



Smart Hands

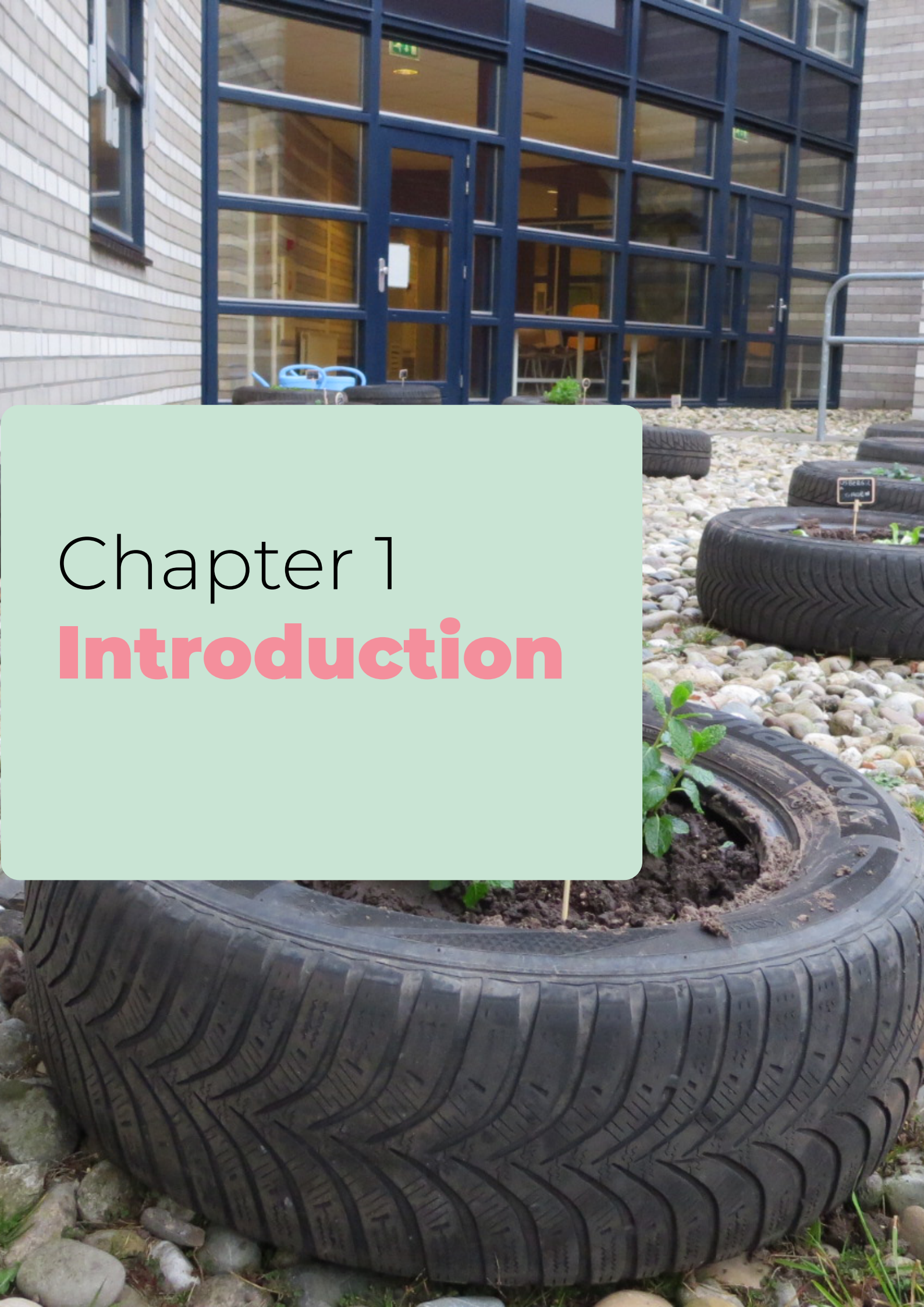
Teacher Guide

Ensuring young people have the power, knowledge and competences to become creative, inventive, social thinkers, co-operators, problem solvers, and makers all together.

Education with Head And Hands To Reach Our Heart

Co-funded by the
Erasmus+ Programme
of the European Union



A photograph of a modern building with large windows and a garden area. The garden features several black tires repurposed as planters, filled with soil and small green plants. The tires are arranged on a bed of light-colored pebbles. In the background, a building with large windows and a blue door is visible. The text 'Chapter 1 Introduction' is overlaid on a light green rounded rectangle on the left side of the image.

Chapter 1

Introduction



Smart Hands Teacher Guide

why and for whom?

“I hear and I forget. I see and I remember. I do and I understand.”

Confucius

Imagine a classroom where pupils are inspired, staff are supportive, and where pupils care about one another and are working together to solve challenging problems from multiple angles, using their various talents. That’s the SMART HANDS-HEAD-HEART approach in action.

Our Smart Hands teacher guide supports teachers implementing (our) multidisciplinary lesson plans, working together with colleagues and with the work field, and it features experiences from teachers across Europe in doing so!


Our HANDS-HEAD-HEART approach plays an important role in classroom climate—for example, how teachers approach pupils and work together with colleagues.

Another critical element is the interaction of teachers and pupils with parents and world-of-work stakeholders. This includes parent-teacher interactions, service-learning opportunities, and partnerships with organizations in the local community. The HANDS-HEAD-HEART approach, when it’s most effective, is part of daily classroom life where staff use everyday instruction to foster challenging education, increase pupil engagement, and model constructive behaviours.

In addition to facilitate pupil learning, staff’ involvement in promoting the HANDS-HEAD-HEART approach goes beyond the classroom and includes:

- Participating on a school team or committee that selects HANDS-HEAD-HEART programs and oversees the implementation and evaluation of these activities; and
- Communicating regularly with pupils’ families about HANDS-HEAD-HEART approach classroom activities to encourage reinforcement of the approach in private life and at home.

This Guide concerns the teacher’s role in relation to our approach. You as a teacher are in a key position between school management, the pupil, parents and the world of work.

The image shows three repurposed tires used as planters, arranged in a row on a paved area. Each tire is painted with vibrant, abstract patterns in shades of black, green, blue, purple, and white. The tires are filled with soil and contain small green seedlings. In the background, there is a metal fence, a brick wall, and a paved walkway. A semi-transparent light green box is overlaid on the left side of the image, containing the text 'Chapter 2 Collaboration'.

Chapter 2

Collaboration



Our Smart Hands approach is all about collaboration. Between teachers, teachers with pupils, teachers with school management, teachers with parents and teachers with the work field.

The benefits of collaboration in schools are well-documented. Working with other educators means better access to fresh ideas, new resources, schemes of work and much more. It also invariably means a reduced workload, which in turn, lowers stress and leads to greater wellbeing.

We know collaboration works in theory – but how can you put it into practice in your daily life? With that in mind, here are some suggestions about how you can work more effectively with other teachers; both online and off.





Nine Ways to Collaborate in Education

Meet with others (on a regular basis).

