

Four in balance:
a reliable support tool
when deciding on the
use of ICT resources



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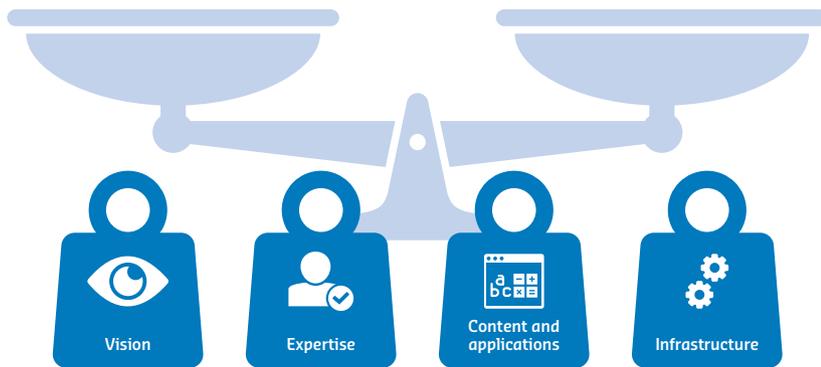
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Introduction

The *Four in balance* model is designed to help you describe your institution's needs when it comes to effectively using ICT resources in education. If you want to make technology work for you, you need to carefully consider any ICT-related decisions you make. The key requirements for ICT in education and the fundamentals of *Four in balance* are: vision, expertise, contents and applications, and infrastructure. This article explains how you can apply *Four in balance* in the classroom.

The *Four in balance* model has been successfully implemented if all basic requirements for ICT in education are in balance.



Visualisation of the Four in balance model.



What is *Four in balance*?



Four in balance is a model describing the key requirements for effectively using ICT in education. The model consists of four key requirements, also known as building blocks: vision, expertise, content and applications, and infrastructure. If these building blocks are in sync with each other (i.e. in balance), your school will be able to get the most out of its ICT resources. For each building block, there are various questions you can answer.

What is the purpose of the *Four in balance* model?

Four in balance enables your school or school board to analyze, using a basic approach, if you have completed all the conceptual steps to make the most effective decisions for ICT in education and to set the appropriate requirements. This means that investments pay off as expected and employees and pupils alike are satisfied users.

Many schools across the Netherlands have adopted the *Four in balance* model and use it as a framework for their ICT policies. If you are compelled to choose between training and purchasing new learning materials, or between Wi-Fi and broadband, you can use this model to develop a philosophy for the use of ICT in education and to use ICT resources to improve education in the long term. The *Four in balance* model also helps you improve your employees' ICT competence, as well as showing you what investments are needed in terms of learning materials, software and infrastructure.

