

Action Grant 2019 – Support to the European Quality Assurance in Vocational Education and Training National Reference Points (EQAVET NRP)

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PLA on the usage of ICT-tools in Quality Assurance

Zagreb, Croatia

17 – 18 December 2019

Introduction

1. The main goal of the Peer Learning Activity (PLA) is the exchange of experiences and best practices on the usage on ICT in QA to process data for quality improvement, in connection with EQAVET approach and qualitative and quantitative data that supports EQAVET indicators.
2. The PLA has been organised by the Croatian National Agency for Vocational Education and Training and Adult Education (AVETAE) within the “Support to European Quality Assurance in Vocational Education and Training National Reference Points” (EQAVET NRP) Erasmus+ project.
3. The Peer Learning Activity (PLA) will enable participants to sharing the knowledge of the ICT that support quality assurance, their current usage on both system and the provider level, impact, possibilities for further improvement of QA procedures and the associated challenges.
4. The topics for discussion include, but are not limited to: tools for self-assessment, VET graduate tracking, data collection, processing and analysis, evidence keeping, database records creation, benchmarking, communication, and feedback collection.
5. The PLA is structured around four topics/sessions:
 - data model of VET (institutions, teachers, students...)
 - data sources, collecting, etc.
 - presentations (web presentation, writings, open data...)
 - how can you use the data and tools for quality improvementEach topic is in the above order covered in one of the four dayparts.
6. The base is a case study on the Netherlands on these topics. This will be generalized to the EU level which is helped by the pre-activity questionnaire. Presentations from other countries (to be confirmed) are added to highlight different approaches.
7. The priority of the PLA is to find time for discussion, reflection, and sharing knowledge and experiences. Each topic, see under 5, is started by presenting the situation in the example country and the additional countries. This is added by an overview of the outlines on this topic of the other participating countries. We end each daypart with a Q&A or discussion session or group work.

8. Each daypart results in a set of conclusions. At the end of the PLA the final conclusions will be developed and agreed by the PLA organisers and participants.

Context

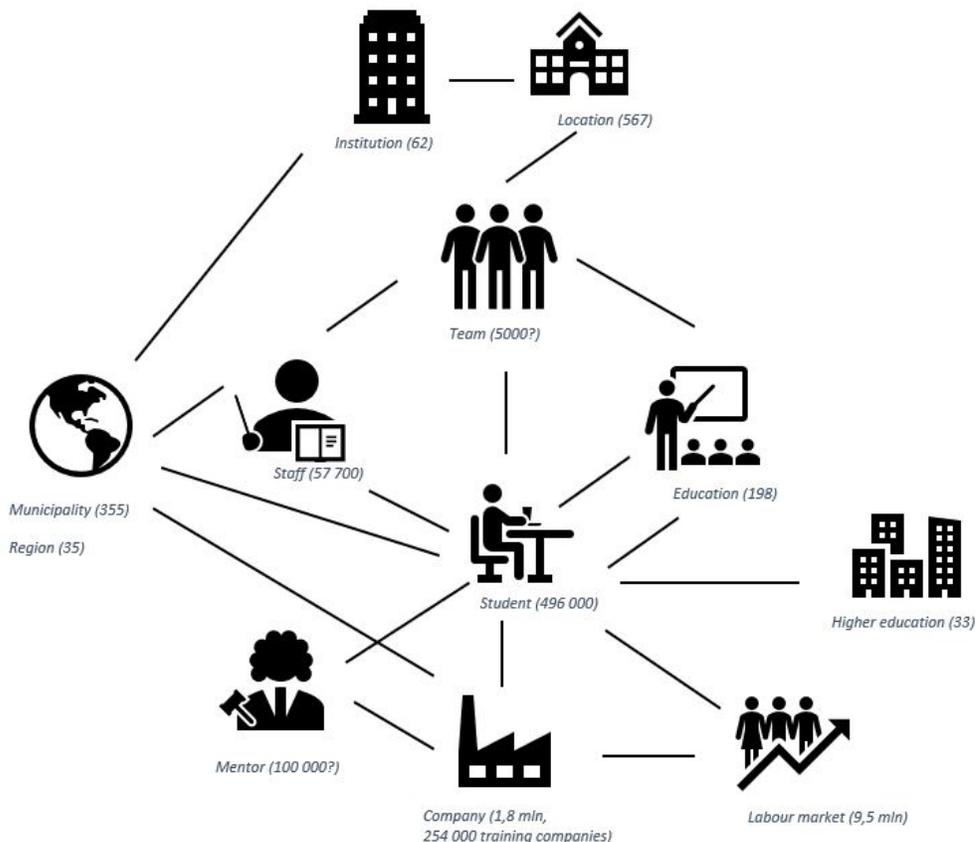
9. The 2009 European Quality Assurance for Vocational Education and Training (EQAVET) Recommendation is developed to assist member states of the European Union (EU) to promote and monitor continuous improvement of their VET systems. The aim of EQAVET is to contribute to increased transparency of, and consistency in, VET policy developments between member states.
10. EQAVET comprises a quality cycle of four stages (planning, implementation, evaluation/assessment and review/revision of VET) supported by common quality criteria, indicative descriptors and indicators to be used at system and VET provider level.. According to the EQAVET Recommendation (2009) EU member states are invited to 1) devise a national quality assurance (QA) and to 2) align it with EQAVET.
11. By considering these two stages, VET institutions and VET systems will be able to reflect on how useful indicators can be as a way of monitoring their own approach to quality assurance, by exploring how data is collected, analysed, used and stored to support the reporting of progress as measured by the indicators.
12. The set of ten EQAVET indicators serve as a ‘toolbox’ from which the various users may choose the indicators they consider most relevant to the requirements of their particular quality assurance system”. In doing so, criteria should be in place when both choosing the adequate indicators and the respective data collection, i.e. the data collected to provide information on the different elements of VET under consideration.
13. A reference set of selected indicators for assessing quality in VET is given in the table:

