

# Continuous learning from secondary education (SE) to higher education (HE)

More than ten years of regional SE-HE networks:  
experiences, results and vision for the future





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# Foreword

Dear reader,

Inspiring and competent teachers in the classroom. Teachers who, filled with enthusiasm, work every day on up-to-date education and on a good alignment from secondary (SE) to higher education (HE). In close cooperation with other teachers, the business community and academia, these teachers ensure that education is provided in which the pupil is central, with challenging lessons and a successful study career. That is what the regional SE-HE networks are working to achieve.

Universities, universities of applied sciences, Senior General Secondary Education (HAVO) / Pre-university Education (VWO) schools in secondary education, the business community and social institutions work together in ten regional SE-HE networks. From a focus on science and technology, they offer a broad palette of activities for pupils, teachers, technical education assistants and school heads. The activities in all the networks have three characteristics: 1) innovation in the profession, 2) a better alignment and 3) professionalisation. The networks were set up for science education, but are now also inspiring arts, humanities and social studies subjects: all the regions are developing initiatives in this area.

- ▶ Beatrice Boots, director of PBT:  
“There is a threat of a shortfall in both the quality and quantity of teachers in the coming years, particularly in science subjects. Attracting, training and providing permanent education to teachers is therefore extremely important. This aspect also forms the sixth objective of the Technology Pact, which has been signed by sixty stakeholders. The SE-HE networks are helping to meet this challenge. They are demonstrating that they are tested and solid cooperation forms.”

- ▶ Pieter Boerman, former chairman of the Support Centres Council (Steunpuntenraad, a national umbrella organisation for SE-HE networks) / one of the drivers of SE-HE network East, based out of the University of Twente:

“At the moment, the transitions in education are a weak link. This is confirmed by the Inspectorate and by the OECD, the Organisation for Economic Cooperation and Development, which published a report in May 2016 about the state of Dutch education.<sup>1</sup> The SE-HE networks are working to break down the Chinese walls between the various sectors. They do this by getting SE teachers working together with HE researchers and subject didacticians on education development and implementation, so that the curricula align better with one another. Ultimately, it is about achieving an education system that takes account of the education career of pupils. This is a challenge we are facing together.”

You are holding the overview publication of the ten regional SE-HE networks. It contains a sketch of their development from the past to the present, facts and figures, recommendations for the future, and a lively portrait of all ten networks.

In this context, a large part of this publication is reserved for dozens of interviews with the people involved in the networks: teachers, school heads, pupils, businesses and coordinators. Because it is the people who make the network.

Be inspired!

On behalf of the ten regional SE-HE networks,

Agnes Kemperman,  
Chairman of Support Centre Council / head  
of the SE-HE network Amsterdam, based out  
of the Vrije Universiteit Amsterdam.



# Inhoudsopgave

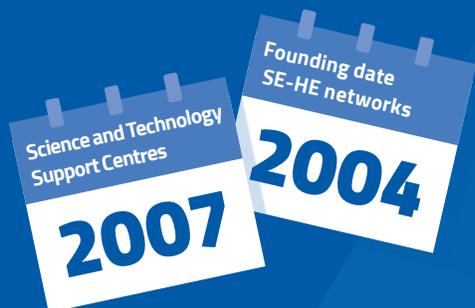
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# Networks on the map



## About the SE-HE networks<sup>1</sup>



**Affiliated HE-institutions**  
(including teacher training schools)

**34**

- 12 Universities
- 22 Universities of applied sciences

**Affiliated SE-schools**

**361**

**Affiliated businesses**

**62**

Among which:

- ASML
- Cosine
- Demcon
- IBM
- ISIS
- Shell
- Siemens
- Tata Steel

**97**

**Other partners**

Among which:

- Jet-Net
- PBT
- Stichting Technasium
- Stichting Techniek Promotie
- Techniecpact
- VHTO
- Wetenschapsknooppunten