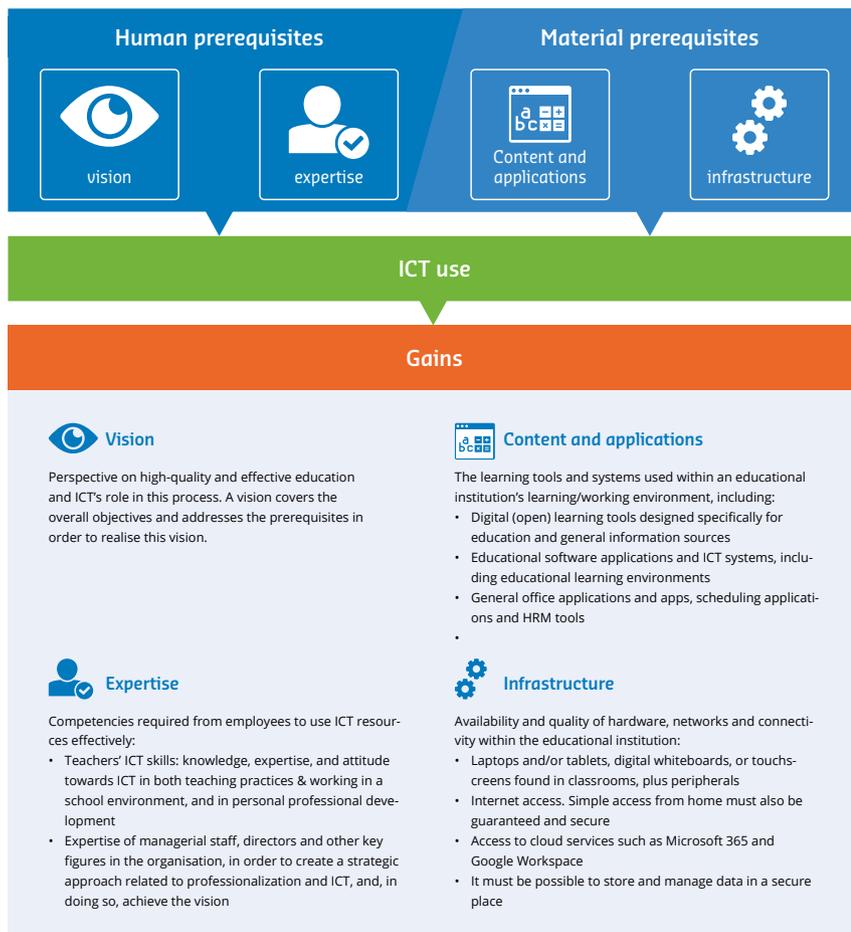
How will you benefit from using the *Four in balance* model?

Using *Four in balance* will help you turn all your ICT-related choices into careful and balanced decisions, so as to avoid purchasing or using technology without knowing for what reason or purpose. If you want to make technology work for you, you need to carefully consider any ICT-related decisions you make. While using this model is no absolute guarantee for success, it is fair to say that failing to give serious thought to any of these four aspects is sure to result in divestment and disappointment.

How do you use *Four in balance*?

Below, we explain the four *Four in balance* building blocks and how to incorporate them into your teaching.





1. Philosophy on the use of ICT education

You are likely to base your philosophy on ICT in education on your overall ideas about teaching. For example, the choice between teacher-centred learning and student-centred learning is a key factor in making ICT-related decisions.

A classroom situation in which the teacher is the director, who decides what their pupils learn, and how and when they learn, can be easily supported by ICT, as learning in this approach is based on a fixed pattern: instruction, practice, repeat, testing. Many different digital learning tools and resources have been programmed based on this approach.

In student-centred learning, teachers are more likely to give their pupils larger assignments, which require high-quality performance, scheduling and mind-map tools for students. Student-centred schools also require a platform on which students can build their portfolios.

When should you define (or rethink) your ICT-in-education philosophy?

The right time to start defining or rethinking the *Four in balance* model is when you have the time available to properly reflect on your ICT policy. This means discussing this philosophy in depth with all the parties concerned before making any decisions. This is the way to go when defining a new multi-annual strategy plan, as it means you can review – and, if necessary, update – your ICT-in-education philosophy annually.



Diagram and explanation of the *Four in balance*: four basic requirements.



There are also likely to be other times during the year when you might need to make decisions about the purchase of learning materials or technologies. Rather than putting your philosophy up for debate each time, you will check whether your current ideas on the use of ICT education are still consistent with your original educational philosophy and ICT philosophy. You can also review and update your philosophy of ICT in education on an annual basis.

Who do you involve in defining a philosophy of ICT in education?

School principals tend to prefer setting up project teams consisting of key staff members who are involved in ICT. It can also be a valuable experience to involve pupils in this process, as ICT decisions are among the more important decisions you make in managing your school. For example, if creativity is a key part of your educational philosophy, you will ask all departments if, and to what extent, they can contribute to this.

How do you develop a philosophy for ICT in education?

This is predicated on your own ideas about teaching and learning. If pupils' talent development is prioritised, it is up to individual schools within the school board to facilitate this. Should we focus more in the curriculum on developing pupils' creativity? Or, alternatively, will we let pupils develop their talents by assigning them to projects, in which they acquire skills such as teamwork, problem solving and critical thinking?