EQAVET Indicator	VET area
No. 1 Relevance of quality assurance systems for VET providers	context/input
No. 2 Investment in training of teachers and trainers	input/process
No. 3 Participation rate in VET programmes	input/process/output
No. 4 Completion rate in VET programmes	process/output/outcome
No. 5 Placement rate in VET programmes	outcome
No.6 Utilisation of acquired skills at the workplace	outcome
No. 7 Unemployment rate	context
No. 8 Prevalence of vulnerable groups	context
No. 9 Mechanisms to identify training needs in the labour market	context/input
No. 10 Schemes used to promote better access to VET	process

14. In order to support member states to use and implement EQAVET indicators, EQAVET has developed EQAVET Indicators Toolkit. The Toolkit presents the aspects that need to be considered for implementing EQAVET, such as: criteria for selecting indicators, criteria for data collecting, and methods for data collecting and visual representation.
15. Although these aspects refer primarily to applicability of EQAVET in national context for monitoring quality of VET system, they can also be used for considering criteria for selecting indicators, data, methods, visual representation and the tools (ICT) that can assist in this process, as well as use of data for quality improvement.

A conceptual data model of VET

16. For making and presenting information about a part of reality, in this case VET, it is good to think about the entities concerned and their characteristics. An entity is 'anything about which information or data can be stored in a database'.
17. Which entities are central in VET? Nobody will doubt that the **student** is the principal entity. (S)he has to deal most of the time with a teacher/mentor and other **staff**. The student will be specialized in a **field and level of education**. The education may be offered by a **team** of teachers and other staff, specialized in certain qualifications to a limited group of students. The educational setting is often centred in an **institution**, or constituent **locations**, but may also be a **company** (including public services) most of the education time. The companies together form the **labour market**, one important goal of VET is to be qualified to be a part of it. But after VET a student can also choose for higher and further **education**. The educational system, and student, is part of a larger eco system that can be pointed to **municipalities/regions**. In a chart, the numbers relate to the situation in VET in the Netherlands in 2019:



18. The entities have properties that are relevant for the quality of the educational process, and therefore also for, statistical, information about it. These will be mentioned per entity.
19. **STUDENTS** are primarily characterized by **gender** and **age**. Concerning age there are two categories: the younger ones who follow VET after secondary education and the older ones who want to obtain new or updated qualifications. Also important might be the **migration**

background of the pupil, for instance for supporting the discussion on the effectiveness of actions on equal opportunities. Important for the success in the school career is the **educational background** when entering VET, for instance attained qualifications. There also could be indications of the **cognitive level** of the person based on test scores.

At last, but not at least, the **social class** background of the student is a central characteristic, also because it is correlated with many of the other properties.

20. Most of the **STAFF** will be teachers. Other **functions** that are common are auxiliary staff, which can be divided in helping in the education process and administration. Managers will normally be a small part. **Salary** and **part-time factor** are two main properties of people working in a job. Also the staff can be characterized by **gender**, **age** and **migration** background. Teaching staff can be characterized by **education** and **competence**. **Type of contract** can also be one of characteristics: permanent or full-term, part-time, casual, fixed-term etc. In VET students are also educated in companies by **mentors**. Important characteristics could be age and gender. Other important characteristics might include **length of service** in field and with students or apprentices.

21. The **LEVEL AND FIELD OF EDUCATION** is normally a hierarchic classification. The **level of education** is internationally standardized in the ISCED 2011. VET has to do with part of ISCED 2 vocational, and the whole of ISCED 3 vocational. Nationally those levels are further divided. Next to ISCED, the European Qualifications Framework EQF contains a grid of 8 levels to which national levels of EU Member States are referenced, the **field of education** is not structured along international guidelines. An example of the structure of VET in the Netherlands for one of the most popular education programs, 5% of the students is:

Sector: health and welfare
Sector unit: health, welfare and sport
Domain: health and welfare
Qualification: VET nurse

At least, education can be divided by the **way of learning** in training on the job (apprenticeship) and training, mostly, in school.

22. When education is organized in **TEAMS** it might be the smallest homogenous particle in an institution and therefore the nicest unit for EQAVET. Some teachers give a program of education to a group of students. The characteristics of teams are derived from the characteristics of the constituent entities.

23. Opposite to teams the **INSTITUTION** is the highest organizational level in education. Sometimes the institution has one **LOCATION** but also there are institutions with many locations. Regarding quality the **size** of the location, for instance in number of students, could be an important variable. Some institutions and locations are specialized in fields of education.

24. Apprentices learn and work under surveillance of mentors in **COMPANIES**. These are characterized by **economic activities**, internationally classified in the NACE. The student is often trained for a **profession**, these are internationally classified in ISCO. Occupations are correlated with education, and both with the economic activities.