You probably already attend regular departmental meetings; but how much of that time is spent focusing on collaboration? Try to introduce an environment where fellow teachers feel comfortable sharing ideas; and even better, developing new schemes of work together.

This doesn't have to be limited to your own school. Take things further by asking teachers from other neighbouring schools to join you. It's likely that they'll be covering similar topics with their classes and, like you, will appreciate having access to new ideas or material.

How to get started:

- Discuss with your head of department. It's likely that you'll need their support to achieve this.
- Get organised. An online platform / social media group can be useful when coordinating meetings; especially if you plan to involve teachers from other schools.
- Lead by example. By willingly sharing your resources and schemes of work, you'll be creating an open, helpful environment – which is perfect for encouraging meaningful collaboration.

Encourage parent participation.

Getting parents involved can be tricky. However, with the right approach, they can offer invaluable skills and experience. Try to find out what they might be willing to help with, and if their expertise could enhance any schemes of work that you have planned.

For example, if a parent works as a research scientist, they might be happy to lead an assembly for the school, explaining what they do. Likewise, a stay-at-home parent may be willing to set aside some time each week to help struggling readers, who are badly in need of some 'one-to-one' time.

How to get started:

- Send a letter home, asking willing parents to sign up as volunteers (be aware, they may need to complete some forms to legally do so, especially if they're helping on a regular basis).
- Talk to parents. As you can imagine, parents' evening is a great opportunity to find out more about what they do.
- Don't be afraid to ask. Some parents won't want to collaborate; others will be delighted to. You won't know until you ask

Join in the (online) conversation.

One of the best aspects of collaboration is communication. Not only does it help you to feel less alone in your career; it also opens up new opportunities for the future. By joining an online community of like-minded teachers (for example, on [teacherly.io](https://www.teacherly.io) or a social media site), you'll be able to chat about your next scheme of work and get feedback from a teacher who has already completed the topic with their class.

How to get started:

- Do your research. It's better to join a respected, well-regulated community. Social media is free but unfortunately, is also vulnerable to 'trolling' – which can be irritating.
- Be an active participant. It's tempting to be a 'lurker' and simply read what others have to say. We recommend joining in with conversations. It's a good chance to ask questions and make valuable online allies.
- Be civil. Not everyone will share your opinions – try to remember that the purpose is to support and help each other.



Pool your resources.

Create a central 'zone' (this could be a series of folders, a drawer, or even a Dropbox account) where teachers in your department can easily share resources, schemes of work and lesson plans. It makes far more sense than each teacher separately preparing every lesson when working on the same topic.

How to get started:

- Identify what will work best for your department. It might be that teachers prefer having access to a physical copy, in which case, a filing cabinet filled with printed material is better. Alternatively, if they're happy to go online to access content, an online file sharing system is a good choice.
- Be proactive. Some teachers may not initially feel comfortable sharing their resources. Share your own work first, then suggest they share their material too.

Collaborate with pupils.

Don't be afraid to get pupils involved. After all, they're the focus of your efforts, and their support and feedback can be invaluable. Get them to help you identify what works in the classroom and what doesn't; they'll appreciate being asked to take an active role in their own education.

How to get started:

- Ask for honest feedback. Obviously, this may leave you open to some silly comments; but it's worthwhile in order to get the 'real picture' about how successful the lesson really was.
- Encourage suggestions. If pupils have good ideas about how to take their learning further, listen to them. It might come in useful for future lessons.
- Let them lead a session. Ask pupils to prepare a learning session for the rest of the class, with your help and guidance. This powerful form of collaboration not only gets children actively involved with the lesson but also nurtures the teacher/pupil relationship.



Search online.

There are some amazing lesson templates online, providing you know where to look. Some sites can be unwieldy and difficult to browse through. Others focus on quality and ease-of-use, making it simple to find exactly what you're looking for.

How to get started:

- Use the right site. Sites like teacherly.io carefully vet the content, which ensures you're downloading something that has already been tested in the classroom.
- Be selective. It's tempting to print out as much as possible, but we'd recommend sticking with what you need, to avoid 'print-out overload'.
- Be generous. Others have willingly submitted their lesson plans for you to use, so it's a nice gesture to do the same for them.

Collaborate with the community.

Your community is home to a wealth of talent and skills, in the form of local businesses, clubs and charitable enterprises. By developing links between the community and school, children gain a better understanding of the world they live in. Also, exposure to a versatile range of skills enhances their education.

How to get started:

- Get in touch with companies, clubs etc. Whether it's the local football team or a big business, you'll be amazed at how many people are happy to come in and work with the pupils.
- Provide a focus. Explain exactly why you'd love for them to get involved. For example, a local game design company could provide a great introduction to a lesson on coding; explaining its practical purpose in the real world.
- Offer something in return. This doesn't have to be financial. Sometimes, even a mention in the weekly newsletter is enough; it's free marketing for them and an enhanced lesson for you – a win/win situation.

Install a 'specialist skills' board.

This is a great idea for the staffroom. Use a large whiteboard and ask teachers to leave their name on it, along with any specialist skills they'd be happy to 'lend' to other teacher's lessons.

How to get started:

- Let teachers know in advance. Send out emails/letters in the pigeon-hole, explaining that you're encouraging better collaboration in the school and that the board will be present in the staffroom soon.
- Put your own name up there! Again, this is all about leading by example.
- Coordinate the skills. Take notes of each teacher and their skill, then get in contact with each of them (again, email is fine) to thank them and suggest how they might use the skills collaboratively in the future.

Suggest professional development with other schools.

Professional development plays an important role in career progression. Explore ways that this development could take place on a grander scale; incorporating teachers from other local schools. For example, a workshop session with a selection of teachers from across the city or town provides the perfect chance to chat informally and forge links for the future.

How to get started:

- Make the suggestion. Professional development is normally organised by senior management, so you'll need to present your case to them.
- Outline your argument. You may need to explain how this sort of collaboration would be beneficial. An email detailing all the advantages should suffice.
- Offer your services. Mention that you'd be happy to get in touch with other schools to get the ball rolling.

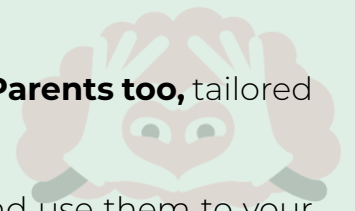
Smart Hands Tip!

Do know that we think along with you!

We have created Smart Hands resources for School Leaders and Parents too, tailored to their needs. Same message, different tone.

