Microsoft

One-to-one Devices and Learning

A step-by-step guide on how to choose devices and plan, implement and manage a successful 1-to-1 learning program in your K-12 school.

A toolkit for school leaders

It's time to let your school shine

A school 1-to-1 learning program is an opportunity to transform education in your school. You can develop future-ready skills for students, introduce flexible, hybrid (home and school) learning models and increase efficiency with time-saving convenience for teachers.

It's tempting to think a 1-to-1 learning program begins with simply choosing innovative devices. In reality, there is a proven process that works. It starts with a vision for your school. You will need to design a holistic environment in which students are thriving and safe, learning is equitable, support is available, the rules are clear, and where teachers feel confident and prepared.

While it's a big project, it doesn't need to be daunting. That's why we developed the Microsoft Education Transformation Framework (ETF) — www.aka.ms/etf — an evidence-based method to empower successful transformation using the best ideas and practices in education from the last 30 years.

What is 1-to-1 learning exactly?

The term '1-to-1' learning refers to any educational environment in which every participant has their own device. In reality, 1-to-1 learning encompasses much, much more than this. As well as equipping everyone with the right device for their needs, 1-to-1 learning requires new and carefully considered culture, training, support, software, resources, connectivity, safety and security.

How does it improve education?

Beyond the economic benefit of ensuring all students graduate with future-ready skills, 1-to-1 learning brings powerful advantages to everyone. When a school equips everyone with the right device and the right support, research shows:

- Significant improvement in academic achievement, including higher test scores in mathematics, science and writing.[1]
- Higher student engagement and enthusiasm, leading to happier classrooms and stronger student-teacher relationships.
- Teachers find it much easier to integrate curricula and assessment into the classroom, giving them more time to focus on teaching.[2]
- Assistive tools, accessibility and personalization options revolutionize the experience of all students, especially those with disabilities or learning differences.

1. Binbin Zheng, Learning Improves When Every Student Gets a Laptop, Michigan State University.
1. Yukie Toyama, Barbara Means; et al, (2010). Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies.

Four steps to success

This guide takes a step-by-step to success, based on the Microsoft ETF with downloadable worksheets you can use to plan the perfect 1-to-1 learning program for your school.
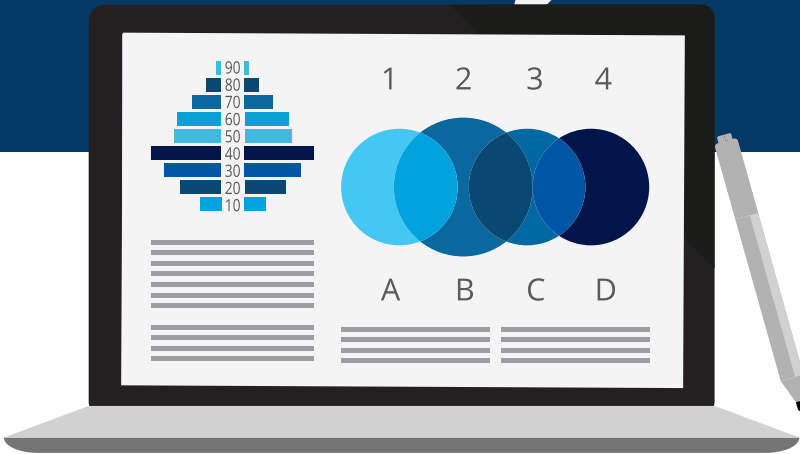
This is your school with 1-to-1 learning.

Before we embark on our journey to 1-to-1 learning, let's take a moment to inspire teachers, students and parents with the exciting possibilities for your school. Early buy-infrom your constituents is a key factor for your program success.

Students
can do things they couldn't do before, at levels of complexity that were previously impossible. They can learn from experts and collaborate with others – across our prefecture or the world.
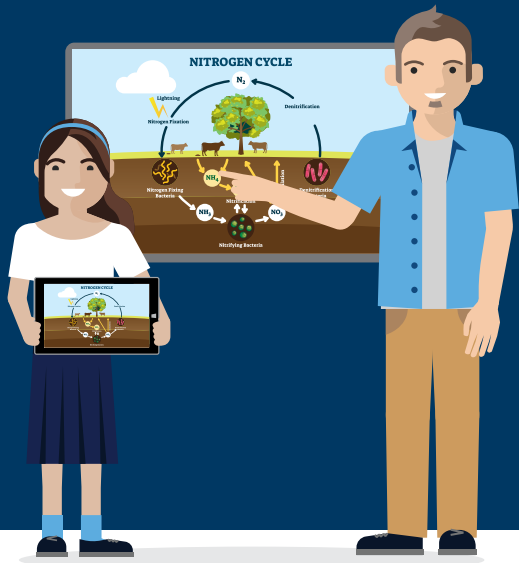
Teachers
can allow students to share their screen, empowering them to guide brainstorming and group collaboration, as well as develop listening, speaking and sharing skills.

Students
use powerful real-world software for creative problem-solving, collaboration and coding. They are developing essential skills for employability using industry-standard tools.

Leaders
can measure school performance, student wellbeing and achievement in real-time, to see how learning programs and interventions are working and adjust their approach to improve student outcomes and drive continuous improvement.

Teachers
use easy-to-learn apps for time-saving administration, and embed formative assessment to evaluate students progress and intervene early.

Students
can use a keyboard, pen, touch or voice, as well as additional accessibility peripherals and inbuilt learning tools, so they can study in the way that suits them best.

Students
can access their personal learning hub wherever they go, making it easier to stay organised, equipped and prepared.
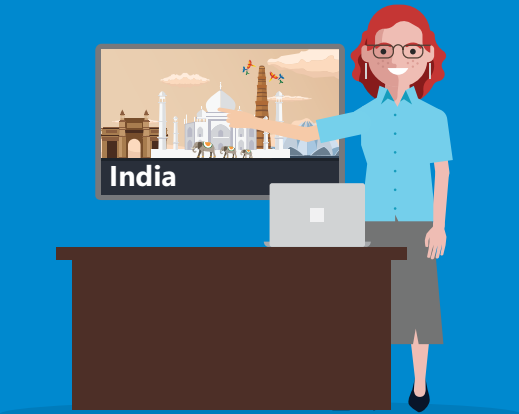
Students
have a personal digital hub with access to all the resources they need, so they can easily organise their work, study flexibly at their own pace, and feel motivated to advance their learning.

Teachers
can transform the classroom into an interactive window to the world with the support of audio, video, drawing, maps, 3D models, games, livestreams and more into classroom lessons, transforming the whiteboard into an interactive window to the world.

Parents
see a real-time view of their child's progress, helping them feel connected and engaged with the school.
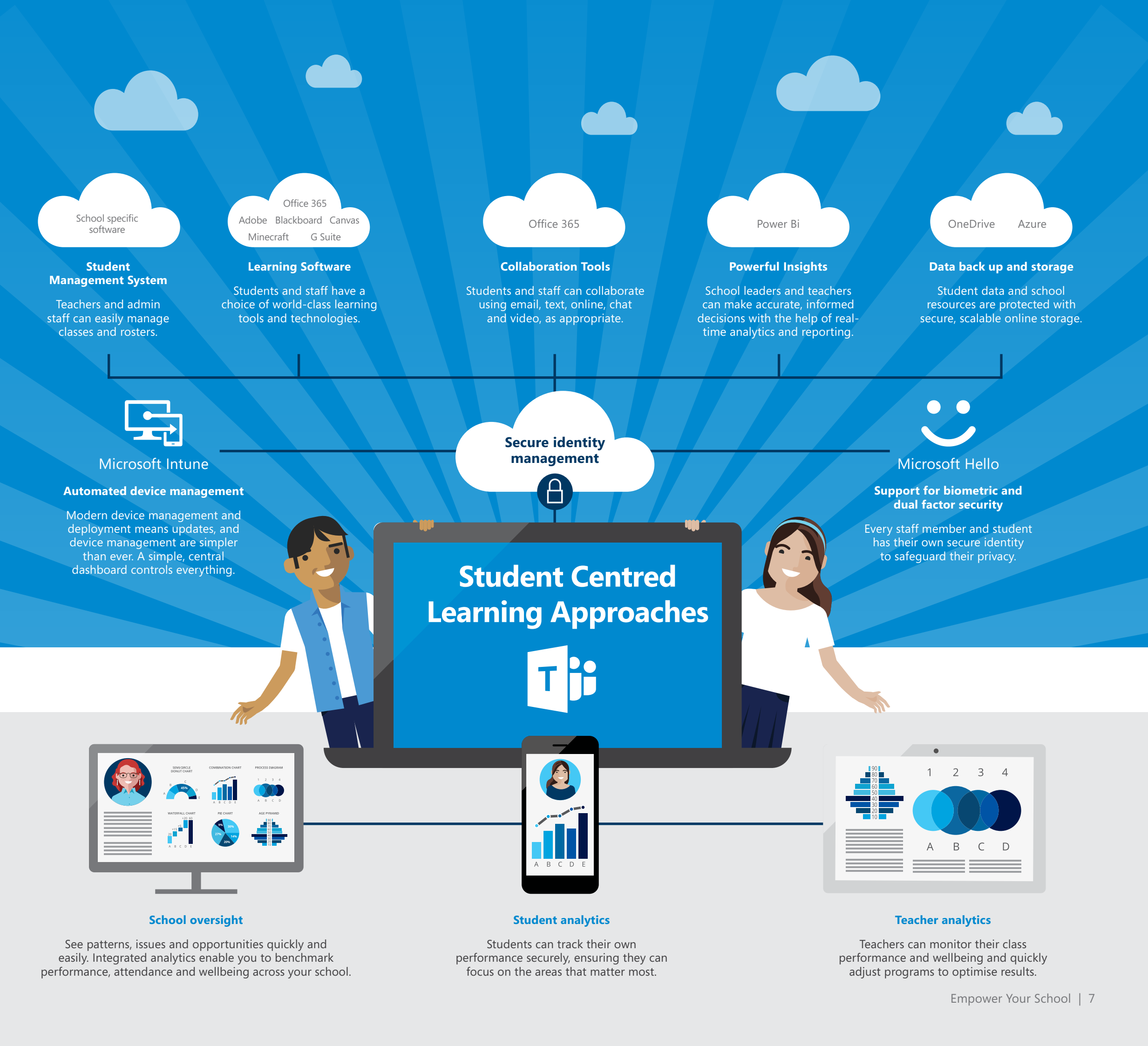
India

NITROGEN CYCLE

SCHOOL

Microsoft School Platform

Microsoft makes the technology easy, so you can focus on teachers, students, leadership and parents.

You'll have a reliable platform that works seamlessly, continually evolves, and takes care of everything.

It's extremely flexible and open, providing secure access to your choice of tools so students can develop their full academic potential.

