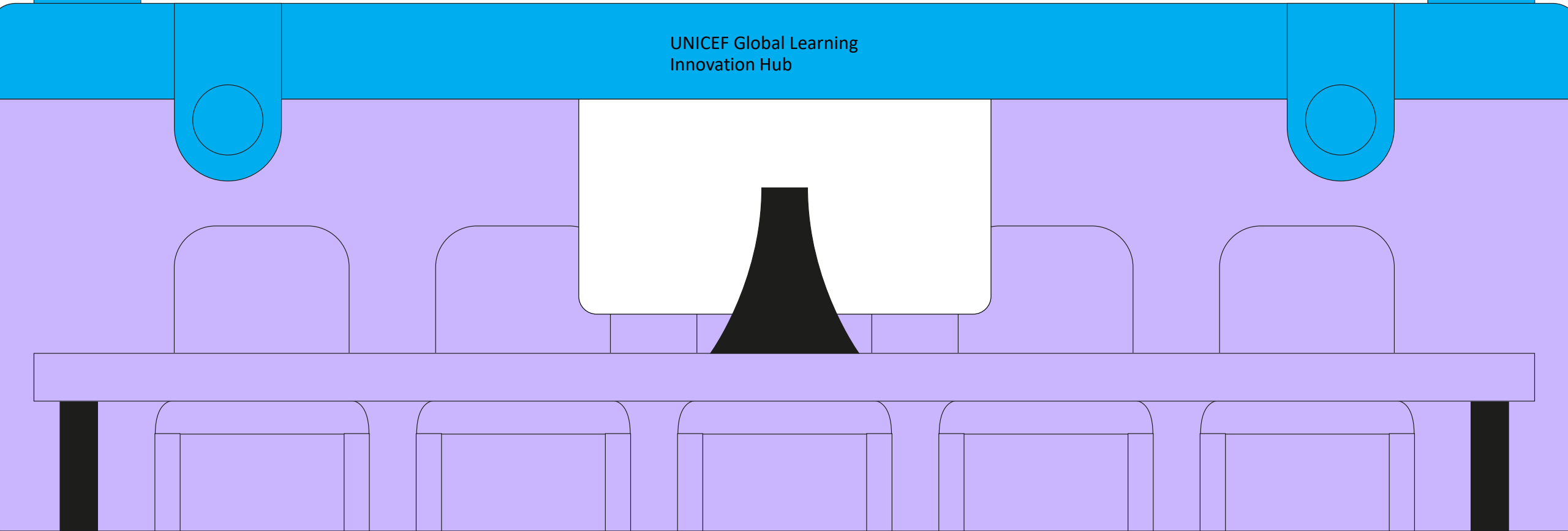
SUPERSTAR TEACHER
TOOLBOX

Pedagogical approaches for using shared devices for learning

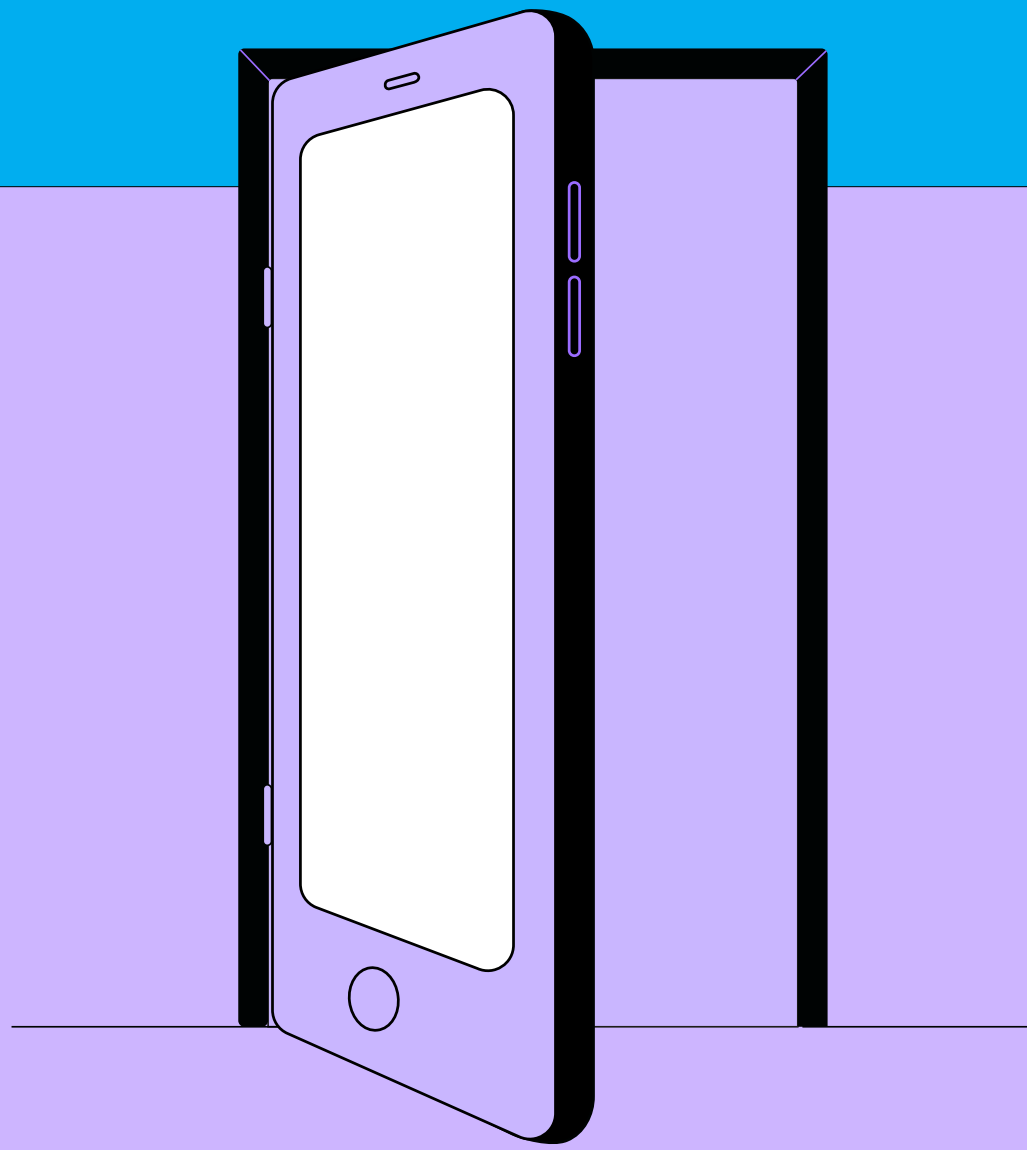
UNICEF Global Learning
Innovation Hub



Contents

01 Introduction

Are you teaching in a classroom where you do not have a device for every student? Do you find yourself wondering how to involve all learners when there is only one computer or a few tablets to share? If so, you are in the right place.



