FULL STEAM

Ahead

Young Future Workers
Guide for employers & schools

INTRODUCTION

One of the issues we are facing nowadays is the gap between the studies provided at educational institutions and the skills, competences and attitudes requested by companies. This gap is growing day by day due to the rapid evolution of technology, techniques and other advances in the industry and companies.

This guide enables a framework where companies, employers and schools can cooperate by providing real cases coming from companies that schools can use as case studies. In this way, schools get input for their classes, companies show what kind of skills are requested in the real working environment and students increase their motivation, while working in cases coming directly from companies.

This Guide connects employers, companies and schools

Five Steps

5 easy-to-follow steps will help you to understand the benefits of these school-business partnerships and have you on your way to defining these relationships and developing authentic content and the subject matter. This will provide students with the opportunity to positively engage in classes and develop the life skills they need to be successful in the future. Makerspaces are also discussed as a designated area for creativity and innovation that can easily be incorporated into classroom learning and inclusive content engagement.

1. Companies-Schools Cooperation: Challenges and Benefits
2. Expectations & Guidelines for Companies to work with Schools
3. How to apply Full STEAM Ahead for Training and Upskilling
4. Embedding Employer Input within the Learning Curriculum
5. Skill Gaps. Pipeline for Future Talent

The guide also contains a **Resources and Tips** section where you can find useful information and templates that will help your school or company in its journey towards cooperation and real-world curriculum content and development.

STEP 1

COMPANIES & SCHOOL COOPERATION: CHALLENGES AND BENEFITS

"At its core, a Makerspace is a space designed and dedicated to hands-on learning and creativity"

The Classroom as a Makerspace:
What is the concept really?

A Makerspace is a designated area of your classroom or a school in which your students learn to use materials and tools to create something unique.

Having a Makerspace in a classroom is a fast-growing trend in education. Some people refer to this trend as the **Maker Movement.**

There are lots of different ways to define a Makerspace. **Essentially a Makerspace is a space designed and dedicated to hands-on learning and creativity.** Maker movement activities usually include the use of digital technology and involve designing and constructing real or virtual things.

However**, Makerspaces don't necessarily HAVE to include digital technology.** Makerspaces come in all different shapes and sizes. A Makerspace might include the following:

- craft station
- electrical circuits station
- construction and design station
- robotics Station
- animation & storytelling station
- digital station
- LEGO Station.

The Makerspace link with STEAM

Makerspaces are a hands-on method for STEAM learning, giving students space to explore science, technology, engineering, arts, and mathematics.
A STEAM design challenge is a great way to motivate your students and to get your first Makerspace activity off to a flying start.

A Makerspace will encourage:

- **High levels of student engagement**
- **Increased student confidence**
- **Development of creativity**
- **Development of problem-solving skills**
- **Increased collaborative learning**
- **Hands-on experience with design**
- **Experimentation and construction**
- **Connections between home and school**
- **Learning through play for lower years**

Benefits and Challenges

STEAM education and Makerspaces can also provide an opportunity to learn and develop the necessary skills and attributes that are being more and more sought after in today's workforce. If students are already benefiting from the makerspace and STEAM education it might be the perfect opportunity to start looking at collaborating with businesses and employers. This can be a fantastic way to bring the real world into the classroom and improve the future success of all students through innovative approaches to education. This means that classrooms are truly reflecting the world we live in and giving everyone the opportunity to excel.

The upsides to this educational method, especially where there are collaborations between schools and businesses, are beneficial to all participants in a variety of ways.

Students Benefit by:
- Gaining insight into the different fields and kinds of jobs that exist today or will exist in the future
- Being more equipped with the necessary skills for future employment
- Having opportunities to engage with a more practical curriculum with real-world examples

Businesses Benefit by:
- Engaging with and inspiring the workforce of the future
- Highlighting the skills, they require in a workforce and working towards equipping students with them
- Getting young people actively interested and engaged in their sector and having the opportunity to raise awareness of careers in their sector.
- Raising awareness within the community of the work that they do

Despite the mutually beneficial nature of these cooperations, there can be a number of challenges or barriers that may have prevented or inhibited such partnerships in the past.
These may include:
- Schools not being aware of the positive ways in which businesses can contribute to enriching educational experiences of students
- Schools and students being predominantly focused on academic successes and exam results and don't consider the benefits of such collaborations
- A lack of resources and time that businesses can provide to schools
- Both businesses and schools may be unsure how to start or set up such collaborations, what they might include, and how they can be mutually advantageous.