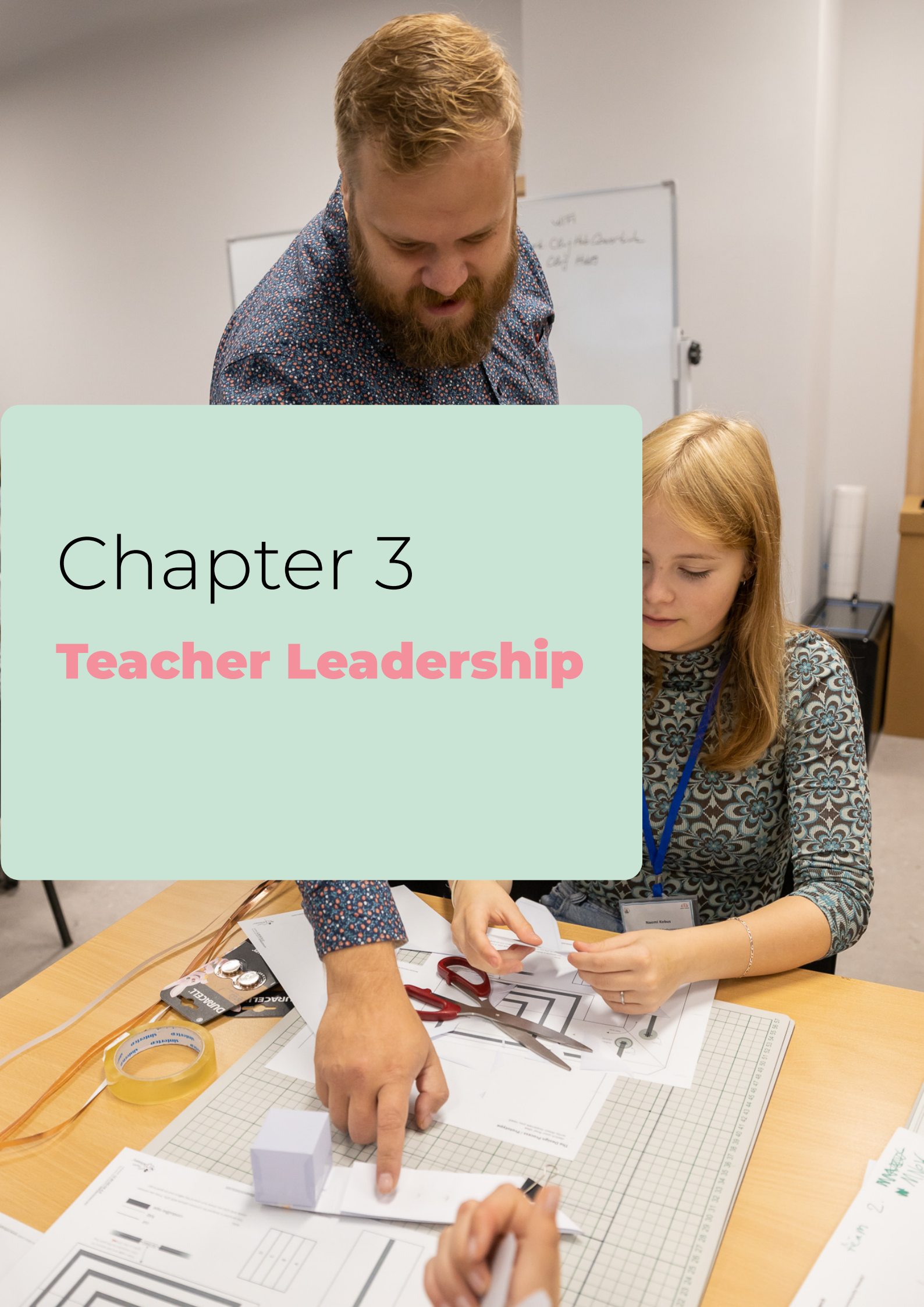
Please refer to these resources in full via www.smarthands.school and use them to your advantage getting school management support and parents' involvement! Like to get a quick impression already? **Skip to chapters 4 and 5 of this guide.**

Still, changing the way you run your lessons and work within your school requires leadership, **teacher leadership.**



Chapter 3

Teacher Leadership



Teacher leadership takes on a wide variety of manifestations, scopes and focus areas. This makes it difficult to describe, but we consider it as follows:

Teacher leadership is the process by which teachers, based on expertise and affinity, influence colleagues, school leaders and other actors inside and outside the school.

This open definition shows that teacher leadership can take many forms, and that it can transcend the pedagogical leadership of the teacher in his own classroom.

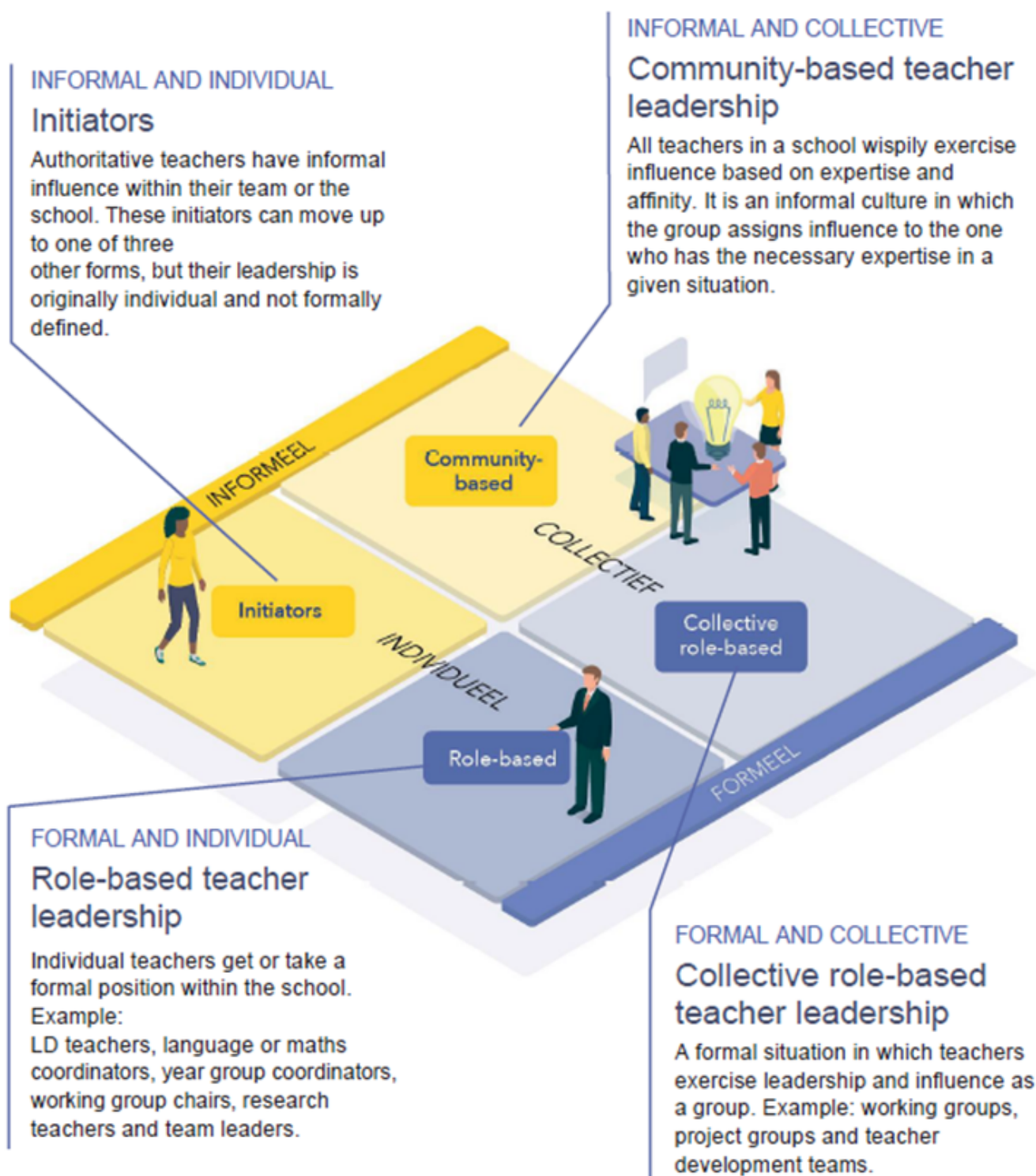
That leadership can relate, for example, to the implementation of education, to the development of and research into (the quality of) education, to policy and organizational issues and to professionalization themes.

