



European Quality Assurance  
in Vocational Education and Training

**How data is being used to  
improve quality assurance in  
vocational education in the  
Netherlands**

## Colophon

Title           How data is being used to improve quality assurance in vocational education  
                  in the Netherlands  
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Date           27-1-2025

*EQAVET stands for the European Quality Assurance in Vocational Education and Training. Each member state in Europe has a national EQAVET coordination point, which serves as the link between European policy developments, national policies, and local practices. In the Netherlands, we promote quality development in vocational education by bringing together and engaging various stakeholders whenever possible.*

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**Co-funded by  
the European Union**

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# 1 Introduction

NCP EQAVET focuses on enhancing educational quality in secondary vocational education (MBO), partly by promoting innovation and research on the use of data in quality assurance. With this study, we aim to provide insight into how VET institutions collect and use their data to improve educational quality. This generates knowledge that other institutions can use to, in turn, enhance their own quality assurance processes.

## 1.1 Method

First we performed an extensive desk research. In this desk research, we gathered insights from the existing literature on the use of data in quality assurance. We aim to answer questions like, how can data be used and how is it used? Which data is most suited for this end? We searched both Google and Google Scholar with Dutch search terms like "Kwaliteitszorg Nederland mbo onderwijskwaliteit", "datagebruik kwaliteitszorg mbo" "verbeteren onderwijskwaliteit data" and English translations of it: "Quality Assurance VET quality of education", "Data usage quality assurance VET", "Improving quality of education data". We included Dutch reports and literature, and also international literature in English.

After the desk research we developed the interview guidelines and started to approach potential respondents. In total we interviewed 18 respondents from 12 VET institutions: 8 large-scale Regional Education Centres (ROCs)<sup>1</sup>, which are large institutions supplying most types of VET study programmes, 2 small-scale professional schools, which tend to focus on a specific field of study, 1 agricultural professional school, which focuses on study programmes on agriculture, horticulture, animal care, and related fields. Furthermore we interviewed 1 respondent who represented a partnership of multiple VET institutions. Respondents come from both institutions in the large cities in the West (G4: Amsterdam, Utrecht, Rotterdam, Den Haag) as from other cities in the South, East and North of the country.

## 1.2 Research questions

Main Research Question:

The main research question of this study is:

*How do Dutch vocational education and training (VET) institutions collect and use data to strengthen their quality assurance systems?*

This core question will be addressed through the use of several research questions.

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<sup>1</sup> We did two interviews with one of these 8 large-scale ROCs: one about the central level and one about a specific location.

The research questions are:

1. *What types of data are collected and used (both qualitative and quantitative) for the purpose of improving the quality of education?*
2. *How is the policy regarding the use of data for the purpose of improving the quality of education formulated?*
3. *Is this policy actually applied? With special attention to the following two situations:*
  - a. *Cases where data is used without an underlying policy.*
  - b. *Cases where a policy exists, but data is not utilized.*

## 2 Results desk research

### 2.1 Quality assurance – Definition

Quality can be defined as the extent to which a school succeeds in achieving the set goals regarding student outcomes and processes to the satisfaction of itself, the administration, the Inspectorate, and the consumers of education (Oomens et al., 2015; Oomens et al., 2011).

Oomens et al. (2015) define quality assurance based on various earlier definitions (Hofman et al., 2004; Schildkamp et al., 2009; Oomens et al., 2011) as a cyclical and systematic process in which schools continuously work on measuring, securing, and improving quality.

The MBO Raad (Netherlands Association of Vocational Education and Training Colleges) agreed on a shared vision of quality assurance in VET: For effective quality assurance in education, it is essential that schools have a shared vision and take responsibility for their own quality, rather than having it imposed externally. A culture of quality is driven by staff's intrinsic motivation to enhance educational standards continuously. This requires a strong organizational learning capability. Collaboration among all employees is vital, with educational teams taking ownership of quality policies and setting their own goals. Quality improvement involves a cyclical process of goal setting, evaluation, and adjustment, with input from external stakeholders like training companies and local governments. Quality assurance is a cyclical process: teams formulate goals, evaluate results, and adjust their goals accordingly (MBO Raad, 2020).

The Dutch Inspectorate of Education recently investigated quality assurance practices in the Dutch VET system. With regard to the existence of a quality assurance system they conclude that most boards (of VET institutions) have established a system of quality assurance. In this system, institutions include agreements to map out, maintain, or improve education and examinations. Institutions make agreements on tasks and responsibilities, schedules, formats to be used, and discussion cycles. The institutions are continuously engaged in mapping out educational and examination processes and results. They use various instruments for this purpose: audits, self-evaluations, and improvement plans. Generally, the quality cycle proceeds in a pre-planned, cyclical manner, with most steps documented (Inspectie van het Onderwijs, 2020).

### 2.2 Quality assurance – Activities

A widely used quality assurance cycle in education is the PDCA cycle (Plan – Do – Check – Act) (Oomens et al., 2011).

- Plan: Formulate or adjust the intended goals and student outcomes;
- Do: Carry out activities to achieve the intended goals and student outcomes;

- Check: Evaluate whether the intended goals and student outcomes have been achieved and identify possible explanations;
- Act: Determine the necessary actions to secure or improve the achieved results.

Another example is the so-called 'data-based decision making,' where data is used to improve the quality of education. Lai & Schildkamp (2013) summarise the steps in this process as follows:

- Goal: Determine what data will be collected and why, and establish what question this data should answer;
- Data Collection: Collect data relevant to the goal;
- Analysis: Contextualize, categorize, connect, calculate, and summarise the collected data;
- Interpretation: Translate the analysed data into conclusions that lead to action;
- Action: Undertake actions that align with the obtained data and conclusions.