STEP 2

EXPECTATIONS & GUIDELINES FOR COMPANIES

> **"The case for business-education alliances is so relevant because of the value it can bring to improving student success and opportunity."**
>
> *- JBL Associates*

When starting to think about developing partnerships with schools it is important for businesses to have clear expectations in terms of how to go about collaborations and what the expected outcomes may be. Brainstorming and creating a list of expectations can help you to have a better understanding of what the partnership should achieve and how it will benefit the business as well as the students and the school. It also means that your assumptions about the project are realistic and thus more grounded and less likely to end up facing unexpected obstacles or pitfalls.
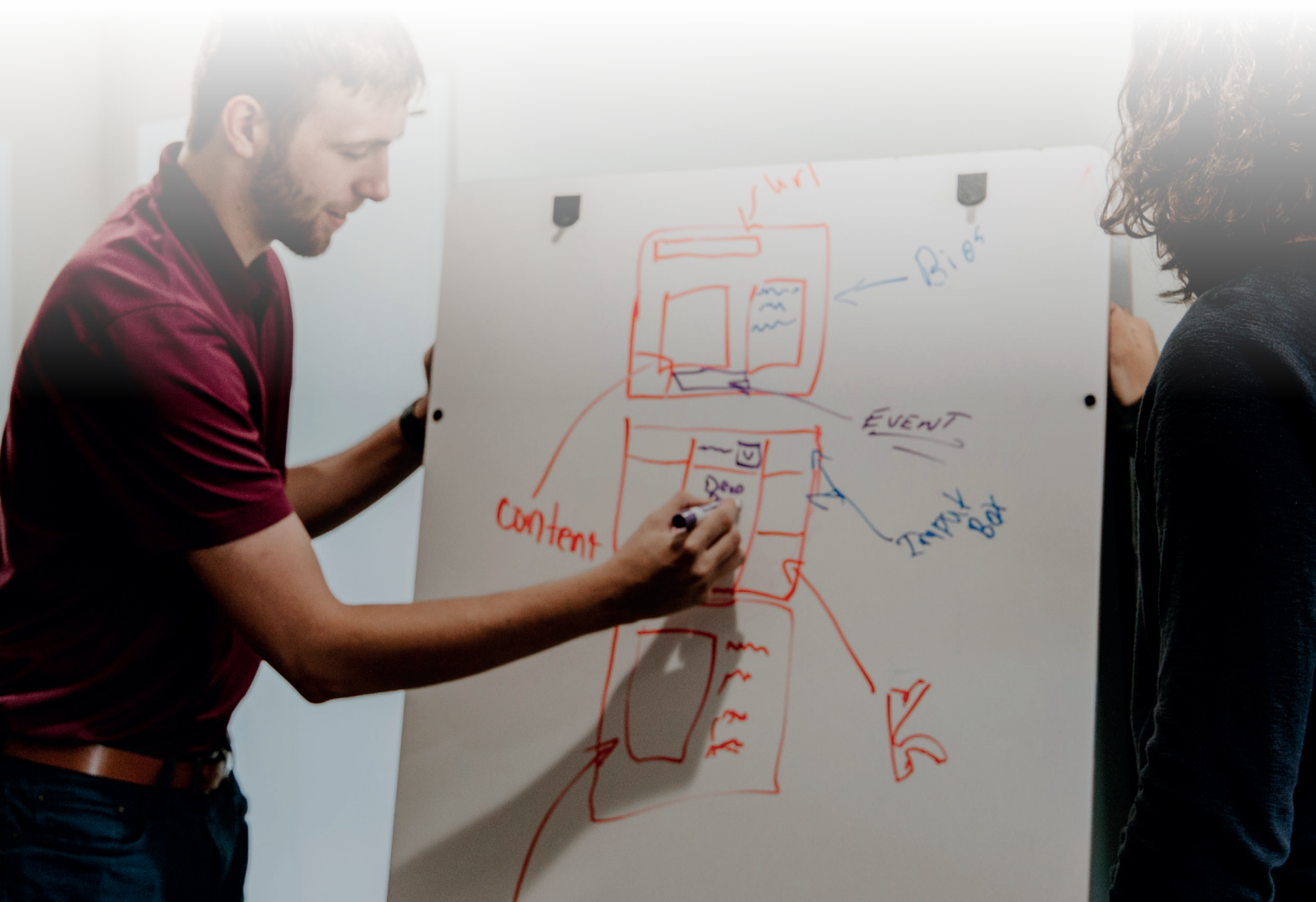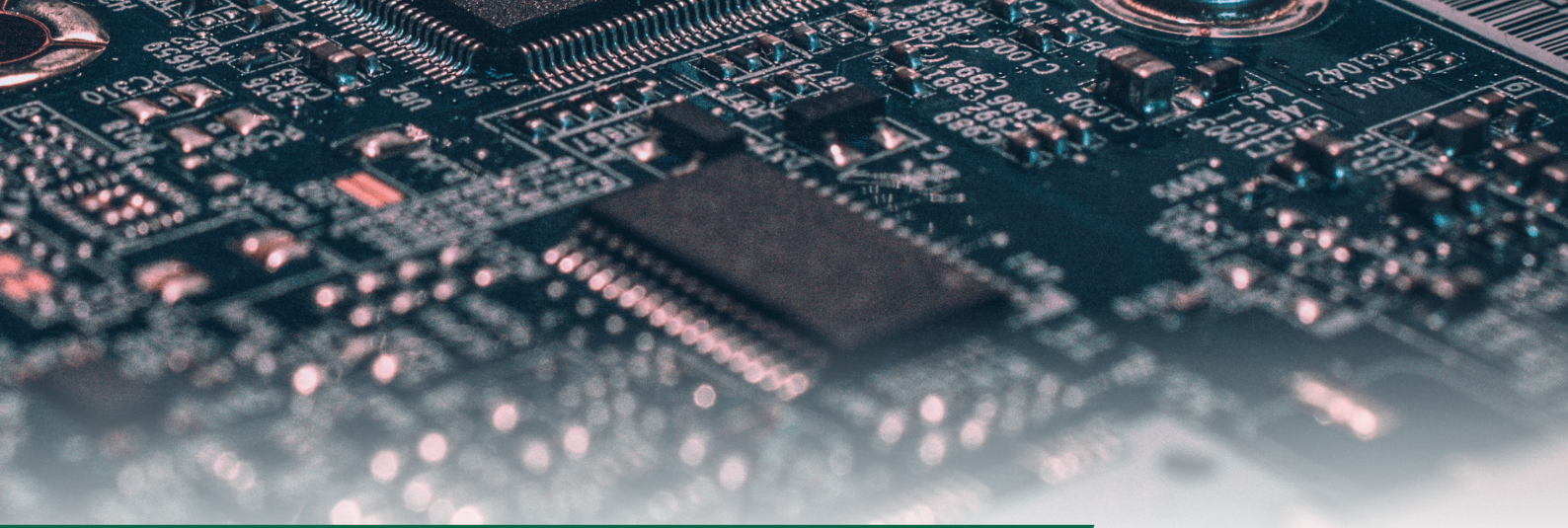
"We need the future of technology in education to be driven by collaboration"