Some philosophies are easier to apply to ICT than others. Whereas schools used to assess whether certain types of hardware or soft-

ware were compatible with each other, we are now also concerned with ethical questions such as: how do providers manage privacy?

When implementing the other three building blocks, you will always have to revert back to your ICT-in-education philosophy. This concerns questions not only about the type of education we intend to provide and how we intend to teach our pupils, but also how this should be organised.

2. Expertise

Any ICT-in-education philosophy can only be implemented successfully if teachers and other key ICT users have the capabilities required to use ICT resources in a didactic and educationally responsible manner, and to use them securely and effectively within the organization.

What conditions must school boards and teams fulfil to be ICT competent?

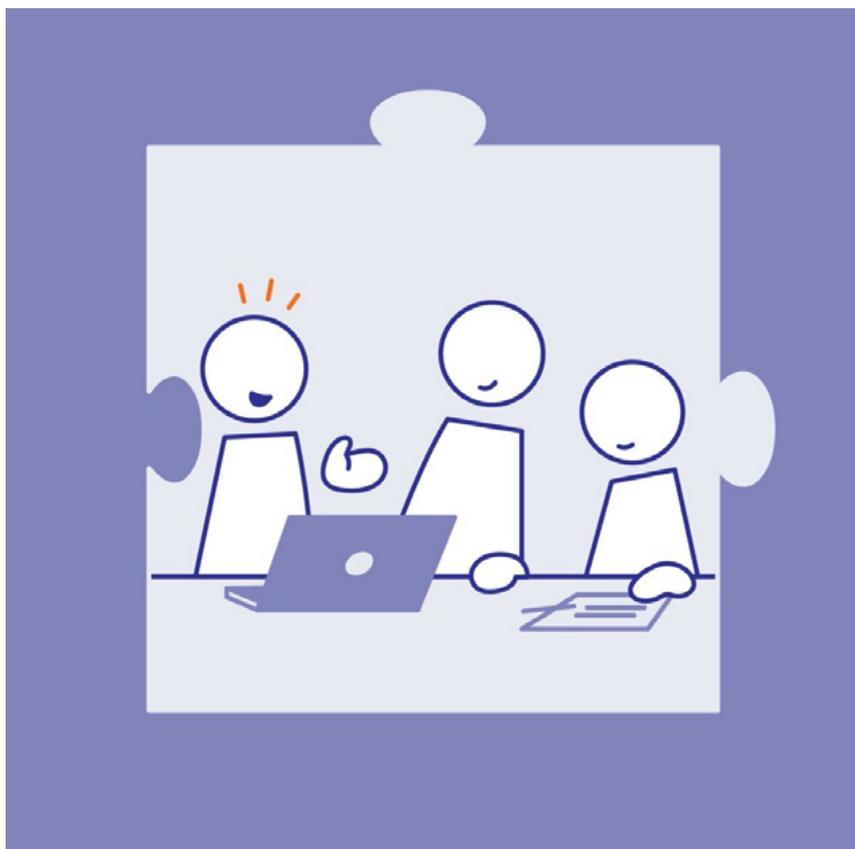
You must look at the key basic ICT skills/capabilities all teachers at your school must possess, plus the statutory and legal requirements, including knowledge of the GDPR. This type of knowledge and skills can be trained at the central level.

The more closely ICT is integrated into individual teachers' classroom practices, the more tailored to the individual needs of the teachers the training should be. It is therefore also important for department members to discuss this issue together and decide what matters for their department. If they use specific types of





software, they will want it to be used the same way across the board and avoid a situation where one group of pupils does not have access to a specific tool during their English classes, while others do. Primary schools can make separate arrangements for each level.



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How ICT competent should teachers be?

