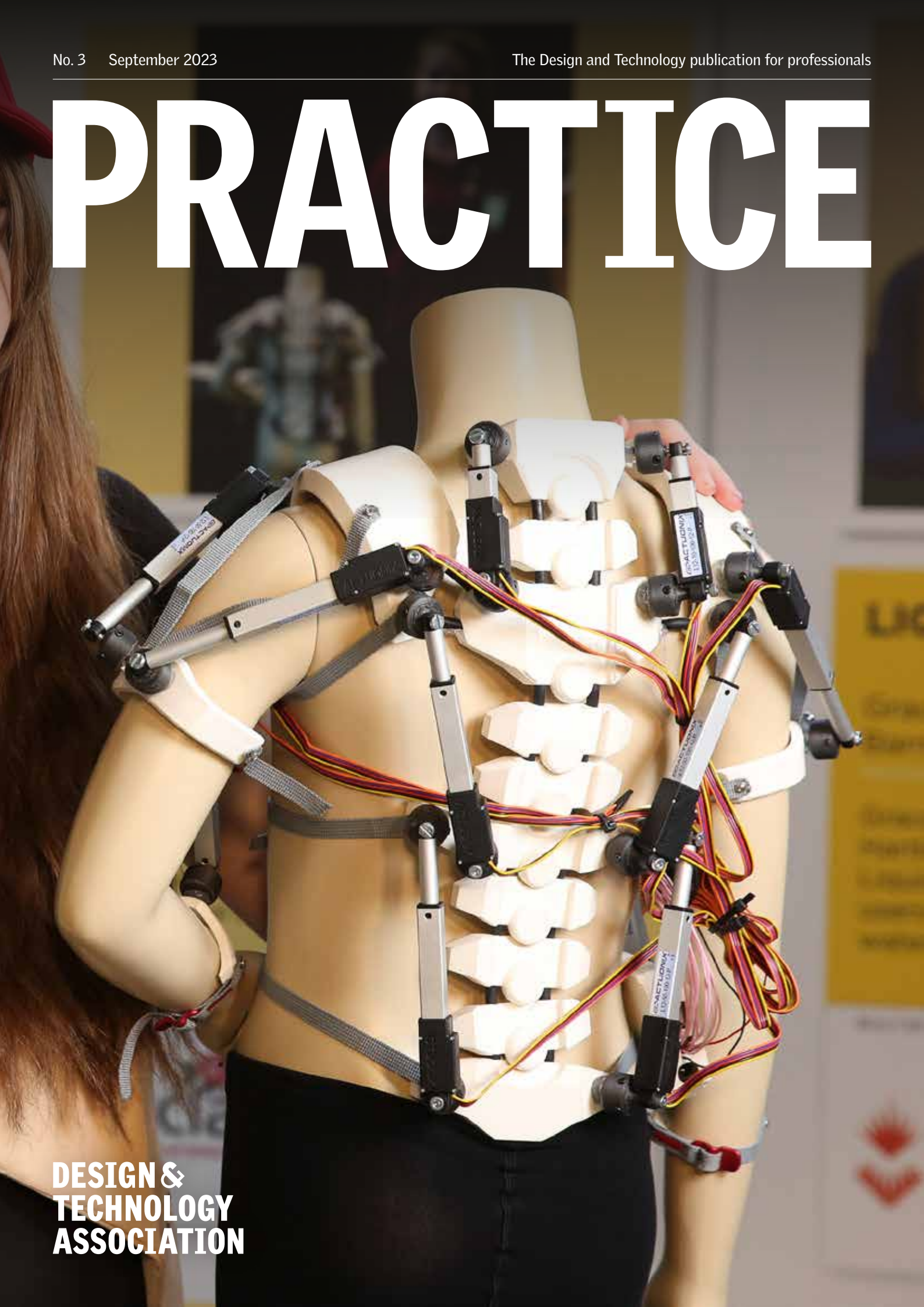


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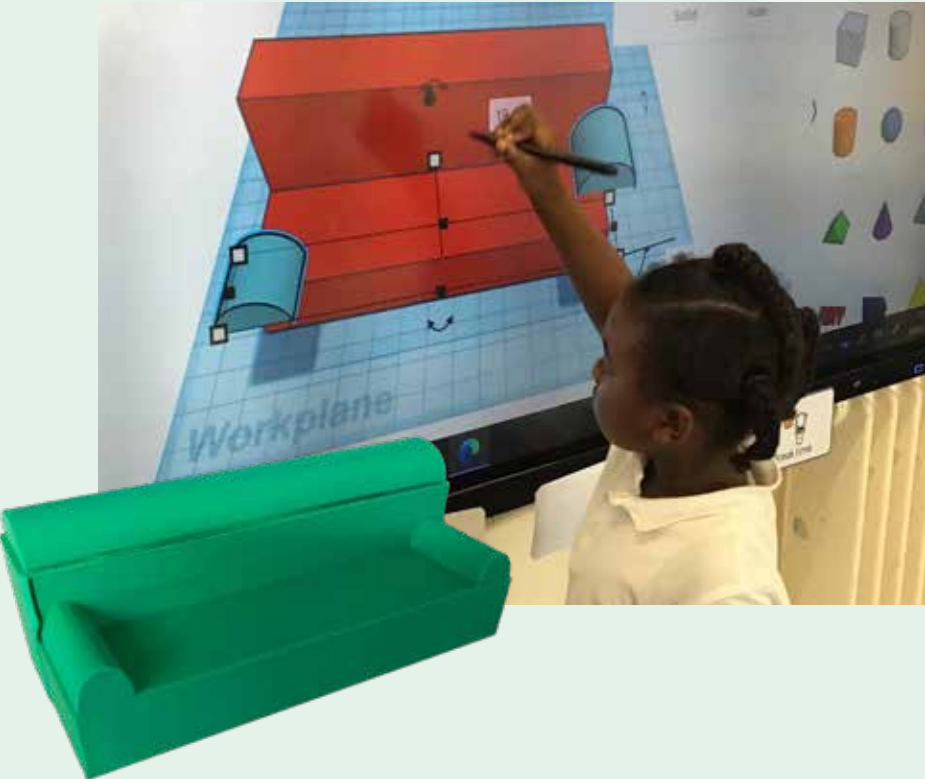
**DESIGN &
TECHNOLOGY
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Empowering Students' Creativity: Integrating CAD and CAM into the Primary Classroom

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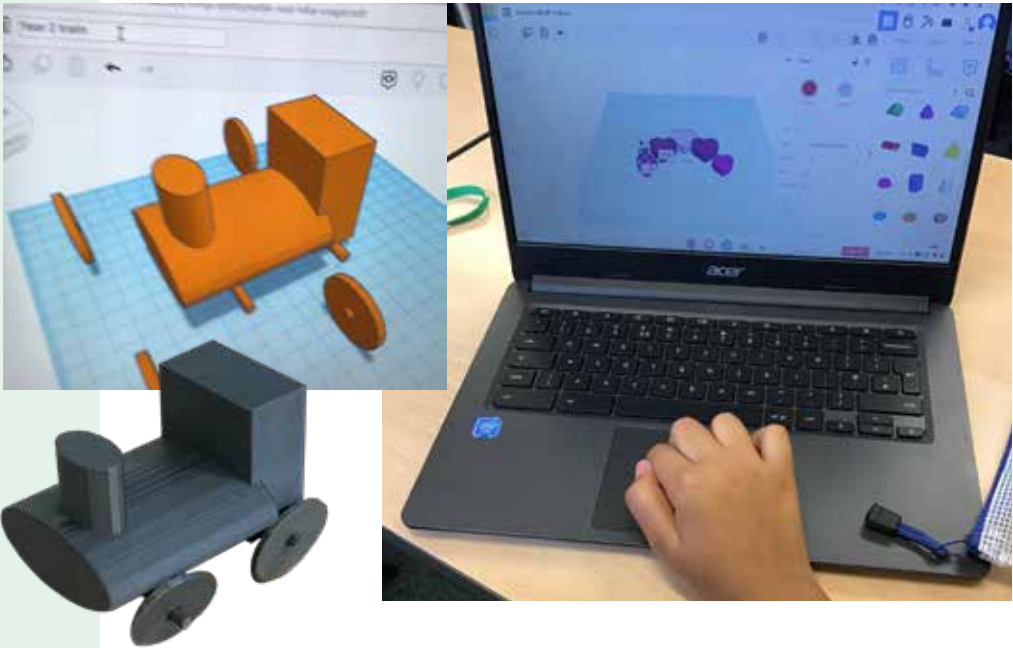
In the ever-evolving landscape of education, it is crucial to equip students with the skills necessary to thrive in the digital age. One approach that has gained momentum is the integration of Computer-Aided Design (CAD) and Computer- Aided Manufacture (CAM) into the curriculum. This article explores the journey of our school that has embraced this technology through the CREATE Education loan scheme and highlights the impact it had on our students' learning and creativity.