### Targets

- Continuous learning from SE to HE (and the business world)
- Subjects and curriculum innovations in SE
- Professional development of SE teachers and school heads

### Funding by HE<sup>2</sup>



**€ 2.730.000<sup>3</sup>** in cash (at least)



**€ 3.319.950<sup>3</sup>** in child<sup>4</sup> (at least)

### Funding by SE<sup>2</sup>



**€ 914.000<sup>5</sup>** in cash (at least)



**€ 1.830.000<sup>6</sup>** in child<sup>4</sup> (at least)

### Funding by the Ministry of Education, Culture and Science<sup>7</sup>



**€ 2.122.300**



**93**

**Teachers activities certified by Registerleraar**



**35.462**

**Participating students**



**3.832**

**Participating teachers**

<sup>1</sup> The data in this infographic apply to the school year 2015-2016. <sup>2</sup> Nor the in-cash contributions nor the in-child contributions are structural, but they are to a greater or lesser degree made available each year. They depend, among others, on the amounts of money invested by other financial partners. <sup>3</sup> This amount does not include the contributions made by Leiden and three out of five HE-institutions in Brabant. <sup>4</sup> In-kind funding implies funding without money being involved (staff, rooms, materials, etc.). The in-child amounts are estimated amounts and should be considered as guidelines. <sup>5</sup> This amount does not include the contributions of schools to Leiden and four out of five HE-institutions in Brabant. <sup>6</sup> This amount does not include the contributions of schools to Leiden, Brabant en Wageningen. <sup>7</sup> Funding for SE-HE-networks, BedrijfsDOTs and Science and Technology Professions in the Classroom (Bètaberoepen in de Les) in 2015-2016. These amounts are no structural amounts.

# About the SE-HE networks

## Who are we? Why do we do what we do?

### Mission: Why do we exist?

Success in HE starts in SE. Schools and higher education have a joint responsibility for high-quality education in the education chain. Secondary and higher education are enthusiastic about working together well on the content of the education. This cooperation can be organised effectively at the regional level. The SE-HE networks provide these regional connections. They establish connections between SE, HE and the professional field, regionally and nationally, and between teachers and school heads.

All the partners learn from one another and help one another move forward. This leads to better education and helps advance the talent development of pupils and teachers. By doing so, the SE-HE networks contribute to a future in which learning is a permanent fact for each individual.

As school head Marga Nievelstein (Bonhoeffercollege Castricum) from the Amsterdam SE-HE network expresses it: *“The most important aspect of the network is that community formation takes place; teachers are incorporated into knowledge workplaces of subject teachers, and share their professional knowledge and experience there. That the business community is also a part of this makes these meetings even more valuable.”*

### Three pillars

The SE-HE networks develop activities with three characteristics:

1. Continuous learning between SE and HE (and the business world) and orientation towards studies and career. Examples include masterclasses, science labs, webclasses or junior/pre-university lectures for pupils. These programs pay extensive attention, through the subject content, to orientation towards studies and career.
2. Subjects and curriculum innovations in SE. Exchanges and teaching material development by teachers

take place in teacher development teams and professional learning communities. SE teachers, HE subject didacticians, teacher training schools and the business community come together in these.

3. Professional development of SE teachers, HE teachers, technical education assistants and school heads. Examples include subject-related and didactic refresher courses for SE teachers relating to subject innovations, or meetings for school heads and team leaders on overarching themes such as interdisciplinary education, 21st-century skills and the role of ICT.

*‘Strong together, but bespoke programs are the norm’*

### You go further together

Regionally, the networks work for and with the following target groups:

- SE: teachers, science and other coordinators, school heads, technical education assistants and pupils;
- HE: subject experts, subject didacticians, teacher trainers, researchers and students;
- Business community and other partners: from SME businesses to ASML, and from Science Centre to Centre of Expertise.