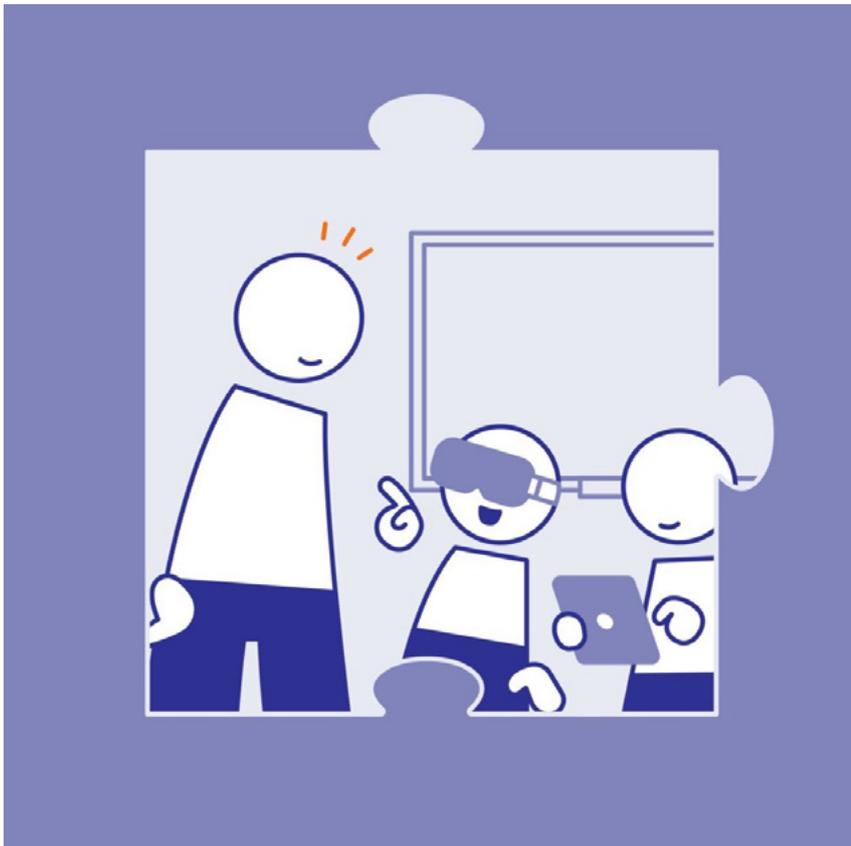
School board members tend to test the ICT competence of their teachers and then arrange for them to attend training courses on this basis. While this type of ‘controlled’ approach might sound tempting, it does overlook an important issue: the ICT competence required depends on the context in which individual teachers work. Since this may vary by subject, class, and preferred teaching methods, it is far more important to engage in discussion with each other and start making decisions: what skills are important to all pupils in the school? (for example, a student management system or a collaborative platform).

You should then discuss with each other potential individual or department-related training requirements.

There are also detailed descriptions available of ICT skills for teachers which you can consult, including the Common European Framework of Reference for Languages (CEFR).

In addition, a *selfie tool for teachers* is currently (2022) being developed, which is based on scientific knowledge of the most effective ways for people to professionalise, as well as focusing on all the aspects involved in ICT competence. Teachers can use the tool to draft their ‘can-do’ statements, which helps them identify their own training requirements and those of their colleagues. You can incorporate the findings of this and similar tools into the HR review cycle.





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What should you do to ensure that all employees meet the standard for ICT competence?