## 2.3 Data Use in Quality Assurance

Oomens et al. (2015) define data as all systematically collected information related to the functioning of a school and student learning. This can include test results, inspection reports, observations, background information of students, and results from satisfaction surveys. According to Schildkamp, Ehren, and Lai (2012), it is important to distinguish between 'data' and 'information.' Data are discrete, objective facts that, by themselves, do not provide a basis for judgment or action. Information, on the other hand, provides a basis for action because it requires the interpretation and contextualization of data. This can be done by placing test results in the right context, categorizing data, conducting trend analyses, making calculations, identifying relationships, and summarizing information.

### 2.3.1 Goals of Using Data in Quality Assurance

Schildkamp and Kuiper (2010) provide an overview of possible goals for using data: (1) Instruction, which involves grouping students and implementing appropriate interventions for students; (2) Monitoring student progress, which includes discussions with parents; (3) Teacher behaviour, which involves reflecting on one's own actions and developing professional development activities; (4) Students, where the goal is to encourage self-directed learning based on their own results; (5) Policy development, aimed at gaining insights into areas for improvement within the school; (6) Motivation of staff and students, which involves celebrating successes; (7) Evaluation of staff, which pertains to assessing performance; and (8) Accountability, which involves providing accountability.

In later publications, these goals are categorized into three main groups. Schildkamp et al. (2012; 2014) describe three purposes for which data can be used within schools: (1) Policy and school development, which involves identifying the strengths and weaknesses of the school and monitoring policy outcomes; (2) Educational development, which includes tracking the development and results of students, developing instruction and the curriculum, with the aim of improving the primary educational process; and (3)

Accountability, which includes providing accountability to the inspectorate and communicating with stakeholders.

## 2.4 Types of data

Schools use data to monitor, evaluate, innovate, and account for the quality of education. Various types of data are used in quality assurance to gain insights into the quality of education. Schools collect both quantitative and qualitative information (Inspectie van het Onderwijs, 2020). Consequently, data does not only consist of quantitative data with traditional numerical information, but also includes qualitative data, such as feedback from academic advising sessions, career counselling, and exit interviews (Stichting Kwaliteitsnetwerk mbo, 2021). Stichting Kwaliteitsnetwerk mbo (2024) has recently also published an overview of which types of data are relevant for what stakeholder within a VET institution (Education teams, Education managers, Board of Governors (CvB) or Supporting services department).

### 2.4.1 Qualitative data

A second instrument that institutions regularly use is the conversation. This often involves formal and scheduled meetings. To evaluate, teams speak with students and sometimes also with internship companies. Observations are rarely used to map out daily practices. Managers do observe teachers as part of personnel policy, but this does not always specifically come back as a source in an evaluation. Observations with an evaluative purpose, such as shadowing students or attending meetings, are lacking (Inspectie van het Onderwijs, 2020).

Oomens et al. (2015) distinguish between two types of qualitative data:

- Consciously collected information, such as findings from inspection research, internal audits, planned lesson observations, and formal consultation situations (peer consultations, with students, with parents, especially in vocational education also with the professional field);
- Informally obtained information, with sources being varied: teachers addressing each other on signals, asking each other for advice; informal conversations with students and parents, observations in and outside of class, etc.

### 2.4.2 Quantitative data

The Dutch Inspectorate of Education investigated how VET schools use quantitative data for quality assurance. When evaluating education and examinations, all the institutions examined use questionnaires. In evaluating education, students, teachers, and businesses are widely surveyed using standardized and self-developed questionnaires. Most questionnaires focus on the satisfaction of these groups and only sporadically address specific institutional ambitions or goals. Furthermore, the Inspectorate sees that institutions, in addition to the aforementioned instruments, most frequently use quantitative data on educational results and early school leavers (Inspectie van het Onderwijs, 2020).



Oomens et al. (2015) include among the most often used quantitative data exam and test results, performance figures, satisfaction scores, and absence rates.

Vocational education institutions (MBO) undertake many initiatives around registering and making data available for educational evaluations and supporting decision-making. Many information systems have a reporting or dashboard module (EduArte, AFAS, JOB, etc.). Additionally, specialized reporting systems such as Qlikview or custom quality charts are also frequently used (Coppens & Westerhuis, 2019).

### **2.4.3 Combining quantitative and qualitative data**

The schools examined by Oomens et al. (2015) are characterized by a balance in the use of quantitative and qualitative data. Key figures are used as management information, both for external accountability and for internal policy: are they meeting the standards, have the goals been achieved? It is emphasized that the 'story behind the numbers' is just as important for this management as the numbers themselves. This requires, among other things, a good analysis of the numbers, also in their interrelationships. For example, in vocational education (MBO), relationships are established between satisfaction scores (students) and study success (early school leaving, annual results). Such cross-references provide a better basis for discussing the backgrounds and explanations of results. Consciously collected quantitative and qualitative data are used, among other things, to identify problems and shortcomings, but this concerns 'post hoc' data. Equally important is the early detection of signals to prevent problems. Informally obtained information plays a key role in this, as does the school culture: in good practices, efforts are made to ensure that teachers address each other and exchange information and knowledge.

## **2.5 Reasons for Using Data**

Stichting Kwaliteitsnetwerk mbo (2021) describes several ways in which data is being used in VET schools currently.

### *Operational Management*

This involves information that team leaders or teams need to manage their team in daily practice. Think of teacher absence and replacement, class cancellations, the realization of instructional time, student attendance and absence, and costs.

