# EDTECH CAPABILITIES AND LEARNING OUTCOMES

Global Survey | England Results | September 2018

# Summary

**Technology can help transform learning.** But numerous studies have shown that **more technology in the classroom doesn't automatically yield better results**. Effective learning and technology use depend on complex systems and behaviours, and when the conditions are right, technology can advance learning significantly. **Getting the conditions right is vital for the success of today's learners.**

- A survey of 55 English education leaders, part of a broader 11 country survey, found **a link between schools' EdTech capabilities and their reported success in driving favourable learning outcomes**.
    - The survey evaluated **22 evidence-based EdTech capabilities**. These capabilities were identified through a literature review of education best practices from around the world, followed by consultation with education leaders and education technology consultants.
    - The survey asked respondents to indicate their **success in achieving or advancing outcomes** including student test scores, teacher satisfaction, school performance and student career readiness.

- English education leaders who indicated high outcomes also reported significantly higher development in their EdTech capabilities, especially those related to:
    - **Technology and professional development planning**
    - **Engaging stakeholders in the technology planning process**
    - **Supporting Social Emotional Learning**

- **Not all EdTech capabilities showed an equal impact on outcomes**.
    - While all the 22 capabilities showed a positive relationship to participants' reported outcomes, some capabilities were more strongly correlated to better outcomes. These included the capabilities listed above, as well as capabilities related to **technology and implementation evaluation and technology change management**.

- Participants who reported higher outcomes also indicated differences in their technology mix.
    - **High-outcomes respondents indicated using more software relating to student collaboration, game-based learning and assessment**.

- Research has shown that well-implemented EdTech can reduce costs in other areas.

- A 2016 study showed that technology drives better learning outcomes when it is chosen to complement defined teaching practices.

Find out where you stand. Get your custom EdTech Capability Profile at **www.smarttech.com/profile**

# Introduction

Technology can help transform learning. But as numerous studies have shown, more technology in the classroom doesn't automatically equal better results. Most notably, the Organisation for Economic Co-operation and Development (OECD) and John Hattie, Director of the Melbourne Educational Research Institute, have raised concerns that education spending does not equate to better outcomes.

Effective learning and technology use depend on complex systems and behaviours. When conditions are right, technology can advance learning significantly. Getting the conditions right is vital for the success of today's learners and teachers.

Earlier this year, SMART Technologies commissioned a global survey of 536 education leaders that found a link between schools' EdTech capabilities and their reported success in driving favourable learning outcomes. Education leaders participated from 11 countries, including England, Scotland, Wales, Northern Ireland, the United States, China, Germany, Canada, Australia, the Netherlands and Spain. This white paper focuses on the 55 English education leaders who participated in the survey.

In England as well as globally, survey respondents who reported a high stage of development in 22 EdTech capabilities were more likely to indicate increased student test scores, improved school performance, high teacher satisfaction, and advanced student readiness and digital competencies. English respondents with high stages of development in these capabilities also reported strong success in technology implementation. Conversely, leaders who reported less developed EdTech capabilities indicated lower levels of success in these outcomes.

The survey also found that some EdTech capabilities have a stronger correlation to higher outcomes. In England, the 36% of schools who achieved high learning outcomes prioritize the 22 capabilities very differently from the 22% of schools who reported low outcomes. These two groups of schools also showed different approaches to their classroom technology mix, with the high-outcomes group favouring technologies that promote progressive, student-centered pedagogies.

# A link between EdTech capabilities and outcomes

The survey polled leaders of one or more schools and asked them to evaluate their schools' stage of development in 22 EdTech capabilities.

These evidence-based capabilities were identified through a literature review of education best practices from around the world. This review sought to define the capabilities that support all schools' effective use of technology, regardless of where they are located, the pedagogies they employ, or their policy environment.

Secondary sources for education and EdTech best practices included NAACE, ISTE, the Friday Institute for Educational Innovation, European Digital Competencies, UNESCO, CASEL and many more.

The literature review was followed by consultation with 31 education leaders and technology consultants from 6 countries. Through this process, 22 capabilities in 4 categories were identified:

## 22 EDTECH CAPABILITIES

### STRATEGIC TECHNOLOGY PLANNING
- Leadership vision and stakeholder alignment
- Strategic planning
- Technology change management
- Evaluation of technology and implementation effectiveness
- Teacher participation in technology planning
- Student participation in technology planning
- Parent and wider community engagement
- Acceptable technology use policies

### INTEGRATION OF TECHNOLOGY IN TEACHING AND LEARNING
- Embedding technology in teaching and learning
- Use of digital content and applications
- Assessment of student progress
- Support for Social and Emotional Learning
- Development of teacher and staff mindset

### PROFESSIONAL DEVELOPMENT
- Professional development planning
- Focus of professional learning
- Training offerings and options
- Evaluation of professional development effectiveness
- Opportunities for collaborative professional development

### TECHNOLOGY INFRASTRUCTURE AND MANAGEMENT
- Network infrastructure
- Design of learning spaces
- Technical support
- Compatibility of learning technologies