The networks are also partners with the following supra-regional parties:

- Ministry of Education, Culture and Science and Ministry of Economic Affairs;
- Provinces;
- SE Board, Association of Universities of Applied Sciences, VSNU;
- Netherlands Institute for Curriculum Development (SLO), Science and Technology Platform (PBT).

## Organisation

Universities, universities of applied sciences and secondary schools are working to achieve an equal partnership in the SE-HE networks. All the parties are represented in steering groups, for example. The networks also make an effort to ensure that work by the schools and SE teachers is demand-driven to the maximum extent.

Nationally, the ten networks form part of an overarching consultation body. This Support Centres Council is therefore a network of networks. The council meets at least four times a year; each network sends a delegate. The chairmanship rotates.<sup>2</sup> *In order to maintain short lines of communication with the national body for curriculum development, the SLO runs the secretariat for the Support Centres Council.*

## Funding

Funding for the networks involves ‘tripartite’ financing. Two of the three investing partners are higher education and the secondary schools. In the case of the secondary schools, there is usually a contractually agreed fixed membership contribution. The level of this contribution varies per network. The third investing partner is the government.<sup>3</sup> At the time of writing, assessments are being made as to how development can take place from a more sustainable (organisationally and financially) perspective from 2018, when the resources from the student loan system become available.

## History

In 2004, the Balkenende II cabinet launched the *Deltaplan Bèta Techniek* (Science and Technology Delta Plan) to give a serious boost to the intake of science and technology students. Programs were developed in this context in all education sectors. In connection with this, a growing number of universities and universities of applied sciences set up SE-HE science networks, together with secondary schools in their regions. Special attention was given to high-quality education, career prospects and a good throughput. PBT<sup>4</sup> strengthened and supported these networks with programs such as *Universum* (2004-2010), *Sprint* (2004-2010) and *Sprint-UP* (2007-2012).

Together with the introduction of the new subject of *Nature, Life and Technology* (NLT), bottom-up regional support centres (also referred to as Science Support Centres) were established in 2007. The other science subjects quickly followed with their own subject support centres, driven by the subject innovation organisations and supported through the *Physics and Chemistry Sector Plan*. These networks of SE teachers, HE subject didacticians, teacher training courses and businesses supervised the professional development of teachers, the introduction of subject innovations and the alignment/exchange between SE and HE teachers.

As a result of all the initiatives, SE and HE worked together increasingly intensively. This development was accelerated in 2013 as a result of two subsidy rounds which PBT coordinated for the Ministry of Education, Culture and Science. The first addressed the (further) development of the *Science Support Centres* (2013–2015), and the second the development of the *SE-HE networks for excellence and/or science and technology* (2013–2015). The focus of the Science Support Centres was on the teacher. The focus of the SE-HE networks for excellence and/or science and technology is on the pupil. In view of the fact that both networks successfully complement one another, they have been working since 2012 on increasing interwovenness under the collective name of *regional SE-HE networks* – the networks which form the subject of this publication.

And given the importance of this regional chain cooperation, the Ministry of Education, Culture and Science also invested in the regional SE-HE networks in 2016 and 2017. The objective is to further strengthen the chain cooperations established, and make them sustainable.

## Learning from one another: Knowledge exchange and quality assurance

The networks consider it important to be learning and innovative. Knowledge exchange and quality assurance are therefore high priorities. The networks apply these in various ways, both informally and formally. Independent parties also carry out research into the networks.

### Informal

Since 2013, the ten SE-HE networks together with the Support Centres Council have had a national cooperation body for coordination and the sharing of knowledge. Partly as a result of this, the lines of communication between all the networks are very short. An informal exchange of knowledge also takes place during national and regional conferences and meetings. Examples include the national Support Centres Day and a joint thematic conference on alignment between Senior General Secondary Education and the Universities of Applied Sciences. Finally, an important source of exchange is the digital and nondigital contact between the networks. They exchange a great deal of information online. Network coordinators also visit one another to learn and exchange.