Expectations
What to prepare for

As the saying goes "by failing to prepare, you are preparing to fail." If you truly want this partnership to succeed and be successful you need to have realistic expectations. Having this clear from the get-go means that the partnership between you and the school should go as smoothly as possible.

Here are some things to bear in mind when starting to develop your partnership with schools.

Time: School-business partnerships take time and effort to develop. They are not an overnight success but the result can yield years of mutually beneficial results. Be prepared to put in the groundwork and get this partnership set up- the results are worth the wait!

Content: Schools want content that can tie in with their lessons and curriculum. Consider how your needs can fit in with areas that students may be learning and you can propose ways that they can put theory into practice and make what they are learning relevant to the real world.

Problems: Like many things, it may not go perfectly the first time round. Be prepared to evaluate and readjust or tweak case studies or the way you are developing content. This is a learning process for everyone.

Students are not professionals: the purpose is not necessarily getting them to provide viable solutions to the case studies but to think outside the box, get creative, develop problem-solving skills and gain an awareness of your sector.

Wider community engagement: families and other members of the community may be curious about what your business does and how you are partnering with the school. It is a great opportunity to raise awareness of your company within the community.

Every partnership will be different: no two schools are the same and every partnership will have different objectives, resources, and outcomes.

Guidelines
How to prepare

Guidelines for how to begin and set up partnerships with schools can facilitate the process and make the initial stages more straightforward. Once you have clear guidelines, the whole process seems less daunting and far easier to get started.

Do Start Now: there's no time like the present to start actively looking into collaborations and who you can partner up with

Do Reach Out: Build relationships by reaching out to local schools, or by looking to contacts within your workforce to see how they might develop into fruitful relationships.

Do Identify a Problem: whether the skills gap is sector wide or company specific, make sure you´ve pinpointed what it is. Then you can work towards building a solution

Do have Detailed Discussions: talk with your school partner about what your respective needs and goals are and ensure that from the beginning you are both on the same page.

Do Dedicate Time: ensure you have sufficient time to build these relationships and develop your activities.

Do Discuss Engagement: decide on your level of engagement and participation and make sure that all parties are clear on roles and responsibilities.

Do Provide Context: present your case studies in a contextualised manner in language that is accessible to people who are not experts in your field. We don't want students to feel bogged down by specific language and jargon that takes away from the purpose of the activity.

Do Provide Structure: giving guidelines for solutions to your case studies helps to add structure to activities and gives students a clearer idea of what they need to do.

Do Evaluate Progress: with the school, evaluate how the partnership is working, student engagement and their reactions to case studies and make changes if necessary.

STEP 3

HOW TO APPLY FSA FOR TRAINING & UPSKILLING
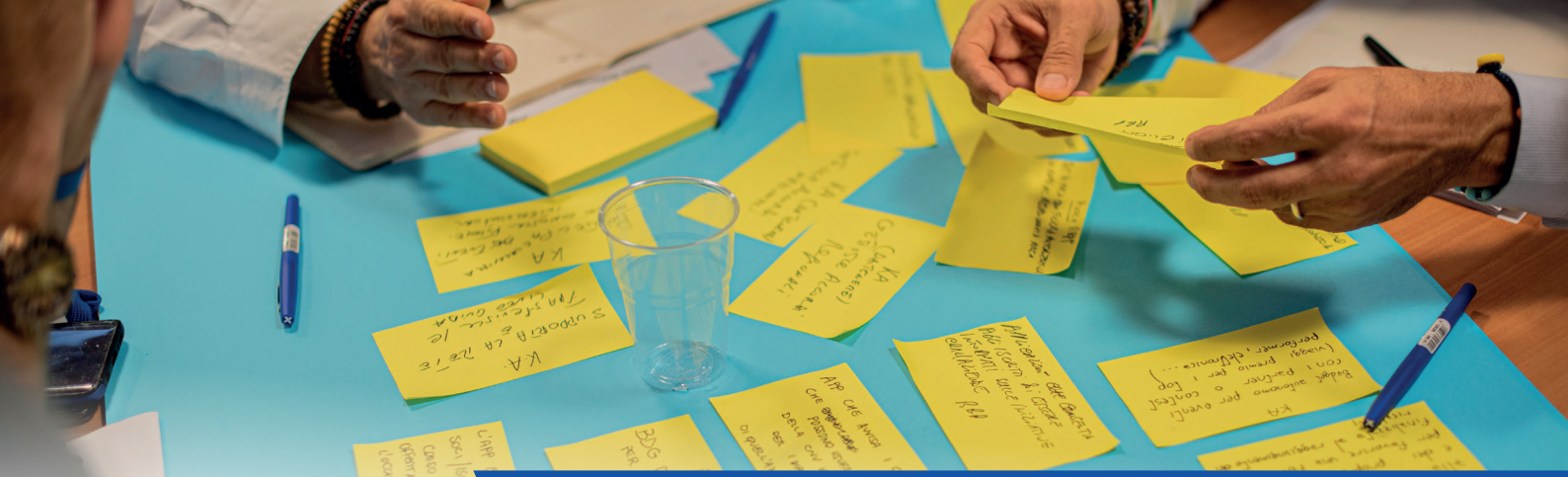
> "The relevant question is not simply what shall we do tomorrow, but rather what shall we do today in order to get ready for tomorrow".
> *- Peter Drucker*

Step 3 - Planning Activities
Top Tips To Get Started with Innovative Activities

A Where to start, you might ask at this point? And literally where to start?!

