3DEXPERIENCE® Edu

AT YOUR SIDE FOR INNOVATIVE TEACHING

Transform your teaching approach and build tomorrow's engineering workforce – with the help of a powerful digital platform.

DASSAULT SYSTEMES

Reimagine the Classroom

The world of engineering education is evolving. **Exciting new trends** have emerged in education, which can help bridge the skills gap in the engineering industry. These trends include:

Outcome-based education (OBE)

Tertiary institutions are making systemic reforms to implement outcome-based education (OBE) effectively, such as providing experiential learning and project-based learning. OBE in engineering will nurture students' ability to conceive, design, implement and operate complex products, processes and systems in a team-based environment.

Focus on sustainability

In line with the industry's priority on sustainable practices, sustainability topics are increasingly being added to the curriculum. Interdisciplinary integration is essential to equip students with the knowledge and skills to tackle real-life sustainability challenges.

Industry-specific programs

Engineering education now prioritizes industry-specific programs that deliver practical-based learning, a skill-driven curriculum, and industry-based materials. These programs ensure that students are as exposed as early as possible to the latest engineering technologies and trends in the industry.

Hands-on learning

There's a growing emphasis on hands-on learning to help students learn faster, better comprehend diverse knowledge, and solve critical problems in a real-world environment. This is supported by access to industry applications like 3D printing labs and state-of-the-art research labs and software.

So how can you take action and thrive in this changing landscape?

What does it take to reimagine the classroom and set your students up for success in the real world?

Here's where our **3D**EXPERIENCE® platform comes in. It's packed with innovative digital solutions in a virtual environment, providing the necessary tools to achieve your goals.

Ready to learn more? In this handbook, you'll discover three essential steps to help you transform the classroom – with the support of the **3D**EXPERIENCE platform. Let's go!

Make It Experiential

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As an educator, you're well aware that students tend to learn more effectively while experiencing best practices.

And we've got just the thing to make it happen – our **3DEXPERIENCE** platform. It comes with a suite of industrial-level software solutions, trusted and used by top engineering companies worldwide.

Additionally, our platform offers industry-recognized certification programs to support project-based learning. These certifications hold significant value in the job market and give students a competitive edge when it comes to employability.

Through the platform, your students get closer to the real-world working environment, experiencing industry processes and tackling challenges they'd typically face on the job.

Let's take a closer look
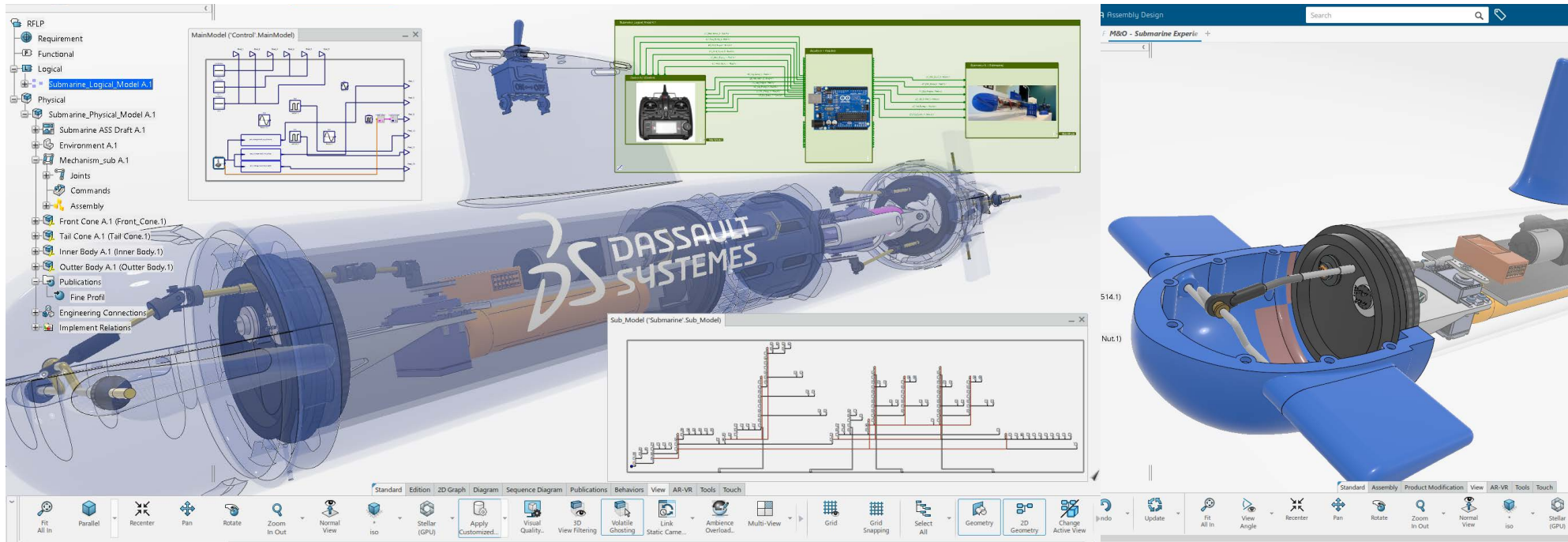at how it works in the following examples:

Systems engineering

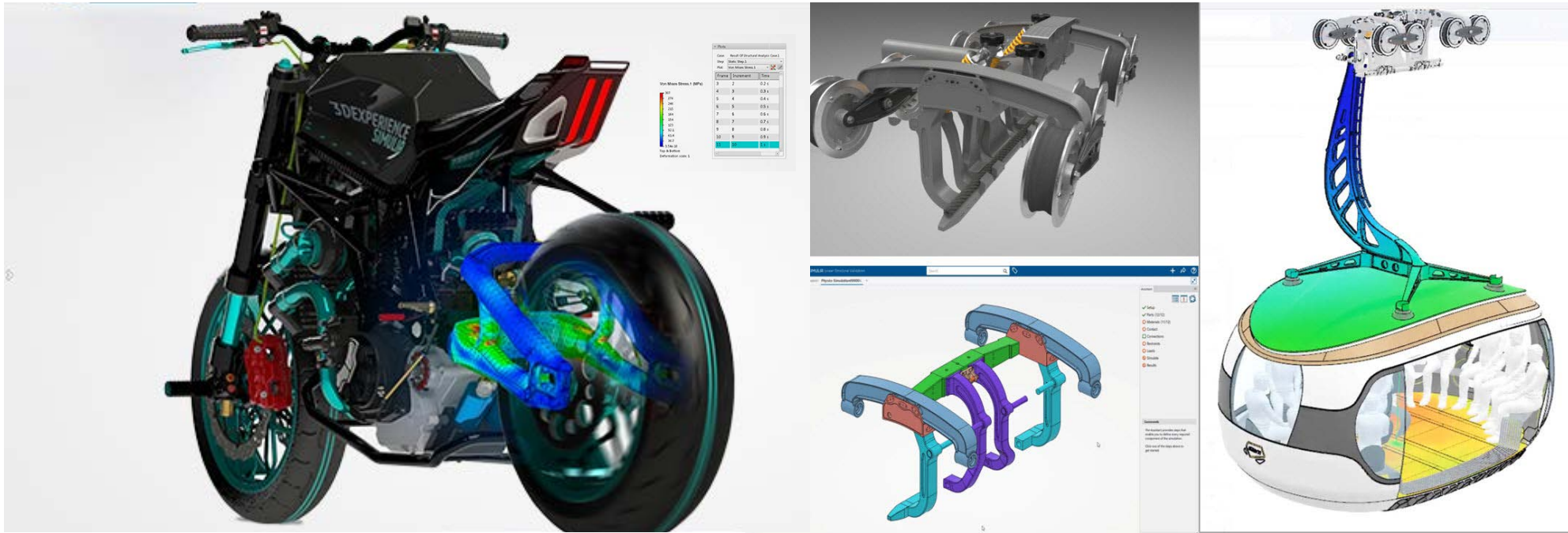Simulation

Virtual manufacturing

Systems engineering

The **3DEXPERIENCE** platform empowers your students to go beyond learning theories on systems engineering.

With the platform's solutions, students can familiarize themselves with modeling modern electro-mechanical systems, simulating their behaviors, and optimizing the systems' design while reducing their environmental impact.