Welcome to the tool on **‘Pedagogical Approaches for Using Shared Devices for Learning’**– your practical guide for teaching when there are limited devices in your classroom. This tool, part of the Superstar Teacher Toolbox, is designed for teachers and school leaders to use in many different contexts.

Inside, you will find simple strategies and user-friendly ideas on how to use a single computer or a handful of tablets to create rich learning opportunities for every student in your class, across different grade levels and subject areas – not just in ICT lessons. The strategies in this tool are equally suitable for teachers in all levels and contexts, as well as teacher training or any informal education setting where new ideas and digital skills are needed.

To get the most out of the tool, it is helpful to familiarize yourself with the Superstar Teacher Toolbox’s ‘Digital Pedagogy’ online course – or review the PDF version – as it covers planning lessons with digital technology, delivering digital lessons, assessing with digital tools, and key safety practices. It is also recommended to look through the ‘Mobile Messaging for Learning’ tool, which builds practical skills and pedagogical knowledge for using messaging apps as learning tools and aligns with key digital teaching competencies.

Let’s clarify the term ‘device.’

In this context, a ‘device’ refers to any digital tool or equipment you use for teaching and learning. This could be **a tablet, a laptop, a desktop computer** or even **a smartphone**. It also includes visual or interactive tools like **a projector or an interactive whiteboard** connected to a computer.

In some cases, a device might be **a programmable unit or kit, or a microcontroller**, that students work on together. Essentially, if it is digital and you can use it to support a lesson, it falls under the ‘device’ category. This tool describes different ways to leverage all kinds of devices in shared setups.

WHAT TO EXPECT FROM THIS GUIDE: You will learn practical ways to organize your classroom so that a limited number of devices can go a long way. In particular, you will learn:

- How to group students, organize routines and schedule device use time fairly
- Tips for weaving digital moments into a lesson
- Examples of learning activities that work even with one shared device
- Strategies to assess each student's learning when devices are shared
- Inclusive techniques to involve all genders and abilities
- Basic guidance on digital safety and device care
- Key takeaways and additional resources

Throughout this tool, you will see short sections called **'Transversal Competencies'** and **'Teacher Digital Skills and Competencies'**. These sections highlight the wider skills that can grow through meaningful use of shared devices. The 'Transversal Competencies' sections show the broader skills that students, and often teachers, strengthen along the way, such as collaboration, communication, responsibility, problem-solving and digital citizenship. The 'Teacher Digital Skills and Competencies' sections show the teaching-related digital skills you build as you plan, organize, adapt, assess and support learning with shared devices. Together, these sections help to clarify that teaching with technology is not only about using devices, but also about developing the skills and competencies that support good teaching and learning.

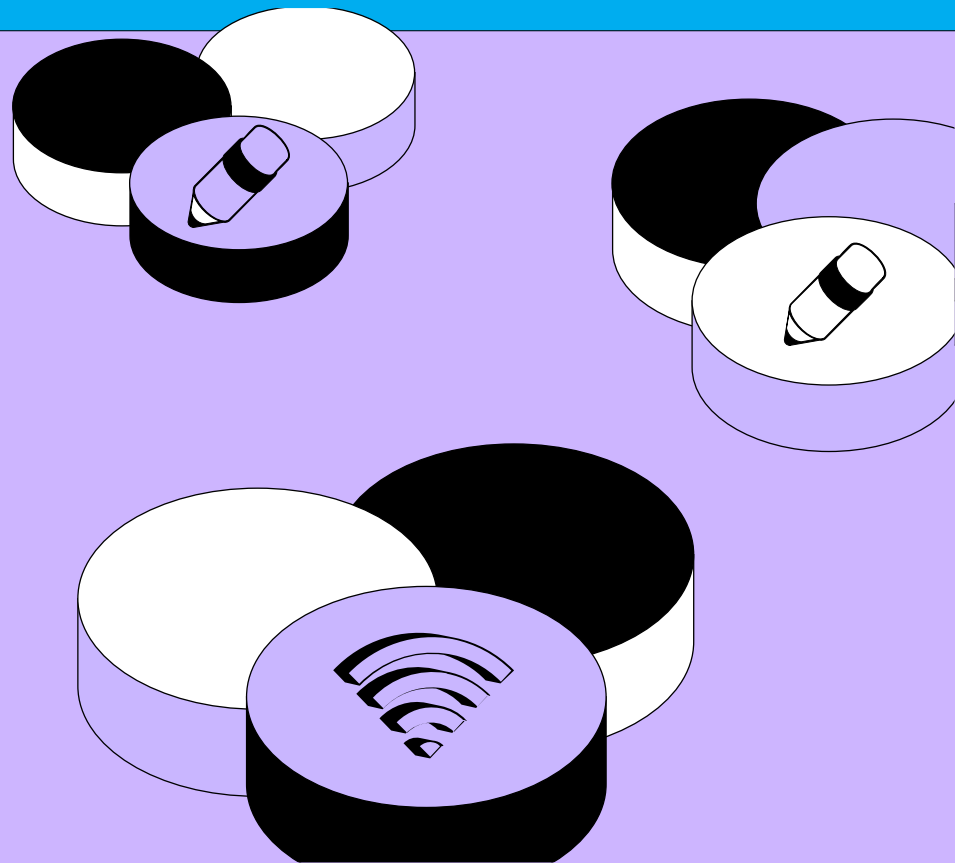
As you read through, remember that you, the teacher, are the true powerhouse of digital learning. A digital device – whether one device or many – is just a tool. What transforms learning is how you guide the process, as emphasized in the **Superstar Teacher Toolbox's 'Digital Pedagogy'** tool. With thoughtful planning and the strategies from this tool, you can create engaging, collaborative learning experiences for your students using whatever tech equipment you have available. So, let us dive in and unlock the potential of shared devices in your classroom. Your students are ready for an adventure, and you are the guide who will take them on it!

