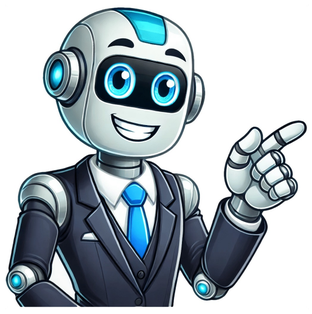
I'm human



Technology Can Help Revitalize Maths Lessons, Say Experts Experts say that engaging pupils with technology-based practical work can boost maths engagement levels. This approach was first recommended in the 1982 Cockcroft Report, which highlighted the importance of 'appropriate practical work' in maths classrooms. The report's third element emphasized the need for learners to transition from handling objects to using pictures or diagrams before progressing to abstract reasoning. However, many modern secondary classrooms lack practical maths activities. A recent example illustrates this point. A teacher observed Y8 pupils enjoying a hands-on activity measuring cereal packets and computing their areas. Despite being proficient in abstract algebra, many struggled with a similar problem presented mathematically. The experts highlight that learning doesn't progress linearly from 'concrete' to 'symbolic'. Practitioners can benefit from moving between stages by incorporating practical activities into maths lessons. Practical work offers numerous benefits beyond cognitive development. It motivates pupils, promotes collaborative working, and helps develop manipulative skills. The use of technology can then be integrated to enhance these experiences. The experts stress that practical work encourages discussion and precise language, which is essential for mathematical thinking. Even simple activities, like using a knotted string, can facilitate learning. Why not replace traditional tools like pencils, rulers, and protractors with digital alternatives on our whiteboards? Students can dive deeper into advanced packages like graph drawing software and interactive geometry tools to explore circle theorems at a higher level. The idea of giving every student access to a calculator was first suggested in the Cockcroft report, and it wasn't long before this goal was exceeded, making calculators a ubiquitous tool in math classes. Calculators aren't just useful for performing calculations, but also offer students greater flexibility with programmable models. However, our reliance on technology has shifted from prioritizing computing power to accessing information, thanks to the rise of smartphones. Today, spreadsheet tools like Excel are widely available and can be used to study statistics, data analysis, and probability. For instance, you can use Excel to generate sample means by entering random variables and copying them across columns. Students can also create spreadsheets to compute gradients and intercepts for lines of best fit or explore the power of Taylor series. This digital approach can spark a "wow" factor in students and provide insight into how calculators work their magic. Let's take a closer look at the outcome when we shorten the compounding interval. What makes it stand out? To wrap up this session, let's dive into one of our favorite hands-on exercises – exploring the harmonic series using Excel: It may diverge slowly, but that's what makes it fascinating! By setting up a loop in Visual Basic for Applications and letting Excel do the calculations, you can compute massive upper limits to the time required to reach a specific small total. Once again, demonstrating concepts can spark imagination. That's precisely what we need to be doing when teaching mathematics – something that practical work and technology can greatly facilitate. We once witnessed a fascinating Y10 physics lesson in an all-girls school where students recorded background radiation levels, then compiled an Excel column of readings from various substances. The initial excitement surrounding radiation quickly gave way to surprise as pupils discovered how easily they could subtract the background radiation value from every other reading using just one menu option. Keith Parramore and Joan Stephens are a mathematician couple who co-authored "Lessons Learned from Maths Lessons" (John Catt Educational, £16), available now. Both authors have experience teaching mathematics in different school settings and held academic posts at the University of Brighton and University of Chichester.

Practical activities in maths. Examples of practical activities. Practical activities in teaching mathematics. Practical math.