

Section three UK Insights

What are the UK's strengths in this skill?

- Many UK apprentices work in high-skilled jobs, which leads them to be good problem solvers.
- UK competitors are accustomed to thinking creatively and adapting to new technologies
- UK competitors usually have a good breadth of engineering experience from working in world-class companies

What are the UK's areas for development?

- **Students can sometimes lack experience using CAD/CAM software.** Traditionally, CNC machinists would move to programming later in their careers. This is something that could be improved upon, by giving apprentices more experience to CAD/CAM software and programming earlier will help them to be analytical of machining processes, encouraging continuous improvement.
- **Working to tight tolerances and understanding how to adapt a machining process to ensure greater accuracy.** Some competitors don't always have the experience or knowledge on strategies to improve accuracy and can have issues using measuring equipment effectively.

What are the key skills that UK Educators need to develop/improve in their students in readiness for competitions, industry & employment?

National Competitions

CAD/CAM experience

Competitors should have a strong grasp of either Mastercam or Fusion 360, both of which are supported at the national competition. Educational resources for both software are readily available.

Time management

Working to tight time limits for each stage of the process. Use stopwatches to time competitor's tasks so they have an understanding of how long each task takes.

Employment / Industry

Understanding of metrology principles as well as skills with measuring tools, Micrometers, DTIs, slip gauges.

Training/CPD resources for UK educators

WorldSkills UK CAD/CAM training activity:

https://www.worldskillsuk.org/wp-content/uploads/2024/04/CNC-Milling-Pre-Competition-Activity_V2.zip

Mastercam University:

<https://www.mastercam.com/support/product-training/>

Mastercam WorldSkills page:

<https://www.mastercam.com/community/competitions/>

Autodesk Fusion 360 Learning:

<https://www.autodesk.com/learn/catalog/product/Fusion>

Autodesk Fusion Project:

<https://www.autodesk.com/learn/ondemand/collection/haas-fusion-cad-cam-cnc>

Final Thoughts

Head over to the WorldSkills UK CNC milling competition page [here](#) and download the pre-competition activity. This has training tasks that walk the student through how to approach programming a component. It has written guides, video tutorials and resources such as drawings, step. models and a marking scheme.

Work on embedding the robot part, or something similar into your teaching, it could be used as a skill build activity or as an assessment.

Use the online educational resources from either Mastercam or Autodesk to help stretch and challenge students, many of the learning resources can be used as extension tasks.

A great way to see what is happening in CNC skills would be to arrange a trip to see the WorldSkills national finals which take place in November each year. From there you can enter students when registration opens at the start of every year.