### *Accountability*

This involves information that team leaders or teams need to account for their approach and results to higher management and the board. Increasingly, VET institutions (MBO) and teams also need to account to direct stakeholders (e.g., regional businesses) concerning the alignment between education and the labour market and (to the municipality) regarding early school leaving. Additionally, for underaged students VET institutions also have to keep track of absenteeism to comply with the compulsory education law (Roelofs et al., 2021)

### *Improvement*

This involves information that team leaders or teams need to improve the educational process. This often concerns the 'why' of a particular development. For successful interventions to reduce school dropout rates, for example, the deeper, underlying causes must be clear. Only then can the team take action. Therefore, the team needs information about these causes to determine the necessary interventions (e.g., homework supervision or extra mentorship) (Stichting Kwaliteitsnetwerk mbo, 2021).

## 3 Results from the interviews

We used the insights we gathered from the desk research to develop the interview guidelines. Below we report the findings from the interviews in thematic sections.

### 3.1 Use of data in quality assurance

In general, the most data usage in the VET institutions is related to the quality norms of the Inspectorate of Education. Most institutions mention this in the interviews. Institution H however does not focus on this, but focuses on intermediate signals and steering indicators instead. Institution D indicates that they use qualitative data more often for quality assurance than quantitative data. They use quantitative data mainly to comply with these norms of the inspectorate. They only function as signalling data, and are not used to improve the quality of education.

Data is utilized in various ways and at different levels to enhance educational quality:

1. **Strategic and operational use:** Data supports the Board of Governors (CvB) and the Supervisory Board in monitoring organizational direction through management cycles, roadmaps, and targets. Teaching teams use it occasionally for analyses, such as the JOB Monitor, and there is a growing emphasis on data-driven practices.
2. **Supporting teaching teams:** Teams monitor interim signals and steering indicators, such as student progress and areas needing attention. This enables timely interventions and helps prevent dropouts. A more uniform and accessible approach to data collection is needed.
3. **Data analysis and self-assessments:** Data from various sources (e.g., enrolments, satisfaction surveys, financial information) is processed in management information systems. Educational Quality (O&K) advisors assist teams with analyses and self-assessments, focusing on inspection standards and team improvement.
4. **Integration into the PDCA cycle:** Data is applied in the full Plan-Do-Check-Act cycle, from goal setting and establishing indicators to monitoring progress and evaluating results. This supports accountability to the Inspectorate and Ministry and provides a basis for further improvement.

### 3.2 Collected and used qualitative and quantitative data

VET institutions collect and utilize a wide range of both quantitative and qualitative data to monitor and improve educational quality. The types of data and their applications reveal patterns and challenges across institutions:

#### Quantitative Data

Institutions collect various numerical and measurable data to track performance, outcomes, and progress. Key categories include:

**1. Student Data:**

- Enrolments, registrations, and withdrawals.
- Intake, transition, graduation rates and diploma yields.
- Dropout rates, including early school leavers (ESL).
- Academic results, such as exam scores, test grades, and average grades per course or module.
- Results of national examinations (e.g., Dutch, English, mathematics).
- Number of retakes and study duration compared to nominal duration.

**2. Satisfaction Surveys:**

- Employee satisfaction surveys (ESS).
- Student satisfaction surveys, such as the JOB Monitor.
- Alumni surveys with quantitative feedback.

**3. Absence and Attendance Data:**

- Student attendance rates and absence records.
- Employee absenteeism and sickness frequency.

**4. Educational Performance:**

- Inspection report scores and external benchmarks.
- Performance data at institutional and national levels.

*"The work I do is actually almost entirely quantitative. Things like early school-leavers, school performance data, and all the other metrics I mentioned earlier, such as student completion rates and sick leave, are all primarily quantitative results. As I see it, it often starts with quantitative research, and based on that, you have conversations—whether with students or with your team. Because in education, we work with people, not just numbers. Those numbers might indicate that something isn't going well, but the opposite can also be true—they might show that something is going very well. In that case, you can learn from one another. What exactly are they doing that makes it work so well?" - Institution I about using quantitative data in the every day context with students or other teachers*

*"What we also do annually is conduct a survey on the six roles of a teacher. For example, a teacher has roles such as pedagogue, didactician, examiner, coach, and a few others. Each teacher receives two links in their email which they can share with a class at different times during the year. Students then provide feedback on that particular teacher. The teacher receives an automatic report in their inbox the next day, and the team leader also gets a copy. This allows the teacher to immediately review feedback from their class. For instance, they might use this in the second period of the school year, review their report, and then ask the same class for feedback again in the fourth period. This lets them check if they've improved in areas where they scored lower. This quick feedback mechanism is what I'd call small-scale quality assurance. It provides actionable insights that the teacher can address right away." - Institution A*

Tools such as Eduarte, Osiris, QlikView, and Power BI enable institutions to gather, visualize, and analyse these metrics. However, while quantitative data is widely available, its use often leans toward compliance and trend monitoring rather than deep analysis or innovation.

### External Data Sources

Several institutions supplement internal data with external quantitative data sources to provide a broader context for decision-making:

- **CBS (Statistics Netherlands):** Used for integrating socio-economic indicators such as neighbourhood status and employment trends, offering insights into the external factors that may influence student outcomes.
- **DUO (Dienst Uitvoering Onderwijs):** Provides data on enrolment, dropout rates, and national benchmarks, enabling institutions to compare their performance against other schools or regions.