25. Companies, government included, and self-employed, form together the **LABOUR MARKET** where VET qualified can find employment. **Unemployment level by education level and field**

and **vacancies and job chances by occupation field and level and their forecasts** are characteristics.

26. A VET qualified person can choose for a job but also to **CONTINUE EDUCATION** in academic or higher vocational education.
27. Students, staff, institutions/locations, and companies and the labour market are geographically located in **MUNICIPALITIES AND REGIONS**. For students there is sometimes a difference between the place of education and the place of living.
28. The participating countries will be questioned in advance about the existence in their country of the entities mentioned, and also about missing entities in this overview.
29. Next to the characteristics mentioned indicators can be defined based on this scheme, depending on the availability of data. For the Netherlands it is possible to compute the EQAVET Quality indicators No 3, 4, 6, 7 8 and 9. But also a lot of other indicators are possible.

Data sources and collecting data on VET in general

30. Data on entities and their characteristics in the real world can be stored in databases or registrations or not. For instance a country can have a population register with all inhabitants and characteristics like gender and birth date, but there are also countries without such a registration. In the latter case collecting data is done by a census. The United Kingdom has for instance no population registry.
31. So to collect data about the real world you can question registers if they exist. The answer can be written on a form or questionnaire, but you can also link the register to a central database, by way of machine-to-machine linking.
32. When data are not stored in a registry you have to count to quantify the number of entities in the real world, for instance the number of students in a class. Some data are never or seldom stored in a registry like student satisfaction, and stress feelings of teachers. Then the only way to quantify them is to question the individuals. Those data are in general, more, subjective but also more qualitative-rich then data in registries.
33. The coverage of the population in registers is often 100%. With questionnaires it is normally lower, for sure when a sample is used. To get a good picture of the whole population the sample should be raised, with taking into account the representativeness of the response population.
34. When data about populations have the same keys, like a national personal identification number, information from different data sources can be combined. For instance characteristics of a person in a population registry can be combined with the school career in an education registry.

Data sources and collecting data on VET in the Netherlands

35. The focus will be on data sources with a national coverage, including self-evaluation. EQAVET quality indicators that can be produced with those sources will be mentioned.
36. The Netherlands has a Base Registry of Education held by DUO, an executive agency which is part of the Ministry. Every pupil/student participating in education that is financed by government is registered in it. His personal characteristics (name, birth date, gender, migration background, home address) are stored, his participation in education (school, location, level and field of education, apprenticeship's company) and his results (test score, qualifications). It is filled real time by machine-to-machine linking from administration in schools to the central register held by DUO. (EQAVET indicator 1b, 3, 4 and 8).
37. A second big registry in education in the Netherlands has data on gender, age, salary.., of all personnel working in schools, except in higher education. Its input is the salary administrations of the schools who are pooled by a small number of processing organisations.
38. With the help of identification keys this Base Registry is linked to other registers; the population registry, a registry of employees, a register of schools and locations, a register of municipalities, registers of fields and level of education programs, a registry of internship companies. Characteristics are exchanged over the registries, for instance a student's name and address in de Base Registry of Education is taken from the central population registry.
39. Statistics Netherlands has many more registries that can be combined with the Base Registry of Education. For instance about labour, social security, taxes, and medical consumption. (EQAVET indicator 5).
40. The data in the registries are kept, so it is possible to follow individuals in time. Careers of pupils can be formed starting with test scores in primary education to quitting or finishing higher education and starting on the labour market. For instance, is early school leaving computed by following these careers.
41. Satisfaction of students is measured by a questionnaire which is organized by the national Vet student organisation. Likewise satisfaction of staff is measured by the Association of VET Colleges ('MBO Raad'). This research is done every two year, and nearly all institutions participate, and the response rates are high, 55% under students and 75% under staff.
42. After ending an apprenticeship the student and mentor in the company gives feedback about their experiences in a questionnaire. This is done by the Association of VET Colleges and Employer organisations. The response rates are not published but are no too high.
43. And one and a half year after getting a qualification every graduate in secondary and tertiary education is questioned about his period at school. Also to which extent the level and field of the education is suited to the job, if the student has started working in the meantime. All students are questioned, but only 20% respond. The research is done by Statistics Netherlands. (EQAVET indicator 6).

44. At last companies are questioned about their satisfaction with a recently hired formerly Vet graduate. A sample of companies is approached, and the response is 50%.
45. Most data in the Netherlands are open data, meaning it is available to everyone. Schools, companies, universities, research agencies can use those data to explore, monitor and research education.

Presentation of Data on VET

46. In presentation of data things are counted. The 'things' can be for instance students, staff, locations, education programs and money. The figures can be sliced by several viewpoints, for instance: regions, institutions and locations, town of residence and more.
47. A range of data presenting techniques is used in the examples, they are written in **bold** and if there are published in the Netherlands it is also a hyperlink.
48. Unsliced, on the national level, examples are the amount of [institutions](#), the amount of [students](#) in Vet, [staff](#), and the [expenses](#) of the Ministry in VET.



