of the field. *Educational Technology Research and Development, 69*(2), 1101–1133.

Tzimas, D., & Demetriadis, S. (2025). K–12 teachers' acceptance and resistance perceptions of learning analytics adoption: A mixed-methods approach. *TechTrends, 69*(2), 385–399.

UNESCO. (2012). *Learning analytics: Policy brief.* UNESCO Institute for Information Technologies in Education. http://iite.unesco.org/pics/publications/en/files/3214711.pdf

UNESCO. (2019). *Beijing consensus on artificial intelligence and education.* https://unesdoc.unesco.org/ark:/48223/pf0000368303

Valtonen, T., Paavilainen, T., López-Pernas, S., Saqr, M., & Hirsto, L. (2025). Elementary and secondary school teachers' perceptions of learning analytics: A qualitative approach. *Technology, Knowledge and Learning*, 1–19.

Vanhoof, J., Van Petegem, P. V. (2011). Designing and evaluating the process of school self-evaluations. *Improving Schools*, 14: 200–212. https://doi.org/10.1177/1365480211406881

Vanhoof, J., Van Petegem, P., & De Maeyer, S. (2009). Attitudes towards school self-evaluation. *Studies in Educational Evaluation*, 35: 21-28. https://doi.org/10.1016/j.stueduc.2009.01.004

Wise, A. F., & Jung, Y. (2019). Teaching with analytics: Towards a situated model of instructional decision-making. *Journal of Learning Analytics, 6*(2), 53–69.

Young, C., McNamara, G., Brown, M., & O'Hara, J. (2018). Adopting and adapting: School leaders in the age of data-informed decision-making. *Educational Assessment, Evaluation and Accountability, 30*(2), 133–158. https://doi.org/10.1007/s11092-018-9278-4

Appendix: Case Study Protocol used in the QUALAS Case Study

1. Portrayals of Case Study Schools

1.1 School 1

- Size (N of students and teachers)
- Location (rural, etc.)
- Special features
- Descriptive account of the school's pedagogical mission
- School policies and procedures in place for quality assurance, digital learning, and teaching.
- including the use of digital learning management systems and, learning analytics, and school evaluations

1.2 School 2

- Size (N of students and teachers)
- Location (rural, etc.)
- Special features
- Descriptive account of the school's pedagogical mission
- School policies and procedures in place for quality assurance, digital learning, and teaching.
- including the use of digital learning management systems and learning analytics, and school evaluations

1.3 School 3

- Size (N of students and teachers)
- Location (rural, etc.)
- Special features
- Descriptive account of the school's pedagogical mission
- School policies and procedures in place for quality assurance, digital learning, and teaching.
- including the use of digital learning management systems and learning analytics, and school evaluations

1.4 School 4

- Size (N of students and teachers)
- Location (rural, etc.)
- Special features
- Descriptive account of the school's pedagogical mission
- School policies and procedures in place for quality assurance, digital learning, and teaching.
- including the use of digital learning management systems and learning analytics, and school evaluations

1.5 School 5

- Size (N of students and teachers)
- Location (rural, etc.)
- Special features
- Descriptive account of the school's pedagogical mission
- School policies and procedures in place for quality assurance, digital learning, and teaching.
- including the use of digital learning management systems and, learning analytics, and school evaluations

2. Overarching Picture of Learning Analytics and Quality Assurance [Or School Self Evaluation as it is known in Ireland and Italy] in Case Study Schools

2.1 The Place of SSE in Case Study Schools

1 What does the term Quality Assurance [**Or School Evaluation as it is known in Ireland and Italy**] mean for you and your school?
2 What policies and processes are in place related to SSE / external school evaluation?

2.2 The Challenges and opportunities for SSE in Case Study Schools

3 What are the main challenges and opportunities for implementing Quality Assurance [**Or SSE as it is known in Ireland and Italy**] in schools? (Prompt: Lack of systematic evidence or clear indicators, distributed data difficult to compile, lack of QA [Evaluator] expertise, etc.)

2.3 The use of data in the daily operation of Case Study Schools

4 What is the role of data or evidence in the daily operation of the school, eg: in learning and school management?

2.4 The Place of Learning Analytics in Case Study Schools

5 What does the term Learning Analytics mean for you and your school? (Prompt for practices, procedures, or outcomes may include demographic data, academic performance data, behavioural data, attendance data, learning environment data, feedback data, social interaction data, etc.).
   a. Describe the technology available for LA (Prompt: for gathering, analysing, presenting/visualising)
   b. Please give examples of what one could learn from using LA for QA
6. How do you feel about using LA for QA?
7. Are teachers in your school **aware of the use [Potential use] of Learning Analytics**?
8. Are teachers in your school aware of the use **[Potential use]** of Learning Analytics **for Quality Assurance** in your School?

2.5 Opportunities for Learning Analytics in Case Study Schools

9 What are the **main opportunities** for implementing Learning Analytics in your school? (Prompt: suitable technology, school culture, improved student outcome/teacher practice, accountability)?
10 What role do you anticipate LA playing in your school and across the education system in the future?
11 What role do you foresee LA playing in **School Self Evaluation** in the future and why?
12 What role do you foresee LA playing in **School Inspection** in the future and why?