*"They now link the data from the CBS and from other large organizations, so you can see what happens when a student graduates. For example, after six months, you can check and see, "Oh, they have a job." You also know what percentage has work, and what percentage has work but not about the field they were trained for. You get a lot of information by linking everything. In the past, you had to send questionnaires to your graduates: "Do you have a job? Did the program help you?" You don't need to do that anymore." - Institution C about benefits of external data sources*

### Qualitative Data

Institutions also collect qualitative data, which provides context and deeper insights into the quantitative figures. Qualitative data which institutions use include:

1. **Feedback and Evaluations:**
  - Open-ended responses in surveys like ESS and JOB Monitor;
  - Feedback from students and teachers on lessons and teaching methods (e.g., pedagogical skills);
  - Comments and suggestions from student panels and focus groups;
  - Evaluations of team and location performance.
2. **Reflections and Discussions:**
  - Reflection reports from students, teachers, and team leaders;
  - Progress discussions with students, often documented in forms;
  - Exit interviews with students leaving the program.
3. **Internal and External Audits:**
  - Quality audits;
  - Peer reviews, quality panels and self-assessment reports.
4. **Observations and Practical Experience:**
  - Findings from lesson observations and workplace visits;
  - Experiences from internships and practical training placements.

**5. Input from the Professional Field:**

- Feedback from companies and alumni;
- Insights from meetings with industry partners.

**6. Reports and Documentation:**

- Reports on internal processes, such as performance reviews;
- Analyses of policy documents, improvement plans, and program files.

**7. Quality Networks**

- Feedback from quality network discussions.

*"We conduct audits, right, with teams? Well, it's still done partly in the traditional way, where they visit and assess the program through interviews. However, they are increasingly conducting peer-to-peer reviews, where the programs themselves come together at a table. They then discuss various aspects of educational quality, aiming to learn more from each other in the process."* - Institution B about more peer to peer reviews (from more traditional way to a new way to learn more from each other)

*"The high percentage of drop out is partly because some students can't always keep up with the lessons, especially when we talk about inclusive education, where some students need slightly different support. We have a lot of students on the autism spectrum, particularly in the game development program. We notice this and now want to make the lessons much more accessible for everyone. This requires broad attention. To achieve this, we need to start with qualitative research. For example, we saw that students left because they couldn't keep up with the pace. This shows that we set quite high expectations in the lessons. The question now is: how can we approach this differently?"* - Institution C about the benefits of exit interviews

Qualitative data is particularly valued for its ability to reveal the root causes behind trends, enabling institutions to design targeted interventions.

*"So yes, the quantitative data is mainly those figures and numbers, but we always try – and I think this is important – to include the story behind it as well."* – Institution F

**Focus on Historical Data and Trends**

Most institutions predominantly rely on their own historical data to identify trends and monitor progress over time. For example, dashboards and annual reports provide overviews of past performance, helping institutions evaluate the impact of past policies and interventions.

While most data use is retrospective, predictive analytics is beginning to emerge in some institutions. Institution B, for instance, is experimenting with predictive models to identify at-risk students early, using factors such as attendance, socio-economic background, and prior academic performance. These initiatives remain in their infancy, with challenges related to data integration, accuracy, and ethical concerns. Other institutions express

interest in predictive analytics but cite resource and expertise constraints as barriers to implementation.

*"We are currently always looking at things retrospectively, for example, analysing the drop-out rates from the past year and the months before. The question now is: what can we do to focus more on the future? Can we make a prediction? But of course, this is something we're still in the early stages of. We still have a lot of steps to take."* –

Institution F

*"We also have a forecasting tool that we use to predict performance outcomes. Based on a qualitative assessment by student mentors within the teams, they monitor how students are progressing. This translates into an Excel-like tool I developed, which generates forecasts. This allows us to look ahead during the year: what does the situation look like, and which students require extra attention? It helps raise awareness within the team and provides better insight into individual students. These insights are also used for various purposes, such as planning for the following year. For instance, how many students do we expect? This is based on the predicted graduation and dropout rates."* –

Institution L

### 3.3 Policy regarding data use in quality assurance

The policies guiding data use in quality assurance within vocational education and training (VET) institutions vary widely. While some institutions have established formal frameworks, others do not yet have this or are still in the process of developing or refining their data policies. These differences influence how data is utilized across different institutions.

#### **Structured Policies**

A few institutions with a more structured policy regarding data use in quality assurance have clear guidelines and standardized tools for data use. These institutions typically implement frameworks that specify the procedures for data collection, analysis, and reporting. For example, Institution J operates within a yearly cycle, recorded in their planning and control guide, integrating performance indicators and annual reporting to monitor key metrics and inform decision-making. Similarly, Institution B has a formal policy that sets out clear procedures for data collection and reporting, including specific guidelines on how data should be used to assess educational quality. These structured frameworks provide consistency in data monitoring, although teams have autonomy in the specific application of the guidelines.

*"Yes, we have a Planning & Control handbook that fully outlines how our cycle is structured, how performance indicators are used, and how the quality monitor is implemented. It also explains the expectations, how and when these are addressed throughout the school year, and how they are utilized by various working groups. A*

*formula is developed within this framework. So in that sense, the policy is in place. We are currently working on evaluating our Planning & Control cycle, specifically focusing on areas for improvement. Our focus is on quantitative data, which is currently more oriented towards accountability. We are exploring ways to shift our focus towards steering information—data that is more current and not only available once a year or every two years. Ultimately, this should also lead to new policies, in this case, a new and improved procedure.” - Institution J*

### **Limited or Emerging Policies**

In contrast, many institutions operate without fully formalized policies, relying on partial guidelines or emerging frameworks or do not even have a policy at all. For instance, Institution A has a yearly calendar for scheduled evaluations and research, but there is no comprehensive policy in place to standardize how data is used across different teams. Institution H has developed a vision for using real-time data to intervene early in student progress, yet this remains an underdeveloped concept and is not yet implemented as a formal policy. Some institutions don't have a policy at all but follow elements of the inspection norms and their own quality agreements such as institution E. Others also use these norms and their quality agreement in their limited to more structured policies.