English survey respondents reported their mean stage of EdTech capability development at 61.50 on a scale of 100.
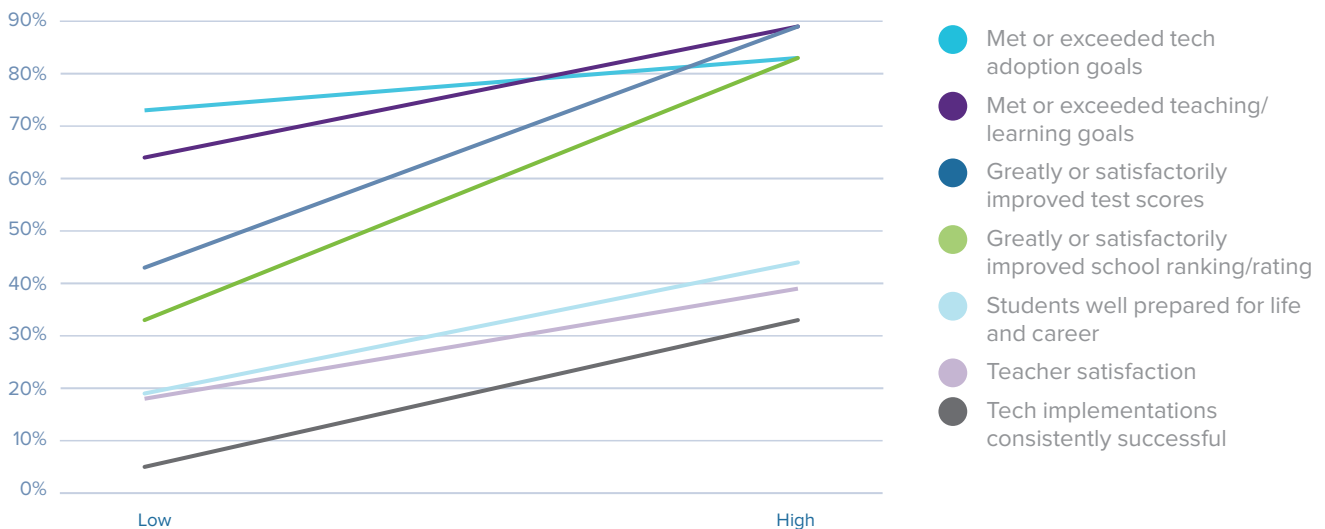
## Learning outcomes

Survey participants were also asked to provide their perspective on the outcomes they see in their schools. Survey respondents evaluated:

1. The extent to which their schools met **teaching and learning goals** in the past year
2. The extent to which **students' average test scores** improved in the past year
3. **Teacher satisfaction** in their schools over the past year
4. Change in their schools' **rankings or ratings** upon last review
5. The extent to which their schools met **technology implementation and adoption goals** in the past year
6. Level of **student preparedness** to be active contributors to society and grow their well-being, life and social skills

The survey found that respondents who indicated a high stage of EdTech capability development also reported higher achievement or improvement in learning outcomes.

### OUTCOMES AT LOW AND HIGH STAGES OF DEVELOPMENT IN ALL 22 EDTECH CAPABILITIES FOR ENGLAND



Legend:
- Met or exceeded tech adoption goals
- Met or exceeded teaching/ learning goals
- Greatly or satisfactorily improved test scores
- Greatly or satisfactorily improved school ranking/rating
- Students well prepared for life and career
- Teacher satisfaction
- Tech implementations consistently successful

OVERALL STAGE OF DEVELOPMENT FOR ALL 22 CAPABILITIES

Differences in participants' responses to questions about test scores, ranking/rating and technology implementation are statistically significant at the .10 level or better (see Appendix B).

# Differences in EdTech capability of high- and low-outcomes respondents

School leaders in England who reported high outcomes demonstrated significant differences in their stage of development when compared with those who reported low outcomes (20 of 22 capabilities are significantly different). The largest differences indicate that school leaders who report high outcomes give more focus to planning and evaluating their technology implementations and professional development.

Capabilities demonstrating the largest differences:

- Strategic planning
- Evaluation of technology and implementation effectiveness
- Student participation in technology planning
- Assessment of student progress
- Professional development planning