Universal Design for Learning

Throughout this tool, Universal Design for Learning (UDL) principles are highlighted. UDL means planning learning from the start so that all students can participate rather than adapting afterwards when someone is left out. In practice, this means offering different ways for students to engage with a task, access information and show what they understand. For example, one student may learn best by listening, another by reading, and another by discussing or drawing before answering. In a shared-device classroom, UDL helps you think beyond the screen itself: who gets access, who needs support, what alternatives are available, and how all students can stay active even when only one device is available. This is why the tool often combines digital and non-digital options, flexible grouping, clear turn-taking, accessibility features, language support and multiple ways to participate. These ideas are revisited in Chapter 6, where you will find practical examples for shared-device learning.

02 Classroom setup models and grouping strategies

Ensuring all students benefit from limited devices requires efficient grouping and classroom organization. This chapter covers grouping formats (pairs, trios, 1:4 groups, station rotations or mixed BYOD use – *see below*) and ways to schedule device time so every learner participates.



WHY THIS MATTERS: Clear grouping plans prevent confusion (and even chaos!), increase fairness and save you time during class. When you pre-plan groups and arrange your room thoughtfully, students know what to do and get equal turns. Research shows that structured rotations and defined group roles lead to better engagement for everyone.

PEDAGOGY CONSIDERATIONS: MODELS: Different classroom models or set-ups can make one or a few devices work for many students. Here are a few models and how they work, along with an example of each.

Table 1: Pedagogy considerations for classroom models, taking into account device availability

MODEL	HOW IT WORKS	EXAMPLE ACTIVITY*
Station rotation	One station has a device, and other stations have offline (for instance, paper-based) tasks. Students rotate through the device station in timed intervals.	Science lab rotation with one tablet station among others
Driver–navigator (pairs, triads, quartets)	Two to four students share one device. One 'driver' controls the device while the other 'navigator(s)' give inputs. Roles switch regularly so that everyone gets a turn to be the driver.	Collaborative story writing on one laptop (students take turns)
Jigsaw/expert groups	One small group (very commonly four students) uses the device for research or content while other groups work offline on different parts of a topic, switching at timed intervals. Later, each group teaches the others what they learned, becoming 'experts' in their part.	Group web quest: each team researches a subtopic on the shared device, then teaches the others
Whole class + projector and whiteboard (or computer and smart screen)**	One device is connected to a projector for whole-class activities. For example, students take turns displaying work or information on the big screen while others observe or give feedback.	Class brainstorm using one computer and a projector for all to see
BYOD clusters***	Some students bring personal phones/tablets to class. Pair or group device owners with non-owners and use those devices as shared stations, with clear rules about which apps/sites are allowed and how turns are rotated.	Mixed group research: each group has at least one student device; they search for answers but still record results on paper to include everyone

*See 'Example activities' in 'Additional resources' below

**One computer and a projector, large display or smart screen can be very effective tools for whole-class or group work, or individual activities. See the 'Example activities' in the 'Additional resources' section below for more ideas.

***BYOD clusters should only be used in contexts where government or school policies permit the use of personal devices. Clear guidelines are essential: students may use their own devices strictly for learning tasks and set them aside when not needed to avoid distraction from the lesson.

BYOD (Bring Your Own Devices)

There might be contexts where some students are able to bring their own smartphones, tablets or laptops from home to class. Check with your government or school policy to find out if a bring your own device (BYOD) approach can be allowed, and ensure parents/guardians are fully informed that the devices will be used for learning purposes only. If BYOD can be arranged, establish rules and a clear plan to maximize the use of personal devices as extra shared resources in the class, applying the same fairness and safety rules as with school devices. Ensure that parents/guardians consent to this type of shared use, and that students follow safety requirements and device care and maintenance procedures. Devices should only be used for learning tasks, and when not needed, they should be set aside to avoid distraction.

TEACHER STORY:
Grade 4 English (Kenya)

A simple rotation that includes everyone

Ms. Amina teaches Grade 4 English with only two tablets for 37 students. She sets up three stations: a quiz game for new vocabulary with two tablets, a reading corner with storybooks and a worksheet, and a writing table for sentence-making. Students rotate every 10 minutes, so each child visits all three stations within half an hour. At the tablet station, **students work in two groups, one group per tablet. In each group, one student uses the tablet (driver) while the others suggest answers (navigators), discuss the options and help explain the choices.** They switch after each question to keep turns fair. At the reading station, students annotate unknown words. At the writing station, they turn those words into sentences and check each other's spelling. A visible timer keeps the pace brisk and reduces confusion or complaints about turns, so the group can focus on the task.

Before starting this routine in 'real' lessons, Ms. Amina spends several days rehearsing the rotations with her class – practising how to move, where to sit and how to switch roles. Students are allowed to make mistakes, bump into each other and try again until the process feels familiar. Then, in the actual vocabulary lessons, she models 'sharing talk' (e.g., "It's your turn" , "Let's check together") and appoints a rotating timekeeper in each group. She also reminds students that the goal is learning the words, not just winning the game. By the end, each child has met the vocabulary goals in three ways – play, reading and writing – and every student receives time on a tablet without chaos. The routine becomes a weekly rhythm: clear roles, quick rotations and a shared sense that the devices are tools for everyone. Students grow in responsibility, teamwork and collaboration, and Ms. Amina's use of a simple structure shows that even two tablets, with consistent practice, can support rich, balanced learning.