This frees you and your staff to plan the educational aspects of 1-to-1 learning – engaging students with great teaching, pedagogy, policies and equipping teachers with ongoing professional development – knowing you have a secure technology platform that is flexible enough to realize your vision.

School specific software

Office 365
Adobe   Blackboard   Canvas
Minecraft   G Suite

Office 365

Power Bi

OneDrive   Azure

Student Management System

Teachers and admin staff can easily manage classes and rosters.

Learning Software

Students and staff have a choice of world-class learning tools and technologies.

Collaboration Tools

Students and staff can collaborate using email, text, online, chat and video, as appropriate.

Powerful Insights

School leaders and teachers can make accurate, informed decisions with the help of real-time analytics and reporting.

Data back up and storage

Student data and school resources are protected with secure, scalable online storage.

Secure identity management

Microsoft Intune

Automated device management

Modern device management and deployment means updates, and device management are simpler than ever. A simple, central dashboard controls everything.

Microsoft Hello

Support for biometric and dual factor security

Every staff member and student has their own secure identity to safeguard their privacy.

Student Centred Learning Approaches

School oversight

See patterns, issues and opportunities quickly and easily. Integrated analytics enable you to benchmark performance, attendance and wellbeing across your school.

Student analytics

Students can track their own performance securely, ensuring they can focus on the areas that matter most.

Teacher analytics

Teachers can monitor their class performance and wellbeing and quickly adjust programs to optimise results.

Getting started

Four steps to implementing your 1:1 Program

Designing a 1-to-1 program is an incredible opportunity - and we make it simpler than ever before. The Microsoft Education Transformation Framework can guide you every step of the way, with a systematic approach designed for schools, based on research from academics, experts and policymakers.

And because the Microsoft ETF has been used worldwide for many years, we've gathered real data and experiences so that you can see what works well — and avoid what doesn't.

For more information, visit:
aka.ms/etf

Leadership & Policy

- Vision for Change
- Community Engagement & Partnerships
- Strategic Planning & Change Management
- Continuous Improvements & Culture

Teaching & Learning

- Student Centered Learning
- Learning Spaces
- Curriculum & Assessment
- Devices for Learning

Intelligent Environments

- Hybrid Learning
- Advanced Analytics & AI
- Safety, Security, & Privacy
- Optimized & Sustainable Operations

Student & School Success

- Educator, Leader & IT Development
- Equity, Inclusion, & Accessibility
- Future-Ready Skills
- Social-Emotional Learning

Your journey starts here

Follow this pathway to develop your school's policies, pedagogy, curriculum and planning, knowing that it's all supported by Microsoft's safe, secure, easy-to-manage technology platform.

1 Plan

- Start by creating your 1-to-1 leadership team.
- Design a shared vision for 1-to-1 in your school. Get buy-in from constituents.
- Identify how you will measure success.

2 Prepare

- Decide how your curriculum and pedagogy will use 1-to-1 devices to support student learning, personalisation and future-ready skills.
- Factor in hybrid learning models, combining digital learning with face-to-face instruction.
- Embed formative assessment.
- Professional development and tech support plans.

3 Deploy

- Capture baseline for the success metrics you identified in step 1.
- Choose the right supply partner to support your school.
- Select your device provision approach: school-provided or bring-your-own-device (BYOD). Define policies.
- Select devices to support your vision and the different learning styles and abilities.
- Provide teachers with powerful devices and professional development.
- Familiarise students with their devices.
- Create smart, purpose-driven spaces that can support 1-to-1 learning.

4 Optimise

- Use analytics to monitor and benchmark your program.
- Use technology to create more inclusive, accessible learning.
- Build teacher capacity and skills.
- Engage the local community and parents.
- Familiarise students with their devices.

Step 1. Plan

Let's envision the future for our school!

To motivate your school community and drive change, you need an inspiring vision that earns widespread support. A great, shared vision ensures the entire school community is excited and supportive of the outcomes the transformation will drive. You will also need to consider how to manage change, ensure sustainability, and embed a continual cycle of improvement.

Create a leadership team

You'll need support from a committed and enthusiastic Leadership Team. We recommend designating an ICT expert in partnership with a great pedagogical practitioner as your Planning Leaders. The focus needs to always be on how technology can make learning better for the rest of your team, try to

include a diverse range of ages, personalities and viewpoints. What's crucial is the ability to imagine how technology could support learning, curriculum and professional development across your entire school — not specific understanding of technical details.
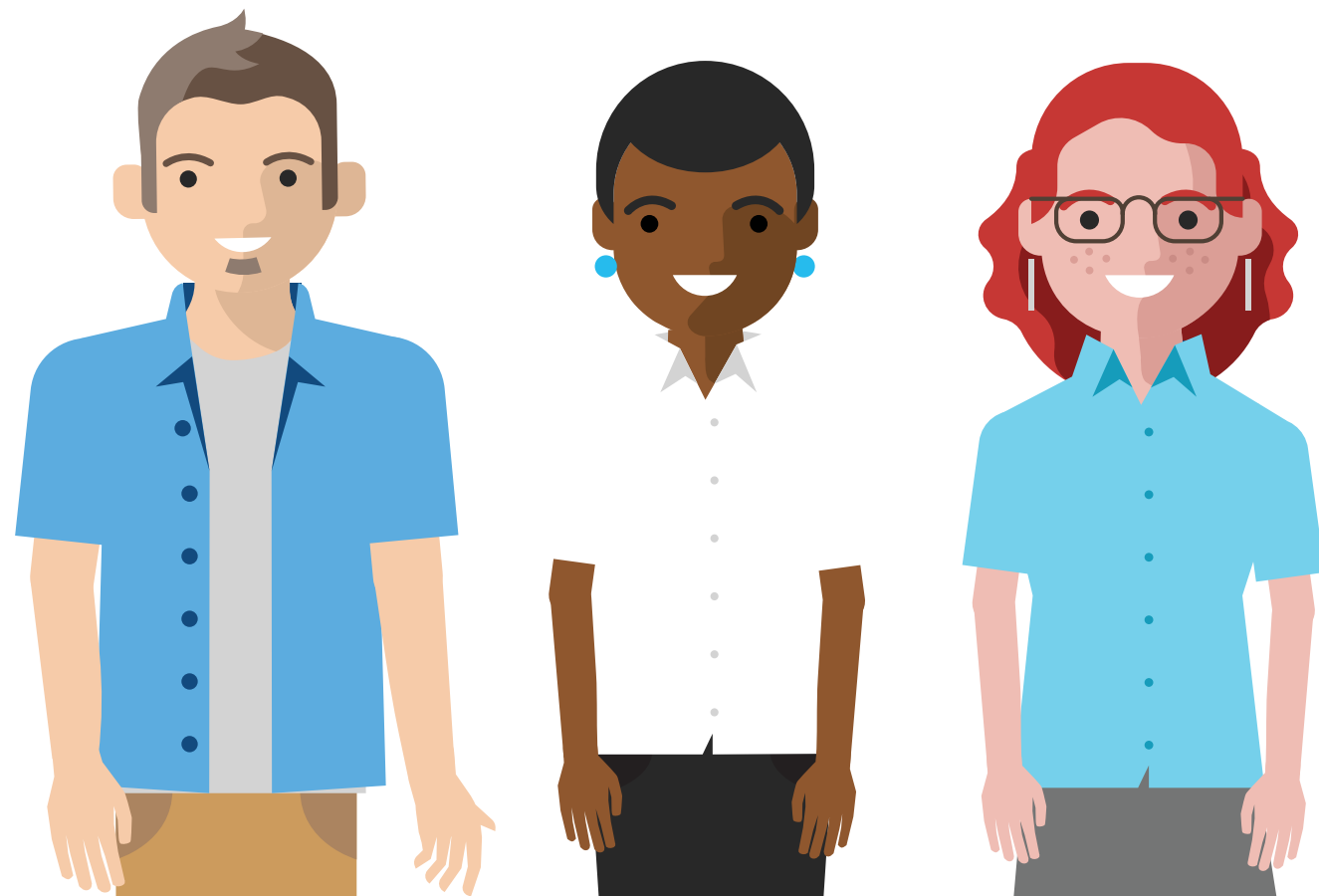
Be inspired by other schools

Building on our decades of work with policy makers, school leaders and educators around the world, Microsoft supports Schools in the Showcase School program with resources and ideas turn their vision into reality.

Showcase Schools create student-centered, immersive, and inclusive experiences that inspire lifelong learning, stimulating development of essential future-ready skills so students are empowered to achieve more.

The Microsoft Showcase Schools Program is an opportunity to engage with Microsoft and like-minded school leaders around the world to deepen and expand education transformation using the Education Transformation Framework.

Find out more about the Microsoft Showcase School program **here.**

Microsoft Showcase School
Ritsumeikan Elementary School

Provided effective learning even during the Coronavirus pandemic using its own online lessons based on its educational philosophy. The school uses Surface devices, electronic blackboards, robotics and other advanced technology, with lead teacher Hidekazu Tou being recognised as a top 10 finalist in the Global Teacher Prize, 2019.

Read more

Microsoft Showcase School
Wimbledon High School

Uses Microsoft OneNote and Teams on Windows 10 devices to set up collaborative learning hubs which students can access from anywhere. Teachers also have their own personal notebooks for resources and notes. This approach has increased student engagement and teamwork, while creating more personalised and flexible learning.

Read more

Include your teachers

Once you have initial ideas for your vision, it is important to expand the discussion to the entire school – perhaps even student representatives. The following page has a worksheet you can use with both your Leadership Team and your teachers to explore what kind of vision will suit your school.

Start with questions

The best place to start is usually student outcomes. Try asking questions like: In which areas do students currently need more support? How could assessment be improved? How could learning be more accessible? How could we improve the way we teach future skills? And so on. If you can demonstrate how technology could improve outcomes for students in your school, you'll be able to gain wide support.

Worksheet 1
Let's craft our vision statement!

Questions

What's our strategic goal?

What values are important to learning in our school?

What do we hope to improve with 1-to-1 learning?

What don't we want to lose at our school?

Which 1-to-1 learning programs do we want to emulate? Why?

What do we want to avoid?

How will we manage change?

What could prevent us from achieving our goal?

Who and what could help us achieve our goals?

What does success look like?

How will we track and measure success?

Inspiration

To create more authentic, relevant learning opportunities for our students?

Nurturing? Safety and support? Inclusivity? Respect? Lifelong skills?

Creativity? Accessibility? Flexibility? Personalisation? Future-ready skills? Lifelong love of learning?

Student behaviour? Certain rules? Physical skills? Safety? Teacher confidence? Community?

Do we go straight to a full 1-to-1 learning program or make a slow progression?

Distraction? Security issues?

A proven change process?

Security? Teacher preparedness? Lack of buy-in? Poor communication of vision? Funding?

Microsoft partner? Regular meetings with ongoing assessment? Open culture? Teacher training? Parents?

What could a typical day look like with our new 1-to-1 learning program?