2.6 Challenges for Learning Analytics in Case Study Schools

13 What are the **main challenges** in implementing Learning Analytics? (Prompt: data literacy, data accessibility/quality, infrastructure, appropriate technology, school culture)
14 Have you considered or encountered any **ethical issues** relating to using LA? What safeguards have you in place or need to be put in place?
15 Is the **Learning Analytic and Quality Assurance material** that is produced **evaluated**? If not, why not and if yes, in what way is the material evaluated?
16 What **barriers** need to be overcome, and what **supports need to be put in place** to facilitate the integration of LA for QA into schools? (Prompt: Dispositions, Competence, Supports, Technology, Ethical considerations, Organisational activities)

2.7 The use of Learning Analytics to support Teaching and Learning in Case Study Schools

17 What **opportunities** do you see for the use of LA for **teaching and learning** (to support students, for learning design, for other reasons)?
18 How can LA be used **to support teaching and learning** in your school?

3. School culture and characteristics for the use of Learning Analytics in the process of Quality Assurance in Case Study Schools

3.`1 School Culture and Characteristics

19 What **documentation**, **communication**, **resources**, **coursework** and **artefacts** [If any] are available to show the use of LA for QA in your school?
20 What **conditions** or **organisational factors** are in place **[need to be put in place]** in your school to **facilitate discussion and collaboration** on data (including LA) for QA?
21 What factors influence your current **[or future use]** of LA? (Prompt: knowledge, skills, experience, disposition, technology or advice)
22 How are **roles and responsibilities involving data distributed in your school**, and why? (Prompt: Learning Analytics, Internal Evaluation, Digital Technologies, Internal and State Assessments etc.)
23 What is the **profile of school personnel** mainly engaged in Quality Assurance/Learning Analytics? (Prompt: Knowledge/skills/experience/Special Post of Responsibility)

4. Affordances and constraints for the use of Learning Analytics in the process of Quality Assurance in Case Study Schools

4.1 Affordances and Constraints – Competence and Capacity Building

24. Describe your **competence** (knowledge, skills and experience) in using LA **for QA**
25. How are school **staff encouraged and supported** (either internally or externally) to collect, interpret and use data (Learning Analytics) for QA?
26. Are you currently, **or do you anticipate**, your role supporting others in using LA for QA?
27. How has the use of LA for QA led to a revaluation of teaching, learning and assessment policies and practices?
28. How has the use of LA for QA led to a revaluation of <u>your</u> teaching, learning and assessment practices
29. Do you anticipate a role for yourself **supporting others** in using LA for QA

4.2 Affordances and Constraints – Resources

30. How effective are **resources and support mechanisms** for **LA** for **QA** available in your school (and who is providing these), including:
    a. Resources, Infrastructure, Learning Management Systems
    b. Individual and organisational learning and capacity building
    c. Education System Requirements or Supports

4.3 Affordances and Constraints – Professional Development

31. Describe the **professional development supports available [If any]** to facilitate LA for QA.
32. How effective is the Professional Development available **[If any],** and what **further supports** could promote the use of LA for QA (Prompt: provide examples)?

5 Impact and use of Learning Analytics in the process of Quality Assurance in Case Study Schools

5.1 The impact of using Learning Analytics for Quality Assurance [Or SSE as it is known in Ireland and Italy] in Case Study Schools

33. What is the **impact [If any]** (advantages/disadvantages) of using LA for QA? (Prompts: Personalisation, differentiation, self-regulation, privacy, control, surveillance, bias)
34. What **changes [If any]** have occurred in your school from using LA for QA?

5.2 The use of Learning Analytics for Quality Assurance [Or SSE as it is known in Ireland and Italy] in Case Study Schools

5.2.1`Planning and Implementation

35. Describe the relationship between Learning Analytics and Quality Assurance **[If any]** in terms of **Planning and implementation** (Identifying the focus, gathering data and reviewing evidence)

5.2.2`Evaluating

36. Describe the relationship between Learning Analytics and Quality Assurance **[If any]** in terms of **Evaluating** (Analysing and making judgments)

5.2.3`Innovating

37. Describe the relationship between Learning Analytics and Quality Assurance **[If any]** in terms of **Innovating** (Writing and sharing Quality Assurance report and improvement plan, putting improvement plan into action)

5.2.4`Implementing

38. Describe the relationship between Learning Analytics and Quality Assurance **[If any]** in terms of **Implementing** (Monitoring actions and evaluating impact)

6 Stakeholder Capacity and Involvement

6.1 Overarching Capacity of School Personnel

39. Are most teachers in your school aware of the use of Learning Analytics in areas such as teaching and learning, decision-making, etc.?
40. Are most teachers in your school aware of the use of Learning Analytics [If used] for Quality Assurance in your School?
41. Do most teachers in your school have the capacity to use Learning Analytics for Quality Assurance?

6.2 Parent and Student Involvement

42. Are parents and students **aware of the use of Learning Analytics in your school**?
43. Are parents and students in your school able to **interpret data** derived from Learning Analytics?
44. Are parents and students aware of the use of Learning Analytics **[If used] for Quality Assurance** in your School?

7 Learning Analytics and Quality Assurance Moving Forward - Issues and Concerns

45 Describe any other issues and **concerns** you may have about the use of LA. (Prompts: security, privacy, bias, suggestive, ethical use)

46 This research **project aims to develop tools, support and training that can enable teachers and schools to make effective use of LA for QA.** What do you think are the most important things to keep in mind in developing these resources? (Prompt: focus areas, types of artefacts, delivery mechanisms, target audience, levels of support, etc…)