Note on computer labs

When a computer lab is available, students work at several desktops in the same room. Each learner can have their own computer or sit in pairs using driver–navigator roles so that both stay active. For large classes, the teacher can bring half the class to the lab while the other half works on offline tasks in the classroom, then swap groups midway through a lesson period. This is possible when the teacher has an assistant, or there is an information and communications technology (ICT) teacher available for support. Lab time can follow the same models as in-class use (e.g., practice tasks, creation tasks or short rotations between devices and offline work, as explained in the next chapters).

Split-screen pair work

If you have one tablet or laptop for every pair of students, split-screen pair work can help both learners stay active. On a tablet, you can open two windows side by side so that each student works on their half of the screen. On a laptop, you can still use a split screen so that both students can see their part clearly and then ask them to take short turns with the keyboard or mouse while they think and discuss together. After working in parallel, the pair pauses to compare answers, explain their choices and correct mistakes. This 'criss-cross' moment – individual work followed by joint checking – keeps both students engaged, even though they are sharing a single device, and reinforces explanation, reasoning and peer support.

TRANSVERSAL COMPETENCIES*: Even with shared devices, students and teachers build important general skills alongside technical know-how. Using shared-device setups can strengthen these skills: *students* practise self-management (waiting their turn, following group routines), teamwork and leadership (working in groups and taking the lead during their turn), and digital citizenship (respecting the device and using it responsibly). *Teachers* likewise develop their ability to guide multiple activities at once and plan for equitable access – essentially learning to choreograph the classroom so that technology is shared fairly and efficiently.

***Transversal Competencies:**

Transversal competencies are broad, cross-curricular abilities – such as critical thinking, collaboration, communication, creativity, self-direction and social responsibility – that help learners adapt, learn both independently and with others in social contexts, and contribute meaningfully to society. They are sometimes referred to as **transferable skills, 21st –century skills and future-ready skills.** More reading on these necessary skills can be found in the UNICEF and World Economic Forum articles provided in the 'Further reading' section.

TEACHER DIGITAL SKILLS AND COMPETENCIES*: When you plan digital activities, you strengthen your ability to make learning accessible and inclusive for all students. This may mean offering different ways for students to access content and different ways to show what they understand. You also develop your teaching practice by adapting routines, grouping and lesson flow when new tools or approaches are introduced, rather than simply adding technology on top of old methods. As you plan, you learn to connect devices, apps or learning platforms directly to the learning goals, so that technology has a clear purpose in the lesson. You also build confidence in using simple blended approaches, where offline work such as books, notebooks and discussion supports online activities such as apps, videos or quizzes in one coherent lesson flow.

Why framework references are included?

The teacher digital skills highlighted in this tool are linked to recognized areas of digital competence for educators. In many education systems, these competencies are defined through national frameworks, professional standards or other government-endorsed guidance. In this tool, references are included to show how the chapter content connects to such recognized competency areas. The main reference point used here is the UNICEF publication *Pathways: Digital competency framework for educators in sub-Saharan Africa*, because it was designed for low-resource and infrastructure-constrained settings and therefore aligns especially well with the practical realities addressed in this 'Shared Devices' tool. The Pathways references used in this tool can be found in the 'Additional resources' section. Many countries have developed or are developing national teacher digital competency frameworks outlining the competencies teachers need for effective teaching and learning in the digital age. There are also other widely used teacher digital-competence frameworks, such as the *European Framework for the Digital Competence of Educators* (DigCompEdu); the United Nations Educational, Scientific and Cultural Organization *UNESCO ICT Competency Framework for Teachers*, which aims to guide pre- and in- service teacher training on the use of digital technologies in both formal and informal education systems from K–12 to tertiary level; and the UNESCO *AI Competency Framework for Teachers*, which defines the knowledge, skills and values teachers must master in the age of artificial intelligence (AI). Chapter 3.3 of the Superstar Teacher Toolbox 'Digital Pedagogy' tool covers digital competence frameworks, where you can read more and explore the frameworks most suitable for your situation. In many contexts, these frameworks are introduced through national programmes, teacher training, district support or school-level professional development. You are not expected to choose a framework on your own. In this tool, the references are included to help you see how shared-device teaching connects to recognized professional competencies and to support reflection, mentoring and practical classroom improvement.

TRY THIS TOMORROW (ANY SUBJECT):

Divide the class into mixed-ability groups of students. Choose one digital task that fits your lesson (for example, a short quiz, a map activity or a simple simulation) and one offline task (worksheet, poster or hands-on activity). In the first 10 minutes, only one group will work at the device while the others work on the offline task at their tables. After 10 minutes, groups should rotate so a new group moves to the device, and so on. Use a timer and write the rotation order clearly on the board. Students will start to learn the routine of moving in groups, taking turns at the device and staying active even when they are not on the screen. If your class is very large, you can spread the rotation over two lesson hours. What matters most is that students get used to fair rotations and are prepared for more challenging station work later.

YOU CAN ALSO TRY THIS:

With two tablets available, split 60 students into twelve groups of 5 and organize the lesson in 10-minute rotations. At the digital station, two groups will work at the same time, one on each tablet, while the other groups complete offline tasks such as reading, writing or worksheet activities. With the tablet, use quick roles such as driver and navigator, change roles after each item, and have a visible timer and simple board chart so everyone knows where to be and when. Rotate every 10 minutes so that all groups get a turn. With two tablets, the full cycle should take about 60 minutes; if the lesson time is less than 60 minutes, continue with the remaining groups in the next session. Finish with a one-minute exit ticket* from everyone.

*See ‘Glossary’ for key terms.

Scheduling fair Access (for school leaders or teacher teams):

Consider creating a shared booking calendar if multiple classes share devices. School leaders can set up equity rules (e.g., each class gets the projector on certain days, or rotating the prime-time slots) so that access to limited tech is transparent and fair across the whole school.

Computer labs: Maintain one school-wide computer lab timetable (posted both on paper and digitally) with a weekly rotation so that every class knows its slot. Rotate the most popular time periods each term to keep access equitable. Ask teachers to book in advance and if possible, submit a short plan before their session (i.e., class size, grouping, number of devices needed) so the lab setup can match the lesson. Schedule a 5–10-minute buffer between classes for smooth changeover and include make-up slots for assessments or project work. For very large classes, consider scheduling half the class at a time and swapping groups midway through the period. Nominate a lab coordinator or team to resolve booking conflicts, track usage and communicate changes quickly (for example, via a staff messaging group). Encourage using these lab times for all subjects, not just ICT classes, so technology supports learning across the curriculum.