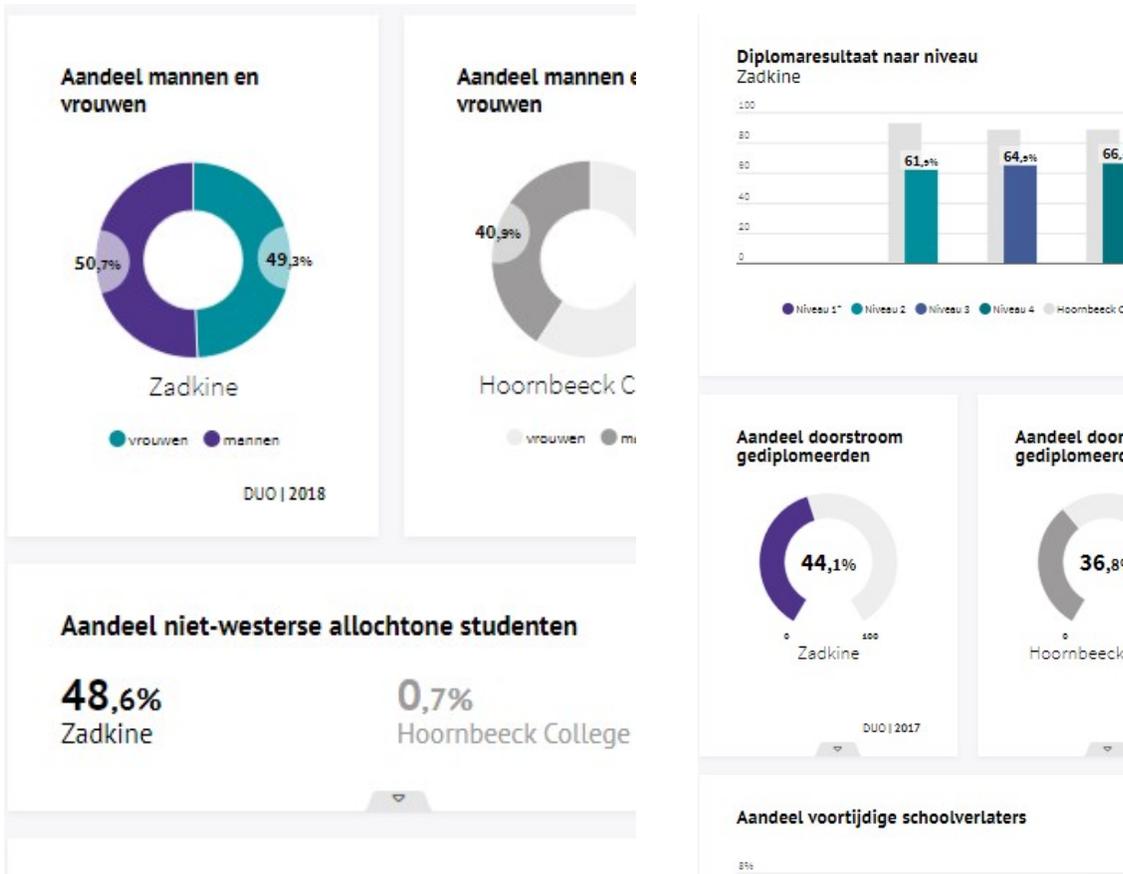
In this [bar chart](#) you see staff in VET by year, sliced in management, teaching staff, supporting staff, teaching staff in training and unknown.

49. One can divide the total population of one of those entities to different viewpoints. For instance, students can be sliced by kind of course. A **treemap** is a nice way of presenting it:

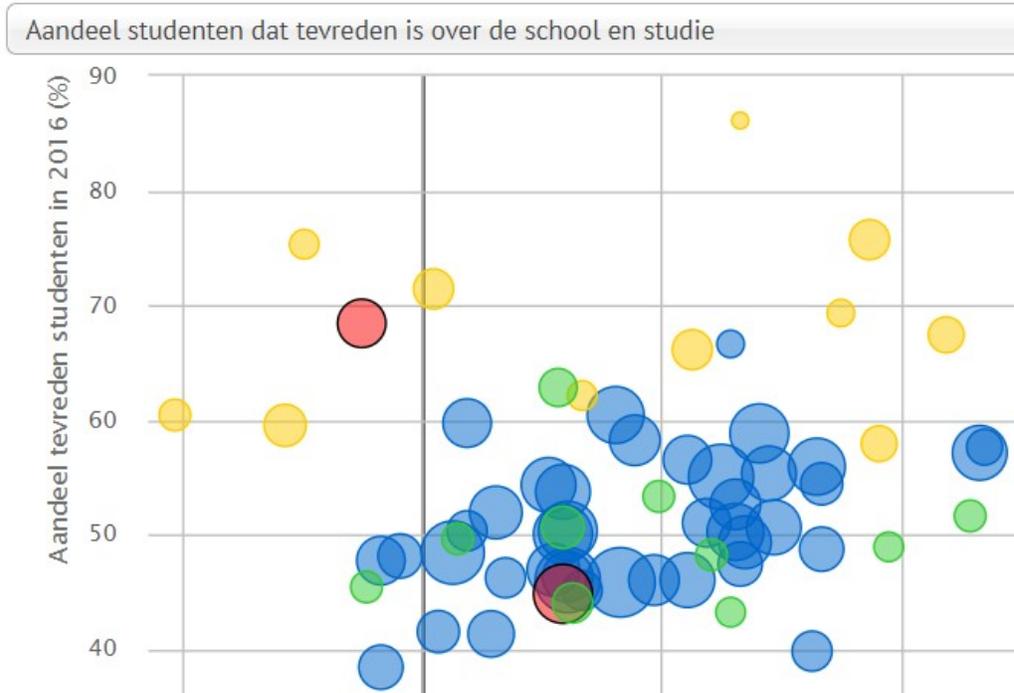


50. A much used presenting-level is that of the, in the Netherlands 62, institutions in VET. The figures for one institution alone are placed in a bigger picture by comparing it with the same kind of institutions or one institution in particular.

