

# *Empowering* Project-Based Learning in engineering education

Accelerating engineering education through practical learning



## Why Project-Based Learning matters

Project-Based Learning (PBL) immerses students in real-world engineering challenges, fostering critical thinking, collaboration, and innovation. Knovel serves as a pivotal resource in this educational approach, offering tools and content that bridge theoretical knowledge with practical application.

### Knovel's role in enhancing Project-Based Learning

- **Comprehensive content access:** Knovel aggregates information from over 160 reputable sources, including NIST, Wiley, and Springer, providing students with a vast repository of engineering knowledge.
- **Interactive learning tools:** Features like interactive tables, graphs, equations, and calculators enable students to crunch data and visualise outcomes, essential for hands-on projects.
- **Real-world application:** By simulating industry scenarios, Knovel allows students to apply concepts in contexts that mirror professional engineering environments. Read the article [here](#).



*“Knovel’s information and interactive tools provide real value to students.”*

**Lim Kong Meng**

Head Librarian, Nanyang Technological University

*“Unlike web search engines, Knovel always finds information from reliable technical resources... you don’t have to pore through...questionable options.”*

**Patricia Kirkwood**

Associate Librarian, University of Arkansas

## Evidence of impact in academic settings

### Case studies highlighting Knovel’s effectiveness

- **University of Arkansas:** Incorporated Knovel into their freshman engineering program, enhancing students’ ability to find and apply technical information effectively. [View Case Study.](#)
- **Purdue University:** Implemented a “treasure hunt” assignment using Knovel, promoting information literacy and resource utilisation among engineering students. [Read Article.](#)
- **Kansas State University:** Introduced Knovel to freshman and sophomore courses, resulting in improved student engagement and understanding of manufacturing processes. [Read Article.](#)

### Quantitative benefits



**Time efficiency:** Users report **saving up to 180 hours** annually in research time, equating to a full month of work.



**Risk reduction: 83% of users** indicate that Knovel helps them meet environmental, health, safety, and regulatory requirements.



**Process optimization:** Utilization of Knovel’s resources has led to significant improvements in manufacturing processes, such as a **5.5% decrease in motor failure rates**, saving companies substantial costs.

# How to integrate Knovel into your curriculum

## Strategies for educators

- **Curriculum development:** Incorporate Knovel's resources into course materials to provide students with access to up-to-date engineering data and case studies.
- **Project assignments:** Design assignments that require students to utilize Knovel's interactive tools, fostering practical skills in data analysis and problem-solving.
- **Workshops and training:** Organize sessions to familiarize students with Knovel's platform, enhancing their research capabilities and confidence in using professional engineering tools.

## Student engagement

- **Competitions:** Encourage participation in initiatives like the Knovel University Challenge to motivate students and provide real-world problem-solving experiences.
- **Research projects:** Support student-led research by guiding them to relevant resources within Knovel, promoting independent learning and critical thinking. [Design News Engineering and Technology Magazine](#).

For more information and resources, visit [Knovel's Higher Education Page](#).

## External resource and article links

1. Real world application – <https://blogs.ncl.ac.uk/subject-support/2022/04/>
2. University of Arkansas case study  
– <https://peer.asee.org/freshman-and-sophomore-introduction-to-manufacturing-related-engineering-handbooks-using-knovel-databases>
3. Kansas State University article <https://assets.ctfassets.net/o78em1y1w4i4/54T5YqFFnIvE5Vq1CXt0WH/075e1c5dd9267203842b7620f99c6265/KN-ACAD-L-CS-University-of-Arkansas-DIGITAL.pdf>
4. Purdue University – [https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1034&context=lib\\_research](https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1034&context=lib_research)
5. Knovel Promoting Critical Thinking – <https://www.designnews.com/industry/knovel-supports-student-engineering-competitions>