The truth is, you can set up a Makerspace almost anywhere.

Before you get started, you need to find the right place for your Makerspace. When setting up and initiating a Makerspace, you should ask yourself:

- Who will be using this area?
- What type of space would best suit their needs?
- What is the purpose of this space?

If you decide to set up a Makerspace in your classroom, choose an area that is easily accessible for your students and won't impact your daily routine. It can be challenging to keep the area tidy so it's a good idea to choose a space that is to one side or in a corner of the room.

Consider the possibility that your Makerspace could be used by more than one class and the wider school community. Perhaps you could repurpose an unused room or set up a shared space between two or more classrooms?

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What Do You Need to Create a Makerspace?

You're going to need materials and construction tools. The materials that you need will depend entirely on the focus of your Makerspace.

Don't be afraid to ask your school community and parents for help in providing materials and tools. You could create a list of materials and include it in a class newsletter or tack the list up in a local cafe or even post it on social media. Chances are, you'll get most of the materials and tools that you need for free.
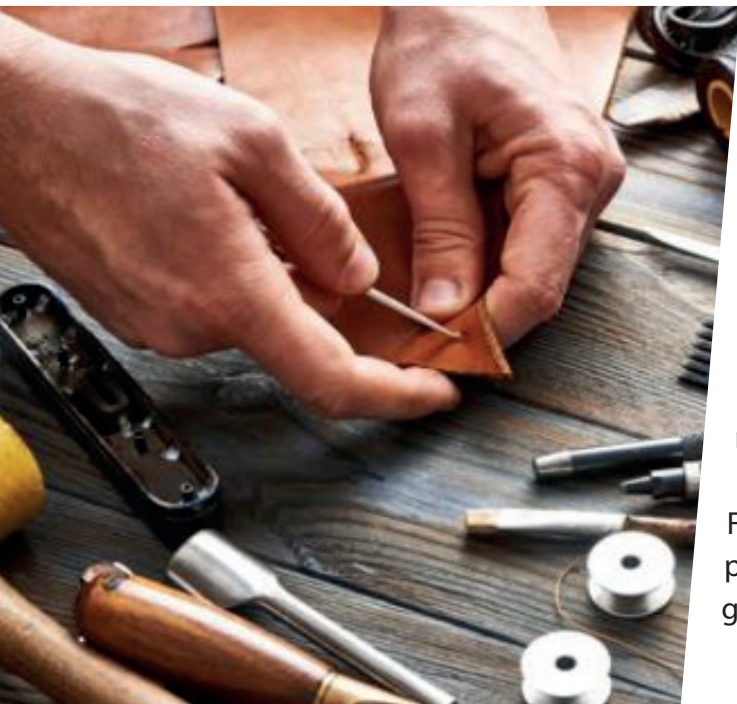
A list of materials might include:

- **General craft materials**
- **Cardboard board boxes**
- **Old toys to deconstruct**
- **Batteries**
- **Containers**
- **Glue**
- **Tape**
- **Wire**
- **String**

You'll also need lots of clearly labelled storage containers and recycling/waste bins!

[Link to PDF – download of list of materials]

MAKER SPACE

Which tools do you need for your Makerspace?

When it comes to construction tools, it's safety first! Safety is an extremely important consideration in any Makerspace program and it's up to you to make sure that your maker program is safe for you and your students. While a Makerspace is suitable for most year levels, ensure that the tools and the materials that you make available are age appropriate.

For upper years students Makerspace tools might include pliers, scissors, screwdrivers, hammers, sandpaper, tape, glue a glue gun and safety glasses and gloves.