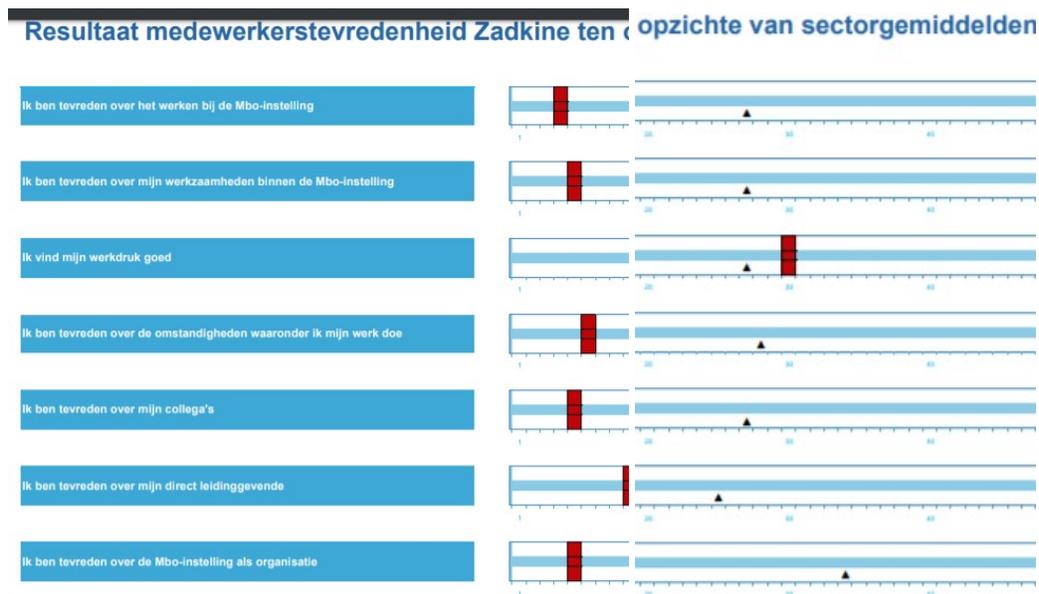
51. In this figure on the left the student population of an institution in a big city (Zadkine, in colour) is compared to that of one in a rural region (Hoornbeek, in grey). From the top one can see the share of the genders, and students with a migration background or coming from a poverty neighbourhood. On the right is the success and transfer rate, and rate of new early school leavers.



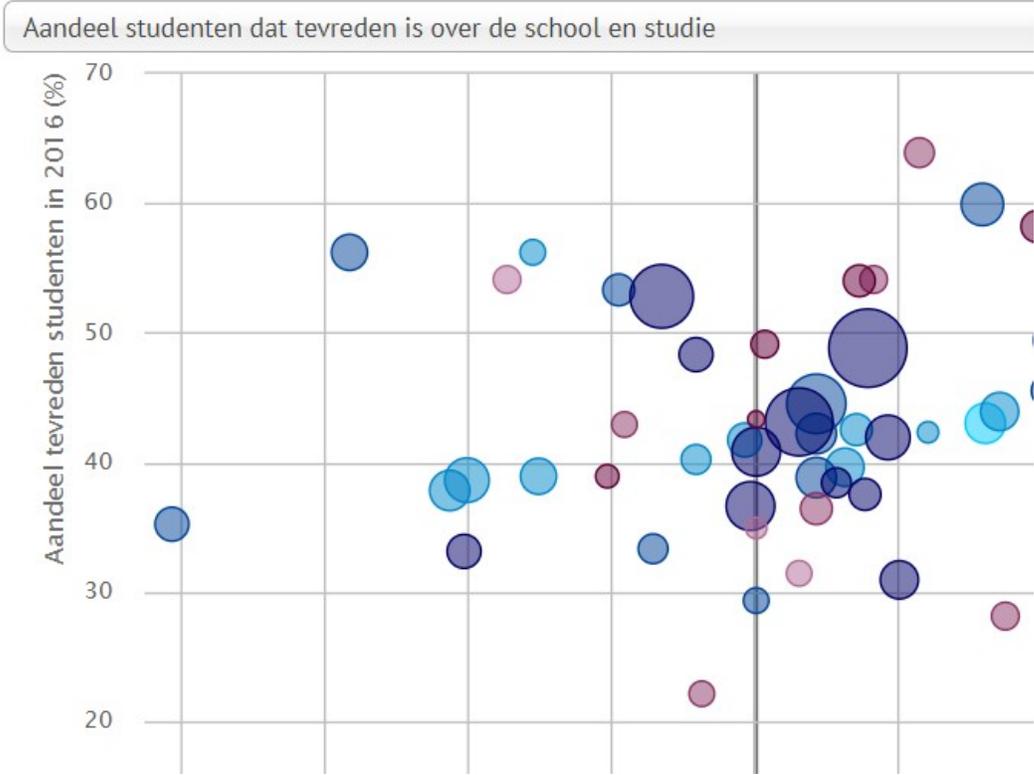
52. Another way of comparing institutions is by way of a **bubble chart**. The institution can see itself in a cloud of all institutions. Each circle is an institution. Yellow ones are specialized schools, green ones are agricultural schools and blue ones are regional schools. The red ones are Hoornbeek (high position) and Zadkine (low position). The y-axis refers to the portion of students that are satisfied with school and study course. The x-axis refers to the percentual development since the last measurement. The size of the circle refers to the size of the institution.