*“The fact is, we strive to meet all the national standards. That’s essentially what the overall policy entails. We haven’t set our own standards in many areas, apart from a few indicators that are also included in the work agenda.” – Institution D*

*“We have an annual plan, right? Last year, I was tasked with creating a quality framework. You can consider that framework as policy. It includes the planned evaluations, as well as things like the annual report and the budget. For example, if you were to add the week numbers up to 2025, you could clearly see when specific activities are scheduled. [...] The team leader is free to handle it in the way they see fit.” – Institution A*

## **3.4 How policy is implemented**

The use of data for quality assurance in education varies significantly across institutions. While some institutions have formal policies in place to guide data use, many others operate with limited or no policy at all. As a result, the actual application of data for improving educational quality depends on a variety of factors mentioned by the institutions including location size, available resources, data literacy, engagement/involvement and trust. These differences contribute to varying levels of effectiveness in how data is used to monitor and enhance educational outcomes. One of the main barriers to effective data use is the lack of resources, particularly time and financial capacity. Larger locations of VET institutions often have the financial means to hire dedicated data analysts or create specialized roles, allowing them to make more effective use of data. In contrast, smaller locations rely on dual roles for teachers or



administrative staff, which limits their ability to analyse and apply data systematically. They often don't have time enough to analyse data because of their combined roles. This discrepancy leads to unequal data usage across locations.<sup>2</sup> This is for example mentioned by institution B and E.

*"Well, it's the size of the location, because there are obviously some very small locations, and then there are larger ones. At a larger location, you often see that someone is specifically hired to handle it, or they are hired with the idea that they will spend two days on quality and the other three days on coordination work. So, this person isn't teaching in the classroom. At smaller locations, however, you often see that it's someone who is in the classroom full-time, and then, yes, on Monday afternoons, they are not scheduled for teaching for just two hours to work on it."* – Institution E

*"But at smaller colleges, you actually see that too little. They should ideally have a different type of data analyst or, at the very least, someone who works closely with data and has a lot of affinity for it, which not all of them have. Ultimately, you just have to make a choice between hiring someone for teaching or a policy officer who can handle that role. And then you choose."* – Institution B

Data literacy plays a crucial role in the effective use of data for quality assurance. Several institutions indicate that where teams have a higher level of data literacy they can quickly respond to emerging issues and use data for improvement. However, teams with lower data literacy struggle to interpret data, which reduces their ability to make informed decisions based on it.

*"In education, when it comes to using educational quality data, yes, it's still a bit of a struggle. Look, here at the central level, we have a lot of data and we create all those tools and dashboards, etc. But the use of this data by program managers or at the colleges is still quite limited. They simply aren't very data literate, and that's the challenge. It's quite difficult to develop this when you have a culture where people can just say things like, "Numbers? I don't deal with that."* – Institution B

*"It's something we see across the entire organization—data literacy is definitely a challenge. You really notice a difference among managers as well. Some find it all super easy, while others really think, "I don't understand any of this." And, yes, that applies to data on educational outcomes as well, which is still considered very important, especially due to the inspection, which is closely monitoring this."* – Institution D

*"It's striking how people sometimes misinterpret results and draw incorrect conclusions. They might say, for example, "Look, this means we shouldn't do that," while the data actually indicates the opposite. As a result, figures can sometimes be misused. This makes it important to be cautious about how we share this data. For example, this week, I found myself asking: how should we distribute the school leavers' survey results?"*

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<sup>2</sup> In the Netherlands many VET institutions are very large, with many different locations of varying size. While some often specialised VET institutions have less or even only one location.

*Should we share it widely within the organization, or limit it to a small group who can provide better interpretation and prevent the data from being misused? This adds another layer of complexity.” – Institution L*

The engagement and involvement significantly influences how data is used for quality assurance. Teams that value data-driven decision-making are more likely to use data proactively, while teams with a less data-centric culture may only engage with data when faced with urgent issues or external pressures. For instance, Institution A and Institution C report that some teams are highly engaged in data-driven processes and actively use data to drive improvements, while others are less proactive. Institution L emphasizes that the involvement of individual team members is key to data use, with some team members more comfortable with data analysis than others. This variation in engagement across teams can slow down data analysis and hinder improvements in quality assurance.

A recurring barrier mentioned across multiple institutions is the lack of trust in quantitative data. This issue often arises from inconsistencies between data sources or doubts about the reliability of data, leading to reluctance in using data for decision-making. For example, Institution D highlights concerns about inconsistencies between different data systems and the difficulty of explaining the origins of certain figures and numbers, such as which students are included and which are not. Institution L mentions similarly that mistakes in the data or complex interpretations lead to mistrust and less use of the data. This lack of trust can discourage teams from using data for quality improvement, as they may question the accuracy of the data or the conclusions drawn from it.

*“It’s quite a challenge to explain how these numbers are calculated. Which students are counted and which are not? The basics are fairly clear, but what happens when a student switches to another program or institution? And, if they drop out again there, that makes things a bit more complicated. Explaining this well is quite a challenge, and you also see people who have to hear it over and over again. Every time, it’s like new information for them, and it doesn’t stick.” - Institution D*

*Experience in vocational education shows that if there are errors in a dashboard, it will not be adopted. People will even say: “Forget it, I don’t trust this, so I won’t use it.” Therefore, it’s crucial to ensure everything is accurate before rolling it out. This is done through a centralized approach where we aim to roll it out and provide training. However, how it is implemented varies greatly by team and team leader, including how they choose to use their quality assurance expert. – Institution L*

### **Data underused despite policy in place**

Sometimes data is underutilized, despite the fact that there is a clear policy in place in an institution. It is mentioned that this might be caused by the fact that the policy is still mostly focused on accountability. In those cases data is used purely for these accountability purposes while different applications are possible as well but not used.