3D Printing

In the Summer term of 2022, our school introduced CAD and CAM by acquiring a loaned 3D printer through the Create Education loan scheme. We carefully designed a curriculum plan consisting of four activities, each tailored to a specific Key Stage 2 year group. This approach allowed us to ensure the projects were suitable in complexity for each age level, while progressively building students' skills and confidence.

To begin, students familiarised themselves with the Tinkercad software, through its user-friendly interface and engaging tutorials. Through these initial exercises, students learned essential skills, such as placing shapes, resizing, rotating, and adding holes to their designs. Once the students had grasped the fundamentals, they embarked on the planned project for their respective year groups.



Year 3

In Year 3, students created buttons by combining various shapes and utilising the holes to punch holes through them. This activity introduced students to functional design elements and developed their spatial thinking.

Year 4

Moving into Year 4, students crafted personalised keyrings. They learned to join shapes, incorporate text, and create holes for the attachment ring. This project fostered both creative expression and practical application.

Year 5

Year 5 students ventured into the realm of imagination, using the doodle tool to draw shapes that were transformed into 3D objects. By designing their own cookie cutters, students discovered the power of converting their ideas into tangible products.

Year 6

In Year 6, the focus shifted to more advanced concepts, specifically exploring overhangs. Students were challenged to design a phone stand, requiring them to consider structural integrity and problem-solving techniques. With the foundational knowledge gained from earlier years, they were ready to tackle more complex design considerations.

Driven by the desire to provide a comprehensive 3D design and manufacturing experience, we decided to involve all the students in the school. Collaborative learning became the centrepiece as students from different year groups came together to work on a class project. Using an interactive whiteboard, they collectively designed a product with the teacher's guidance. Year 1 students created a sofa for their teddy bears, while Year 2 students designed a train. This cross-year collaboration nurtured teamwork, communication, and creativity.

Early Years Foundation Stage

Even our Early Years Foundation Stage students were not left behind. They eagerly joined the 3D design and manufacturing journey by creating a bear through assembling various parts available on the Tinkercad software. Once printed, the bear became a cherished addition to the small world area, sparking imaginative play and reinforcing the connection between the digital and physical worlds. Since then, we have refined the project to support the development of fine motor skills, personalisation, and a sense of ownership over their creations. Drawing inspiration from the unique and personal nature of handwriting, we selected an activity where the pupils used their own handwriting to create a 3D printed name plate. This activity not only aligned with their developmental stage but also encouraged a sense of pride and ownership in their work.

By introducing CAD and CAM through the Create Education loan scheme, our school transformed the learning experience for our students. The carefully planned projects tailored to each year group allowed students to progress gradually while building a strong foundation in 3D design. The whole-school engagement fostered collaboration and creativity, ensuring that every student had the opportunity to explore the world of digital manufacturing.

As we continue to embrace technology and innovation in education, integrating CAD and CAM into the curriculum offers students a unique avenue to develop critical thinking, problem-solving and design skills. By empowering students to turn their ideas into reality, we are preparing them to thrive in a future where creativity and digital literacy are paramount.

Links



CREATE Education:
www.createeducation.com/



3D Printer Loan Scheme:
www.blueprint1000.org.uk/case-studies/create-education.org