

**CENTURY**  
INTELLIGENT LEARNING™

## The platform that learns how each of your students learn

Going beyond the VLE and LMS. Introducing the advanced technology platform which personalises each student's learning path to mastery, automatically fills gaps in knowledge and skills and automates data tracking and data management for teachers.



### School leaders use CENTURY to:

- Easily track progress, achievement and measure impact
- Access data insights on an individual, class and whole school level
- Support teachers with timely and effective interventions
- Improve student learning outcomes
- Reduce teacher workload

*CENTURY offers a truly individualised and tailored approach to the preferred and most effective learning techniques of each and every student. It is a step change to the technology schools have had to date.*

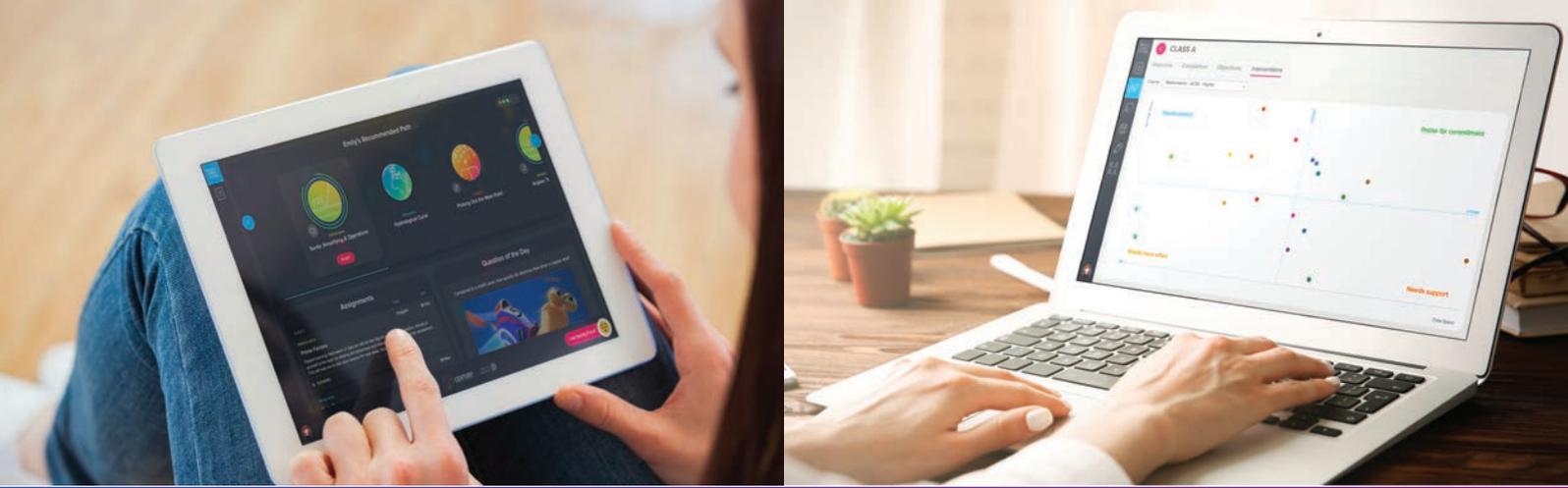
*UK Secondary Academy Trust Director*

*It saves me an hour per week per class on marking, planning and assessing.*

*Maths teacher, Kent*

*I like the way CENTURY adapts to my level of learning and helps me understand topics. It is also fun and easy to use.*

*CENTURY student*



## PERSONALISED LEARNING → DEEP DATA INSIGHTS

**With teachers spending up to 60% of their time on administrative tasks and data management, they need a solution which is easy to use and allows them to focus on teaching and timely interventions.**

- Real-time data dashboards provide insight into each student's progress, achievement, strengths, areas for improvement and skillset, supporting evidence based teaching and complementing the Ofsted inspection report
- Automate routine tasks, allowing the teacher more time to focus on students' learning and development
- Using big data analytics, CENTURY uniquely provides deep insights to educators based on student learning behaviours

**No two students are the same. Each one has a unique set of skills and challenges.**

- Artificial intelligence and predictive analytics learns how each student learns, recommends suitable content and addresses gaps in knowledge and skills
- A totally personalised learning experience with personalised messaging which helps develop a growth mindset and improve long term memory retention

**A whole solution for any subject, at any level.**

- Use in a flipped or blended learning model, for homework, revision or classwork
- Integration with MIS, including SIMS
- Diagnostic tests, GCSE and Functional Skills content available. KS2 and KS3 coming soon
- Multimedia authoring tool: integration with Microsoft, Google, videos, audio and more
- Free CPD courses

Sign up for a **free trial** at [leaders@century.tech](mailto:leaders@century.tech)



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**Maths in crisis: teacher shortages, exam reform and funding turmoil**

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**How artificial intelligence will transform the classroom**





## The Research Basis of CENTURY

At CENTURY we want to harness technology to improve learning outcomes for students and to support teachers with real-time data insights. There are various ways we achieve this.