## PERCENT DIFFERENCE IN EDTECH CAPABILITY DEVELOPMENT IN HIGH- AND LOW-OUTCOMES RESPONDENTS
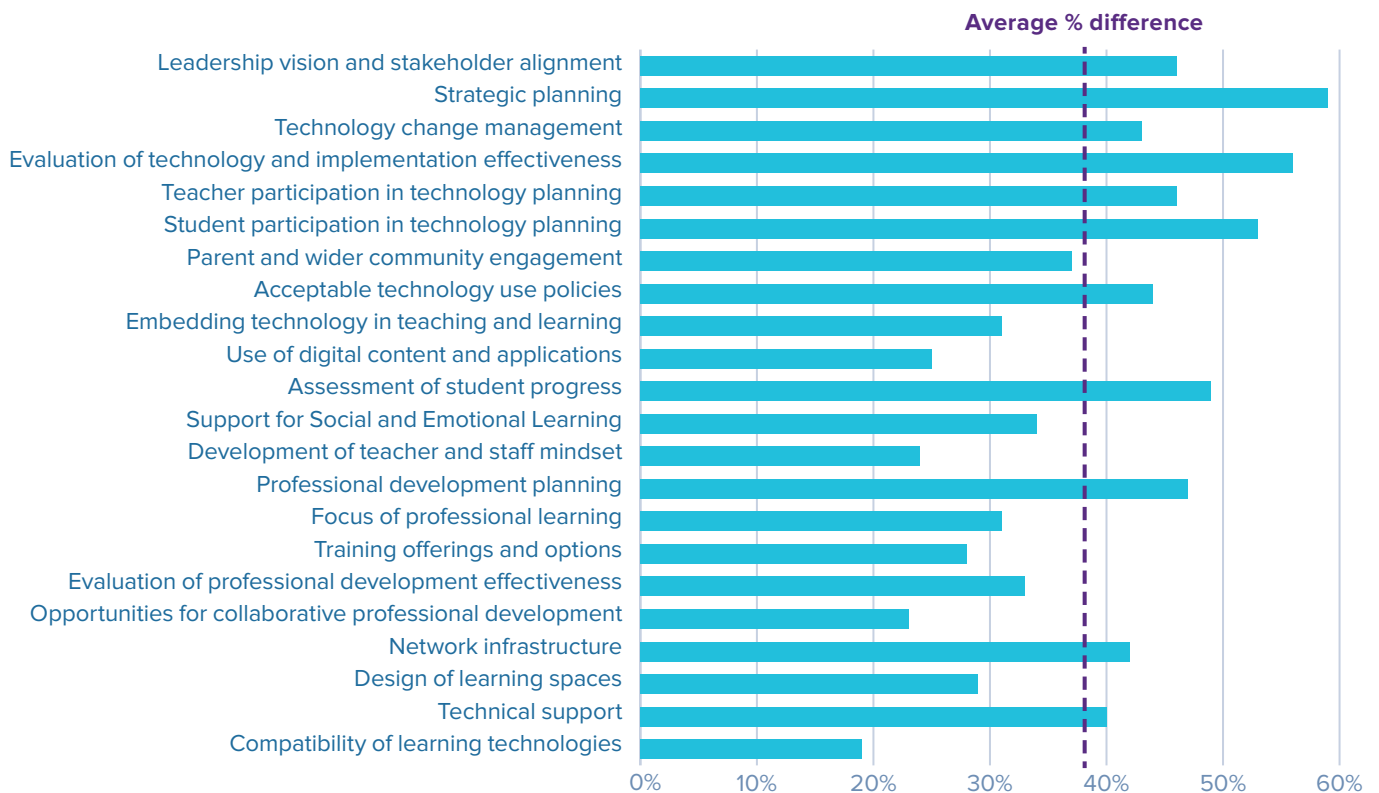
# Not all EdTech capabilities have equal impact on outcomes

The survey found that some EdTech capabilities showed a greater relative impact on reported outcomes than others. This was determined by correlating the relationship between survey participants' responses about each capability and their learning outcomes, based on whether and how much the variables moved together.

In England, all 22 correlations were positive. Most were significant at the .10 level, with the exception of capabiltiies related to embedding technology in teaching and learning, enabling teachers with digital content, providing diverse training offerings and ensuring compatibility of learning technologies.

Some capability responses were more strongly correlated to outcomes responses than others. The capability responses most strongly correlated to outcomes responses include:

- Professional development planning
- Evaluation of technology and implementation effectiveness
- Strategic planning
- Technology change management
- Student assessment

## CORRELATION OF SURVEY RESPONSES ABOUT EDTECH CAPABILITY DEVELOPMENT AND OUTCOMES
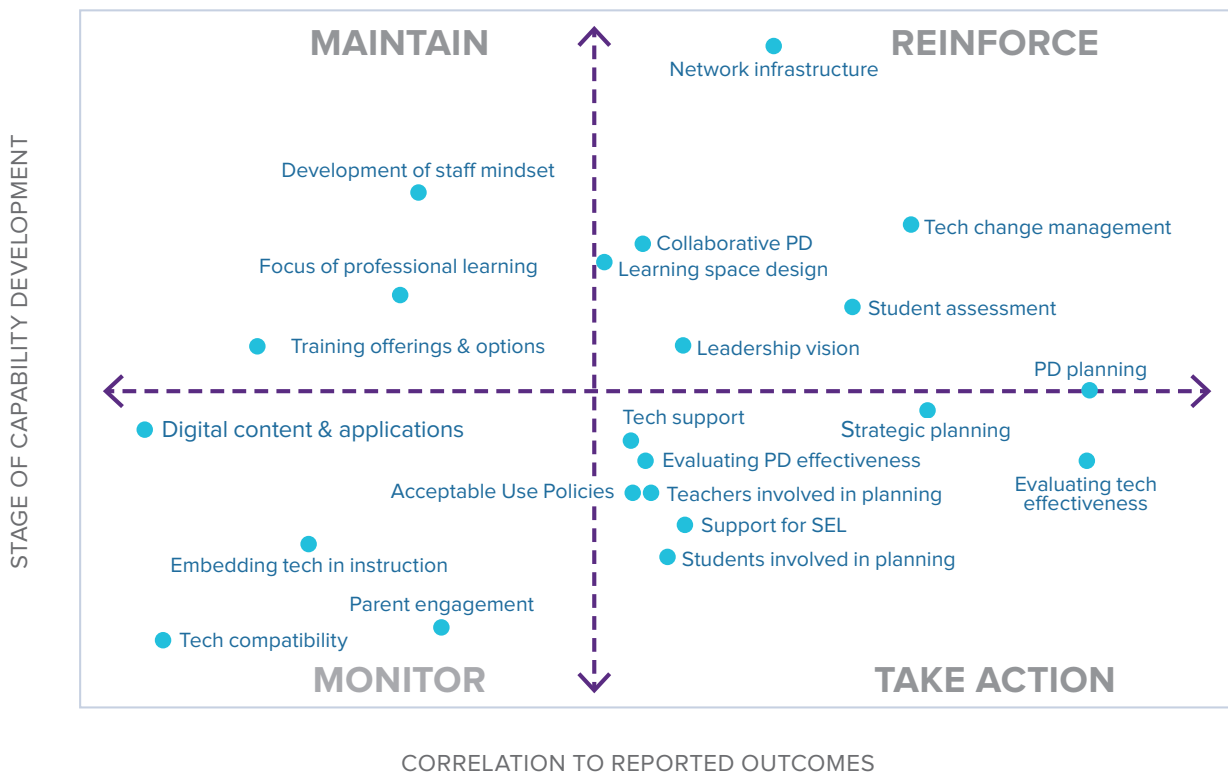
The capabilities most strongly correlated to high outcomes responses for English survey participants were those related to planning professional development and evaluating the effectiveness of technology. English school leaders report a moderate level of development in professional development planning, but a lag in their capability to evaluate technology's effectiveness.