When students use our platform, they gain hands-on experience in the following:

1. Working with an advanced model-based system development platform to speed up the process of creating and validating complex products and systems

2. Integrating embedded systems and 3D product design processes in the simulation of complex mechatronic products and systems

3. Verifying the behavior of complex products and systems through Modelica-based modeling and simulation

4. Collaborating across all disciplines to define a complete system architecture through multiple operational, functional and component views

5. Using systems modeling language (SysML) compliant toolchain for model-based systems engineering

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Simulation

With our **3DEXPERIENCE** platform, your students can jumpstart their understanding and application of simulation technology.

The platform helps by visually reinforcing fundamental theories and introducing advanced concepts in a controlled setting.

Students get to explore multiple scenarios to optimize an outcome.

For instance, those studying fluid mechanics can visualize flow separation while studying how an airfoil shape influences the stall angle.

Instead of analyzing stress in one component, they are able to evaluate complex assemblies using general contact and pre-tuned solution procedures.

For more advanced students, the platform offers opportunities to experiment with complex physical responses such as explicit dynamics, material failure and complex turbulence modeling.

The possibilities are endless, and the benefits are real.

Virtual manufacturing

Imagine if you could make your classroom feel like a real-world manufacturing factory.

With virtual factories becoming increasingly prevalent in the industry, it's time for students to experience the same setting.

Our **3DEXPERIENCE** platform is the perfect enabler. By using the platform, your students interact with 3D digital models that simulate entire manufacturing processes, from plant design to factory operations and human ergonomics.

This experience allows students to learn the methods used in the industry, including:

1. Carrying out the design, simulation, automation and control of part production

2. Programming, simulating and validating robotic assembly systems in a virtual factory context

3. Reducing manufacturing cost and waste with simulated interactions and optimization

4. Evaluating the workplace and product designs, taking into consideration human factors and ergonomic requirements

Step 2

Make It Collaborative

Collaboration is key in the engineering industry, and it starts in the classroom.

Today's complex engineering problems require a collaborative effort, with engineers working with architects and designers in a centralized space.

To prepare your students for this reality, you can rely on our **3D**EXPERIENCE platform, which provides a secure digital environment that connects you, your students, and all vital resources. When everyone is on the same page, it leads to better engagement and outcomes.

The platform makes it easy to work together by enabling:

A unified environment to plan, execute and monitor project statuses in real time

Swift task sharing and input of deliverables, dependencies and milestones

Efficient review of students' work, including the ability to provide feedback through direct annotations on 3D models

Boost collaboration further on the **3D**EXPERIENCE platform, where you'll find online dashboards and communities that add a new dimension to collaboration.
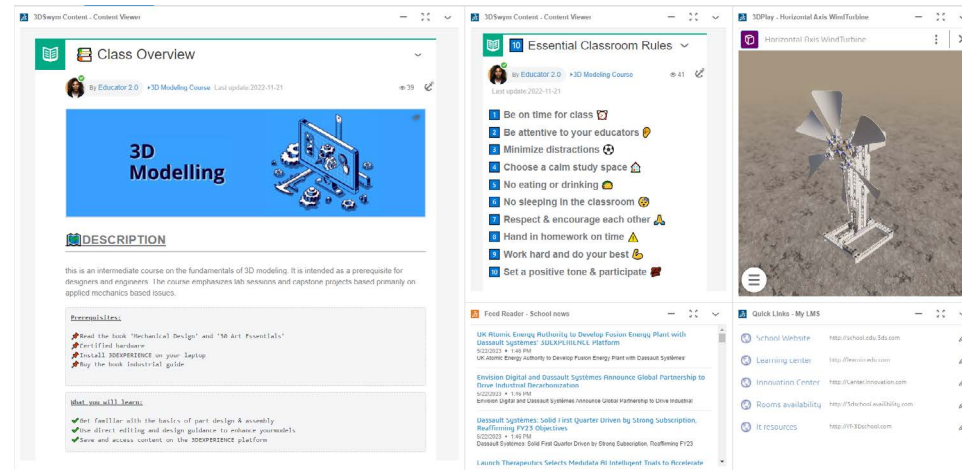
Dashboards: Your most relevant information in one location

Dashboards provide an essential way to keep you and your students up-to-date with the course.