[Link to PDF – download of list of tools]

STEP 4

EMBEDDING EMPLOYER INPUT WITH LEARNING CURRICULUM

> **"Students who receive a STEAM education engage in experiential learning, collaborate with others, and persist in problem-solving as they take thoughtful risks and work through the creative process."**

Why real-world examples and experiences are crucial

21st century skills are key for students' future employability. These can be fostered and nurtured through numerous exercises that facilitate the development of key transferable skills. By identifying and focusing on the key sector-specific skills that are currently lacking, we can produce relevant content to encourage students to master these essential skills through achievable learning outcomes with both academic and employability benefits.

One of the biggest problems faced by students is the disconnect between what they are learning and its application in the real world. If students can't see the purpose of learning certain course content they are left feeling like it is a waste of time to learn and irrelevant to their lives. Upon leaving school with their certificates and results they end up feeling that they are ill-equipped and unprepared for the challenges of real life. By embedding employer input into the curriculum, you are making a huge contribution to bridging the gap between theory and practice, bringing the classroom topic to life and giving an insight into the world of work.

How to go about it

The first thing that companies need to do is an analysis of the business to identify its current situation, what is needed, and what resources are available. It is important to not only consider current challenges but to also attempt to predict future needs and requirements when it comes to skills, knowledge and abilities of the future workforce.

When you have your own situation and direction clear you can start to brainstorm and discuss potential proposals and case study ideas that might tie-in with course content being studied by students. Similarly,

schools may already have areas in the curriculum that they are trying to teach in a more dynamic way and may propose learning areas within the syllabus that could be perfect for more engaging and real-world scenarios.

A case study can be written about any problem or complicated situation that has occurred in your business and requires a solution. These are an excellent way to introduce your company to students, give them insight into a tricky situation and get them working on the skills they need to be the workforce of the future.

The content covered in the school curriculum is vast and you´ll have ample opportunities to find a module or subject that ties in perfectly with your case studies and STEAM education. If schools already have Makerspaces, students can get even more creative with their solutions by constructing or developing their own technology or artistic creation to solve your company's challenges.

In the resources section you can find an easy to complete template for developing your case study ideas to make sure that you've explained everything students might need to know in order to solve the problem.

Once you've written the first draft of your case study, read through it to check for any gaps or inconsistencies in content or structure.

- Is it clear and coherent?
- Is it easy to understand?
- Does it avoid complicated sector-specific language?
- Is there enough background to the case?
- Is it a real-life situation that needs to be solved?
- Does it allow students to apply the ideas and knowledge from their course to the practical situation?
- What knowledge gap or problem is it helping you to solve?
- What skills and abilities are students developing?
- What course content is connected?
- Does it allow students to apply the ideas and knowledge from their course to the practical situation?

Some real examples of cooperation between companies and schools

In this section you will find three real examples of cooperation between companies and schools. The most common way of cooperation between companies and schools is hosting students for internships, but Full Steam Ahead goes a step further.

As you can see through the following examples, your company could also support the school by providing raw materials or leftovers they could use for their STEAM projects.
The cooperation doesn't have to be something static, binding both organisations forever. It is more a win-win relationship where you will receive hints and/or help to solve or improve some of your daily tasks or projects and the school and its students will get a topic to work on, based on real examples, which is always more motivating to them.

Next, you will find 3 examples that can be inspiring for you:
- The first one, from Portugal, "Mini-golf for blind people" shows a cooperation where the company provided materials, expertise and guidance through the elaboration of a project in the school.
- The second one, from The Netherlands "Cooperation with Hogeland secondary school", consists of an example of partnership between the local municipality and the schools.
- The third one is operating worldwide: Junior Achievement. This NGO is working in over 100 countries to equip young people with the employment and entrepreneur skills required nowadays, and it has been nominated for the 2022 Nobel Peace Prize.

FIRST EXAMPLE: "MINI-GOLF FOR BLIND PEOPLE"

The Agrupamento de Escolas José Estêvão asked the companies nerby companies if they wanted to cooperate in any of these STEAM projects and the companies that accepted proposed their challenges to the students, asking them to be creative and use their imagination to try to change minigolf so it could reach people with different types of disabilities.

In order to respond to such a challenging challenge, it was necessary to involve other students of the 3rd year of the courses of Industrial Chemistry, Support to Sports Management, and the 2nd year of the Photography course (2016/2017).