Another problem which respondents mention is that surveys suffer from low response rates, which leads to less useful results of these surveys, as mentioned in the following quote. Here data is underused, because it substantially less valuable than it should have been if the surveys would have good response rates.

*"If I look at the satisfaction survey conducted by the SBB, for example, where companies provide feedback on their satisfaction, it's something we are required to participate in. It's a survey that is sent out to companies we work with, but the response rate is so minimal that you can't really draw any meaningful conclusions from it. Internally, we do conduct the analysis, and we work with the data. We share the results with the educational teams. But at the same time, you think: This doesn't really tell us anything."* – Institution J

### **Data without policy**

In several institutions, data is being collected and analysed on an ad-hoc basis without clear policies or frameworks to guide its application. This decentralized approach often relies on the initiative of individual teams or enthusiastic staff members.

For instance, Institution G highlights the frequent use of ad-hoc analyses that are not connected to broader institutional objectives or supported by centralized data structures. They have their own forms where employees can leave their ad hoc questions which the business intelligence team then collects and answers. Moreover Institution B mentions that their location takes initiative to analyse specific themes.

*"You know, there are also things that we at (specific location) research on our own initiative. We sometimes ask ourselves questions like, "How is that going?" or about certain themes from the multi-year strategy. We don't always wait until it's required."* – Institution B

*"I think this is something unique, or at least something that not all ROC institutions have. It's definitely worth mentioning. We've automated the process for submitting questions through forms that can be filled out."* – Institution G regarding leaving Ad-hoc questions through forms for the business intelligence team

One significant challenge of data use without policy is the lack of standardization. Some teams at Institution J use data in self-created Excel spreadsheets. These practices, while resourceful, can result in differences with centrally regulated use of data.

*"Yes, within the colleges, data is sometimes recorded in different ways. So, there isn't always policy in place on a ROC-wide scale. For the more ROC-wide data, I think everything is fairly well organized. However, there are teams that simply record certain things in an Excel document. That's not always official policy."* – Institution J

## Exploring New Data Possibilities

Institutions have untapped opportunities to leverage innovative data sources for improving education quality and student success. Predictive analytics, as noted by Institution A and Institution F, can help identify at-risk students early and target interventions effectively. Similarly, Institution K sees potential in data from learning management systems (LMS) to personalize learning by tracking engagement and progress. Institution D also sees potential in learning analytics.

*"You essentially have data related to the secondary process and data related to the primary process. The secondary process involves things like how many students enrol, where they come from, whether they drop out, and where they go after. That's obviously interesting, and you can see that it's gaining traction. But when it comes to data from the primary educational process, I think that's where it gets really interesting, especially with the rise of flexible education. For instance, you now have RPL (Recognition of Prior Learning), which assesses the skills students already possess. But what if the entire curriculum became fully flexible and personalized? How do you measure someone's progress when there is no fixed start or end point? In that case, data can play a very important role. I think data from the student's learning process is currently being used very minimally. With the rise of AI, there are so many opportunities in this area. For example, you can analyse how a student learns and what suits them best. If a student learns quickly, you can accelerate their progress. If a student learns more slowly, you can give them more time to develop." – Institution K*

*"What we want to move towards is more learning analytics, but that's not happening much yet. To make that work, we would need to track a lot more; otherwise, there's not much we can do with it." – Institution D*

Institution I emphasizes the need for integrated dashboards that provide a comprehensive view of student journeys, from enrollment to graduation, enabling better decision-making and study programme improvements. However, challenges such as accessibility to data, and a lack of structured policies hinder progress. Addressing these issues can help in using these data sources and solutions.

### 3.5 Improving the Quality of Education with Data

The use of data plays a critical role in enhancing the quality of education, but its effectiveness varies significantly across institutions. Findings reveal that data is primarily used during the evaluation (Check) and improvement (Act) phases of the PDCA cycle, while its application in the planning phase is less robust. This section highlights key insights and challenges related to the use of data in the context of educational quality improvement.

## Use of Data in the PDCA Cycle

Many institutions execute the *Plan* and *Do* phases relatively well, but the *Check* and *Act* phases often lag behind. For example, the *Act* phase is frequently hindered by time constraints and the complexity of required actions, as noted by Institutions B, C, and D. These limitations often result in teams struggling to move beyond observation (*Check*) to implement meaningful improvements. Institution E further highlights that the lack of measurable objectives in the *Plan* phase undermines evaluations in the *Check* phase, limiting the effectiveness of subsequent actions. Institution L confirms that teams sometimes progress too quickly from *Act* to *Plan* without fully analysing underlying problems, which weakens the improvement process.

*"You know, planning and executing plans is always done very well, and in many cases, the checks are also done well. But then, following through with the actions is always the difficult part. You see that teams are aware of this, and sometimes they include it in their own team plans. They realize they need to complete the cycle and work more cyclically. But, you know, that's just the way it is. It's also a human thing—people tend to prefer making new plans and doing something new."* - Institution D

*"When it comes to those analyses, okay, they come up with them and create an improvement plan. A team leader has ambitions in this area. But then, look, the teacher spends 80% of their time in front of the class with students. So, yes, the remaining 20% is when they just want to eat and chat, not deal with various improvements. ... The expectation is that they deliver good lessons."* - Institution C about the act phase

*"In itself, they're not good at evaluating, or rather at formulating objectives. They struggle with setting measurable goals. And without that, it's really hard to check whether the goal has been achieved."* - Institution E

Additionally, inconsistencies in data usage across teams exacerbate these issues. Institution G observes that while some teams effectively utilize data in the *Plan*, *Do* and *Check* phases, others struggle to achieve the same level of effectiveness, emphasizing the need for greater alignment, support, and resources across teams.