Student outcomes? Teacher surveys? Student surveys? Amount of time saved? Local reputation?

Write your vision

After plenty of discussion, research and inspiration, it's time to distil everything into a one-paragraph vision statement. Your vision statement will be your guiding light, and all decisions should begin by consulting it. Your Leadership Team may enjoy making a poster of your vision statement, so it can hang up as a constant inspiration.

Ideally, a vision statement should:

- Express what a 1-to-1 learning program makes possible, in the context of the learner, the educational system, and the community.
- Articulate the benefits of the program and how it will lead to improved student outcomes.
- Incorporate flexibility, so that continual improvements can be made.
- Ensure it feels relevant to both short-term and long-term goals.
- Set targets and standards against which success can be measured.
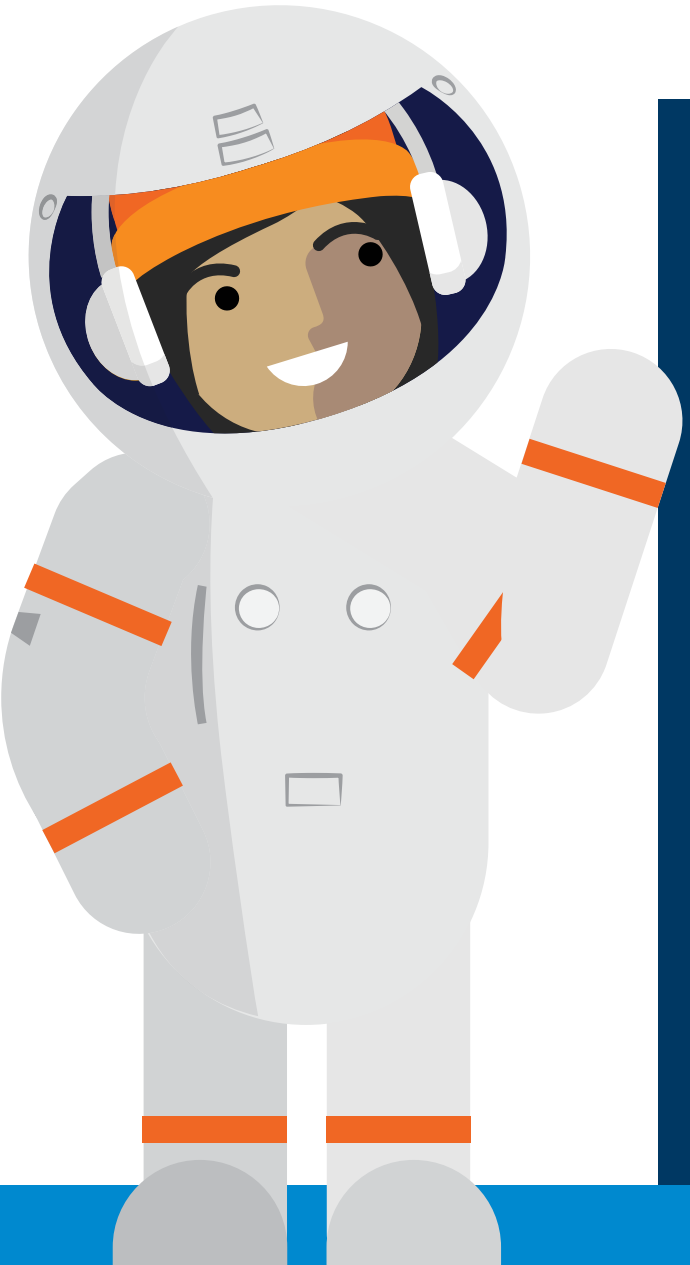
Let's Review!

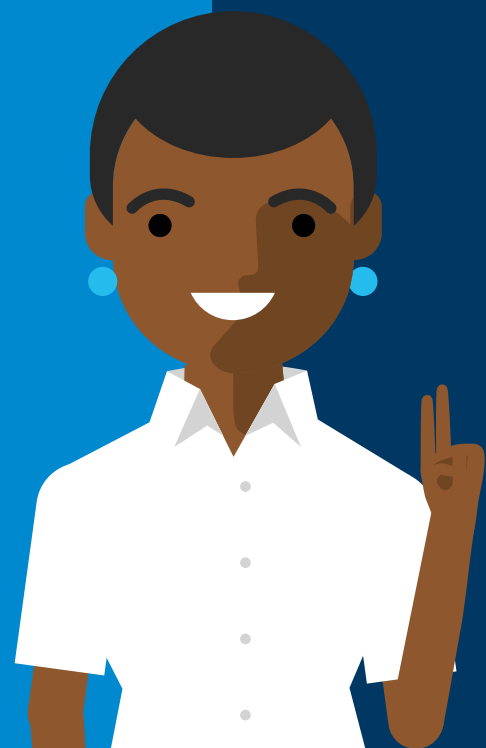The first and most important step on our journey to 1-to-1 is setting a bold vision.

- Create a Leadership Team with a range of viewpoints, personalities, ages and technical expertise.
- Gather inspiration and research from successful schools.
- Discuss ideas and seek contributions from teachers.
- Write a one-paragraph vision statement that explains what 1-to-1 will make possible and how it will improve learning, now and into the future.

Reading & Resources

The Class of 2030 and Life-Ready Learning
http://aka.ms/classof2030signup

Leading the School of 2030
http://aka.ms/LeadingSchools2030Resource

Education Reimagined
http://aka.ms/hybridlearningpaper

Step 2
Prepare

Let's plan pedagogy and curriculum!

Now that a strong vision is in place and you know the Microsoft platform can support it, it's time to look at practical classroom applications. 1-to-1 learning brings exciting new ways to learn, so the best place to start is by working with your teachers to explore how technology could transform their curricula.

Lay out a project timeline

New curricula, assessment, pedagogy and organization take considerable thought and planning. Every situation will be different, but typically we recommend 3-6 months for planning, projecting out for three years. It's a good idea to tackle your goals in phases: short, medium and long-term. Make sure your timeline includes a communication plan, so everybody remains informed at key points.

A good plan:

• Provides clear goals.

• Sets out key milestones and makes it clear what is required at each stage.

• Keeps everyone on track with dates for reporting and discussions.

• Shows what is possible and makes it exciting instead of overwhelming.

Use one of our free timeline templates!
templates.office.com/en-gb/Timelines

Inspire your teachers

Group teachers together into small teams, perhaps based on the age groups or subjects they teach. Challenge each team to research and report back on how they envision teaching in a 1-to-1 learning environment.

Explore the possibilities of the Microsoft platform
Using the poster on pages 6 and 7, encourage teachers to reflect on 1-to-1 learning as an opportunity to embrace modern learning models, moving to a more inclusive system that can improve the lives of students and teachers.

The following two pages can be used to explore new possibilities for pedagogy, such as personalisation and Social and Emotional Learning.

Discourage them from simply translating old methods to a new medium. Research shows that "A focus on facts and recall, on drill and practice, does not leverage the value of the computer."[1]

1. Norris, C., & Soloway, E. (May 5, 2011). One-to-One Computing Has Failed Our Expectations, The New York Times.

Prepare for new pedagogy

The visual on pages 6-7 shows how the platform enables teachers to cater for individual learning styles, support hybrid and social and emotional learning, and help students build future-ready skills. Use this section to encourage teachers to consider how they could incorporate these opportunities into your program.

Student-centred learning

How can we use 1-to-1 learning to provide alternative ways for students to learn, based on their individual differences?

Considerations

Could you deliver learning in different modes, such as video, audio, experiential or interactive experiences that suit different students?

Could you offer different learning pathways?

Could you offer more flexibility in how students submit assignments (animation, video, podcast, poster, etc) to cater for different learning styles and abilities?

Could your students benefit from assistive and learning tools and how will you integrate these into learning?

Are you using accessible technology that enables individuals to adjust their device to meet their vision, hearing, dexterity, cognitive and speech needs?

Microsoft capabilities

- Easy access: You can provide each student with a secure, single sign-on to a digital learning hub, containing a curated selection of cloud learning applications, digital tools, school resources and information.

- Personalized learning: You can set up automated extension and remediation activities. If a student performs poorly on an activity they can receive extra explanations and encouragement – and if a student does well, they can be given more of a challenge.

- No compromise: You can allow students to use touch, pen, type or voice input to suit the subject, individual learning style and abilities so they don't have to compromise because of the interface.

- Equity: You can use the inbuilt learning tools in Microsoft software to support students with vision, dyslexia, auditory and learning challenges.

Hybrid learning

How can we use 1-to-1 learning to help students continue learning from home or any location?

Considerations

Could you offer more flexibility in how and where students learn?

How can you ensure that remote learning amounts to more than basic videoconferencing?

Would flipped learning work for your school? Could you extend some courses to cater to students who are absent or unwell?

How could you share and organise your own professional resources, such as teaching plans?

Microsoft capabilities

- Global Collaboration: Microsoft 0365 helps you build digital learning and collaboration hubs using Teams. This acts as the bridge between school and home, providing students with a completely portable learning centre.

- Unlimited support: Any number of useful apps can be included in each student's learning hub.

- Powerful learning tools: Microsoft 0365 includes OneNote, an intuitive way to take notes and easily organise all resources in one space.

Future-ready skills

How can we use 1-to-1 learning to develop students' communication, problem-solving, creativity and collaboration skills?

Considerations

How could you use 1-to1 learning to integrate creativity and collaboration into learning?

How could you use 1-to1 learning tools to build students' communication skills?

How could you use 1-to-1 learning to develop problem-solving skills? Could you introduce coding? Can you increase enquiry-based learning based on real-world problems?

What inspiration can you draw from the maker movement?

How can you use 1-to-1 learning for flexible grouping and questioning for critical thinking?

Microsoft capabilities

- Industry Standard: Students will have a powerful suite of industry-leading software and tools to actively create, produce, experiment, design, collaborate and code.

- Preparing for the future: Students will be developing skills in Microsoft office, the most widely-used tool for office environments and the fourth most-demanded skill by recruiters (after communication, problem-solving and integrity).

Social and emotional learning

How can we use 1-to-1 learning to develop social-emotional skills and increase students' likelihood of future success?

Considerations

Research shows that an intentional focus on social-emotional learning (SEL) improves academic outcomes and provides a range of positive benefits for individuals, communities and societies.

How could you build SEL into your curricula using using group discussions, peer-to-peer teaching, problem-solving activities, and the "think, pair, share" method and Microsoft technologies like Flipgid and Praise in Teams?

How can you use 1-to1 learning to encourage students to build a sense of community and belonging through shared problem-solving and contributions?

Microsoft capabilities

- New forms of expression: Students will have a powerful suite of communication and collaboration tools, enabling them to connect through voice, video, chat and blogs, both in class and in their own time.

- Better teaching: Teachers can rely on communication tools to facilitate group discussions, peer teaching and problem-solving activities.