### Formal

Alongside the informal learning circuit, the networks have a more formal basis of accountability and knowledge sharing. All the networks have internal cycles of accountability and control, for example. In addition, the stimulation programs of PBT include visits by expert commissions and extensive final reports. The latter has the form of an activities report and a financial audit by an independent auditor. Two concrete examples are: 1) the review board of 2014, and 2) the peer reviews in 2016 (developed at the initiative of the networks themselves). Further details on these will be provided below.

#### Review board (2014)

In 2014, all the networks were visited by a review board under the chairmanship of Prof. Dr. Harrie Eijkelhof.<sup>5</sup> The general conclusion of the board was that solid communities had come into being. Networks of teachers from the various educational

institutions demonstrated that they were bearers of educational innovations. According to the board, the SE-HE networks act as catalysts for secondary schools as learning organisations. They build an important bridge between national policy and regional implementation. The board asked that attention be paid to the specific focus on HAVO and universities of applied sciences, and the business community affiliated to the networks. Both showed room for improvement. In addition, the board determined that the basic infrastructure (the coordinating core) should be guaranteed by the government.

## *‘Sharing is learning’*

### Peerreviews (2016)

In the summer of 2016, the SE-HE networks developed and implemented a peer review system.<sup>6</sup> They did this under the supervision of PBT and SLO. This method of intensive and structured learning from one another was such a success that the networks decided to implement the peer reviews every two years from then on. The process consists of discussions in which three or four networks participate each time. As preparation, the networks send a written preparation with learning questions own good practices. As a preparatory part of the reviews, a survey was also sent to teachers and school heads in 2016. This showed that the most valued aspects of the networks are:

1. The cooperation/networks with colleagues at other schools;
2. The good range of activities offered for teachers and pupils;
3. The exchange of materials and sharing knowledge.

### Research into the networks

Independent studies/evaluations are also held alongside informal and formal quality assurance. Recent examples include 1) the evaluation of the Choose Technology (CT) program in 2016 and 2) a broad study into networks in SE. The key results of the two studies are shown below.



### Evaluation of Choose Technology

In 2016, the Ministry of Education, Culture and Science commissioned the independent evaluation of the broad Choose Technology program, implemented by PBT.<sup>7</sup> The program focuses on the implementation of Science and Technology in Primary Education and SE in 2012-2016. The SE-HE networks form part of this. Several findings:

- Schools which participate in an SE-HE network are positive about this. The networks succeed well in responding to individual wishes of the participating schools.
- The increased numbers of HAVO/VWO pupils opting for a Nature and Technology profile and the throughput to higher technical education shows the effectiveness of the networks.<sup>8</sup> The SE-HE networks appear to be playing a significant role in these trends.<sup>9</sup>
- There is a need for an integrated network for HAVO/VWO higher education, to include the SE-HE networks, Jet-Net, talent networks and LOB (career orientation and mentoring) networks. The integration of national and regional networks initiated through CT is recognised, but from the point of view of the parties involved has not yet been completed.
- There is a need for more structural involvement by businesses.
- Finally, it is often extremely difficult to ensure sustainable financing by the institutions themselves for tasks such as overarching project leadership, which fall between sectors and institutions. They do not have any earmarked budgets for this. According to the researchers: “In our opinion, support for the project leader roles in regional networks in the primary education-SE, VMBO (Pre-Vocational Secondary Education)-MBO (Senior Secondary Vocational Education) and HAVO/VWO-HE lines is a structural government responsibility. This valuation also showed that there is a need in the regions and schools for [labelled] resources for professionalisation and innovation at schools.”<sup>10</sup>

### Research into networks in SE

In 2016, research firm B&A drew up a list of all the networks of which secondary schools are members.<sup>11</sup> This also included qualitative characteristics such as the nature and intensity of the cooperation, theme, scale/reach, density<sup>12</sup>, centrality<sup>13</sup>, participating partners, objectives, origin, financing, governance and any overlap with other networks. Insight into these characteristics helps in working towards more sustainable, regional platforms; platforms which, as appropriate, can tackle education challenges on the basis of a broader agenda. Several findings:

- Core data of the SE field researched: 1432 school locations, 51 unique network types, 318 networks<sup>14</sup>, average of 30 networks per labour market region, average of 20 schools per network and an average of 5 networks in which a single school participates. In short: there are a huge number of networks in SE!
- In order to be able to issue advice on the question of which networks have the greatest potential to grow to become broader networks with good regional cover, the thematic focus of the networks forms the first guiding principle. The study also considered the following aspects: 1) the extent to which a network has a broad reach in terms of secondary schools, and 2) the intensity of the cooperation.
- The networks with a high reach and a high intensity of cooperation will probably have the greatest potential to grow to become effective, thematically broader networks, particularly if they offer national cover.
- The study showed that, of the 51 network types, the regional SE-HE networks in the case regions were some of the most promising networks. Some regionally specific networks also played an extremely central role (for example, Tech Your Future in Twente). The researchers advised looking at these networks in particular for opportunities for further regional connection and reinforcement.

### Looking to the Future

The SE-HE networks are working on the future with a great deal of energy. This is shown – among other things – from all the interviews which formed the basis for these publications, the literature study and the think tank of the SE-HE networks, in which thought was given regarding 2017 and beyond.<sup>15</sup> This resulted in a number of guidelines, challenges, opportunities and recommendations.

#### Twelve-point list: Shared vision 2017 and beyond

In order to be able to continue realising the shared vision in the future, the SE-HE networks jointly drew up a list of anchor points in 2016. This twelve-point list says a lot about the DNA (and future DNA) of the networks and about their ambitions. In 2017 and beyond, the networks want:

1. to offer regional platforms for cooperation between SE, HE and other relevant partners, such as the business community.
2. to develop activities within the platform with the three characteristics: continuous learning during SE-HE (and the business community), subject and curriculum innovations, and professional development.
3. to have learning starting in and being embedded in the social assignment (the needs of society and the labour market).
4. to make meaningful and successful learning by the pupils to be the central focus of all activities.<sup>16</sup>
5. to get teachers and schools to develop activities and teaching material together, in dialogue with higher education and other partners.
6. to achieve critical mass in order to realise broad impact.
7. to be clearly recognisable both regionally and nationally.
8. to offer continuity and stability through long-term agreements (on organisation and finances) with all partners.
9. to provide bespoke solutions: each region, school and teacher has different needs.
10. to continue improving the national sharing of knowledge and coordination between the ten networks.

11. to be learning infrastructures, including regional and national quality assurance.
12. to offer room for broadening. In other words: to also be open to involvement with platforms for arts, humanities and social sciences, cooperation with primary education and cooperation with VMBO and MBO.<sup>17</sup> The other sectors also bear their own responsibility in this.

### Focus on opportunities and challenges

Supplementary to the twelve-point list above, various current themes and opportunities require further explanation. These are given below.

#### Implementation of national policy objectives

The infrastructure of the regional SE-HE networks was used, in the past, for updating the individual science and technology subjects, for the introduction of the Nature, Life and Technology subject, implementation of the natural sciences and technology knowledge basis for the first two years of secondary school, the top talent policy for motivated SE pupils, and the introduction of new science and technology examination programs. In this context, the networks work closely at all times with the SLO and the subject associations, among others. The networks want to continue in the future to establish alignment with policy objectives (including 2032, see below) in the context of subject updates and teacher development.

#### Onderwijs2032 (Education 2032): Curriculum revisions

Onderwijs2032 is closely linked to bottom-up curriculum revisions. In effect, the current SE-HE networks are also the result of a curriculum revision.<sup>18</sup> Although there were many places where cooperation was already taking place between SE and HE, this cooperation went into rapid acceleration and got “professionalised” through the SE-HE networks.