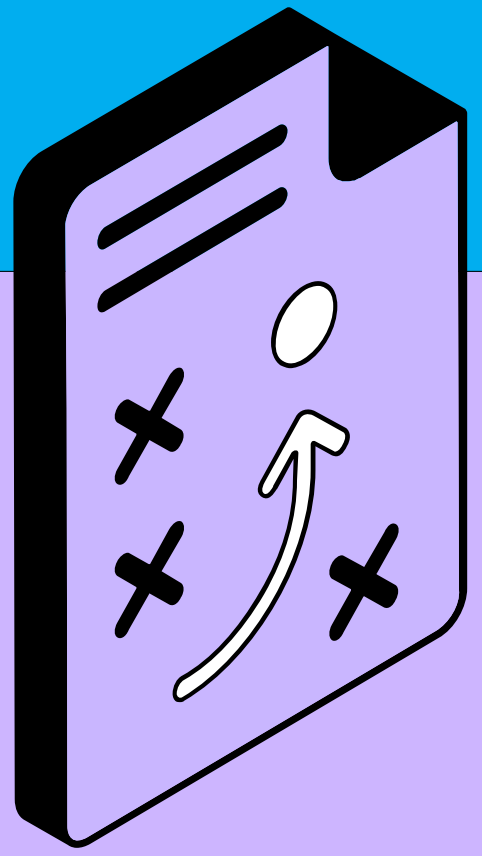
Partnering with parents in shared-device learning

In shared-device contexts, parents become key partners in keeping learning going. At home, families can coordinate device time among siblings, help children borrow or share devices, set simple screen-time rules and even work alongside kids on digital tasks. Experts note that open communication and a family ‘media plan’ help guide safe, responsible device use. Parents/guardians often want to help but need guidance, so teachers can suggest that parents monitor homework time, for example, or even learn about the classroom apps through a quick demo. If a BYOD policy is in place, schools should encourage parents to let students bring approved devices from home to foster a successful BYOD environment. Importantly, parents/guardians should model and reinforce responsible and ethical use of devices by discussing respect and safety online, setting and supervising family tech rules and guiding children’s device use. By partnering with families through open discussions in school meetings, sharing clear tech policies and up-to-date communication, schools help ensure that students use technology responsibly and effectively – whether devices are shared at school or used at home. Please visit the ‘Further reading’ section for more information.

03

Lesson planning and delivery with shared devices

How can you involve all learners meaningfully when only one computer or a few tablets are available? The key is to use the devices, even if numbers are limited, at **just the right moments** in your lesson.



This chapter takes the grouping strategies and classroom models discussed above and incorporates them in actual classroom sessions through planning meaningful lesson flows. The chapter also discusses how to build recurring routines – such as station setups, group roles and materials preparation – so that each lesson reinforces students' skills in collaboration and responsible device use over time. Because technology can be unpredictable, the chapter also encourages planning for backups (for example, what to do if a device is not working or the battery dies) to keep learning on track.

WHY THIS MATTERS: Purposeful lesson planning for shared devices prevents confusion and keeps **all students engaged**. When you plan ahead for *when* and *how* to use the device(s), no one is left idle or off task. Research and experience show that explicit planning of device use – including clear turn-taking procedures and parallel offline work – helps the technology **support instruction rather than distract** students from learning. Good planning also ensures fairness: every student gets a turn with the device, and activities run smoothly on a predictable schedule. This reduces teacher stress and boosts confidence. You will feel prepared with a solid plan (and a Plan B if needed), so you can focus on guiding learning instead of spontaneous troubleshooting. A well-planned lesson that integrates a shared device at key points leads to enhanced **engagement and deeper learning experiences** for all of your students, and models effective time management and purposeful tech use – valuable skills for students in any subject.

PEDAGOGY CONSIDERATIONS: MODELS: Think through the lesson flow step by step. Start with your learning objective and decide what **activity type** best suits it – maybe a discussion, experiment, practice drill or creation task. Next, identify where using a device(s) could **enhance** that activity or make learning more interactive. For example, could a tablet or laptop be used to add a simulation or video clip to enrich understanding? Plan those device moments thoughtfully and ensure that they have a clear learning purpose (that is, never use tech just for the sake of it). Determine how much time each group should get with the device and prepare **parallel offline tasks** for the others. This ensures continued productivity for students not on the device, avoiding downtime. Effective shared-device lessons often resemble a **station rotation**: one station might be using the device, while other stations involve using worksheets, books or manipulatives (see Table 1 above). All groups rotate among the stations so that everyone gets equal device time. This model is a practical way to **maximize the use of limited devices,** ensuring that every student uses the tool most effectively at different times.

TEACHER STORY:
Secondary social studies (Peru)

Stations with roles for fair access

Mr. Luis has three laptops for 35 students. He organizes a three-station rotation for a regional map study with a simple rotation chart and clear roles. At the online map station (the digital station), all three laptops are used: small clusters of 3–4 students share each device, and in every cluster a driver controls the laptop while one or more navigators propose search terms, read results aloud and check details on the screen. At the atlas station, groups use paper atlases and a worksheet to find the same landmarks. At the creative station, teams draw a map from memory and label key features. **The class rotates through the stations; within each station, roles reset so many learners have a chance to drive a device or lead a task**.

When one laptop freezes, Mr. Luis calmly asks that small group to join another laptop group so they share a single working device, while others continue the offline work. The routine keeps overall momentum: no idle time, no exclusion of students. Students compare digital maps with atlases and then transfer understanding into their own drawings. By the end of the lesson, everyone has completed each task. Students say they enjoyed the variety and clarity. Mr. Luis notes how a visible rotation plan, shared learner roles and parallel offline tasks made limited technology feel abundant and useful.