- Safe, secure online chat: Yammer or Teams chat provides a safe space for students to discuss their learning together.

Plan your learning and collaboration hubs

Once your teachers have considered the opportunities they would like to create through 1-to-1 learning, use these pages to design learning and collaboration hubs to bring it to life.

Teams is at the heart of 1-1 learning. It enables you to create central learning hubs accessible by teachers and students. In a hub, teachers can create discussions, share files and assess work. Students can study, submit work, comment and collaborate.
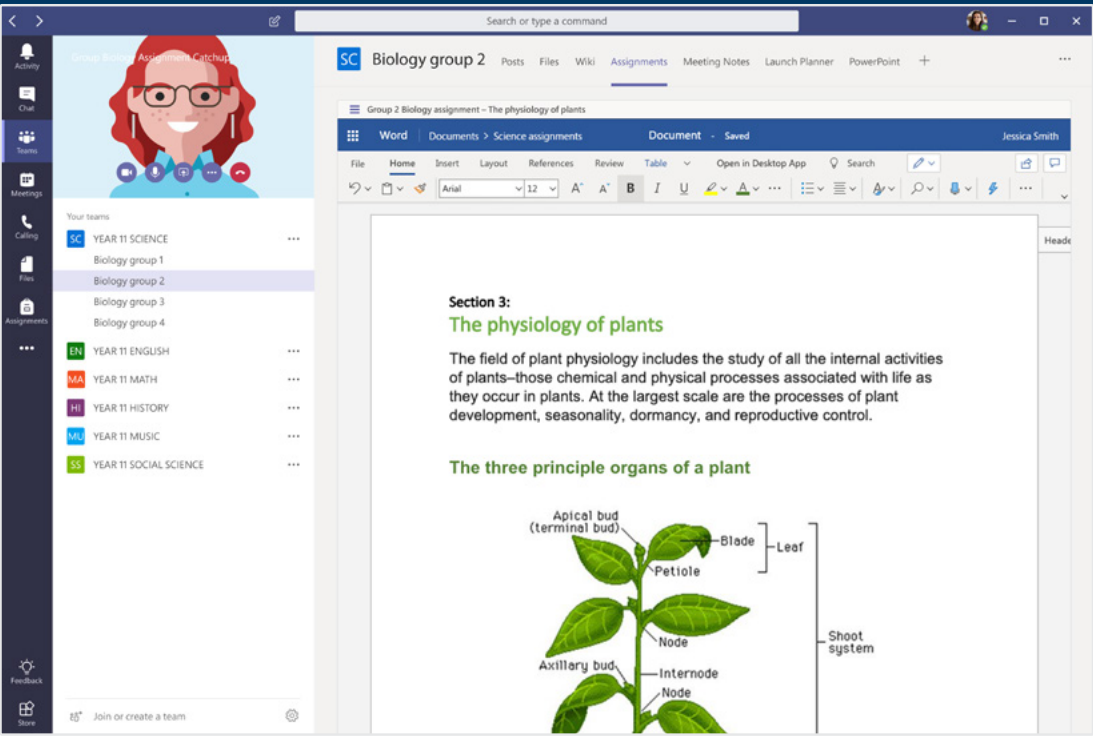
Learning from home works best if there's just one place to organise schoolwork. Teams provides a single, online location to share files and assignments, study, collaborate and communicate – without juggling multiple log-ins or worrying about storage or backups.

Communication and collaboration

Voice and video conferencing for teacher-led lessons and class discussions.

Chat for quick real-time answers, questions or comments.

Team posts to contribute to the conversation and share links, photos, videos, etc.

Flipgrid for short video responses.

Shared knowledge

Students and teachers can create their own wikis that are accessible to all to reference or contribute.

Creativity, brainstorming and thinking

Office 365 tools, including Word, OneNote, Excel, PowerPoint, Sway, Outlook and more.

Interactive whiteboard for sketching and sharing ideas.

Subject-specific tools

Teams can be extended with a wide choice of learning apps. Simply search and add the ones you need and they can appear in a tab.

Managing Learning

Calendar for school timetable with automatic reminders.

OneNote provides a searchable digital notebook with tabs for different subjects/classes and real-time co-authoring.

One searchable place for files posted by students or teachers.

One place for assignments.

When you're supporting online learners, you need to see, understand and manage student progress easily and efficiently. To make this simple, Teams offers Class Insights – analytics on student engagement and performance.
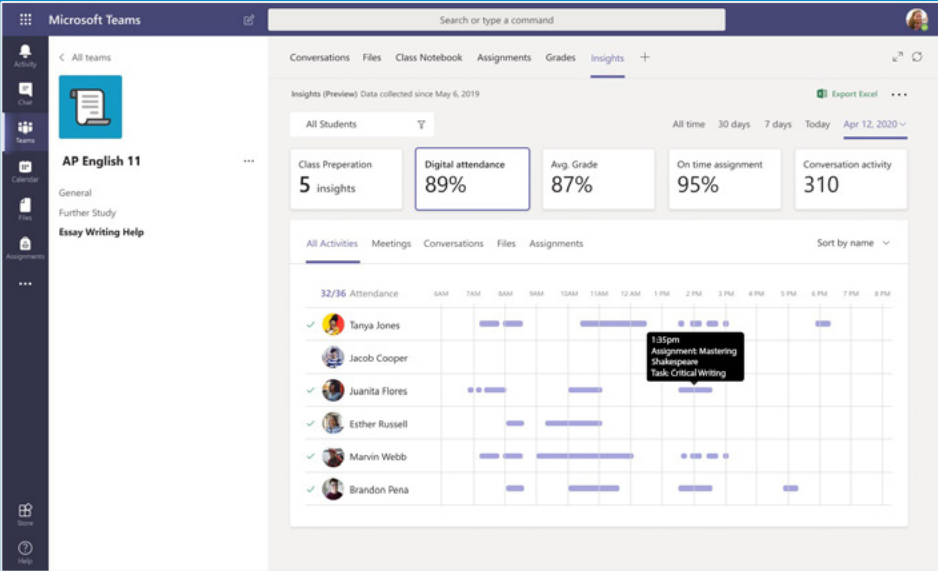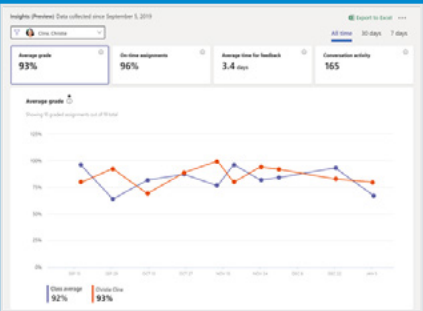

Class dashboard
See current averages for Digital activity, Grade, On-time assignments, Time for feedback and Communication activity.
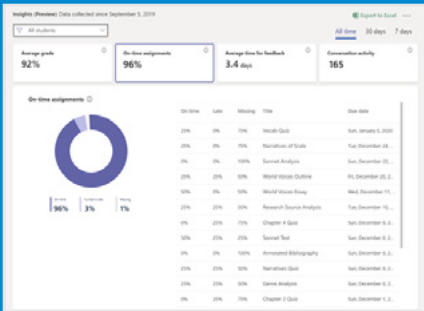
Digital activity
See what your students are working on, and when, for any aspect of the project/task.
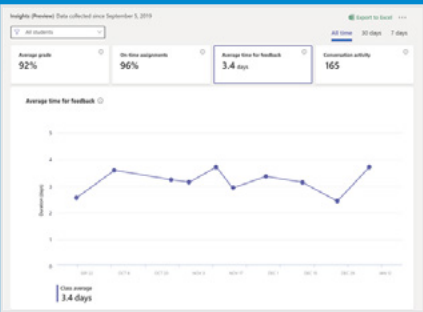

Average grade
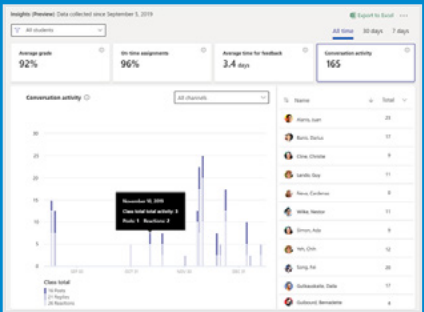Click to compare a student's grade against the class average.

On-time assignments
Click to see the percentage of assignments submitted on time.

Average time for feedback
The time between a student submitting an assignment and it being returned.

Communication activity
See how engaged students are in terms of replies, posts and reactions to posts.

Worksheet 2
Let's plan pedagogy and curricula!

Curriculum
1. How will our new curricula support, manage and encourage communication, collaboration and personalised learning?

2. What knowledge management will be required to achieve this?

3. How does our curriculum comply with national curricula?

Assessment
1. How will assessment be embedded throughout all learning?

2. Have we achieved balance between authentic, performance-based, formative and summative assessment?

Pedagogy
1. How does our curricula and assessment work together to support modern pedagogy?

2. How are we preparing our students with future-ready skills, such as critical thinking, collaboration and digital competence? I.e., How are they structured and integrated?

3. Does the content we use (from publishers, teachers and students) adequately reflect the interactive and collaborative experiences of future-ready learning?

4. How will we accommodate adaptive teaching and learning?

Technology
1. How easy is it for teachers to search, create, collaborate, store and share curriculum content?

2. How will classroom management, resource management and teacher workflows be supported?

3. What are the management and administration requirements for each of our courses?

Accessibility
Microsoft Windows®, Office and Edge® include many accessibility features and settings that make the computer easier to see, hear and use. Take the course now: www.aka.ms/accessiblecontenttraining

Include embedded, formative assessment

A 1-to-1 learning platform brings powerful new capabilities to assessment.

Using Microsoft Forms in OneNote, for example, teachers can easily design a wide variety of quizzes and tests. Once taken by students, these tests provide sophisticated real-time analytics of individual students and class groups. Teachers can also export summary data to Excel for more in-depth analysis.

At a more sophisticated level, Power BI analytics can quickly reveal student and class performance. Data can be used to help point to where a student is headed rather than a summative assessment of where a student has been. Because assessments are administered digitally, they provide instantaneous results that allow teachers to adjust their teaching in real-time. With frequent, embedded assessment, teachers can easily see how to adapt their coursework to different students, offering remedial or extension work as and when required.