We observed a trend in capabilities that were strongly correlated to higher outcomes responses, but for which respondents indicated lower capability development (lower right quadrant).

Overall, the correlation suggests that English schools may **benefit from further developing their capabilities to**:

- Evaluate the effectiveness of their technology
- Support Social and Emotional Learning
- Link their technology and professional development plans to measures of impact

Another trend in the data indicates that **collaboration in the technology planning process** may be an area of opportunity for English schools, particularly in capabilities related to including students and teachers.

# What high- and low-outcomes respondents are doing differently

The survey data provides compelling clues about what may make the difference between schools who are successful in their EdTech implementations and those who struggle.

## Differences in technology used by high- and low-outcomes schools

We observed trends in the types of technologies used by respondents who indicated achieving higher and lower outcomes. High-outcomes respondents reported more student assessment, game-based and collaboration software use than low-outcomes respondents. This may reveal a tendency among high-outcomes respondents to use more student-centered pedagogies in their schools.

**TYPES OF SOFTWARE USED BY HIGH- AND LOW-OUTCOMES RESPONDENTS**
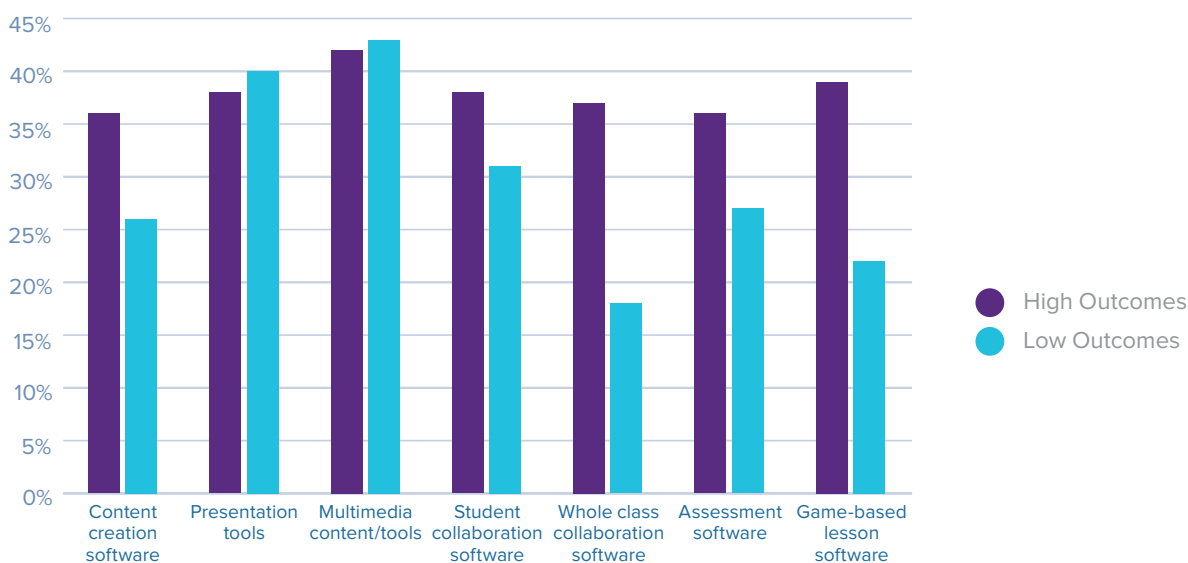
## Differences in how capabilities are prioritized

Compared to low-outcomes respondents, **high-outcomes respondents in England placed a much greater priority on collaborative professional development and professional development planning. They also favour capabilities related to technology management** including the ability to evaluate the effectiveness of their technology and implementations, change management capability, and ability to provide robust technical support and network infrastructure.

The ability to support Social Emotional Learning was a priority for high- and low-outcomes respondents alike.