Build in roles and routines

If students are sharing one device in a group, assign simple **group roles** or a turn-taking order before the activity starts. For example, in a pair you could designate one student as the ‘driver’ (device handler) and the other as the ‘navigator’ (giving guidance) and have them switch roles with each new question or task. In a trio or quartet, you might add roles like recorder (taking notes) or timekeeper to keep everyone involved. Clear roles prevent a scenario where one student dominates use of the tablet while others watch passively. Roles also encourage collaboration and accountability – students learn to **communicate and share responsibility** for the task at hand. Post the rotation order or role chart on the board so it is visible to all. Establishing these routines and **practising them regularly** (e.g., weekly station activities) will build students’ competence and confidence. Over time, your class will move like clockwork: devices will be handled fairly, transitions will be quick and students will know what to do at each station without extensive instructions. Research (such as the publications listed in the ‘References’ section below) shows that such collaborative routines not only keep students on task, but also nurture higher-level thinking, time management and even leadership skills through peer interaction.

Plan timing and transitions

In a lesson using shared devices, time is a precious resource. Decide in advance how long each activity and rotation will last and use **cues** to keep things on schedule. For example, you might use a visible timer or ring a bell after 5–10 minutes to signal that it is time for the next group to use the device. Teach students what to do when they hear the signal (save work, log out, pass the tablet to the next team, move to the next station, etc.). Tight time management keeps everyone focused and prevents any one group from monopolizing the device. It is sometimes okay if not every group finishes their device task completely – the goal is that everyone had a turn and learned something in the process. You can always debrief as a class or have groups share what they accomplished during their turn. Meanwhile, **transition routines** should be kept simple: for instance, a quick cleaning of hands or device wipe (if needed), a straightforward way to switch users and a clear entry into the next task. By scripting these transition steps and **practising** them, you minimize downtime and confusion. This way the lesson flows smoothly from one stage to the next, and students stay engaged in a meaningful learning routine.

Always have a backup plan

Because devices (and internet connections) do not always cooperate, think ahead about how you will continue the lesson if technology fails. A good rule of thumb is to have an **alternative task** ready that does not require the device. For example, if you planned an online quiz but the tablet will not connect, have those questions ready so students can do them on paper instead. If a tablet app crashes mid-activity, you might switch that group to a similar offline activity (like reading a textbook section or doing a written exercise) while you reboot or adjust. Preparing a simple backup ensures that learning does not stop when tech issues pop up.

Similarly, **pre-load content** on the device whenever possible – download videos ahead of time, bookmark webpages or install apps in advance – especially if your internet is unreliable. This preparation avoids wasting class time trying to load something during the lesson. With a Plan B (and even Plan C) in your pocket, you can confidently adapt in real time as needed. In fact, teachers who regularly use shared devices say this flexible mindset becomes second nature: if Plan A fails, it is just an opportunity to demonstrate problem- solving and resilience to your students!

TRANSVERSAL COMPETENCIES: *Students* will not only build subject knowledge, but also strengthen collaboration, communication, time management and responsibility when they share devices. Working in groups, they take turns fairly, follow agreed routines, make joint decisions and practise safe, respectful technology use – building leadership, critical thinking, digital literacy and digital citizenship along the way. *Teachers* enhance their competencies by planning equitable access to limited devices, orchestrating several activities at once and adapting quickly when timing or technology changes, growing their confidence in blended, tech integrated teaching.

TEACHER DIGITAL SKILLS AND COMPETENCIES: When you plan lessons with shared devices, you strengthen your ability to combine digital and non-digital activities in a smooth and purposeful way. You do this by planning clear rotations, setting time limits and preparing backup tasks in case a device fails. You also learn to use technology in support of the main learning goal, choosing carefully when a device is truly needed and when paper, discussion or hands-on work may be the better option. As you guide students through routines such as station work or role rotations, you build confidence in preparing, testing and improving these routines over time. You also strengthen your classroom management by observing what is happening during shared- device activities and making small adjustments on the spot, such as changing the station order or shortening device time, so that learning continues even when technology is unpredictable.

TEACHER STORY:
Grade 5 science – ecology (Ethiopia)

Rotations, roles, routines and inclusion

At the start of the lesson, Mr. Yonas tells students that today's objective is to understand basic ecosystem relationships – such as food chains and how changes in one part of an ecosystem affect the rest – while practising fair turn-taking and clear routines when sharing devices. He has three tools to work with: his own laptop, an assistant teacher's laptop and one school tablet.

He opens with a short whole-class ecosystem simulation on his laptop and projector so that everyone begins with a shared picture of predators, prey and producers. Then he moves into a station rotation. Small groups alternate between the **tablet station** (exploring a simple food-chain simulation or doing quick research), the **laptop station** (drafting one or two slides that explain a chosen food chain) and a **hands-on station** (diagramming food chains with cards, creating posters or drawing food webs on paper).

Roles are simple and rotate weekly: a **driver** handles the device when at a tech station, a **recorder** notes key ideas, a **presenter** prepares what the group will share, and a navigator helps the group stay on track by guiding what the driver should click, read or type, while also helping to manage time. Bilingual prompts (in both Amharic and English) and visual checklists support language learners, and the navigator role can also help students with additional needs stay actively engaged.

If the tablet battery dips or the Wi-Fi slows, Mr. Yonas does not stop the rotation. Instead, he turns that station temporarily into an offline task, so the group continues by discussing, sketching or working with the printed materials already prepared there. The next group then moves to one of the working devices when its turn comes. In this way, the overall rotation continues, even if one device is unavailable for a while. Students learn science content and routines together: taking turns, talking through choices and producing short group outputs, such as a labelled diagram, a few sentences or a quick summary to present at the end. The school also has access to one simple microcontroller, Arduino, which students have already used in practical activities and which can be used in occasional STEM extensions (such as a quick Arduino light-sensor demo linked to plant growth) to add variety when relevant, but the core remains repeatable and doable: a fair rotation, clear roles and accessible materials that let one tablet and two laptops serve the whole class.