1-to1 also offers new ways to assess work though an e-portfolio featuring student's process diary and project work.
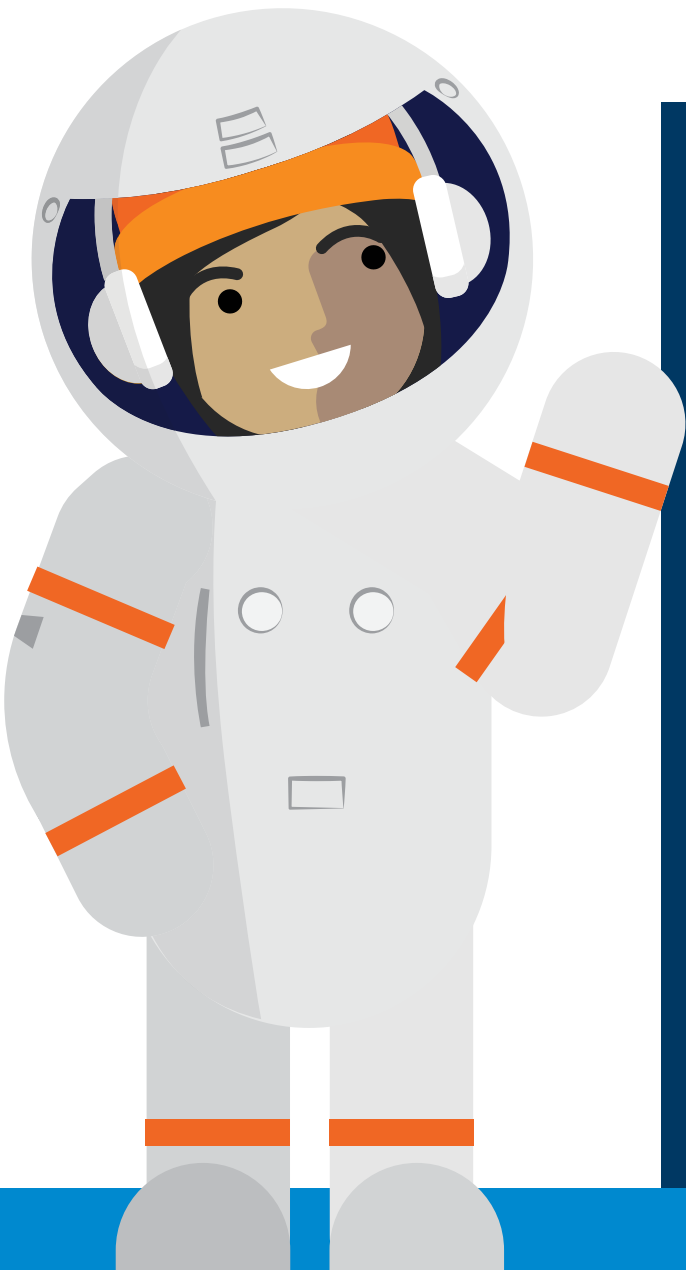
Let's Review!

1-to-1 is an unprecedented opportunity to extend, amplify and reinvigorate your pedagogy and curricula.

- ☐ Challenge teachers to envision how 1-to-1 could be used in their teaching, administration and device management.

- ☐ Consider how 1-to-1 learning opens opportunities for new pedagogy.

- ☐ Decide how to include embedded and formative assessment.

- ☐ Define the information, tools and resources that teachers, students and staff will require in their centralised hub.

- ☐ Plan a timeline for project management, change management and communication.

Reading & Resources

Education: Reimagined
aka.ms/hybridlearningpaper
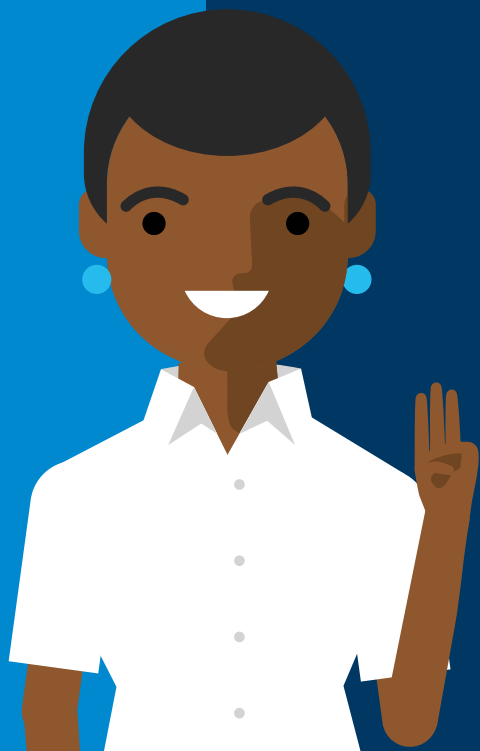
Step 3 Deploy

Let's make the most of 1-to-1 learning!

Microsoft provides an intelligent environment with automated management, which ensures student devices can be supported, secured, managed and updated with minimal staff involvement. Plus, you'll have ample storage capacity, and all student and teacher data will be safely protected.

Choose a technology partner

With Microsoft you don't need to understand the technical details to build a fantastic 1-to-1 program. All you need to do is select a technology partner with proven experience, commitment and capabilities. Set out performance criteria with built-in reviews, so they meet your requirements and continue to be productive.

A Microsoft Education partner will ensure your 1-to-1 program works, the devices are managed and maintained, and that everyone enjoys a safe and reliable experience. A Microsoft partner is able provide a complete package, including infrastructure services, devices, deployment, warranties, ongoing support, repairs and replacements, as well as teacher professional development.

Decide who pays

In the case of the GIGA school project, a large number of devices are being funded under a Government program. However, our experience has shown that by asking for a financial contribution, students and parents feel a strong sense of ownership. This means there is less loss, less damage, less downtime and better care for devices overall.

Work with your Leadership Team to discuss different leasing and financing options. We recommend that you consider the following:

1. The funding model should ensure that all students can participate.

2. The funding model should be able to sustain the 1-to-1 program indefinitely.

3. The funding model should include a commitment to professional development.

4. Everyone who benefits should make some kind of contribution.

Step 3 – Choose your device ownership model

There are two types of Bring-Your-Own-Device environments. The first involves students bringing any device they like to school. The second, which we recommend based on years of experience, is a school-directed program. This enables you to manage, update and secure devices centrally and providing greater learning equity.

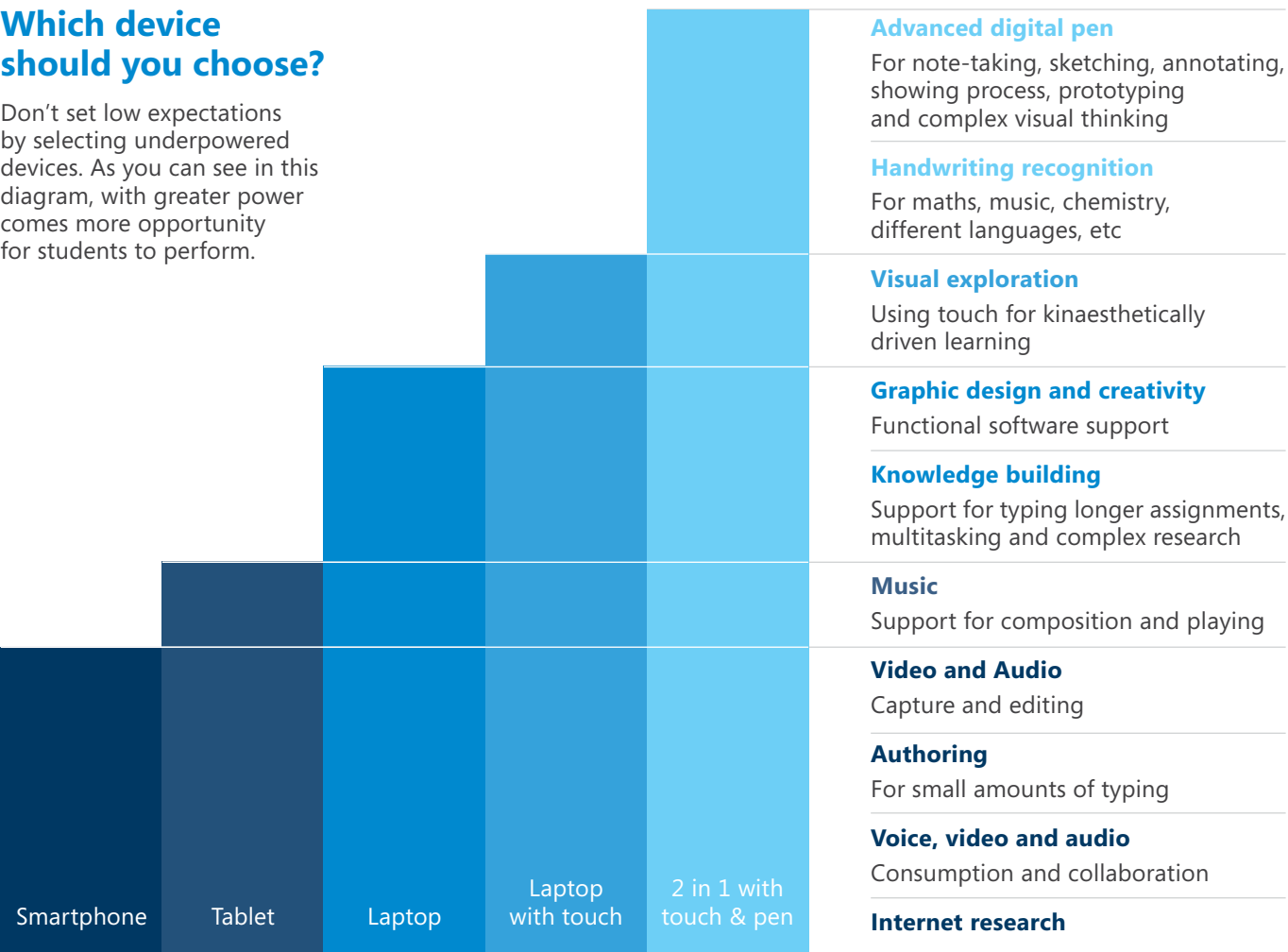| Student choose their own **Not recommended**	School sets specifications or device **Recommended**
Student devices with different features and functions can oblige teachers to only teach to the lowest capability.	No student is working with a device that is inferior, enabling teachers to deliver the curriculum without compromise.
It's harder to skill teachers across several different platforms and software.	It's easier to offer staff professional development when there's just one device to master.
Parents may buy a device that doesn't meet the needs of the student – and have to navigate a bewildering range of options.	Parents and students have clear choices and directions from the school.
Parents pay retail price, have to manage their own financing, repairs and replacements.	The school can benefit from volume buying power with simplified financing. Plus you can negotiate loan devices and extended service needs.
Parents and students have to arrange their own software and servicing.	Servicing, support and warranty can all be integrated, and your IT service provider can be held to account for efficient turnarounds
Each device has its own recharge, leads and plugs putting pressure on the school to accommodate them.	Managing, recharging, repairs, leads, plugs and swap-in spares are all standardised.
Security can be compromised without centralised authentication and access management.	IT management, identity services, Internet filtering, virus protection and security updates are much simpler to manage.