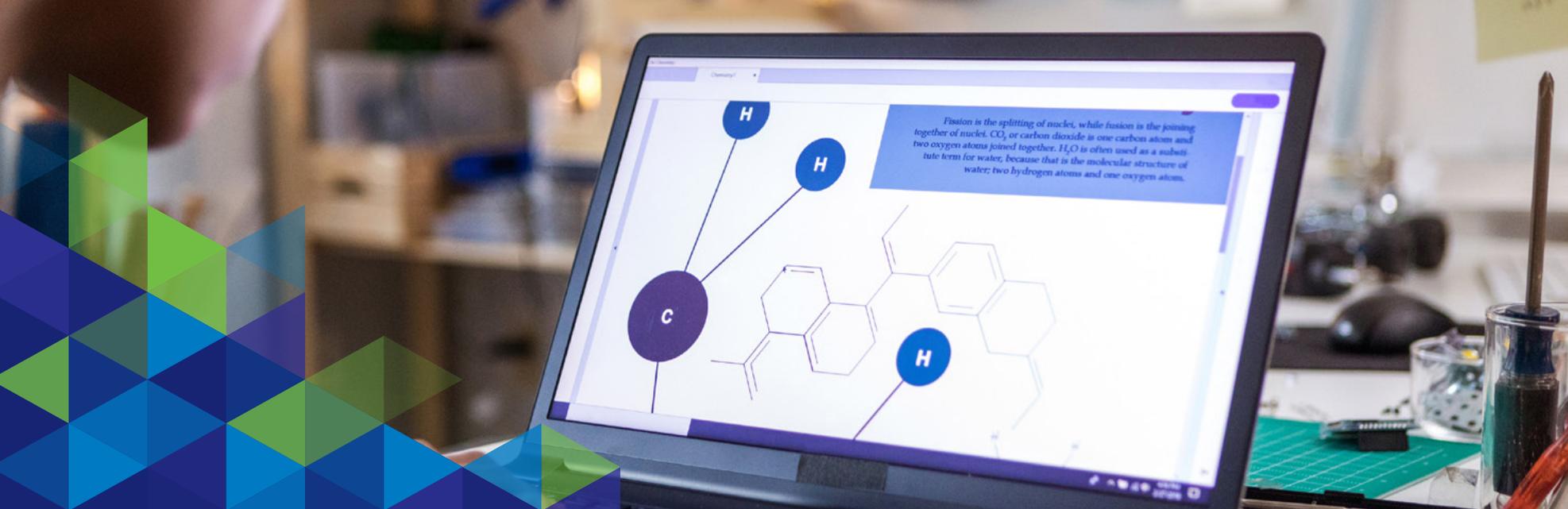
School boards tend to be interested mainly in larger, centralised systems anyone should be able to use. You may also want your employees to further develop their personal ICT decisions.

Questions you might ask yourself in this regard include: do we mainly want to inspire and should we, for example, create an centralised education lab? Or, alternatively, should we invest in i-coaches who can support teachers on a daily basis?

How do you integrate ICT competence across the entire school organization?

Arrange for HR workers to incorporate ICT competence into their HR cycles. Arrange for directors to describe ICT competence in their school plans. You should also include the professionalization plans defined by the team members themselves. Check together what budgets are available.





3. Contents and applications (learning tools and learning/work environment)

You must develop your philosophy into an educational policy. The world of teaching tools/resources and learning environments is complex, comprehensive and valuable and plays a key role in the educational process.

How do you define your policy for learning tools and resources?

The process of defining policies for learning tools and resources starts with agreeing on a set of parameters and criteria in which the educational vision can be crystallised. These run the gamut, ranging from financial parameters (i.e. free textbooks, parents' contribution, relationship with essential devices) to teacher guidelines. Teachers can use these guidelines to find out whether an interesting new digital learning tool might comply with the school's security requirements, and what arrangements need to be made for licences, data

management and interconnectivity in various learning environments used. You must also agree on what can be decided at the administrative level, i.e. centralised or decentralised, or at the school or teacher level.

How do you set up a decision-making process for learning tools and resources?

It's not easy to establish and implement a well-thought-out decision-making process for learning tools and resources. For one, the market for tools and learning environments changes all the time, and you often don't have the time available to analyze everything in depth. You should try to adopt a project-based approach for this process and hire the services of an expert if possible. This might include the following steps: evaluating the old learning method and setting criteria for a new one, making a shortlist, starting and implementing a pilot project with the new materials, and, finally, evaluating the decision-making process.





How do you choose a learning environment?

When choosing a digital learning and working environment, you must follow the same process as when choosing learning tools and resources. These tools and resources must be incorporated into the learning environment, and they must make it possible for teachers to implement their approach.

What makes the decision even more complex is that all kinds of features can be incorporated into different types of systems. Testing applications, for example, can be purchased separately and can be linked to other systems (including a learning environment or student management system). However, there are also learning environments that already include the features of a test application, creating the risk that you purchase the same features in duplicate, or even triplicate.