*"That still needs attention from us, not in all teams, because there are also quite a few teams that do it well. They work with a strength-based methodology, using a PDCA cycle. Some teams have also appointed quality assurance staff within the teams themselves, these are teachers who have taken on this additional responsibility and are working on it in a very effective way. So, I think it's mixed, but particularly the A still requires extra attention from us."* - Institution G

## Successful Applications of Data in quality assurance

Despite these challenges, there are examples of effective data use. Institution F demonstrates how data helps in monitoring student dropout. Institution J highlights satisfaction data, such as JOB survey results, as a valuable tool for driving dialogue and

identifying improvement areas. Institution H emphasizes increased quality awareness and the expanded use of dashboards for performance monitoring, which have become central to decision-making processes.

*"The most important data we use, I think, are the dropout rates. We track those monthly. That's probably one of the key metrics to know where you stand. The data itself won't help you improve directly, but it's very useful for monitoring your current status."* –

Institution F

### Potential Improvements

Several opportunities exist to enhance the effective use of data:

- **Measurable Objectives:** Institutions such as E emphasize the importance of clear, measurable objectives in the *Plan* phase to strengthen evaluations.
- **Combining Data Types:** Institution L recognizes that integrating quantitative and qualitative data can provide deeper insights and enable more effective improvements.
- **Balancing Autonomy and Uniformity:** Institution B strives to balance local autonomy (in different locations) with a unified methodology, which could help address contextual differences more effectively.
- **Enhancing Qualitative Data Use:** Systematically collecting and analyzing qualitative data by integrating the data in tools such as Power BI, as considered by Institution G, gives opportunities to make better use of this data to improve quality assurance.

In general it can be argued that developing policy concerning the usage of data could be helpful for many institutions with no or limited policy on data as of yet.

## 3.6 Difficulty of data collection

### Challenges in Data Collection

Collecting both quantitative and qualitative data poses significant challenges, with notable variations in efficiency across institutions. This section outlines the key findings regarding the effort and resources required for data collection, as well as the difficulties in integrating qualitative and quantitative data.

### Labour-Intensive Nature of Qualitative Data

The collection and processing of qualitative data are widely seen as labour-intensive. This is primarily due to the manual evaluation required, such as audits, interviews, or open-ended responses. Institution B exemplifies this with the challenge of analysing many thousands of open-ended responses, which is nearly impossible without automation.

Institution F highlights that collecting qualitative data often depends on individual departments, with variations in the completeness and structure of submitted data. This level of effort makes it difficult to standardize and efficiently utilize qualitative data. Additionally, Institution K stresses that data from the primary educational process, such as experiences and observations, is significantly harder to access. Similarly, Institution E and F note that collecting qualitative data, such as alumni feedback and data from the workplace (e.g., internships), can be particularly challenging due to low response rates. These types of data often require extra effort to reach a representative sample, which further complicates the process.

*"What I find more challenging is that, in the past, we used to include open-ended questions in our student satisfaction surveys. But analysing open responses, especially with the scale we're talking about—[many thousands of] students—is just not something I'm going to tackle. So, those responses often went unused. Yet, when you include an open question, there's an expectation that you'll actually do something with the feedback. Sure, we didn't get responses from all [many thousands of] students, but we still had around [half] to deal with." – Institution B<sup>3</sup>*

*"And the quantitative and qualitative data—well, for the qualitative side, you're often more dependent on the department itself. What kinds of conversations are they having with students? How are they documenting those discussions? It also sometimes depends on the teachers—what kind of teachers are documenting the information? I've occasionally received very brief qualitative data where I thought, "Oh, I would have described this in a bit more detail myself." – Institution F*

*"Yes, we do conduct research on BPV (work-based learning) companies and alumni, but it just doesn't provide much input. Ideally, we'd find the "golden solution" to extract truly meaningful data from these sources. I believe this type of information can be very valuable, but with the limited input we currently receive, it's often dismissed. This is because the group providing feedback is so small and specific." – Institution E*

### **Efficiency of Quantitative Data**

Quantitative data is generally considered easier to collect, thanks to automated systems such as Power BI, QlikView/QlikSense and LMS-systems like Eduarte and Osiris. Institution B mentions that these systems simplify the collection of quantitative data, such as data from systems like Eduarte, which are processed into dashboards and other automated reports. However, not all institutions have well-integrated systems. Institution D reports that internal quantitative data can be challenging to access due to poor system integration, resulting in additional time investment. Additionally, some types of quantitative data are inherently more difficult to collect, particularly those requiring input from multiple sources or without standardized collection methods. For instance, institution L highlights challenges in collecting data related to more specific topics like safety in internships or discrimination, as these often rely on external sources or require additional

<sup>3</sup> Exact numbers are deleted to prevent disclosure of which institution the respondent is from.



coordination. Small organizations with limited resources, as noted by Institution C, face compounded difficulties in addressing these issues.

*"As for the aspects I mentioned earlier, such as internal satisfaction and educational outcomes, those processes are now well-organized. It doesn't require significant effort anymore. We've set up the systems so that, while I wouldn't say it's done with just a few clicks, it doesn't take weeks to organize either."* – Institution E about the automated systems

*"Sometimes I notice that data is already available somewhere, but we don't yet have access to the source file. As a result, we can't submit it (the results of their analysis), and there's often a significant delay before it gets processed into our own systems."* – Institution D

*Yes, I think it varies quite a lot depending on the type of data. For some data, it's really straightforward. You can simply extract it from the systems, like performance rates, for example. But for some other types of data, it's not as straightforward. Those numbers are sometimes difficult to obtain. [-]. Yes, from the work agenda, I think there are one or two indicators I'm still struggling with in terms of data. For example, the number of reports of internship discrimination. That's something we didn't use to track at all. It's something the institution itself would need to collect. But I think there's now a national initiative being set up by the MBO Raad (the Dutch Secondary Vocational Education Council). Still, the question remains: if we, as an institution, need to collect it ourselves, how are we going to do that? How will we obtain that data?"* – Institution L

### **Challenges in Combining Data Types**

One of the major challenges for many institutions is integrating quantitative and qualitative data. While quantitative data is often centrally and automatically available, incorporating qualitative insights is more complex. Institution A points out that data collection and analysis can be time-consuming, especially when trying to merge qualitative insights from audits or open-ended surveys with quantitative performance metrics.