Step 4: Choose the right device

A low-cost device quickly becomes a high-cost limitation if it restricts students to the bare minimum. The right device should empower students to learn through speech, touch, typing, handwriting, drawing and mixed reality, as well as be physically robust enough for school life. The right device should save teachers time and give them more ways to bring lessons to life. Most of all, it should support full software, cloud based tools AND apps.
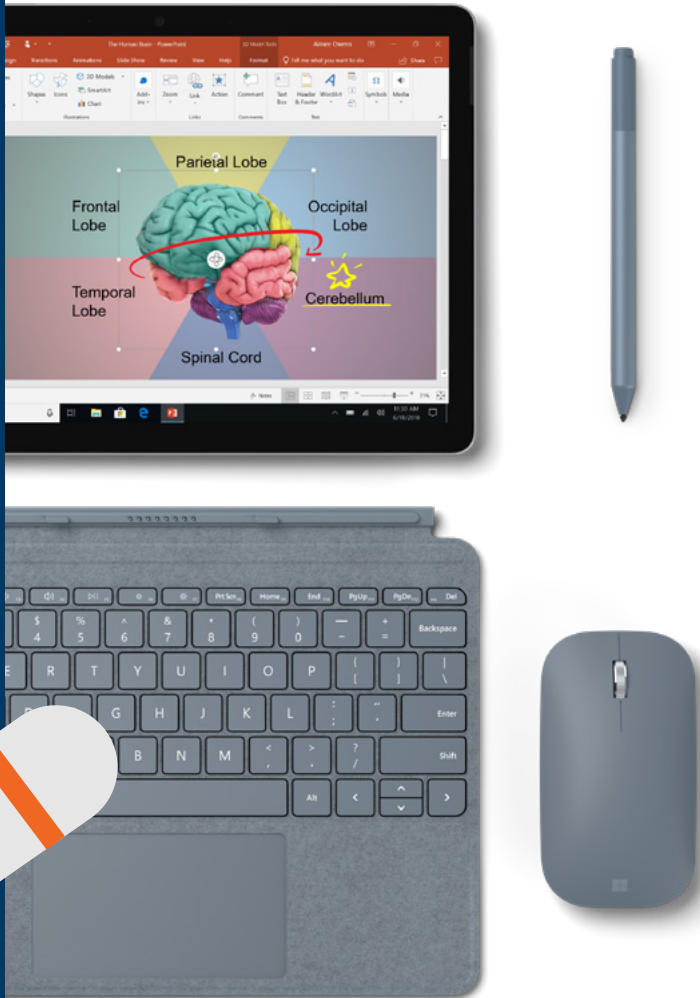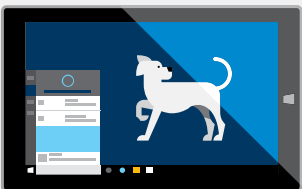
Which device should you choose?

Don't set low expectations by selecting underpowered devices. As you can see in this diagram, with greater power comes more opportunity for students to perform.

Advanced digital pen
For note-taking, sketching, annotating, showing process, prototyping and complex visual thinking

Handwriting recognition
For maths, music, chemistry, different languages, etc

Visual exploration
Using touch for kinaesthetically driven learning

Graphic design and creativity
Functional software support

Knowledge building
Support for typing longer assignments, multitasking and complex research

Music
Support for composition and playing

Video and Audio
Capture and editing

Authoring
For small amounts of typing

Voice, video and audio
Consumption and collaboration

Internet research

Smartphone | Tablet | Laptop | Laptop with touch | 2 in 1 with touch & pen

What kinds of devices are available?

Tablet
**Pre-School and Elementary School**

Tablets mostly offer basic functionality and are effectively irrelevant for developing future employment skills. However, tablets can be a useful entry to computing for younger age groups as they tend to be geared towards simplistic usage. They can also be handy as an ancillary device for older students, supplementing a laptop or 2-in-1 device.
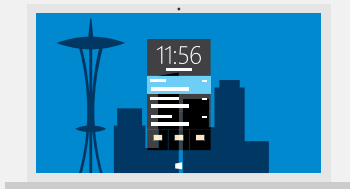
Laptop
Elementary, Middle, Junior High and High School

The laptop is a classic and familiar device that can support the majority of a student's needs. Many modern laptops also incorporate a touchscreen for extra functionality. Some professional-grade laptops have the highest processing power, which may be more suitable for students with high-performance requirements, such as game design, CAD and film-making.
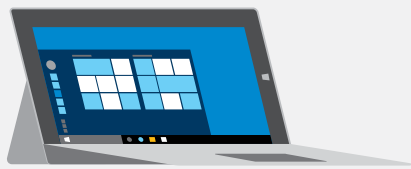
2-in-1 Device
Elementary, Middle, Junior High and High School

A 2-in-1 device combines the best of a laptop and touchscreen tablet with the additional functionality of a digital pen. These parts are often flexible and detachable, which means students can work in the way that suits them best. The digital pen is critical for supporting creative and multi-modal learning.

Providing optimised personal learning for all requires a web browser, touch-based apps and full software

- 4.5 million software tools (e.g. Minecraft).
- Caters to pen, voice, touch, natural language translation and full accessibility options.
- 99% of technology skills demanded by industry require full software to develop and demonstrate.
- Full online/offline functionality.
- Provides simplicity for younger learners.

Full software | Touch based apps | Cloud
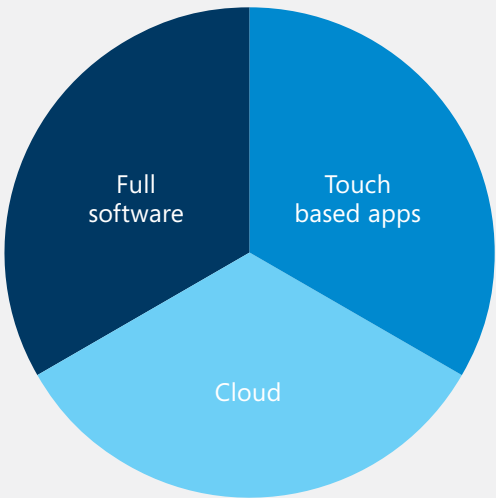
- Caters to pen, voice, touch natural language translation, full accessibility options.
- What kind of devices are available?
- Full off-line/on-line functionality.

- Predominantly keyboard and mouse.
- Requires connectivity.
- Limitless in content.

How to choose the right device: A checklist

Learning Requirement

Can the device be secured and updated centrally?
Easy, automated device management is essential to successful 1-to1 learning programs. Windows 10 devices can be managed using these two applications.

Does it offer multiple usage modes?
Students who can take notes, sketch, diagram, write math equations, science formulae and different languages will build and retain more knowledge, create more ideas, generate more hypotheses, and show better outcomes in general.

Can students type up professional assignments?
On-screen keyboards can slow students down as they offer no tactile feedback, obscure much of the working space on the screen, and usually don't support special characters

Is it powerful enough?
Students will need to be able to develop future-ready skills using full software, not just apps. They will also work better with a fast, powerful, responsive experience that lets them run multiple applications at the same time.

Does it run on a reliable operating system?
Look for a known operating system that supports everything students need, along with additional software options through an online store, such as Windows Store.

Is it inclusive to all students?
There should be built-in personalisation, assistive tools and accessibility options that help students with vision, hearing, mobility, mental health and learning difficulties.

Can it connect to a school network?
Often overlooked, it's critical that student devices can easily connect to your network

Is it light enough for the backpack?
Consider student posture, health and welfare.

Can it connect to other things?
Headphones? Graphic tablets? Digital microscopes? Projector screens, and more?

Is it rugged enough for school life?
Drops and knocks are inevitable. Look for a device with a toughened screen, a cover and impact protection.

Will the battery last a full school day?
Ensure classes are not interrupted by devices that always run out of charge.

Recommended

Windows 10

Digital Pen
Empower students to naturally handwrite, draw and diagram.

Full keyboard
(detachable is fine)

Powerful processor
Ability to run full software

Ability to multitask

Industry-recognised operating system
Such as Windows 10

Accessibility options
Assistive tools

Ability to personalize settings to meet student needs and preferences

Dual-band WiFi
(2.4GHz and 5Ghz) for fast access.

Under 1.6kg

At least one USB port and a headphone jack

Robust case and screen

Battery life
Minimum 8 hours that will last over 3 years (1,000 cycles)

Make sure you can manage, secure and update student devices centrally

Easy, automated device management is essential to successful 1-to1 learning programs. Windows 10 devices can be managed using these two applications.

Azure Active Directory creates and manages secure identities for every student and staff member. Once they're set up, you can provide secure, single sign-on to all the cloud learning applications, school resources and information they need to support personalised learning across year intakes, subjects and electives.

Intune for Education lets you use a console to set up a classroom in under an hour and easily manage devices, students, staff and apps. You can also secure your data and create a safe learning environment across school devices with Microsoft's comprehensive security solutions

Consider additional devices, such as whiteboards

Chat with teachers to understand the additional technology that could be useful to their curricula, such as USB microscopes, digital piano keyboards and film-making equipment.

One of the most popular teaching tools is Microsoft Whiteboard. It takes the magical simplicity of a classroom board and adds a digital pen, touch, and the unlimited potential of audio, video, interactivity, and typing. Teachers can naturally handwrite notes with the digital pen, type with a keyboard, and drop in videos, graphs, links and stickers. Everything is saved and recorded for students to view later. Microsoft Whiteboard can convert handwriting into easy-to-read text, and reduce eye strain by offering different background colours.