The company took the initiative offering the students the possibility to use some of the boards for mini-golf. Then when the students were preparing their final course projects, they were challenged by the school director to act differently through the material and to present new ideas for mini-golf boards. Students made some research and they found that there was no mingilfe for blind people. One of the students presented the idea to create it After some meetings between students, school direction, teachers and company, the project began.

These are the most valuable aspects that came out of this project:

- Students' innovative ideas.
- Students and teachers' capacity of working and planning together with companies.
- Give students and teachers real world problems and reality challenges to develop better human resources.
- Companies have the opportunity to contact and choose the best human resources for working with them.
- Keep your schools opened to community.
- Listen to the students' voice.
- Make your curricula opened to the real world.

SECOND EXAMPLE: COOPERATION WITH HOGELAND SECONDARY SCHOOL

Hogeland secondary school (www.houseofdesign.nl) showed that workshops are a good example in how to implement local value chain in secondary schools. The idea was to teach about how products ae made and by how many parties usually spread all over the world and how this can be changed from a linear production chain to a local value chain.

The main problems were that the school does not have a budget for these classes and they didn't know how to make these lessons part of the curriculum but they were free to develop the lessons within the subject. They are very willing and open and want to learn from our approach. They organized the students and other practical needs.

To solve the budget problem Hogeland Secondary School financed this project with "De Lokale maakplats" so they could go on and proceed with the project.

The most valuable aspects from this project were:

- To combine theory with practice in the lessons
- Teaching skills and stimulating a new generation
- Showing students they can be part of the solution
- Professional designers giving quality lessons; sharing knowledge and experience and teaching the students about crafts and materials
- Invite businesses that work with regional or local topics to make it more meaningful for the students.

THIRD EXAMPLE: JUNIOR ACHIEVEMENT

Junior Achievement (https://www.jaworldwide.org/) is connecting companies and schools since more than 100 years ago. They develop over 50 programmes in which young people follow qualified mentors and develop their critical and entrepreneur skills in a real context.

JA's experiential curriculum begins with exposure to critical skill sets—collaboration, creativity, self-confidence, and resilience—that prepare students for university, vocational education, the workforce, or their own start-up ventures.

JA students job shadow skilled mentors, challenge themselves and their teammates during technical and business innovation contests, and test their skills through multiple channels and experiences. Many students also launch their own businesses, get their first taste of entrepreneurship, and lay the groundwork to be the next generation of job creators.

JA's programs, more than 50 in all, are designed to be immersive, high-impact experiences that give young people a taste of life in the real world. These learning experiences motivate and inspire students to acquire the skills they need for future career success. For some programs, like JA Job Shadow, students leave the classroom for time in the real world. For other programs, like the iconic JA Company Program, JA brings the real world to schools.

The programmes they organise are related to 3 areas:
*   Work readiness
*   Financial Health
*   Entrepreneurship

STEP 5

SKILLS GAPS. PIPELINE FOR FUTURE TALENT

Talent Pipelines

Talent pipelines are quickly becoming an essential part of companies' recruitment processes as they look to the future. **But what exactly is a talent pipeline?**

It is a collection of qualified potential employees which gives businesses immediate access to talented pools of candidates. These pipelines of talented communities are much more than just an accumulation of candidates and require relationship building and engagement from employers.

Skills gaps cannot be resolved solely by educational institutions but rather companies must also contribute to solving the problem. If we can engage with school students of all ages they are developing the necessary skills for the future workforce as well as engaging with and learning about jobs and career choices that they may otherwise not hear about.

It is hugely beneficial for young students to engage with and have access to industry resources during their education. If this is facilitated, companies gain by having young professionals with the skill-set they need and similarly, students receive an education that is relevant and appropriate for the job market.

By expanding this pipeline to include school age students, we are tackling the problem of the skills gap at its core and providing a win-win situation for all.

Companies must face and be ready for future transformations and to do that they must understand the skill-set required for the future which undoubtedly is a blend of technical and soft skills. One way to assess your current workforce and identify any skills gaps is to do a skills audit which enables companies to see where the gaps lie which would in turn inform and influence training plans and programmes to remedy such deficits. This provides a clearer picture of potential training requirements and inhouse upskilling as well as necessary skills developments of new/future hires.