The influence of that leadership can then mainly relate to one's own team, the school, the board, but also nationally by contributing to curricula and national networks. Whatever the theme or focus, the ultimate goal of teacher leadership is to contribute to pupil development and better education.



4 FORMS OF TEACHER LEADERSHIP

Teacher leadership can take form formally or informally and teachers can acquire individual or collective leadership. Four forms of teacher leadership follow from these two dimensions, all of which fit within the basic definition:



ROLE BASED TEACHER LEADERSHIP

Individual teachers are given or take up a formal position within the school.

Example: language or math coordinators, year group coordinators, work group chairs, research teachers and team leaders.

COLLECTIVE ROLE-BASED TEACHER LEADERSHIP

A formal situation in which teachers exercise leadership and influence as a group.

Example : working groups, project groups and teacher development teams.

INITIATORS

Authoritative teachers have informal influence within their team or the school. These initiators can move up to one of three other forms, but their leadership is originally individual and not formally established.

COMMUNITY BASED TEACHER LEADERSHIP

All teachers in a school exert varying degrees of influence based on expertise and affinity. It is an informal culture in which the group assigns influence to those who have the necessary expertise in a given situation.

CONDITIONS FOR TEACHER LEADERSHIP

Many studies of teacher leadership indicate that leadership also has positive effects on teachers themselves and their professional development.

Compared to the effects, much more research has been done into the conditions for teacher leadership.

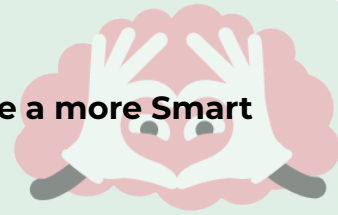
Positive conditions for teacher leadership

The studies on teacher leadership provide more insight into the most important conditions that promote leadership. These conditions concern the culture in the school, and relationships with colleagues and the school board. It is important for teacher leadership that this culture values openness, mutual trust, feedback, collegiality and a broad focus on learning from both pupils and teachers.

Leaders should encourage, recognize and support teacher leadership.

Ask the teacher!

What support do you need from the school management to facilitate a more Smart Hands approach?



“To have a policy in place to create the conditions for working more with the Smart Hands approach. Think along with the teachers, and listen to what they need. Replace meetings that are not important with consultation moments with colleagues. Make sure that you practice what you preach, ensure a smart hands approach with teachers themselves to make them implement it more in their own lessons.”

Hannah Hariri

biology and physics teacher, Singelland secondary school, Netherlands.

Seven qualities that are important to both teachers and school leaders.

- 1. A perspective that transcends one's own working environment** . Teachers must look beyond their own subject, their own class and their own pupils. School leaders must look beyond their own school, realize that teachers can find inspiration outside the school, and that they must be prepared to recognize and facilitate contacts and networks outside the school.
- 2. A Vision and Moral Consciousness.** The desire to exert influence must come from a motive for good education, with attention to the involvement of pupils and teachers. In addition, both teachers and school leaders need a vision of the teaching profession and their leadership in educational development.
- 3. Guts,** initiative and entrepreneurship. Leadership requires from teachers agency and ability to act, thinking out-of-the-box and the courage to explore new paths. The school management must recognize and encourage that guts, initiative and entrepreneurship, and appreciate alternative voices.
- 4. Believe in your own abilities** . Leadership requires new qualities, such as knowledge about good education, the ability to realize changes and a feeling for strategy, organizational structure and political processes at school. In many cases, this will require support and professionalisation, and school leaders can play an important role in this.

5. **Networking.** Teacher leadership does not take place in isolation, but is nurtured through interaction and collaboration with others inside and outside the school. These networks contribute to the inspiration and impact of the teacher. School leaders can strengthen these networks – which also prevents the isolation of teacher leaders.
6. **Granting and Consensus Orientation .** Leadership presupposes a dynamic of leading and following. Teachers and school leaders must therefore be able and dare to allow each other leadership. This requires consensus and shared ownership. In this way, the leadership of one teacher also increases the leadership of others.
7. **Responsibility.** Leadership is not possible without getting, but especially taking responsibility. Teacher leaders must therefore be prepared to account to colleagues, the school leader and the outside world. This works best in a school culture that is inviting and challenging, that appeals to people about the things they do, but also leaves room for experimentation and failure.



Example of a teacher leader

Bob is a biology teacher at a secondary school in the Netherlands. Within this school, teachers work together to provide education in so-called “learning houses”.