How Onderwijs2032 will exactly look going forward is not yet clear at the time of writing. In order to get the process properly off the ground, regional partners between national policy and local schools/boards will be essential, in any event. The SE-HE networks are in discussions with Onderwijs2032 to see how

they can help. Thought is being given to the following aspects:

1. The SE-HE networks can include 2032 related activities in professionalisation programs. For example, workshops for school heads about the ideas behind 2032, and their consequences at school level. For teachers, these can be activities about what 2032 involves and how this can be translated into teaching practice.
2. The networks can also set up very concrete, substantive workshops related to 2032. For example, about interdisciplinary and supra-subject education, research-based learning or the role of ICT in education.

Agnes Kemperman, chairman of Support Centres Council/ head of SE-HE network Amsterdam (Its Academy/ Bètapartners): *“Working on the curriculum means working on the ownership of the teacher. That is specifically our working method within the SE-HE networks. In Amsterdam, we continually ask what teachers need and encourage the attitude of needing something. This is the method which 2032 needs, I think. Top-down is not going to work: empowering teachers as the key factor in education will.”*

Berenice Michels, head of SE-HE network Utrecht (U-Talent): *“One very important aspect for the success of 2032 is the curricular awareness of teachers. Making sure that teachers (and school heads) see that they themselves determine a major part of the curriculum, what the parameters are and how much freedom there is within them. As far as I’m concerned, there has to be two-way traffic: it is not the intention to present 2032 to schools as a fait accompli, but to give schools the opportunity to have concrete consultations about this curriculum development.”*

#### Meta-networks

As the infrastructure of the regional SE-HE networks is very suitable for connecting with other programs and themes, the networks are increasingly becoming regional meta-networks. In other words: ecosystems in the region in which relevant partners repeatedly encounter one another, and where they can achieve things rapidly on the basis of existing relationships.<sup>19</sup>

That this approach of cooperating networks and programs is effective in regional policy was shown in 2016 by the doctoral research of Esther Klaster, among other things.<sup>20</sup> One of the conclusions was that projects start more quickly and better within existing networks or meta-networks. Furthermore, this working method is in line with the broad shared wish to work on the basis of an integral approach, and to combat policy fragmentation.<sup>21</sup> That the regional SE-HE networks are highly suitable for this as central and intensive networks was also shown from independent research into SE networks in 2016 by research firm B&A.<sup>22</sup>

## ‘Full of confidence and ambition’

### Gradual expansion to other fields

The cooperation and cooperative models which have been developed in the areas of science and technology are gradually being expanded to other fields, an expansion with which experience is now being gained in all networks. Other opportunities lie in the cooperation with/expansion into primary education (mainly via the Science Hubs) and in cooperation with VMBO and MBO. The other sectors also bear their own responsibility in this.

### Good preconditions

An important factor in the success of the networks is and will remain the presence of the right preconditions. According to the official advisory report “Choosing sustainable growth” from 2016, there are “important reference points for improving the quality of teachers and the attraction of the teaching profession [...] in improving the supervision of junior teachers and creating time and space for various career paths for teachers”. The government has an important role in this in terms of creating the right conditions.<sup>23</sup> The creation of preconditions could also play a role in the follow-up on the recent final assessment of the

performance agreements for the HE in 2016.<sup>24</sup> For example, future quality agreements could address the maintenance of networks for continuous learning between SE and HE (and the business community).

### Financial embedding

The financial embedding is currently one of the most important challenges for the networks. A tripartite investment of resources from the Ministry of Education, Culture and Science and the regional partners in SE and HE has enabled a healthy infrastructure to be built in recent years. A (structural) solution is still being sought for improving sustainability, in which respect roles such as the overarching project leadership, in particular, will not only be a task of the institutions themselves.