**HOW HIGH- AND LOW-OUTCOMES ENGLISH RESPONDENTS PRIORITIZED THE 22 CAPABILITIES**

| 22 CAPABILITIES | PRIORITY | |
|---|---|---|
| Evaluation of technology and implementation effectiveness | 1 | 7 |
| Professional development planning | 2 | 9 |
| Opportunities for collaborative professional development | 3 | 16 |
| Technical support | 4 | 13 |
| Technology change management | 5 | 12 |
| Support for Social and Emotional Learning | 6 | 2 |
| Network infrastructure | 7 | 20 |
| Student participation in technology planning | 8 | 17 |
| Design of learning spaces | 9 | 19 |
| Assessment of student progress | 10 | 11 |
| Strategic planning | 11 | 5 |
| Use of digital content and applications | 12 | 3 |
| Focus of professional learning | 13 | 22 |
| Evaluation of professional development effectiveness | 14 | 14 |
| Teacher participation in technology planning | 15 | 4 |
| Development of teacher and staff mindset | 16 | 18 |
| Leadership vision and stakeholder alignment | 17 | 21 |
| Parent and wider community engagement | 18 | 8 |
| Embedding technology in teaching and learning | 19 | 6 |
| Compatibility of learning technologies | 20 | 10 |
| Acceptable technology use policies | 21 | 1 |
| Training offerings and options | 22 | 15 |

● High Outcomes Group (1=highest)
● Low Outcomes Group (1=highest)

# Did you know?

## Implementing EdTech effectively can lead to significant cost savings

Implementation has been called the "Achilles' Heel" of education technology. Some schools struggle to effectively adopt EdTech due to gaps in areas like planning and professional development.

Studies have shown that well-implemented EdTech can not only transform learning outcomes, it can reduce costs in other areas. When schools choose difficult-to-adopt technology, these potential savings become costs that could have been avoided.

### THE HIDDEN COSTS

According to a recent study, the total opportunity cost of incomplete education technology adoption can be as high as £145 per student for schools in the United Kingdom.



For a UK school of 500 students, this could translate to up to £72,500 in avoidable costs.

**These costs may include:**

- Added support costs
- Administrative costs/overhceads
- Teacher attrition/turnover costs

It is vital to note that far more important than financial costs are the consequences to students when technology is not implemented effectively. Lost opportunities to increase student engagement, deepen social and emotional learning, and improve teacher effectiveness, leave learners with their potential unfulfilled.

Download this research at **smarttech.com/hiddencosts**

## Sources

1. ISTE Standards Essential Conditions https://www.iste.org/standards/essential-conditions
2. UNESCO ICT Competency Framework for Teachers http://unesdoc.unesco.org/images/0021/002134/213475e.pdf
3. Naace Self Review Framework https://www.naace.co.uk/wp-content/uploads/2016/01/Self-review-Framework-v1.67.pdf
4. European Digital Competence Framework https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework
5. European Digital Competence Assessment https://europass.cedefop.europa.eu/resources/digital-competences
6. The Friday Institute NC Digital Learning Progress Rubric http://region3.ncdpi.wikispaces.net/file/view/NCLTI-DLPR_2013_Aug2013.doc
7. Education Counts NZ E–learning Maturity Model https://www.educationcounts.govt.nz/publications/e-Learning/58139
8. Prosci Change Management Maturity Model https://www.prosci.com/change-management/thought-leadership-library/change-management-maturity-model
9. 2015 CASEL Guide: Effective Social and Emotional Learning http://secondaryguide.casel.org/description-of-tables.html
10. OECD: Social and Emotional Skills, well-being, connectedness and success http://www.oecd.org/education/school/UPDATED%20Social%20and%20Emotional%20Skills%20-%20Well-being,%20connectedness%20and%20success.pdf%20(website).pdf

**Take the self-evaluation at www.smarttech.com/profile**
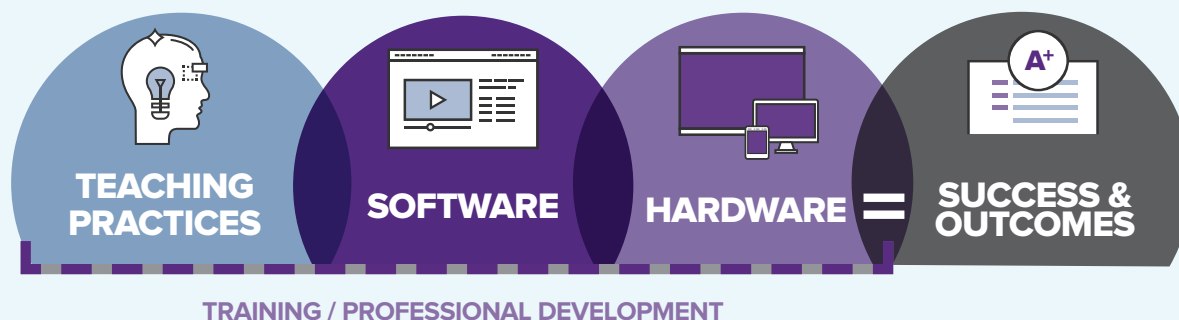
# NEXT STEPS

Schools who seek to drive better outcomes with their technology should consider:

- Looking for areas of improvement among high-impact EdTech capabilities.
- Focusing more on strategic and collaborative technology planning.
- Seeking technologies that support student-centered pedagogies. These include game-based learning, formative assessment and student collaboration software.

The research continues online. Find out where you stand and add your voice to the dialogue by taking the EdTech Capabilities self-evaluation.

# Did you know?

When schools choose technology, there is a formula for effective decision making that drives successful outcomes. Download the report at smarttech.com/TTL.