The skills gap is a huge concern for both businesses and jobseekers. Educational institutions are perfectly positioned in the middle though they are, for the most part, working off antiquated models and curriculums that don't meet the needs of prospective job seekers. By partnering with companies class content is modernised and made relevant and the students are gaining the skills and competencies to become the future workforce.

RESOURCES AND TIPS

FULL STEAM AHEAD RESOURCES

Here is a list of templates and resources that you can use or adapt to meet your needs when developing your School- Business partnership.

Resource 1

Resources Assessment for Businesses

Resources Assessment for Businesses

1. What areas of expertise do we have that we could share with schools?

i.e.: ☐Computers and IT ☐Arts and Crafts ☐Science

☐Public speaking ☐Graphic Arts ☐Printing

☐Photography ☐Creative writing ☐Construction

☐Engineering ☐Other: _____

2. What are our current/future needs and how can schools help us?

_____

_____

_____

3.Are we interested in providing more than case studies for use in classrooms: i.e:

☐Mentorship ☐Work Experience ☐Internships

☐Talks and Presentations ☐Short Courses ☐Group Visits to company ☐Career Clinics

☐Curriculum Design ☐Job Shadowing

☐Funding for equipment ☐Workshops on the use of specific industry equipment

4. What resources are available for developing and maintaining partnerships with schools? _____

5. What is the time and cost commitment of this partnership?

_____

6. Who is going to coordinate/ manage the partnership with the school?

_____

Resource 2
Partnership Proposal Form

PARTNERSHIP PROPOSAL FORM

Thank you for your interest in partnering with **[--School Name--]** *Tell us about your proposal by completing these initial questions.*

Organization Name:

Address:

Contact Details:

Date:

Briefly describe your business sector and your mission statement:_____
_____

1. Briefly outline what you want to do in this partnership:
_____
_____

2. What learning outcomes will be achieved through this partnership?
_____
_____

3. What student/school benefits would there be from this partnership?
_____

4. What are the proposed key activities that will be undertaken to achieve the outcomes?
_____
_____

5. What is the target group for this partnership:
☐Primary School Students ☐Secondary School Students
☐School Staff ☐Parents/Families

6.What is the time frame of your proposed activities?
☐Academic year ☐Period of academic year/trimester
☐One-off presentation/talk/event ☐One-off task/activity

7. What resources will be provided to the school?
_____
_____

8. What resources will be required from the school?
_____
_____

SCHOOL BUSINESS PARTNERSHIP AGREEMENT

[--School Name--]
And
[--Business/ Organization Name--]

On the [--Date--] both parties agreed to the following partnership:

1.[--School Name--] will:

Detail the general objectives the school is committing to

-
-
-

State how the partnership is going to be recognized by the school:
_____

*State all **resources** being committed by the school for the partnership (human, financial, time etc.)*
_____

*2.***[--Business or Organization Name--] will:**
Detail the general objectives the business is committing to

-
-
-

State how the partnership is going to be recognized by the business:
_____

*State all **resources** being committed by the business for the partnership (human, financial, time etc.)*
_____

3. Groups Served
Detail the age groups/classes that you are targeting in this partnership
_____

4.Evaluation Methods
Detail how the partnership is going to be monitored and evaluated and under what criteria and timeframe
_____
_____

We agree to adhere to the expectations outlined above

School Name: *Address:* *Coordinator/Principal:* *Contact Details:*	*Business/Organisation Name:* *Address:* *Coordinator/Manager:* *Contact Details:*
Date: *Signature:*	*Date:* *Signature:*

Case Study Template

Background

Company name:	
Sector:	
Size and location:	
Brief description of work:	
Introduce the topic of the main issue briefly:	
Skills required to solve the problem:	
Materials required to solve the problem:	
Link with school syllabus/curriculum:	

SITUATION *(Give detailed information about the situation and problem being faced)*

_____
_____
_____
_____
_____

SOLUTION *(Get students to identify alternative solutions to the problem) (Solution may also be creating/making something)*

1.
2.
3.
4.

RECOMMENDATIONS *(Get students to choose which of the alternative solutions should be adopted)*

_____

(Briefly justify your choice explaining how it will solve the problem)

_____

IMPLEMENTATION *(Explain what should be done, how it should be done, who should do it, and when)*

_____
_____

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