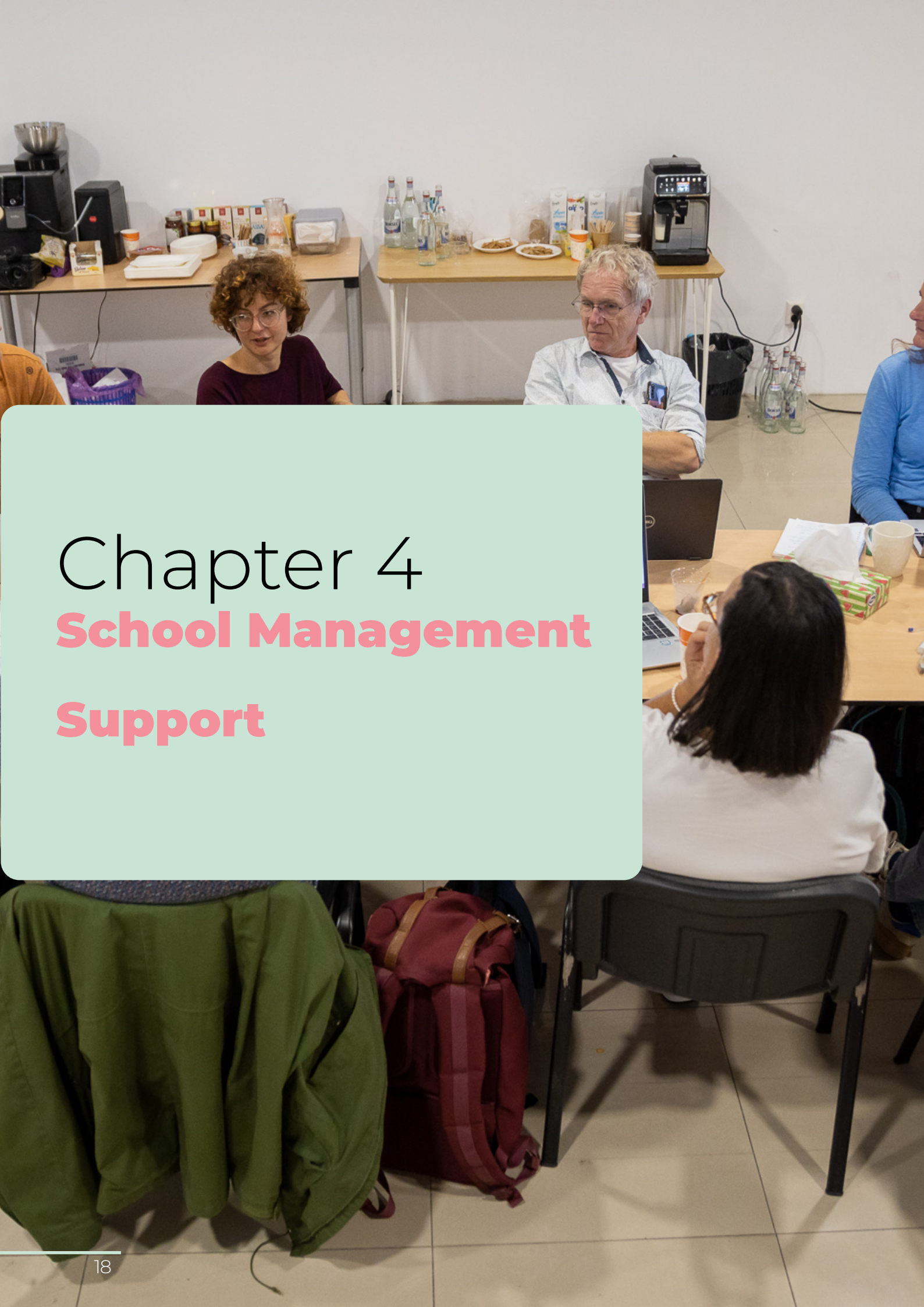
These are large spaces (about the size of four normal classrooms) where four groups of pupils can attend classes simultaneously. Together with about ten colleagues, Bob is responsible for education in their learning house. He is always in the learning house with two or three colleagues at the same time. Precisely because of this meeting in their daily work, teachers at the school work together intensively to improve education.



For Bob, his leadership takes shape not so much in a formal position, but because he can fulfil an exemplary function for colleagues or pupils: “I am not a formal leader, and I don't necessarily want to take on that role. It is especially important to me that what I do and what I design encourages further development”. Bob sees his leadership taking shape both in the classroom with pupils and in designing and developing new education with colleagues. He gives two examples:

“Together with a colleague, I threw out the entire ANW **natural science** course two years ago and we came up with a new and better plan. ANW was no longer a compulsory subject and it was no longer attractive to pupils. Then we dared to say that it was no longer good enough and dared to change course. Teachers generally find it difficult to let go of something completely and change it. You don't know what will come in return. That requires trust. And you must dare to ask for feedback on how you are doing. These are steps that many people find difficult. The subject is now a really good contribution to the curriculum.

Where I also see myself as a teacher leader is in the way I structure my lessons. At our school, self-directed learning is very important. That's why I flip my classes as much as possible, with minimal classroom instruction. As a result, pupils also take on a self-responsible role. And what I really like is that the pupils are also asking other teachers to use this method. This is how I influence colleagues through pupils. I help colleagues to apply it in their lessons as well. In this way I not only set the bar high for myself, but also for colleagues”. In Bob's eyes, this teacher leadership requires him to look very critically at his own actions and to constantly analyse his actions: “It requires you to be able to fully analyse and break down processes. And can analyse small pieces well. You have to look very analytically at your own actions. Almost scientific: if I change this, I get that result”. It also helps to take the time to make changes.

A group of people are seated around a table in a meeting room. In the background, there are two long tables with various items including water bottles, coffee machines, and food. A woman with curly hair and glasses is on the left, and a man with glasses is in the center. A woman with dark hair is seen from the back in the foreground. A large light green rounded rectangle is overlaid on the left side of the image, containing the text 'Chapter 4 School Management Support'.

Chapter 4

School Management

Support



School Leaders Guide

As spirited as you might already be, we will not leave you alone fighting windmills! As a teacher you need support and backing from school management to adopt fresh approaches in education.

Our Smart Hands School Leader Toolkit is for school leaders (head teachers, school principals, team leaders, coordinators, etc.) who want to know what the Smart Hands programme has to offer in the fields of secondary education and its connection to vocational education and the work field. Moreover, it demonstrates how, with careful planning and with committed and facilitating leadership, Smart Hands can advance the short-term and long-term interests of participating schools, their staff and their pupils.

Ask the principal!

What changed in your school since the Smart Hands approach has been implemented?

“Being a project with topics anchored in everyday life, the teachers involved have changed their approach in teaching lessons in ecology, environmental protection, sustainable development and also in maths, language, biology, IT.