**TEACHING PRACTICES** **SOFTWARE** **HARDWARE** = **SUCCESS & OUTCOMES**
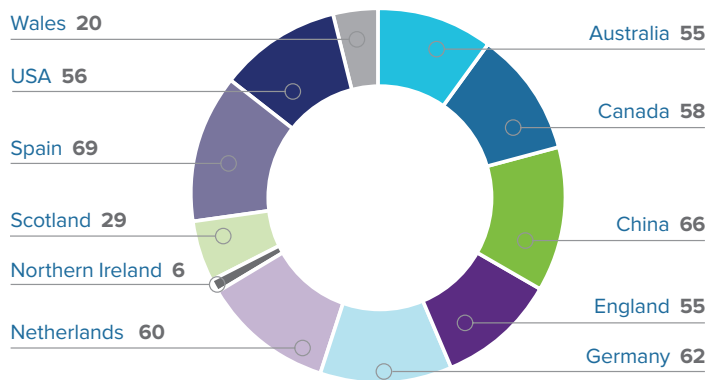
TRAINING / PROFESSIONAL DEVELOPMENT
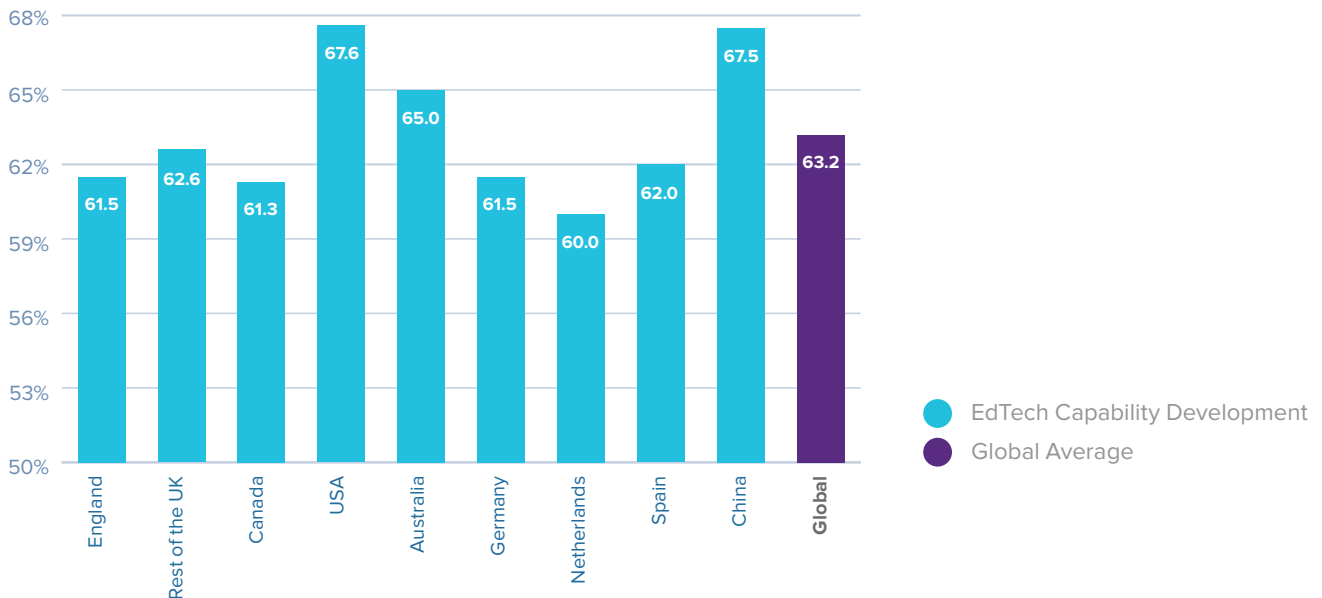
# Geographic differences

## Survey participants

Participants were responsible for various areas of technology leadership in one or several primary and/or secondary schools, serving a variety of student ages.

### NUMBER OF SURVEY PARTICIPANTS BY COUNTRY

Wales **20**
USA **56**
Spain **69**
Scotland **29**
Northern Ireland **6**
Netherlands **60**

Australia **55**
Canada **58**
China **66**
England **55**
Germany **62**

### DIFFERENCES IN AVERAGE EDTECH CAPABILITY DEVELOPMENT BY COUNTRY

| Country | Value |
|---|---|
| England | 61.5 |
| Rest of the UK | 62.6 |
| Canada | 61.3 |
| USA | 67.6 |
| Australia | 65.0 |
| Germany | 61.5 |
| Netherlands | 60.0 |
| Spain | 62.0 |
| China | 67.5 |
| Global | 63.2 |