TRY THIS TOMORROW:

Teach a literacy lesson with one tablet available. In your next lesson, split the class into four groups and set up simple stations around the same text. At station 1 – the reading corner – students will read a short story or passage and note down new or interesting words. At station 2, they will do a writing task such as writing a few sentences or a short summary on paper. At station 3, they will play a vocabulary game or puzzle using word–meaning cards or other simple materials. At station 4, they will share one tablet with a literacy game or interactive story app linked to the same theme. Give each group a short time at each station, then rotate so everyone visits the tablet once. End with a quick whole-class share: one new word, one sentence and one thing they enjoyed at the tablet station. You have just run a simple shared device rotation!

Planning support (for school leaders/mentors)

Even a little support can boost teachers' confidence and know-how. Consider offering a short professional development session on designing lessons with station rotations or other shared-device models. For example, a hands-on workshop could let teachers practise setting up a device station and an offline station, or brainstorm solutions to common challenges (like managing noise or timing). Another idea is to provide simple lesson plan templates that prompt teachers to include grouping, device time and backup plans. Templates take the guesswork out of planning and remind teachers to consider important details (like roles or how to wrap up the lesson).

Encouraging co-planning or mentoring can also make a big difference. You might set up teacher buddy pairs or small planning teams that meet weekly to plan a lesson together – "What will our groups be? How will we use the one laptop we have?" – sharing ideas and troubleshooting as a team. Newer teachers could be paired with a more experienced mentor teacher to design a shared-device activity or even do a peer observation to see such an activity in action.

School leaders can foster this collaborative culture by allocating a bit of meeting time for teachers to swap tips or by celebrating successful lessons in staff meetings. Remember, managing with limited tech is a skill that grows with practice and reflection. By building a supportive network and providing practical training, schools empower teachers to innovate in their classrooms and show that the school is actively managing its digital resources and leading staff development in a planned way.

Learning Passport Blended Learning Handbook

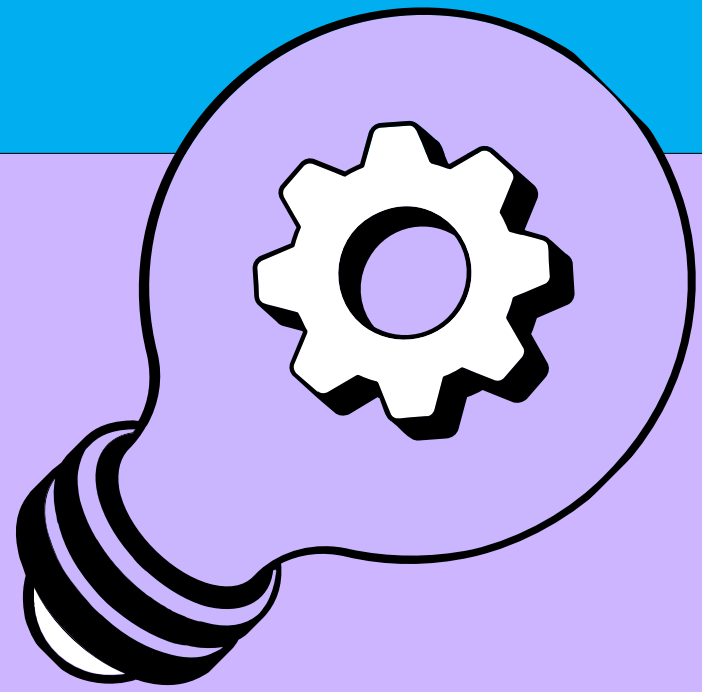
The Learning Passport *Blended Learning Handbook* is a practical guide for teachers on implementing blended learning – combining face-to-face teaching with technology enabled learning using the Learning Passport platform. It includes classroom-ready examples, templates and tutorials to support lesson planning and delivery.

Importantly, the *Handbook* also includes guidance for continuity of learning when schools are closed, showing how blended approaches can shift toward remote and home-based learning when needed.

In blended learning, devices (even if limited) are used for targeted learning moments – such as accessing Learning Passport content, completing a short digital task or rotating through a digital station – while other learning continues offline through discussion, print materials and hands-on activities. See the Chapter 3 portion of the 'Further reading' section below for a link to the *Handbook*.

04 Types of pedagogical tasks supported by shared devices

Shared devices can be used in many types of classroom activities. This chapter maps out some common **task types** and shows how they can work even if only one group at a time has a device. The idea is that choosing the right kind of task will maximize **active participation**, so even when just one team is on the computer or tablet, everyone else is still involved and learning.



The chapter also considers **what kind of content and meaningful activities** fit these pedagogical approaches, so that the device is always used with a clear learning purpose, not just for the sake of ‘using technology’.

NOTE: A useful way to think about integrating technology is the **SAMR model** (substitution, augmentation, modification, redefinition). It encourages you to reflect on whether the device is simply substituting for a traditional way of teaching or truly transforming a learning task in a new way. This and other frameworks, such as **TPACK** or the simple **R-A-T model,** are intended to remind you that it’s not just about using technology, but how you use it to enhance learning.

See the Superstar Teacher Toolbox ‘Digital Pedagogy’ tool (Chapter 3.5, ‘Digital pedagogy: Theory and concepts’) for further reference to tech integration models.

PEDAGOGICAL TASK PATTERNS WITH SHARED DEVICES:

Inquiry tasks:
One group might use the device to explore a simulation, an interactive map or to look up data, while the rest of the class works offline (discussing questions or recording observations). Then that group shares what they discovered with everyone.

Practice and fluency tasks:
Use ‘pass-and-play’ games or quizzes. For instance, with a math drill app or a language quiz on one tablet, students take turns answering questions or completing levels while their peers watch or help. Rotating quickly keeps everyone on their toes.

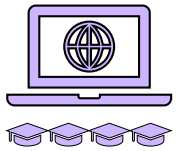
Reflection and feedback tasks:
A shared device can capture group work so everyone can reflect on it later. Students might take a photo of a project or record a quick audio comment using the device. Later, play back those photos or recordings to the class to prompt discussion and reflection on the learning process.

Creation tasks:
Students can co-create digital content by taking turns. For example, a team might jointly make a set of slides, create an infographic or record a short video using one device. Each student contributes ideas and rotates through the role of using the device for editing or typing.

Collaboration and whole-class tasks:
One device can be connected to a projector or large display for group collaboration. For example, you can open a shared document or brainstorming app on the screen, then students take turns proposing ideas as you (or a student helper) type them in, so the whole class builds something together that everyone can see.