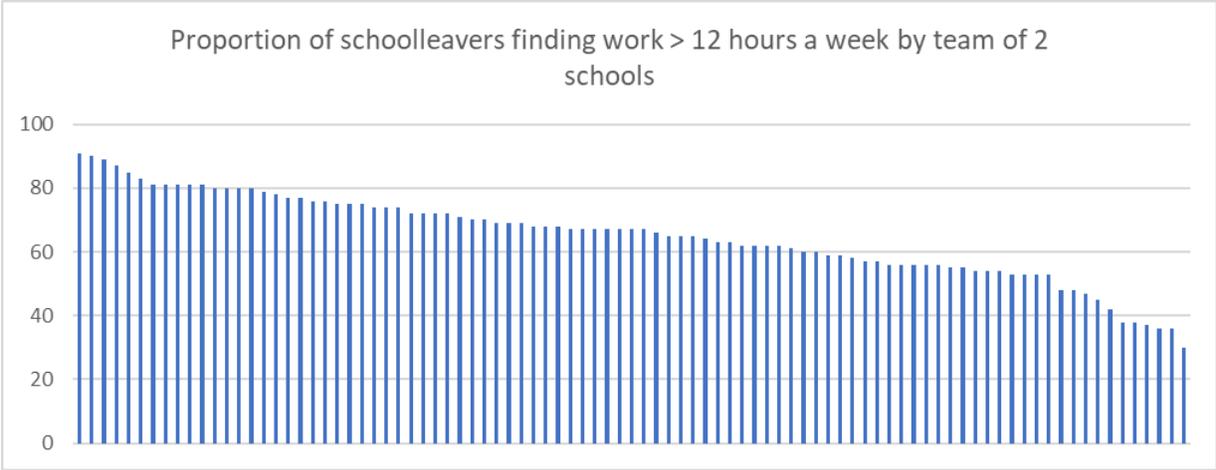
53. The score of institutions can also be placed in a rank ordering. The results on the staff-satisfaction survey are presented as such in this figure. On the left are the ranks for Zadkine, on the right for Hoornbeek. The themes are: total score, work, workload, circumstances, colleagues, manager, organisation, circumstances and reward.



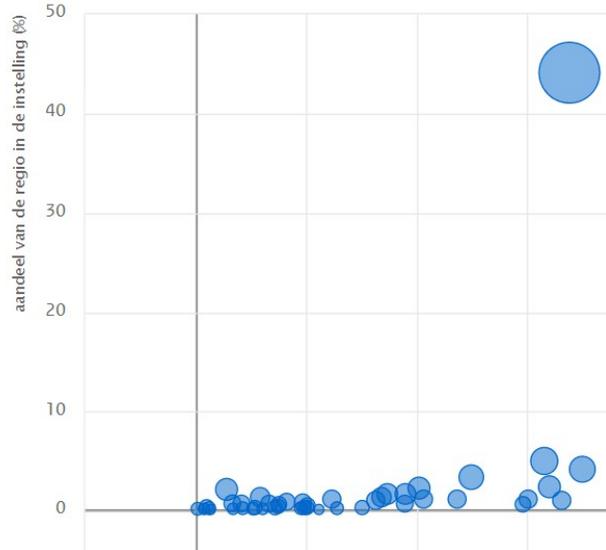
54. Instead of comparing with the outer world an institution can also make internal comparisons. In this bubble chart one sees all study courses inside Zadkine on the same indicator as above.