Here's how:

- Quickly create a dashboard and use a wide range of options to tailor the experience

- Share essential course information, homework, class notes and resources in one convenient location online

- Add media to your dashboards to better communicate your concepts, including web pages, documents, videos and 3D files

Communities:
Interact in real time

Easily create class or department communities to share and collaborate on ideas, topics of interest and projects on any device.

In the communities, you can:
- Post updates, questions and surveys
- Share, view and comment on 3D designs regardless of location
- Create, assign and manage tasks
- Propose ideas and use the ideas pipeline feature to gauge support and track their maturity
- Create a wiki to capture and share knowledge

That's not all.

As an educator, you'll have access to a global community of peers to discuss and exchange best practices. The result? You can continuously enhance your teaching methods and stay up-to-date with the latest trends in the field.

Spotlight:
The IMT story

Instituto Maua de Technolgia (IMT) is a private nonprofit learning institute in Sao Paulo, Brazil.

Its students work on various kinds of projects to contribute to society at large – for instance, developing skateboards for a municipal daycare center and partnering with other universities in Colombia and Peru to develop hip prosthetics.

By using the **3DEXPERIENCE** platform, students can access and benefit from a single, connected environment.
It enables them to:

- Integrate diverse knowledge in one place

- Tackle complex problems more easily

- Quickly grasp all project and management cycles – from design to production

- Interact with one another and boost teamwork

Make It Accessible

Cloud technology has made it possible for us to share and access information, anytime and anywhere.

You can leverage this technology to enhance your teaching with the **3D**EXPERIENCE Cloud platform, a cloud-based version of our platform.

The **3D**EXPERIENCE Cloud platform provides a secure and accessible environment for your students to study and collaborate in real time, no matter where they're located. This helps them work more effectively and accelerate the pace of their projects.

Plus, with the **3D**EXPERIENCE Cloud platform, you can ensure that learning never stops – even in the face of disruptive events such as lockdowns and social distancing measures. Your students can access the platform from wherever they are and continue learning remotely, without interruption.

Spotlight:
The RMIT story

Royal Melbourne Institute of Technology (RMIT) has been using the **3D**EXPERIENCE platform on-premise since 2014.

However, with the recent growth in demand for remote learning, the university wanted to provide more flexibility and accessibility for students' learning experience while maintaining its world-class standard of teaching.

To address its challenge, RMIT shifted to the **3D**EXPERIENCE Cloud platform. Its mechanical engineering students now enjoy the same learning experience over their personal devices, anytime and anywhere.

The **3D**EXPERIENCE Cloud platform gives students everything they need to bring their ideas to reality, including applications for design and engineering, simulation, and manufacturing and production. Shifting to the cloud has also meant RMIT could reduce a lot of in-house costs relating to computer labs and tedious IT maintenance.

The Aso College story

During the COVID-19 pandemic, the restrictions in place made it difficult for students to attend classes on campus.

Aso Architecture & Design College responded by finding a solution that provides e-learning classes to prevent students from falling behind in their education.

With the help of the cloud-based **3D**EXPERIENCE platform, the college was able to quickly deploy online CAD courses.

ASO College's students benefit from the ability to:

- Easily share data within a team
- Collaborate on data that can be accessed anytime
- Enable simultaneous changes to the data

Time for Action

" Engineers will address the complex societal challenges of the 21st century by building a new generation of machines, materials and systems. We should fundamentally rethink how we educate engineers for this future."

– Ed Crawley

Ford Professor of Engineering, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, United States

Now is the perfect time to step up and prepare for change.

You have the power to drive the transformation at your institution and grow the best talents for tomorrow's engineering workforce.

With the **3DEXPERIENCE** platform at your side, you're equipped to bring to life a classroom that is experiential, collaborative and accessible.

There's always more to discover.

Our 3DEXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3D**EXPERIENCE Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating virtual twin experiences of the real world with our **3D**EXPERIENCE platform and applications, our customers can redefine the creation, production and life-cycle-management processes of their offer and thus have a meaningful impact to make the world more sustainable. The beauty of the Experience Economy is that it is a human-centered economy for the benefit of all –consumers, patients and citizens.

Dassault Systèmes brings value to more than 300,000 customers of all sizes, in all industries, in more than 150 countries. For more information, visit **www.3ds.com**.

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