In the evaluation of Choosing Technology (Kiezen voor Technologie) in 2016, the researchers, the Kohnstamm Instituut and ResearchNed, advised the Ministry of Education, Culture and Science to make the project leader roles in these networks a structural government responsibility.<sup>25</sup> Resources for chain cooperation from 2018 on were committed in the *Strategische Agenda Hoger Onderwijs en Onderzoek 2015-2025* (Higher Education and Research Strategic Agenda 2015-2025). The SE-HE networks are keen to consult regarding which role – including financially – will be possible from 2018 on. 2017 is being seen as a transitional year, during which the networks will continue their activities with full energy and confidence in the future. ■

## The SE-HE networks in a nutshell

### Three characteristics

Since 2004, the SE-HE<sup>26</sup> networks have been solid platforms for regional cooperation between secondary and higher education (SE and HE) and other relevant partners. They develop activities with three characteristics: 1) aligned, continuous learning between SE and HE (and the business community), 2) subject and curriculum innovations in SE, and 3) the professional development of SE teachers and school heads. The teachers and schools take the prime position in the dialogue with HE and other partners, in the development of themselves and the education. In this, they are embedded in the social assignment: the needs of society and the labour market. Bespoke solutions are the key in this. Each region, school and teacher has different needs, after all.

### Quantities

There are now ten regional SE-HE networks. Their central focus is learning, including regional and national quality assurance. Together, the networks provide almost full national coverage, and they enjoy broad support. 22 universities of applied sciences, 12 universities and 361 secondary schools

(60% of the HAVO/VWO institutions) are paying partners. The government also contributes to the funding. Each year, the activities reach more than 27,000 pupils and 3800 teachers.

### Cooperation

The ten networks bring many parties together: school heads, SE teachers, technical education assistants, HE subject didacticians, pupils, students, teacher trainers and researchers. They work together with countless businesses, government agencies and social organisations.

### Broadening to include arts, humanities and social sciences

The networks, set up for science education, are now also inspiring arts, humanities and social studies subjects: general academic orientation, languages and business subjects. Concrete initiatives have already been taken in various regions.<sup>27</sup>

### Effective

That the chain corporations are effective has been shown, among other things, by the increase in the number of pupils opting for a Nature and Technology profile in HAVO and VWO, and the throughput to higher technical education.<sup>28</sup> The SE-HE networks have been shown to be playing a significant role in this as a relatively cheap “tool”.<sup>29</sup> ■