For more information on Microsoft Whiteboard, visit: https://www.microsoft.com/en-gb/microsoft-365/microsoft-whiteboard/digital-whiteboard-app
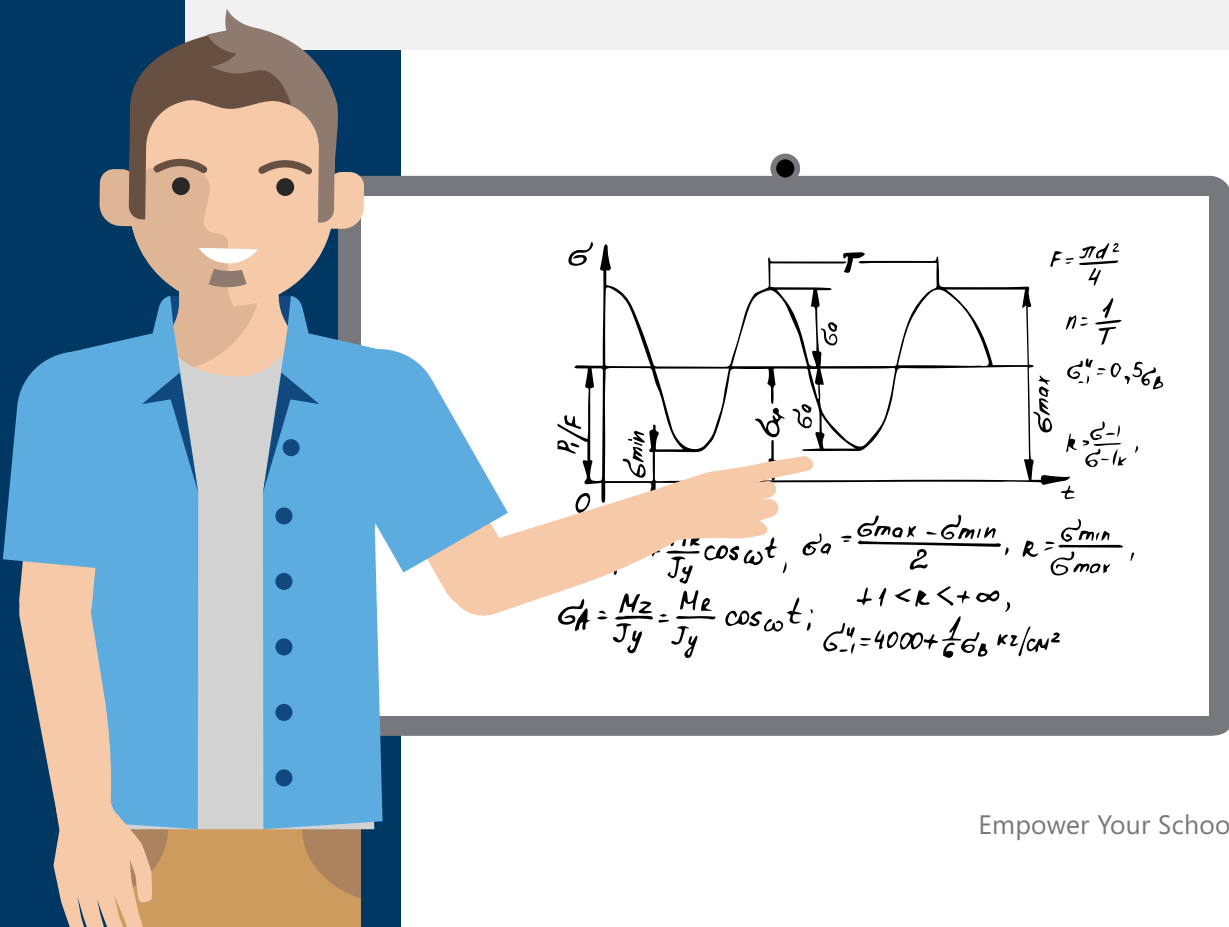
Skill your teachers for success

The most commonly cited reason for project failure is not preparing teachers with the skills to succeed or keeping them informed on expectations, so they have trouble implementing change and feel discouraged. Meanwhile, projects that implement change management are six times more likely to meet their objectives. Because new technologies and new learning opportunities continually present themselves, make professional development an integrated part of your school system.

Equip teachers with devices first, not students

As you introduce devices, teachers are always the best place to start. This gives them a vital opportunity to gain confidence, learn, and innovate, which makes them far more likely to embrace the 1-to-1 learning transformation. Discuss the amount of time your teachers feel they need to master the new technology before introducing student devices to their classes.

Skill teachers with 'how to' technical training

Hold technology familiarization days. Provide a dedicated space and time to introduce basic technology skills

Reinforce learning through ongoing online courses, professional learning communities, and by recognising and rewarding success.

Organise teachers into groups by subject or grade and encourage them to create chat channels to provide ongoing peer support.

Your Microsoft partner can design a series of professional learning sessions to get teachers confident.

Provide professional development

A well-rounded professional development program will facilitate change, boost confidence, build competence and nurture commitment. The best professional learning is practical and iterative, with evidence of how new methods can work.[1]

Start by asking teachers which specific problems they face, and support them with multiple opportunities to try out new approaches in the classroom.

You can also build a comforting sense of community into your professional development program, through peer collaboration, classroom observation and feedback.[2] Create teacher teams with complementary skills and inspire them with team-based incentives, so teachers don't feel singled out.

Set up Teams chat channels or forums that create a community for sharing new ideas, support and best practice, as well as ways to track professional development and certifications to build up a portfolio.

> "Teachers don't need to know more about technology than students. They need to focus on how technology supports learning, and how it can make learning better"

Free online teacher training

The Microsoft Educator Center provides a suite of online courses to help teachers with both the practical and theoretical aspects of teaching with technology. There are some excellent courses on 21st century learning design, developing a digitally literate curriculum, as well as specific applications, such as Teams and OneNote. This site also contains helpful lesson plans.

education.microsoft.com/en-us

Choose a training method to suit your school

All of these methods have a proven positive impact.

Mentoring and Coaching

Intensive mentoring and coaching that includes regular classroom observation and feedback helps teachers diagnose students' learning needs, develop classroom management skills and take on new pedagogy.

Lesson and Grade Groups

Lesson and grade groups are a fantastic way to bring teachers together, so they can more easily discuss approaches, plan lessons and examine student progress.

Tailored teacher training

When teachers feel professional development activities are both aligned with the content they teach and attuned to their teaching practice, they are more likely to integrate technology into their teaching.

Teacher Research Groups

Teachers come together to select a research topic, such as "ways to introduce a new pedagogy," and work together to analyze evidence, best practice and case studies. They can then opt to trial any promising new practices and evaluate the impact on their students.

Teacher Feedback

Teacher appraisal and feedback has a significant positive impact on professional learning. It helps teachers improve their teaching skills and feel recognised when they do. Feedback can also include badges, certification recognition from industry.

Microsoft Global Training Partners

For localized and tailored to your school and teachers needs training, Microsoft has a global network of training partners who are ready to help.   Aka.ms/findatrainer

Worksheet 3
Let's develop our school IT policies and processes!

There are lots of things to consider when developing your 1-to-1 policies. For certain areas you may find it beneficial to consult your technology partner and find out how they can help.

Breakage, Loss and Theft

Will insurance be mandatory or optional? Will the school or home pay for it?

_____

How does someone report a lost or stolen device?

_____

Who will be responsible for accidental damage and non-warranty repairs? Will we maintain a collection of swap-in loan devices to minimise disruption?

_____

Will we make protective cases or skins mandatory or optional?

_____

Management and Maintenance

How will we provide service and support at school? What is the cost, level of support and the supplier agreements? Will there be a dedicated support area, real or virtual?

_____

How will we manage secure access, firmware and software threats, and virus protection?

_____

How will we support battery charging? Will there be charging facilities at school?

_____

Behaviour – Acceptable Use

Will we permit access to personal software, including games – or not?

_____

What is our Internet access and network policy? (If different from existing policy.)

_____

Will we permit real-time chat and instant messaging?

_____

Will we provide a school email or allow personal email?

_____

What are our policies for handling cyberbullying, discrimination, and posting or possessing inappropriate content?

_____

Will we allow texts and calls from our devices?

_____

Will we allow students to install their own apps?

_____

How will we manage the taking of photos and videos?

_____

Create smart and flexible spaces

Will your physical classroom spaces support your new technology? In a 1-to-1 environment, learning becomes more co-operative and student-oriented. This requires a different layout than the typical rows of seats facing the teacher.

Consider how your physical learning spaces can be made flexible to support different uses. Studies show that flexible use of space correlates with an increase in the number of learning activities within a single session, as well as a more creative, collaborative, egalitarian use of space.[1] Teachers also feel less constricted and more willing to innovative their teaching practice.

1.   King E, et al, (2015) Exploring the impact of a flexible, technology-enhanced teaching space on pedagogy, Innovations in Education and Teaching International, 52:5, 522-535.

Ensure healthy device usage

Education should be as safe and as healthy as possible, and this includes deciding when, where and for how long students use their devices. Considerations include:

• **Posture** – is it possible to have stands that allows each student to have their screen at eye level, as well as adjustable chairs that support the natural curvature of the spine.

• **Eyesight** – is it possible to introduce melanopic light apps, light-filtering screen stickers, computer glasses or time limits to reduce exposure to the blue light that is emitted from screens.

• **Hearing** – make sure students understand that sound levels should not go above 60%, especially with headphones, and that they don't sit devices on bare skin as it can cause "hot water bottle rash".
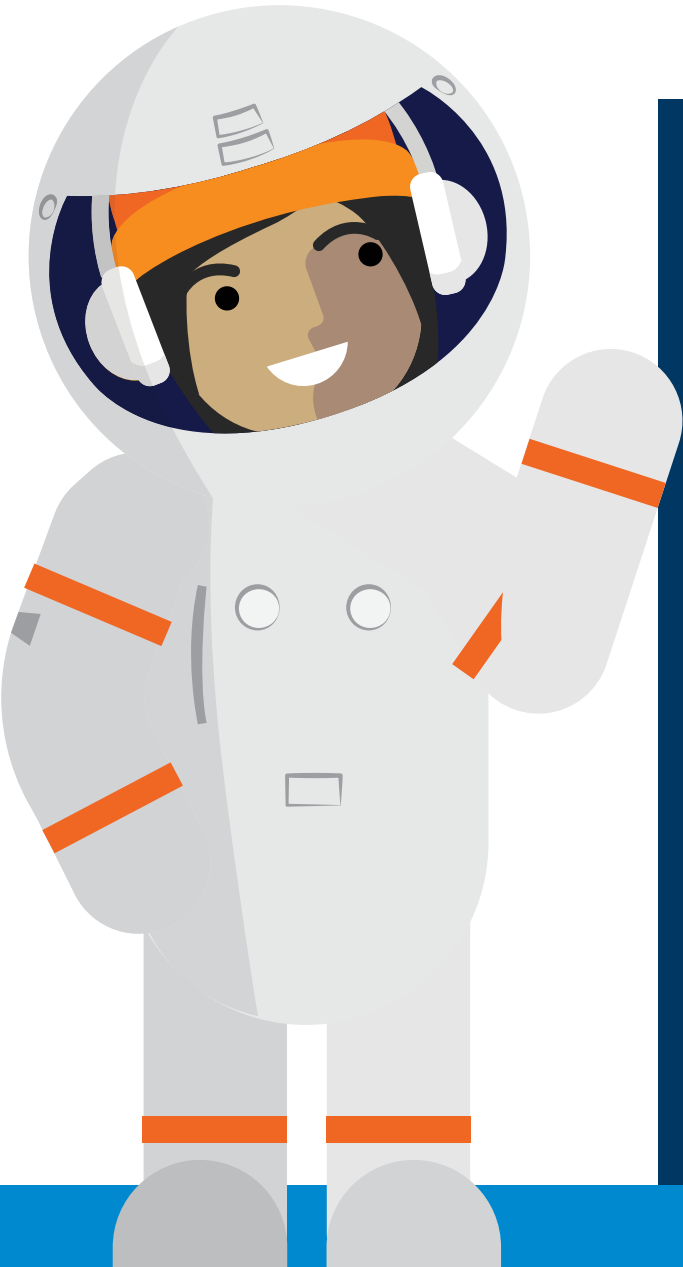
Let's Review!

A lot goes into building the right platform for 1-to-1. Let's review the steps to ensure we create a flexible, managed and safe environment for everyone.