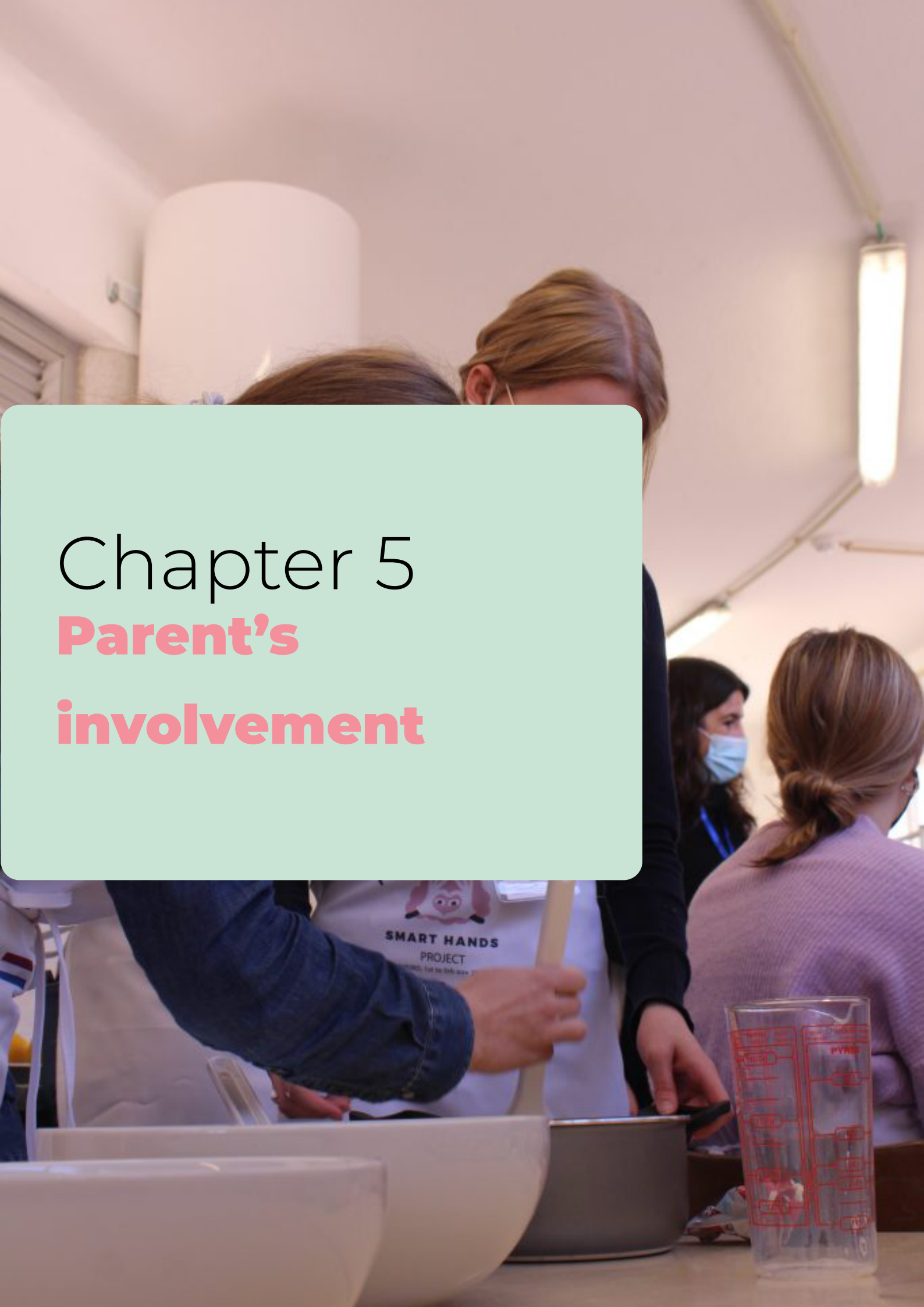
Also the students paid more attention to these topics, involving other colleagues in carrying out the project activities.”



Camelia Moldovan
principal at National College “Emil Racoviță”, Cluj-Napoca, Romania

School Leaders Guide impression





Chapter 5

Parent's involvement



Parents' Guide

A HANDS-HEAD-HEART approach does not start at school. It starts at home. Parents and families are critical partners in helping their children develop in various facets, discovering and using their talents. They can model the kinds of skills, attitudes, and behaviours we want all pupils to master. They can be important advocates for our approach at home and elsewhere. But unlike at primary schools where parents tend to be strongly involved, in secondary schools they tend to be forgotten to fully involve.

We stimulate parents to work closely with schools. Parents can further promote their child's talents by learning more about their school's HANDS-HEAD-HEART approach and modelling behaviours and adopting practices that reinforce their child's skills at home and elsewhere.

Examples include:

- Participating in family informational meetings at their school to learn more about the initiative;
- Emphasizing their child's strengths before discussing deficits and needed improvements;
- Become more open to other options for continued education or work field for their children, fitting their talents.

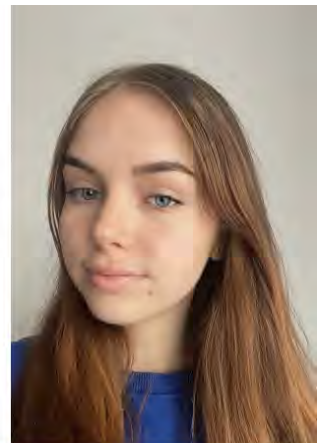
Parents Guide impression



Maria Ficior RO

I believe that each and every one of us has a special unique memory of a family member. My grandfather has offered me the opportunity to build such a memory whenever we repair old things together. Although it might sound strange for a person over 60 to be patient enough to do things together with a child, we all know that grandparents have endless patience and a big heart. My grandfather and I both agree that it makes no sense buying something new when you can fix an old object. So, we have started a new summer hobby. Every time I spend a few weeks of my summer holiday at my grandparents, our favourite pastime is working in the garage, away from the heat, eating fresh fruit from our garden. I think that this kind of activity has brought us together and has helped me grow into a healthy person who knows how to use her hands and mind productively instead of spending time in front of the TV. I believe that the bond between generations becomes stronger when family members work together. In spite of our different personalities and the considerable age difference, the time we spend mending old objects has created a special bond between my grandfather and I.

Whenever I fix old things, I feel I give them a new life, a new purpose. They seem like the pieces of a puzzle just waiting to be put together. As a child, this activity made me feel like one of the fairies from the cartoons I loved so much. Now, although I no longer believe in fairies, mending old things still makes me feel magical. Over the time we have fixed all sorts of old things, mostly clocks. They have complicated mechanisms, the process is more delicate and requires a lot of attention so, when mending watches, the magnifying glass is one of the magical tools ever! We have repaired a pendulum clock, a cylinder clock and a smaller simpler one. We also had a lot of fun piecing together my great-grandfather's sewing machine, an object that my grandpa was very fond of. This antique sewing machine reminded him of his own childhood and of his father who used to mend his children's clothes.





Chapter 6

Smart Hands

Lesson Plans

Now then, we have empowered you as a teacher to involve and align your different stakeholders. Internally, your colleagues and management, and externally parents and the work field. Your hard work is done, and should be rewarded. Without further ado, we offer you a series of tested and ready to use Smart Hands lesson plans to directly apply with your pupils.

Our portfolio of Smart Hands lesson plans develops pupils' skills in a cross subject manner. The combination of alpha, beta and gamma subjects challenges pupils to be more exploring, creative, ingenious and inventive. Still finding out why exactly? Here is some last piece of background before delivering the goods.

Hands & Head: A steamy future

Some urge us to get our pupils back to basics through the “three Rs” of reading, writing and arithmetic. For educators, there is now a greater need for science, technology, engineering and maths (STEM) concepts to integrate with the arts (STEAM) across the wider curriculum.

We know this because business and industry broadcast that future-ready employees need to have multiple areas of expertise or at least appreciate how a range of skills fit together.

Teachers working in cross-curricular STEAM settings often see their pupils making connections between concepts and solving problems in new and exciting ways. They demonstrate this by active engagement, their discoveries visible in enthusiastic “aha” moments.

What's the difference?

STEM represents science, technology, engineering and maths. “STEAM” represents STEM plus the arts – humanities, language arts, dance, drama, music, visual arts, design and new media.

The main difference between STEM and STEAM is STEM explicitly focuses on scientific concepts. STEAM investigates the same concepts, but does this through inquiry and problem-based learning methods used in the creative process.

This looks like groups of learners working collaboratively to create a visually appealing product or object that is based in the understanding of a STEM concept, such as the mathematics of the parabola used to create fine art imagery.