Will or won't you be using open learning tools and resources?

One final decision to make is whether or not to use open learning methods. Teachers have always developed a lot of their own materials, especially during the Covid pandemic. There is also a growing awareness that schools using open learning tools and resources find it easier to incorporate current affairs into their classrooms. Note that open learning tools and resources are often the only ones available for many minor disciplines, types of education, and educational themes, as there is simply no commercial incentive to develop them (this applies, for example, to special education and practical education).





How do you choose the appropriate learning tools and resources for your school (folio/digital, open/closed)

You find educational methods that are in line with your philosophy on teaching from an academic and scholastic view point, as well as being consistent with your organizational choices and financial decisions. Relevant questions include:

- ▶ What tools and resources do we use within a specific discipline, and are we satisfied with them? Are they still consistent with our philosophy and our policies for learning tools and resources? And if there is a need or desire for change, how do we create the ideal mix of learning tools and resources?
- ▶ What systems (for facilitating learning, teaching and support processes) do you use and how do you create your digital learning and working environment as efficiently and effectively as possible?
- ▶ How aware is your organization that you are part of a larger chain, including interdependencies? What can you do and arrange from this position to facilitate access to the required digital resources at the right time and for all pupils? This is primarily an administrative issue, for example facilitating access for all pupils, testing them in advance, and so on.

4. Infrastructure

ICT infrastructure includes the availability and quality of the networks and access to the internet, digital whiteboards or touchscreens found in classrooms, laptops or tablets, and peripherals. Easy access (including from home) must be guaranteed and secure. It must be possible to store and manage the data in a secure place. We have seen a lot of changes in all these areas over the past few years. While most schools have a solid basic ICT infrastructure in place, the next challenge is already emerging.

How many devices and what types of devices do you choose for pupils?

Teachers at most schools have access to a laptop. But what about pupils? Switching to one-device-per-pupil would generally involve a massive scale-up for schools. In addition, educational choices determine what features and options a device should have. Windows laptops are dominant in the Dutch schools market and access to digital learning materials, while Chromebooks and tablets are becoming less popular.

The situation is altogether different at Dutch primary schools. At the upper-primary-school level, we more often see the use of a single device per pupil, with Chromebooks being used most frequently. At primary schools, the providers of the devices often also operate the network (i.e. the accesspoints, routers and the like) as a comprehensive solution to provide schools with across-the-board support.





How do you facilitate a network which can support the growth and simultaneous use of all devices?

Where networks are concerned, massive progress has been made thanks to the emergence of digital resources. Publishers deliver a lot more digital products, including dashboards and monitoring systems to assist teachers. Due to this development, there is a greater focus on organizing the infrastructure of school boards, particularly in secondary education, where there are more subjects, more materials and more pupils.

Working in the cloud has won the race. Server parks have become more complex and require specialised management. Refrigerated and secure server rooms at schools are a thing of the past. Cloud platforms will arrange all this for you, while you remain in charge of functional management. This is a positive development, as ICT specialists are hard to find, as well as being expensive.

How do you organise information security, and how do you guarantee privacy?

The use of cloud environments has changed significantly since the GDPR was enacted. Under the current laws, educational institutions are required to make the appropriate arrangements for information security and privacy (IS&P), as a result of which schools are more focused on management than they were in the past. Information on topics such as security, reliability and continuity is widely available and can be used by schools to improve their own organization.

While networks are becoming more complex and connections even wider and stronger (also if new types of devices such as robots, VR and AI are introduced into the classroom), the basic ICT infrastructure will not really change. It has essentially become just another utility that must, once it has been set up, be kept up and running. We have moved beyond the pioneering stage at this point.



Colophon

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About Kennisnet

A good education lays the foundation for living, learning and working, and challenges students to bring out the best in themselves. This requires an education that responds to social, economic and technological developments. Kennisnet supports management boards in primary education, secondary education and vocational education in professionally implementing ICT and is the guide and builder of ICT foundations for schools.

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