### Machine Learning

CENTURY uses machine learning to create a unique Recommended Learning Path (RLP) for every student. Rather than developing specific rules for each possible starting point (which would quickly become so intricate as to be impossible), our software is “trained” using large quantities of data. This training allows the technology to “learn” what the best output is from a given set of inputs. Our machine learning algorithms are constantly learning and never leave their “training” phase; every click, every interaction, every score on CENTURY is recorded and all the patterns of behaviour are analysed. The machine learning technology, combined with cognitive neuroscience principles, determines the most conducive long and short term learning paths. The result is a Recommended Learning Path as unique as each student is, carefully crafted to suggest the most useful nugget (a singular piece of learning material on CENTURY) at exactly the right time. **The more a student uses the platform, the more our algorithms learn about the student and the more nuanced and accurate the recommendations become.**

### Failure Adaption

CENTURY adapts the Recommended Learning Path (RLP) to each student based on performance on previous material, among other things. When learning material is uploaded or created via CENTURY, it can be tagged with prerequisite skills, either from within the same course or from other courses. For instance, in a maths course, ‘trigonometry’ teaching material may have ‘triangles’ tagged as a prerequisite skill: to understand how trigonometry works, students need to know the basics of triangles. At a cross curricular level, World War I poetry studied in an English Literature course could have history topics as prerequisites. To use the former case as an example, if a student performs poorly in trigonometry, our algorithms will look back to the pre-requisite triangles topics to determine whether difficulty in this area is potentially causing the current poor performance. If so, the triangles topic will appear in the RLP for the student to study, before they are invited to return to the trigonometry topic. This is failure adaption.

Initially, the prerequisites are determined by the content creator - the ‘human in the loop’ - but over time our machine learning algorithms will also detect patterns in material and build on the manual inputs to create a deeper web of interconnected skills. In time, each student’s RLP will



become a unique pathway, tailored to address their specific gaps in knowledge and rectify any misunderstandings.

### Metacognitive Learning Skills

Experimental evidence suggests that improvements in learning can be achieved by encouraging what might be termed “positive metacognitive skills”. To take the jargon away, this is the concept that how a student thinks about and approaches his/her learning has an effect on how he or she ends up learning. If we can encourage positive learning strategies and positive approaches to learning, we can also improve the quality of the learning that takes place.

There is a current buzz around Growth Mindset, and this is a good example of a metacognitive skill that affects learning. Empirical evidence suggests that students who believe that their intelligence is “fixed” (intelligence is set and cannot be changed no matter how much the student works) are likely to achieve less in their education than their peers who believe that intelligence can be increased with time and effort. At the moment, we primarily encourage a growth mindset, along with other metacognitive learning skills, via cognitive messages that are presented to students via the platform at key times. Students see a personalised message when they login that gives feedback on their learning (based on achievement, duration of study and time since last study session) and encourages helpful strategies. They receive similar messaging on the results screen. These messages have been written to subtly encourage a growth mindset, to encourage resilience and to promote healthy learning techniques.

### Retrieval Practice (Spacing Effect)

Because our principal aim is to improve learning outcomes for our students, we have spent some time devising features that will encourage the long term retention of information. We know that memory degrades quickly if information is not reviewed, so we have built principles of retrieval practice and the spacing effect into our Recommended Learning Path (RLP). A simple explanation of spacing is that if you have 30 minutes to spend studying one topic, it is better to split the time into three 10-minute study sessions than to lump it into one 30-minute session. The three sessions will result in a more robust memory of the information for longer because you have had more practice at actively *retrieving* the information from memory. There are two ways spacing is currently implemented in CENTURY: Firstly, we implement spacing into the RLP directly by reviewing previously studied material periodically; and secondly, we interleave nuggets from different topics (breaking up learning material on one topic with learning material from other topics), meaning that micro-gaps are achieved, even when students are studying in one longer single stretch of time.

### The Feedback Loop

Feedback can have a powerful effect on learning. The most effective feedback provides cues or reinforcement for learners and takes place at the point of learning, so we have shaped all of our



auto-graded assessments on CENTURY to include instructive feedback. On CENTURY, when students get an answer wrong they are given an explanation as to why the answer was wrong and/or help to answer correctly next time. Formative feedback to the student is only one part of the feedback loop; we also arm the teacher with thorough and accurate data about their students' learning. By providing teachers with instant access to detailed learning data at an individual and class level, CENTURY enables them to plan optimally for their students and to intervene where necessary.

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