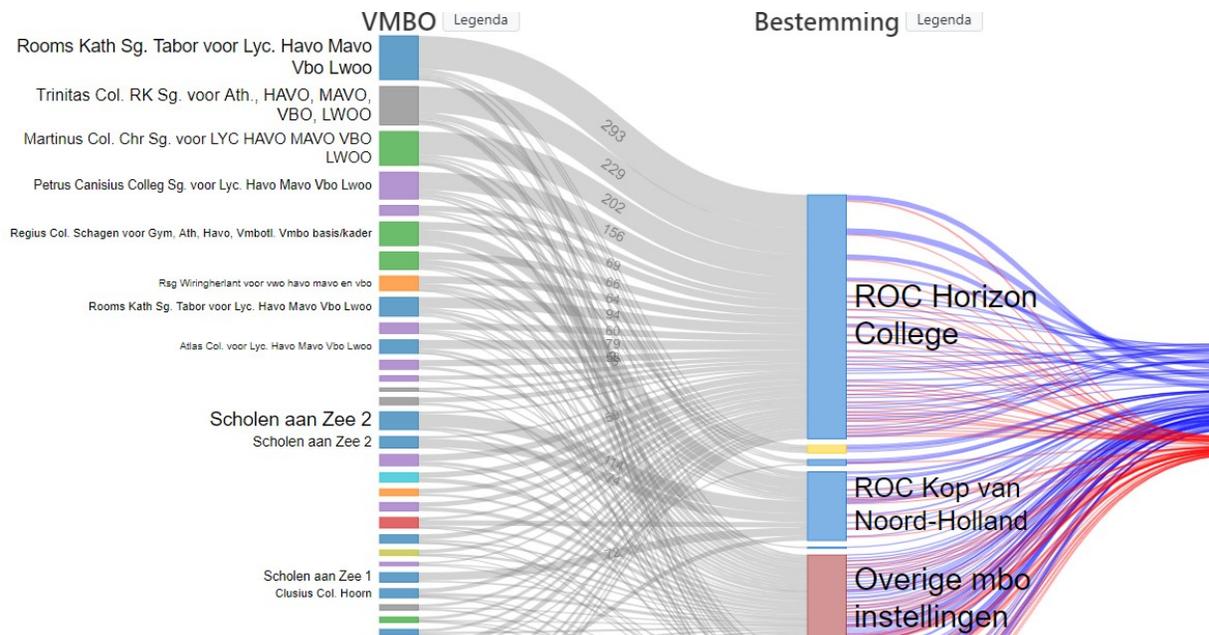
55. Instead of per course in this [bar chart](#) education teams of two institutions are ordered from high to low on a work indicator. The teams are defined by certain courses per location.



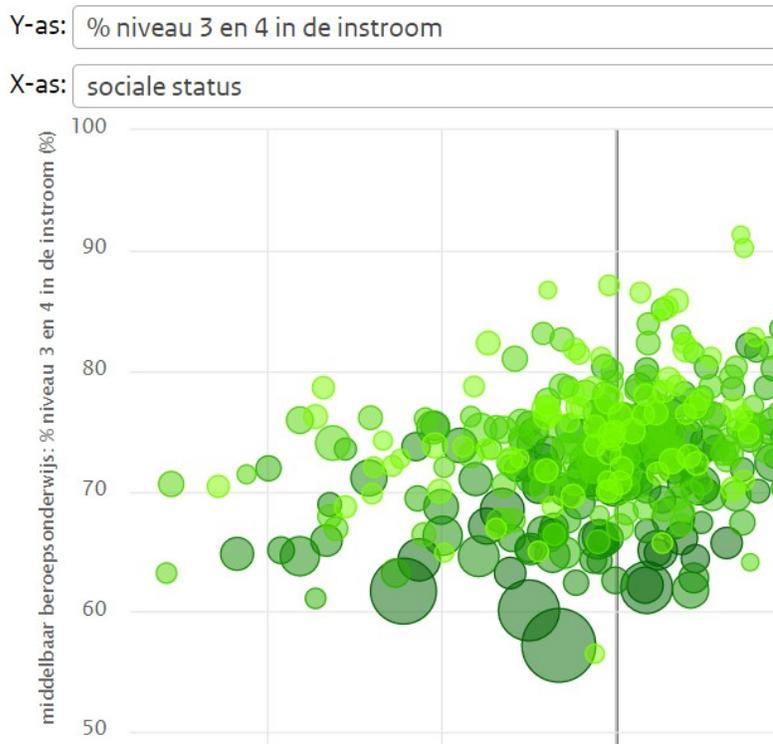
56. One can picture the scatter of the residence of the students of an institution in a [map](#). Hoornbeeck has a wide spread over regions from southwest to the northeast (light to dark red regions). In the [bubble chart](#) the part of Zadkine in towns is indicated on the x-axis, and the part of the students' residence in the towns is indicated on the y-axis.



57. Flows of students can be shown in a [Sankey](#) diagram. The flows between locations of secondary education and VET institutions in one region (North-Holland-north) are shown, including switch of education or drop out in the first year.

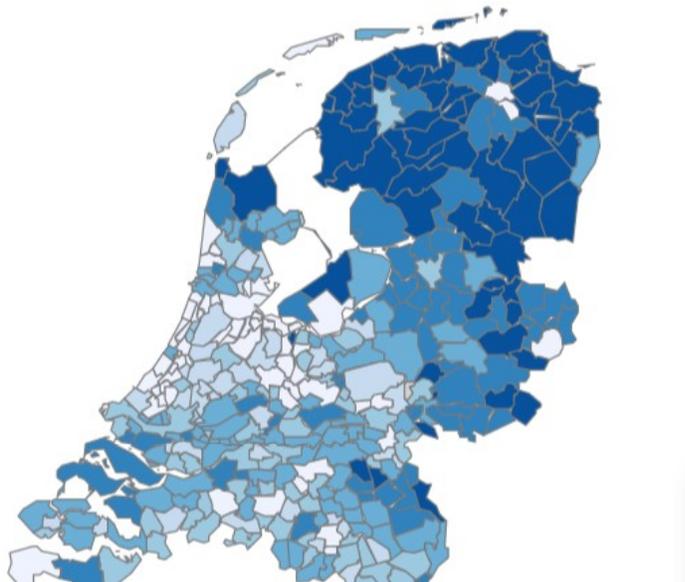


58. In this [bubble chart](#) all 380 municipalities are shown with their inhabitants (size of the circle), urbanity (colour of the circle) social economic status (on the x-axis) and portion of vet students entering high levels of education. This kind of charts gives the opportunity to explore correlations.