- 1 OECD (2016), Netherlands 2016: Foundations for the Future, Reviews of National Policies for Education.
- 2 As of 2015/16, Agnes Kemperman is the chairman (SE-HE network Amsterdam); her predecessor was Pieter Boerman (SE-HE network East).
- 3 This government contribution has, since 2004, been related to the programs Universum, Sprint, Sprint-UP, Meer betere bèta's, Kiezen voor technologie (Choose Technology) and STEM Teacher Academy.
- 4 Before 2016, this took place under the name "Science and Technology Platform".
- 5 Report of review board for SE-HE networks for excellence and/or science and technology and Science Support Centres (The Hague 2014).
- 6 Report peer review 2016 - regional SE-HE networks (The Hague 2016).
- 7 Kenniscentrum Beroepsonderwijs Arbeidsmarkt, Kohnstamm Instituut and ResearchNed (commissioned by the Ministry of Education, Culture and Science), *Evaluatie implementatie Wetenschap en Techniek PO en VO 2012-2015* (Evaluation of Implementation Science and Technology PE and SE 2012-2015) (April 2016).
- 8 See also: PBT in cooperation with Techiekpact, *Monitor Techniekpact 2016 - bètatechnische facts and figures* (Technology Pact Monitor 2016 - science and technology facts and figures) (2016).
- 9 See also: Raab, J. et al - Nijmegen School of Management, *Going the distance - the effects of university - secondary school Collaboration on pupil migration* (2016).
- 10 Kenniscentrum Beroepsonderwijs Arbeidsmarkt, Kohnstamm Instituut and ResearchNed (commissioned by the Ministry of Education, Culture and Science), *Evaluatie implementatie Wetenschap en Techniek PO en VO 2012-2015* (Evaluation of Implementation Science and Technology PE and SE 2012-2015) (April 2016), p. 80.
- 11 This public study was commissioned by the Talent Networks SE program, and carried out by the independent research firm B&A. See: B&A - L. Huijskes and E. Klaster, *Regionale netwerken in het voortgezet onderwijs* (Regional networks in secondary education) (The Hague 2016).
- 12 The number of relationships within a network/meta-network compared to the total number of possible relationships.
- 13 How central is the role of certain schools and networks in regions.
- 14 This is because many unique network types consist of multiple regional networks. For example, in the case of the SE-HE networks, there is a single unique network type and ten regional networks.
- 15 These met in 2016, forming a representative delegation of the network heads, the VSNU alignment platform, HTNO/VH, PBT and SLO.
- 16 Successful refers not only to gaining a qualification. It certainly also refers to the successful development of the pupil's talents and being able to be meaningful to others and to society. This is different for each pupil, based on a personal and unique situation.
- 17 Via the Science Hubs; various networks work together with these.
- 18 The science and technology support centres which form part of these were created, from 2007, for the implementation of the new exam programs Nature, Life and Technology (NLT), biology, physics, chemistry and mathematics.
- 19 Cooperation partners include Technasia, STEM Teacher Academy, Centres of Expertise, Science Hubs, mobile DNA-labs, Jet-Net, Regional SE Talent Networks and agendas such as the Technology Pact and the HTNO-Roadmap.
- 20 E. Klaster, *Toward More Effective Regional Networks - A Multi-Method Study on Top-Down Stimulated Networks Within the Dutch Public-Policy Areas of Education and Employment* (2016).
- 21 Kenniscentrum Beroepsonderwijs Arbeidsmarkt, Kohnstamm Instituut and ResearchNed (commissioned by the Ministry of Education, Culture and Science), *Evaluatie implementatie Wetenschap en Techniek PO en VO 2012-2015* (Evaluation of Implementation Science and Technology PE and SE 2012-2015) (April 2016).
- 22 B&A - L. Huijskes and E. Klaster, *Regionale netwerken in het voortgezet onderwijs* (Regional networks in secondary education) (The Hague 2016).
- 23 *Kiezen voor duurzame groei - Rapport Studiegroep Duurzame Groei* (Choosing sustainable growth - Report by Sustainable Growth Study Group) (July 2016). The independent official Sustainable Growth Study Group, set up in the context of the Nijboer/Harbers motion, has analysed potential policy measures for the next cabinet period 2016-2020 which would contribute to sustainable increases to prosperity.
- 24 Letter accompanying final assessment advice, reference: RC.16.00056/WvN (24 October 2016).
- 25 Kenniscentrum Beroepsonderwijs Arbeidsmarkt, Kohnstamm Instituut and ResearchNed (commissioned by the Ministry of Education, Culture and Science), *Evaluatie implementatie Wetenschap en Techniek PO en VO 2012-2015* (Evaluation of Implementation Science and Technology PE and SE 2012-2015) (April 2016).
- 26 The Science and Technology Support Centres and the SE-HE networks for science and technology and/or excellence interwoven.
- 27 In addition to the regional SE-HE networks, various other, smaller networks are active in the areas of alignment and chain cooperation. Cooperation takes place with these networks where possible.
- 28 The number of HAVO and VWO pupils that chose the profiles Nature and Health and/or Nature and Technology (N Profiles) increased significantly between 2004/05 and 2015/16. The percentage in HAVO in 2015/16 was 43%, and in VWO, 62%. Also, since 2009 the throughput of HAVO/VWO pupils with an N profile to a science and technology follow-up course in HE increased from 55% to more than 60%. See: PBT in cooperation with Techiekpact, *Monitor Techniekpact 2016 - bètatechnische facts and figures* (Technology Pact Monitor 2016 - science and technology facts and figures) (2016).
- 29 Raab, J. et al - Nijmegen School of Management, *Going the distance - the effects of university - secondary school Collaboration on pupil migration* (2016).





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