STEAM is not a new concept. People such as Leonardo Da Vinci have shown us the importance of combining science and art to make discoveries.

Why is STEAM important?

STEAM education in schools provides pupils with the opportunity to learn creatively, using 21st century skills such as problem solving. We highlight the importance of these skills for the future workplace. These general capabilities are crucial to growing a future-ready workforce that understands the potential of “what if” when solving problems that occur in real life.

They also point us in the direction of 22nd century skills – connection, care, community and culture.

Practical applications of STEAM

A perfect example is artist and designer Leah Heiss. She works with nanotechnologists in biomedical industries to develop jewellery to assist diabetics administer their insulin.



The 'Smart Heart necklace'

There are lots of hands-on learning opportunities popping up in schools and institutes all over the world. These are generally called “maker spaces”. They encourage collaboration in learning and discovery, using science and tech resources such as soft circuits, embedded video, game creation, data art, and more.

- Interested in setting up makerspace at your school? Visit www.full-steam-ahead.eu, learn from your peers and get started right away!

We are beginning to see this type of learning creeping into everyday curriculum. This is particularly so in the cross-curriculum priorities, where the arts context is used to demonstrate STEM concepts and vice versa.

So the idea of “what if?” is not dependent on the purchase of STEAM-specific technologies or even classroom or maker space design. It’s more dependent on the imagination and curiosity of the teachers collaborating with their pupils.

It’s exciting to see so many STEAM concepts embodied in current popular culture, inspiring confidence in young women in particular. Characters like Shuri in the movie [Black Panther](#) - the intelligent, creative and playful technologist - help us move beyond historical stereotypes associated with STEM and inspire new generations of interdisciplinary innovators. How can we forget Velma from Scooby Doo and Lisa Simpson? All super smart STEM girls using hard and soft skills to solve a wealth of problems.

With STEAM, we can challenge preconceptions that learning areas are separate, and move past the “I’m good at maths and science, so I’m not creative” way of thinking. This will change the way we see STEM problems and create a new way of thinking that is engaging, multifaceted and inclusive, with diversity of representation and thought. This is how it is in the real world, after all.



So, Smart Hands Lesson Plans for a Steamy Future!

Our Smart Hands lesson plans enable a MULTIDISCIPLINARY WAY OF TEACHING AND LEARNING.

It is our ambition is to educate pupils' skills in a cross subject manner to create context for pupils. The combination of alpha, beta and gamma subjects challenges pupils to be more exploring, creative, ingenious and inventive. Important aspect here is to create the circumstances for pupils to "learn to learn" this way.

By challenging pupils to take their time, perform trial & error activities, we appeal to them to be clever and crafty. This also includes prolonging their attention span and be able to work in a focused manner on long term assignments, viewing an assignment from all angles.

Therefore, central to all pupil activities of the Smart Hands pupil training programme are the following components:

- pupils in the lead;
- a multidisciplinary approach;
- trial and error methodology;
- a worldly and regionally oriented outward look;
- crafts, circular design, materials, techniques
-

Our portfolio is designed according to incorporate and embrace STEAM parts. The sum of the parts resemble our motto to integrate HANDS – HEAD – HEART. Meaning we will add HEAD & HEART elements to traditional HANDS topics and the other way around.

Lesson Plan portfolio set up

All lesson plans in our portfolio include:

- a full description of the assignment,
- examples and tips how the lesson can be delivered in practice,
- experiences from teachers and pupils,
- an international 'top up': do the lesson working together with pupils in other countries!

Ask the teacher!

How do you organise your lessons to make them Smart Hands?

"In my classes, whenever possible, I try to experiment and highlight the importance and applicability of the contents taught to the daily lives of my students, as well as try to respond and correspond to their curiosities and interests, in order to make the classes more interesting and participatory."



Anabela Augusta de Pinho Vieira Pais

teacher of Physics and Chemistry at José Estêvão High School in Aveiro, Portugal.

Lesson Plan Portfolio impression

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SMART HANDS

Lesson Plan Portfolio

Visit www.smarthands.school to download!

Chapter 7

The Smart Hands Kit

Materials:



DEVELOP YOUR OWN MULTIDISCIPLINARY LESSONS IN AN INSTANT!

Excited about our multidisciplinary lessons? Did you like working together with your fellow teachers from other school subjects? Maybe creating your own multi-disciplinary lessons or workshops is then right up your alley!

We have developed a handy deck of cards we like to call the Smart Hands Kit. It enables you to quickly develop your own STEAMy lessons covering various school subjects. It comes with instructions how to use it so you can get started right away.

Like to receive a set? [Do get in touch with us!](#)



Smart Hands Cards instructions

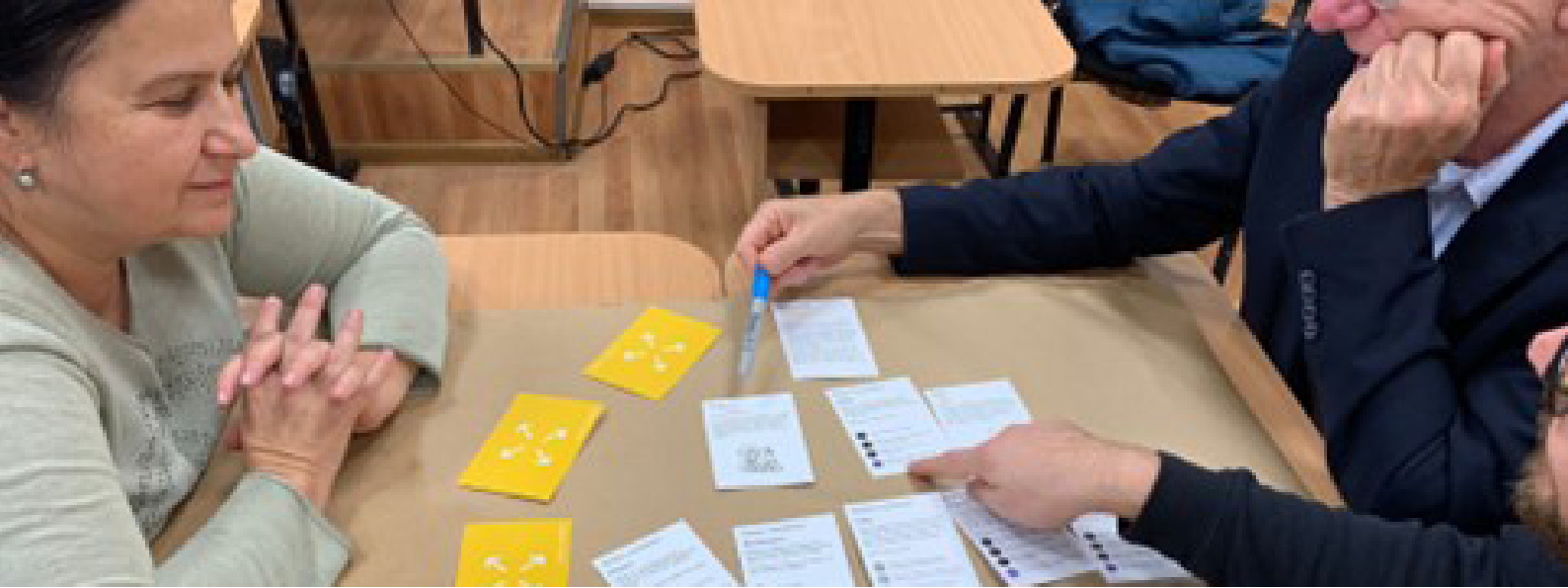
Why do we suggest you use these cards?