● EdTech Capability Development
● Global Average
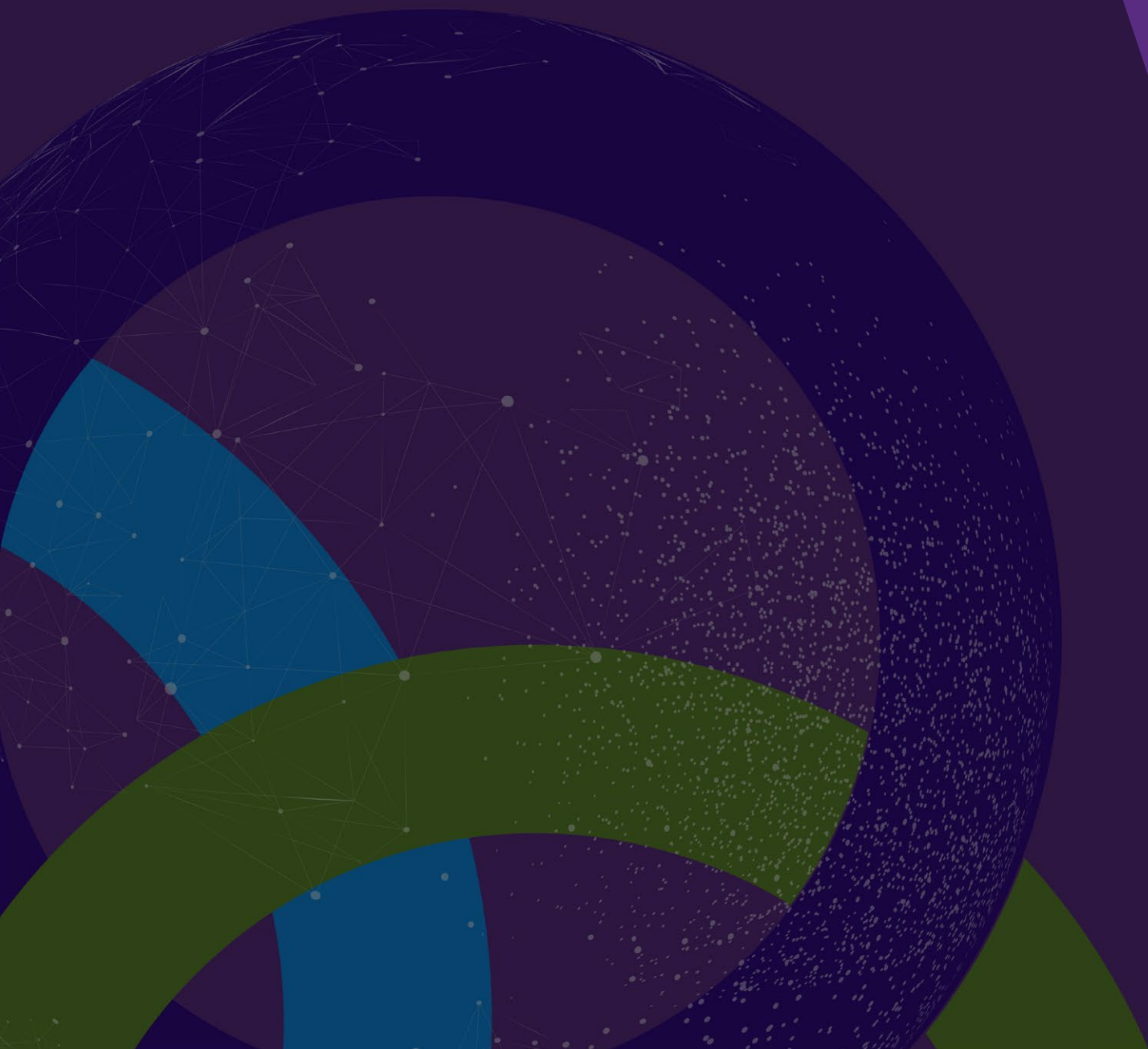
# APPENDIX A:
## Other survey demographics

### PARTICIPANTS' ROLE IN TECHNOLOGY LEADERSHIP

**ENGLAND**

- Policy, government, or consortium-level administration **16%**
- Administration for one or more schools **45%**
- Information and communications technology **38%**

**GLOBAL**

- Policy, government, or consortium-level administration **12%**
- Administration for one or more schools **40%**
- Information and communications technology **48%**
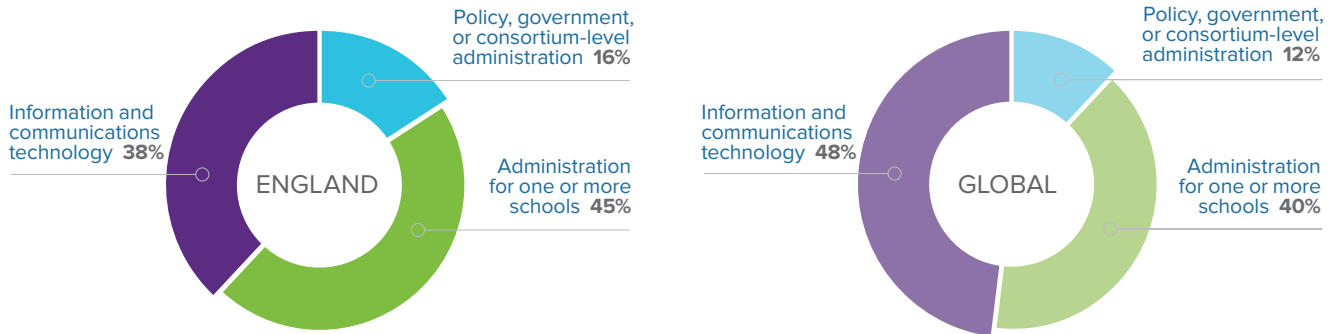
### AGE OF STUDENTS IN PARTICIPANTS' SCHOOLS

| Age group | England | Global |
|---|---|---|
| 19 years or older | 7% | 10% |
| 15 to 18 years old | 38% | 49% |
| 11 to 14 years old | 67% | 60% |
| 4 to 10 years old | 42% | 34% |