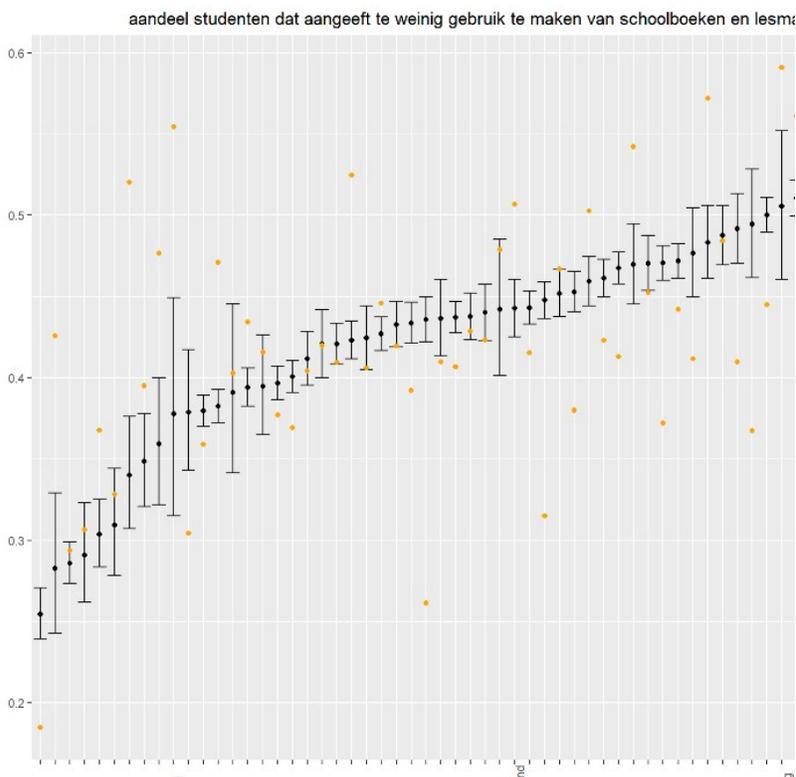
59. A last example is the scatter of an indicator on a map. In this case the proportion of VET students among 15-24 years old in municipalities, based of residence of the student.

Indicator:



The use of data for quality improvement

60. The first aim of the use of data is to know your number. How many drop outs you have? What is the sick leave rate of the staff, and the qualification rendement?
61. To evaluate that number you can compare it in time. Is it rising or falling down?
62. Another way of evaluating is to compare the number inside an institution between locations, courses or education teams.
63. A third way of evaluating is to compare numbers between institutions, or parts, locations, courses or teams, of it.
64. But in many cases a teacher or team or location is not responsible for a 'bad' number, but is that number a result from a high-risk student population. It is also possible that a number seems fine, but in reality it is not so good because of an auspicious population.
65. Therefore it is better to compare yourself with a comparable unit (location, courses or teams) with a comparable student population.
66. Another possibility is to determine which factors are correlated with an indicator and then calculate a corrected number that takes into account the differences regarding those factors. In the following figure one sees the percentage of students per institution that says books and other material are used to little in class. The yellow dots are the real percentages, the black dots, with confidence intervals, the corrected values. In the correction differences in education domain, level and way of learning (in school/on the job) are taken into account.



67. But after the analytic work starts the real work. Which numbers and differences are meaningful and require maybe action? And what is the matter, how do you interpret what is going on? A bad result of a recently started team is something else than that of an experienced team.
68. Then, when you have found you have a real problem, a strategy for improvement is needed and has to be devised.

Future developments and possibilities

69. The level of institutions is much used to present information. But most regional and agricultural institutions have many locations. 62 institutions count approximately 500 locations. The impression is that many locations are specialized in certain fields of education. Information on this level can reveal differences inside institutions and helps to compare practices within the same kind of education.



70. Under the location-level in many institutions you will find the team-level. Presenting data on this level is powerful because the staff becomes aware of their own situation and results.
71. In comparing institutions today the special circumstances of an institution are not taken into account, for instance the differences between the populations of Hoornbeeck and Zadkine. Possibilities are added value indicators, or presenting also an expected value for an institution or the characteristics of the population of an institution as described under number 59 above.
72. Today the indicators relate mostly to a year, and are available some months afterwards. Instantaneous feedback on the team level can be a more direct quality impulse. For instance in the app [Did you learn enough today](#) students are asked three questions at the end of each day. Of course evaluations between teachers/teams and students can also be done without ICT-tools. For instance, conversations about the results of the student satisfaction research, or after an education program.

Heb Je Genoeg Geleerd Vandaag?

Dé participatiecyclus voor studenten
Dé verbetercyclus voor onderwijsteams



After the PLA

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73. At the end of the PLA, a short report (3-4 pages) will be produced and circulated to participants. This will highlight the key issues and conclusions developed during the PLA.

References and recommended readings

Council Recommendation of 20 November 2017 on tracking graduates

<https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32017H1209%2801%29>

EQAVET Indicators' Toolkit

<https://www.eqavet.eu/Egavet2017/media/Documents/mys-toolkit.pdf>

Recommendation of the European Parliament and of the Council of 18 June 2009 on the establishment of a European Quality Assurance Reference Framework for Vocational Education and Training

<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009H0708%2801%29>

Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)

<https://eur-lex.europa.eu/eli/reg/2016/679/oj>