These cards can be used to brainstorm together with other teachers teaching other subjects to create multi-disciplinary lessons or workshops. It is also about teaching how to include using the fine motor skills of the hands in learning how to make objects, hold tools and work with different materials. The main focus of using these cards is to combine the head to the hands and make lessons more tangible and easier to understand. Also to make pupils more motivated to learn.

The four categories of cards

1. **Theme:** cards about themes of the different subjects that are taught like geometry, brain, light.
 2. **Material & Technology:** these cards will make the task visible and tangible.
 3. **Action:** what will be done with the material and technology, what will be the outcome.
 4. **Bigger Picture:** these cards represent society. What are the issues in the world or in your region?
- **Joker:** you can add this card to your selection to focus more on a subject that you are working on or link it to a question from the work field.
 - **Empty Card:** you can also add your own theme, action, material & technology and bigger picture card





Ideas when to use the cards

- Below are some examples in which the cards could really help.
- To set up a workshop or a series of lessons in which you would like to work multi-disciplinary;
- To work together with stakeholders on a societal or regional matter;
- To add some extras to your existing lesson to inspire and motivate your pupils/pupils;
- To add a practical lesson within your curriculum to teach more craft skills;
- To add some A to STEM lessons;
- To add a STEM subject to your practice lesson.

What card do I start with?

Choosing a category to start with is also your choice. Some teachers thought it worked best to start with the Theme cards, others started with the Bigger Picture cards.

If you work on a workshop with a societal goal, you can best start with the Bigger Picture and work on challenges concerning food waste, sustainability, climate change, etc. If you want

to add some practice within your own subject, you can start with a Theme card that is closest to your lesson and ask the other teachers in your group to contribute.

Using the cards, the brainstorm

1. Define why you will use the cards: for a workshop, a lesson or a cooperation with stakeholders?
2. Create a pair or a small group of three or four teachers from different subjects.
3. Choose how you will work with the cards: open or closed.
4. Choose which card is leading considering your working scenario (see Ideas when to use the cards) and select the cards from the other categories.
5. Change a card or add a joker card.
6. Take 5 - 7 minutes to choose your final cards
7. Individually write down some ideas of activities
8. Present all the ideas and combine the similar ideas.
9. Share your ideas and start to brainstorm for the final project.

Some examples of combinations and outcomes

Teacher team 1: Math, History, Art

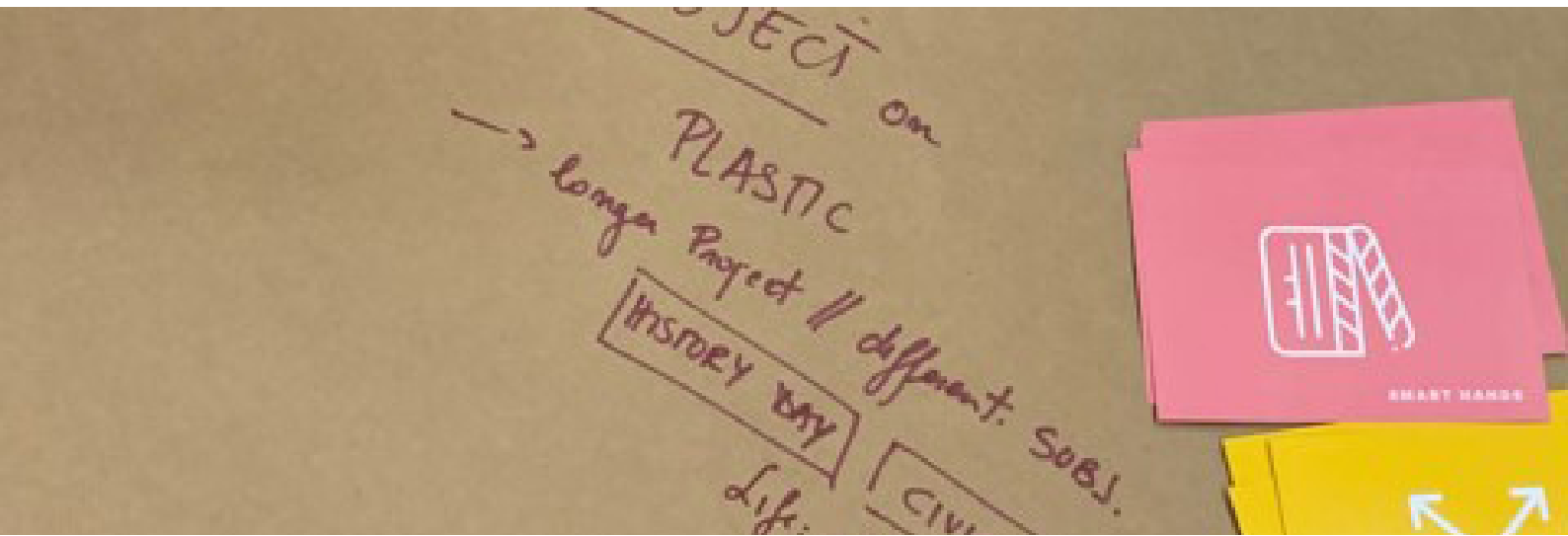
Bigger Picture card: Food Waste

Theme card: Colour

Action card: Experiment

Material card: Paper

Outcome: Challenge for pupils: make a story-telling campaign poster on Fast Food using the calculations of how much food is thrown away, how many km food travels for your fast food and how much it used to be 50 years ago.



Teacher team 2: Math, Physics, Crafts

Bigger Picture card: Helping Younger Pupils Learn

Theme card: Space

Action card: Object Design

Material card: Plastic

Outcome: Challenge for pupils to make Space related models out of plastic or plastic waste. . Examples could be rovers, a model of the solar system, space ships, space suits and much more...



Sources and references:

- <https://teachmiddleeastmag.com/collaborate-effectively-with-other-teachers/>
- <https://theconversation.com/explainer-whats-the-difference-between-stem-and-steam-95713>
- <https://www.hva.nl/kc-onderwijs-opvoeding/gedeelde-content/contentgroep/teacher-leadership/wat-is-teacher-leadership/wat.html>



SMART HANDS

Smart Hands

Teacher Guide

Ensuring young people have the power, knowledge and competences to become creative, inventive, social thinkers, co-operators, problem solvers, and makers all together.

Education with Head And Hands To Reach Our Heart





way of arts

WOA

Conservação & Restauro | Artes & Ofícios



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