Institution G further emphasizes the challenge of incorporating more qualitative data into platforms like Power BI, which are primarily designed for quantitative analysis. The institution acknowledges the potential benefits of integrating qualitative data into their existing systems, but the process remains complex and requires additional tools and customization.

### **Stakeholders Involved**

Various groups are involved in data collection and analysis within educational institutions: Team leaders, quality officers, and examination boards play a central role in managing both quantitative and qualitative data, as seen in Institution A. Teachers often collect data



directly from the educational process, such as student feedback, as noted by Institution B, while management and policy staff coordinate how the data is integrated into policy goals. Central teams, such as data teams and business intelligence departments, handle the processing and presentation of data, with Institution G emphasizing the importance of these teams for quantitative data analysis. Institution F highlights the role of policy advisors, functional management, and regional advisors in interpreting data and ensuring it supports institutional strategy. Students and parents sometimes provide feedback, as in Institution B, for qualitative data, while external parties, such as alumni and industry partners, provide valuable insights, though response rates are often low, as seen in Institution D and Institution E. Furthermore, privacy officers and data analysts ensure compliance with privacy regulations (GDPR) and data processing, as noted by Institution K. This wide range of stakeholders underlines the importance of collaboration to effectively use data for informed decision-making

### 3.7 Privacy

Privacy is carefully protected across the institutions, with each organization implementing specific measures to safeguard personal data. Many institutions, such as Institution B and Institution G, use data anonymization and restriction for both internal analyses and reports, with access to sensitive information strictly regulated based on the roles of staff members. For example, teachers only have access to their own results, while team leaders or location directors can access anonymized reports at the team or location level. Institutions like Institution F and Institution H emphasize the importance of careful data management and a secure culture, where information is shared only with a limited, authorized group, and the privacy of students and staff is actively monitored.

*"The level of detail you can access depends on your role within the organization. Since I work at a higher level, I'm allowed to see all the data. However, a college director, for example, can only view information specific to their own college, while a program team within the college can only see data related to their own team."* – Institution B

*"Yes, the interesting thing is that the security only activates when you select a field requiring GDPR protection, such as names or birthdates. That kind of data is stored in a separate table. If you only select the student number, a team, and the count, everything displays neatly. That's the security setup based on how we access the source. Even in the source system, typing in a student number won't reveal personal details. We negotiated this because the student number is a very convenient way to count individuals without compromising privacy."* – Institution G

In addition, privacy in several institutions, such as Institution B and Institution I, is overseen by a privacy officer and/or data protection officer. These officials play a crucial role in ensuring compliance with privacy legislation, such as the GDPR. In some cases, like at Institution K and L, data processing agreements and Data Protection Impact Assessments (DPIAs) are used to mitigate processing risks and ensure proper handling of

sensitive information. Institution L adds that downloading or sharing data is prohibited, and clear guidelines are in place for data sharing.

Despite the strict regulations, such as those at Institution I, where the rules can sometimes be perceived as slowing down data processes, institutions highlight the importance of these measures to protect privacy. Regular professional development and training at Institution I ensure that staff understand what data can be shared and why. The awareness of data breach risks plays a crucial role in ensuring compliance with privacy rules

## 4 Summary and conclusions

This report identifies significant challenges and opportunities in how VET institutions collect, manage, and utilize data to enhance educational quality and decision-making.

1. **Underutilization and Policy Gaps:**

Data is often underused despite the presence of policies, primarily because these policies are heavily focused on accountability rather than broader applications. Additionally, institutions operating without clear policies rely on decentralized, ad-hoc practices that lack standardization and alignment with organizational goals.

2. **Challenges in Data Collection:**

The collection of qualitative data is labour-intensive and inconsistent, often requiring manual processes and facing low response rates. While quantitative data is easier to collect due to automated systems, integration and access issues persist, particularly for specific or cross-disciplinary data types. Combining qualitative and quantitative data remains a major challenge, despite the potential for richer insights.

3. **Untapped Data Opportunities:**

Institutions recognize the potential of data innovations, such as predictive analytics, learning analytics, and personalized learning systems, but adoption is limited by accessibility challenges, gaps in policy, and resource constraints.

4. **Data Use in Quality Improvement:**

While data supports planning and execution phases of the PDCA cycle, its use in evaluation and improvement phases is inconsistent. Teams struggle with setting measurable objectives, analyzing underlying problems, and implementing meaningful improvements due to time constraints and insufficient support.

5. **Privacy and Stakeholder Involvement:**

Privacy is a critical consideration, with strict measures in place to safeguard personal data through anonymization, role-based access, and GDPR compliance. A wide range of stakeholders, from teachers to business intelligence teams, collaborate on data collection and analysis, but misalignment and resource disparities hinder efficiency and effectiveness.

Educational institutions face significant barriers to fully leveraging data for improving quality and outcomes. Underutilization, policy gaps, and challenges in data collection and integration undermine the potential of data-driven strategies. However, there are some promising opportunities in predictive and learning analytics, flexible education, and the integration of qualitative and quantitative data.

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