- England
- Global
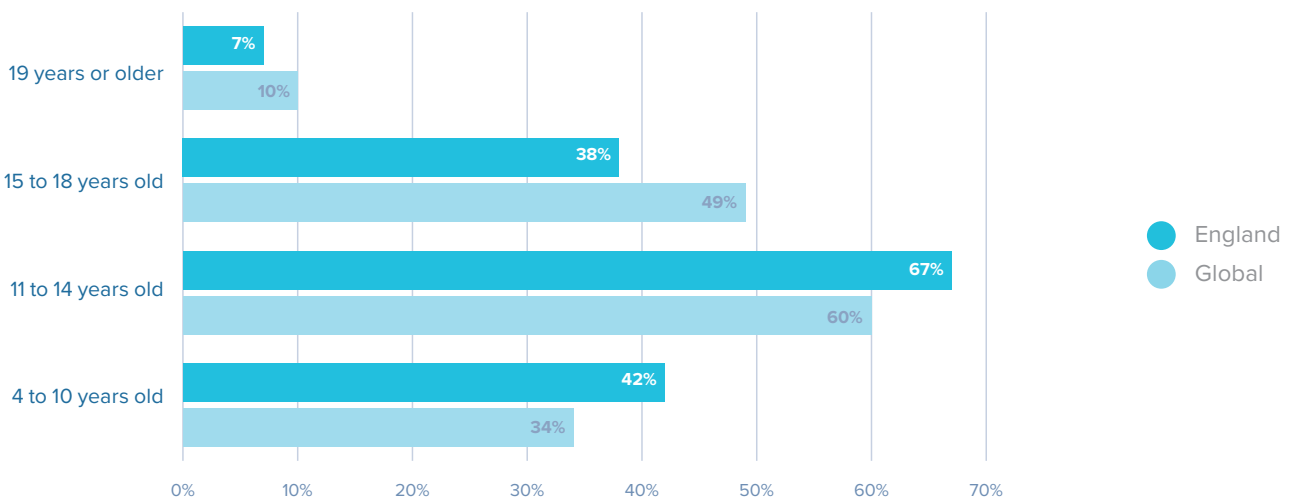
### NUMBER OF SCHOOLS UNDER PARTICIPANTS' LEADERSHIP

**ENGLAND**

- 100 or more **15%**
- 1 **31%**
- 2-9 **33%**
- 10-99 **22%**

**GLOBAL**

- 100 or more **9%**
- 1 **33%**
- 2-9 **37%**
- 10-99 **22%**
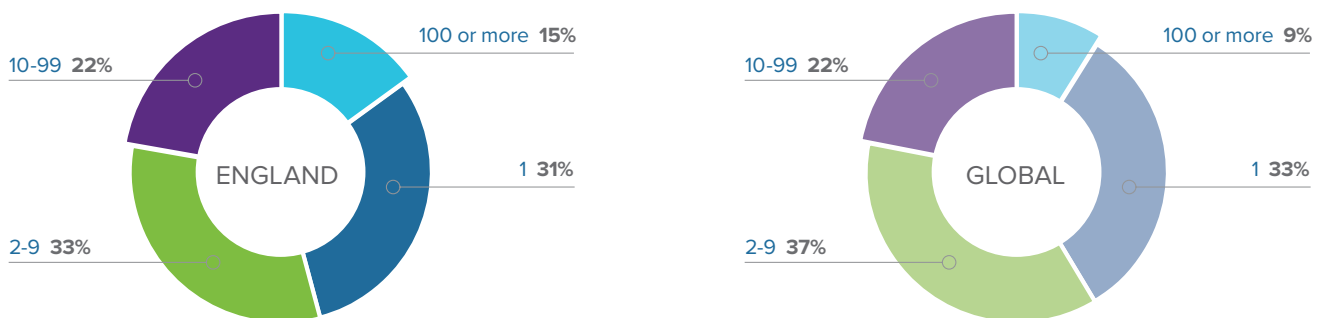
# APPENDIX B:
## Relationship between overall EdTech capability development and learning outcomes responses

English schools at a very high stage of development in the 22 capabilities were more likely to advance every type of learning outcome reported. The relationships are significant at the .01 level.

| | ENGLISH RESPONDENTS REPORTING A HIGH STAGE OF CAPABILITIES DEVELOPMENT, COMPARED WITH RESPONDENTS REPORTING A LOW STAGE OF DEVELOPMENT |
|---|---|
| **To what extent have you met your teaching and learning goals in your school or schools in the past year?** | **1.4x** as likely to report meeting or exceeding teaching and learning goals |
| **To what extent have students' average test scores improved in the past year?** | **2.1x** as likely to report greatly or satisfactorily improved test scores |
| **How would you rate overall teacher satisfaction in your school or schools in the past year?** | **2.1x** as likely to report satisfied teachers |
| **How did your school or schools' ranking or rating change upon last review?** | **2.5x** as likely to report greatly or satisfactorily improved rankings or ratings |
| **To what extent have you met your technology adoption goals in your school or schools in the past year?** | **1.1x** as likely to have met or exceeded goals |
| **How would you rate your overall impression of your school or schools' success in implementing learning technologies?** | **6.7x** as likely to view implementations as consistently successful |
| **To what extent do you feel your students are prepared to be active contributors to society and growing their individual well-being and social progress (i.e. life skills and social skills)?** | **2.3x** as likely to view students as well prepared |