☐ Choose a trusted technology partner that can support your journey.

☐ Consider whether you prefer students to bring their own device, or to centrally manage a bulk purchase of identical devices.

☐ Discuss and decide who will pay for the devices.

☐ Research the market and choose the right device for your vision, curricula, pedagogy and desired learning outcomes.

☐ Decide how you will manage and secure your devices – talk to your Microsoft partner.

☐ Roll out the new devices to teachers first, supporting them with training and development opportunities.

☐ Create flexible spaces that can support modern learning styles.

☐ Discuss the health considerations of technology use, deciding how best to support your students and their welfare.
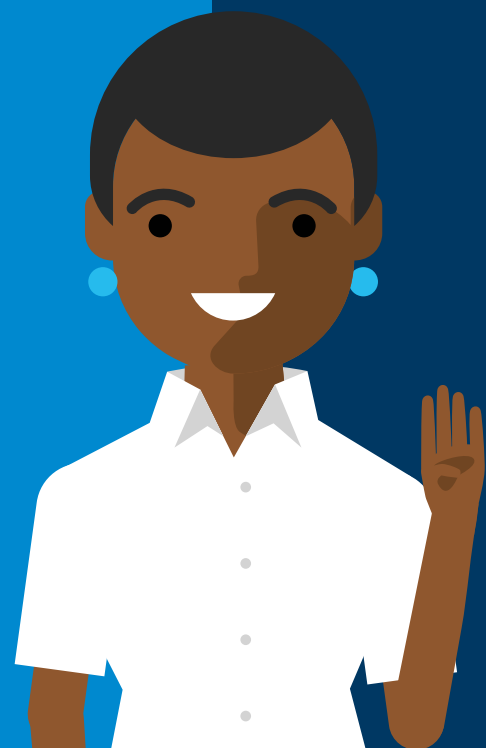
Step 4. Student & School Success

Let's evaluate and optimise our program!

Now that we have our vision, pedagogy and platform, it's time to analyse how it's working. Long-term success will depend on ongoing monitoring, measurement and refinement, continually building our engagement and staff capabilities.

NITROGEN CYCLE
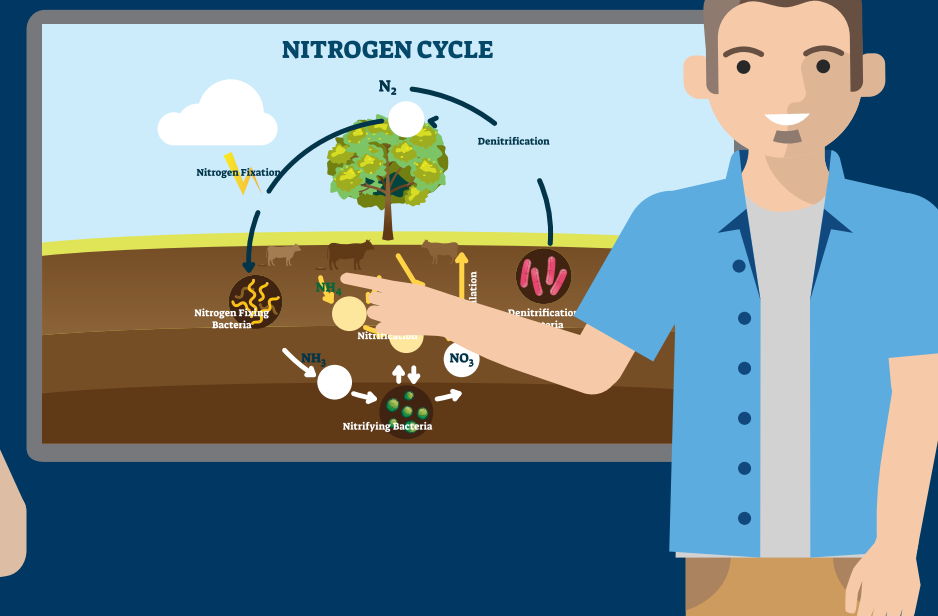
Determine how you measure success

Return to your vision statement, and decide how you will measure its success. Microsoft Business Intelligence software can connect to your data systems — such as attendance records, grades, demographics and staff information — to show how your 1-to-1 program affects outcomes. With accurate reports, you will be able to demonstrate success and prove to parents that all the effort and investment was worth it.

With these capabilities at your fingertips, all you need to consider is what you will measure and how you want to analyse it. For example, your school could:

- Investigate the impact of 1-to-1 learning on student performance, engagement and satisfaction.

- Securely share individual student attendance and performance data with parents.

- Benchmark school performance against standards.

Continually encourage teachers to expand options for student input

The more ways students can interact with their learning, the more skills they develop. Going forward, it's important to encourage teachers to include a breadth of inputs, including voice, touch, keyboard and pen - and for some students, eye trackers and head pointers. This not only enables more students to acquire digital literacy, they develop future-ready skills like creativity, collaboration and problem-solving, which they need to thrive in tomorrow's world.

Use multiple means of representation

When creating course materials and implementing content, provide options for perception, language and symbols, and comprehension. For example, use a combination of:

Visual representation
Video, graphs, a presentation, or mind mapping.

Auditory representation
Voice or podcast.

Touch-based apps
Skeletal notes, physical or computer models, or written transcript of a video.

Foster a more inclusive school

According to the OECD, as many as 35 percent of school-age students need some kind of special support or have been diagnosed as having special needs. Thankfully, technology has introduced easy ways for teachers to create classrooms where children with disabilities have equal opportunities to learn and thrive. But they are not the only ones to benefit. When such an environment is created, all students have the opportunity to learn in ways that are more personalized, engaging and diverse.

Find out about the inclusive classrooms tools here. https://www.microsoft.com/en-us/education/products/learning-tools/default.aspx

Can all your students, see, hear and use their devices?

Microsoft allows deep customisation and personalisation through accessibility options and assistive tools. Teachers can help students to adjust their device to meet their vision, hearing, mobility, cognitive and speech requirements. They can also take advantage of the inbuilt tools in Office 365 that ensure they create materials that are as inclusive as possible.

Office 365 tools and features	Technique
Accessibility check **Accessibility templates**	Feel confident you are creating accessible content by checking to see if your document (test, assignment or teaching notes) can be read aloud.
Image description **Link display controls**	Ensure images and links can be understood with those with vision impairments, by including image descriptions and link displays.
Learning tools, including Immersive Reader, Dictation and Contrast	Empower students to have a text read out loud to them, dictate their thoughts without typing, or adjust the contrast to help with dyslexia.
Real-time translation	Offer live automatic subtitles in more than 60 languages to help hearing-impaired or non-native speakers to engage with your presentations.
Office Lens	Take a photo of a whiteboard, printed page or a sketch and easily import to your device, where you can use numerous apps to edit it just like any other digital file.

Engage the community

A move to a 1-to-1 environment may challenge some people's idea of student learning. Before you move to the final planning stages, maximise community and parent support by communicating your progress early and often, making sure to acknowledge feedback.

To lay a strong foundation for success, provide parents with opportunities to get involved, give feedback, and learn how they can support their child's use of the device at home. By providing hands-on sessions for parents, you can showcase the powerful new learning experiences that their device investment will make possible for their child, while promoting the value of your 1-to-1 program.

Roll out student devices

Many schools choose to pilot their program with a few year-groups first, in order to stress-test the vision, strategy and policies. For example, in elementary school you could begin with Year 1 and Year 4, then add devices to the inbound cohort of students each year, covering the entire school over a three-year period.

Begin by organising familiarisation sessions that introduce the students to their devices — everything from why they are getting a device, to how to use it, to what to do if something goes wrong. Familiarisation also makes it easier for teachers to get students to focus on the curriculum once they start using their devices in class.

Share the rules

Provide students and their parents with your Internet Acceptable Use policy with staying safe online guidelines for students. If you have not developed one, you can use or customise Microsoft's sample guide.

1. Cole, P. (2012). "Linking effective professional learning with effective teaching practice," Australian institute for Teaching and School Leadership.
2. Hattie, J. (2009). Visible Learning: A synthesis of over 800 meta analyses relating to achievement, Routledge.

Worksheet 4
Let's engage our community!

Now that we have developed a vision, new pedagogy and a platform for our 1-to-1 program, it's time to engage and inform the community. Let's consider what we need to communicate:

Communication Plan	Tips!
How will we introduce our vision for 1-to-1? What is 1-to-1? What is our vision? Why are we doing it? What evidence do we have to support our vision? How much will it cost? Why? What benefits will it bring to each student? Have we examined all the research and alternatives?	Don't be afraid to include the educational research in your communication to parents, to help support your choice of program and device. Parents often respect the fact the school has examined the research and is making a decision based on maximising the learning opportunity for their child. This is especially important when discussing the price. Find all the research and papers you need here https://www.microsoft.com/en-us/education/school-leaders/resource-center
How will we run the information session? Should we use documents, presentations, speeches, meetings, live discussions, or a combination of mediums? How will we structure and manage audience feedback? Will they ask questions or will we use private written feedback, or both? Can we achieve buy-in with key community figures, such as popular parents or teachers, to help advocate our vision?	Train your team on the importance of being knowledgeable, courteous and responsive to questions from others. Prepare answers to anticipated concerns.
How will we keep the community informed on our progress? ☐ Speaking at parent groups, clubs and business or community meetings. ☐ Producing newsletters and flyers. ☐ Writing articles for the school newspaper. ☐ Posting on the school website. ☐ Using Twitter to update our progress. ☐ Offering one-on-one sessions to people who do not support the project. ☐ Having students produce 'news' reports on how and what they're learning.	Make sure you commit to an ongoing communication plan that updates everyone at key points.

Monitor and optimise

Microsoft Power BI enables teachers and principals to use simple visualisation tools to obtain a 360-degree view of student, class and school results. Simply work with your Microsoft Education Partner to connect your attendance, academic results data and other systems or data sources.

Power BI allows you to ask natural language questions to find key insights. These can provide forewarning as to which students are experiencing difficulties, allowing teachers to implement programs to increase understanding.

Analytics not only benefit struggling students – they can identify learners who are capable of acceleration, scholarships or selective schooling. On a school or national level you can understand the performance of your school and students benchmarked against standardised tests or metrics for retention and achievement.

Let's Review!

Now that we have established a 1-to-1 program, we need to put the work into measuring, maintaining and refining it. Here are the key steps:

☐ Decide what success looks like to you, then determine how to measure it.

☐ Encourage teachers to use multi-modal learning.

☐ Push your school to be more inclusive, with accessible technologies.

☐ Help teachers to identify and support students who may need more accessibility.

☐ Familiarise teachers with the built-in tools for creating more accessible learning.

☐ Continue to support teacher capacity, with an ongoing program of professional development.

☐ Inform and engage parents and the community, and allow them to offer feedback.

☐ Roll out devices to students, starting with familiarisation sessions.