Individual inclusive practice:
While one student uses a device for a personalized task (like a remedial exercise or an assistive learning app), others work on an equivalent task in their notebooks. Then they switch, ensuring that students who need extra help via technology get their turn without being isolated from the group.

SHARED-DEVICE ACTIVITIES



Below is a list of example classroom activities using shared devices; these show what is possible when students share technology. These examples bring together the **pedagogical task patterns** above (inquiry, creation, practice, collaboration, reflection, inclusion) and the **shared-device classroom models** from Chapter 2 (such as station rotation, pair work, jigsaw groups and whole- class projector work), showing how they look in real lessons. Each is described in the 'Example activities for using shared devices' section below.

Station rotation science lab:
One tablet station among others for a science experiment rotation.

Group web quest challenge:
Students work in groups to research specific questions, using one device per group where available or taking turns on one shared class tablet.

Collaborative story writing on one laptop:
A small team co-writes a story by taking turns on a single laptop.

Pass-the-tablet math quiz game:
A fun math practice game where students pass one tablet around for each question.

Class brainstorm via projector:
Whole-class idea generation using one computer and projector, facilitated by the teacher.

Photo scavenger hunt:
One device used as a camera is rotated to each group to capture images related to lesson topics.

Jigsaw research teams:
Different groups use one device at different times to become experts on subtopics, then teach others.

One-device coding challenge:
Pairs take turns using a microcontroller or single laptop to solve a simple coding task together.

Digital gallery walk:
Each group creates one digital artifact on a shared device, then the class rotates to view each on the same device or projector.

Peer teaching with a shared tablet:
Students work in pairs, with one student using the tablet to show concept hints or examples while teaching the other, then swapping roles.

TEACHER STORY:
Grade 3 mathematics
(Lao People's Democratic Republic)

An AI-powered math EdTech tool using pair mode on one tablet

With tablets available to cover pair/triad work (1:2 or 1:3 device-to-student ratio), Ms. Sone schedules a weekly math session using a digital practice platform that provides instant feedback and a teacher dashboard. She seats learners in pairs and explains two roles: the driver holds the tablet and submits answers; the navigator thinks aloud, checks each step and confirms before the tap. After each item, they switch roles so everyone gets equal time on the device and in the reasoning seat. She opens a short, targeted set of exercises aligned to the week's topic. Before starting, Ms. Sone models the kind of language she wants learners to use during the task. She gives simple prompts such as: "What is the question asking?", "Show tens and ones" , "Let's check before we tap." A visible timer keeps turns brisk and fair. During practice, she circulates with quick feedback – name → noticing → next step – and keeps pairs focused on explaining strategies, not just chasing points. If a tablet must serve three students, the third learner briefly observes, then rotates in as the next navigator to keep momentum and fairness. Where connectivity is uneven, Ms. Sone can still use the platform in a fair and practical way. Because progress is linked to each learner's own account, she gives each child a short, timed turn, usually 3–4 minutes, on their own profile. During that time, the other child, or the other two children in a triad, help by serving as navigators by thinking aloud, checking steps and discussing the answer before it is submitted. Then Ms. Sone switches to the next learner's account so that each child records some progress in their own profile during the lesson. Students can later continue from that same point when they log in again. In the final minutes, Ms. Sone checks the dashboard to spot common errors and gives a brief whole-class review.

Even with a low device ratio, pair mode turns screen time into shared thinking. Students practise verbalizing strategies, listening and checking accuracy; turns are predictable and fair; and off-task behaviour drops. Ms. Sone leaves the lesson with useful follow-up data, including some learner-level progress in each student's profile and class-level information on common errors from the dashboard; her learners leave more confident, accustomed to taking turns, explaining their math decisions and making steady progress together on one screen.

TRANSVERSAL COMPETENCIES: Through these varied tasks, students also build broader skills like information literacy (finding and interpreting information during an inquiry task), creativity (making digital content together) and presentation skills (sharing their results or creations with the class). Teachers learn to match the right digital tool to the right learning objective and understand the importance of connectivity and context (for example, downloading content in advance if the internet is slow, or choosing apps that work offline).

TEACHER DIGITAL SKILLS AND COMPETENCIES: When you plan tasks with shared devices, you strengthen your ability to match the right digital tool to the right kind of learning activity. For example, you might use a simulation for inquiry, a slide tool for creating and presenting ideas, or a quiz app for quick practice and feedback, always so that technology supports the pedagogy.

You also build your skill in adjusting tasks up or down in complexity, deciding when a device adds real value and when a simpler approach may work better. As you organize shared-device activities, you learn to structure them so that all students think, talk and contribute, not only the student holding the device. Over time, you also build confidence in reflecting on what worked, what could be improved and which types of shared-device tasks – such as inquiry, creation, practice, collaboration or reflection – work best in your context.

05 Assessment strategies with shared devices

This chapter looks at how to measure student learning and participation when working in teams on one device. Even if students share a screen, it is important to ensure that each individual's understanding and progress are checked. So how can you assess everyone fairly in a shared-device setting? Let us explore ways to see what each learner is **gaining from** the activity, without needing each student to have their own computer or login.

WHY THIS MATTERS:

When students work in groups, it is easy for some to hide in the background. Effective assessment strategies make sure that every student is accountable for their learning – not just the one controlling the mouse. By building in clever 'assessment moments' during and after group work, you will not need one-to-one devices or separate accounts for each student to evaluate their learning. These approaches balance the group's output with each individual's understanding.

PEDAGOGY CONSIDERATIONS:

Learning assessment in settings where shared devices are used. Here are some approaches for light-touch assessment with limited tech:

- **Observation checklists:** As students work in groups with a device, circulate and observe. Use a simple checklist or class roster to note who is actively participating and who might need a nudge. This gives you immediate insight into group dynamics and each student's involvement.
- **Group products and individual exit tickets:** Have each group submit one shared output per activity, such as a photo, a slide, a recorded answer, a completed worksheet or a single response entered on the device, and also ask each student to jot down one thing they learned or answer a key question on a slip of paper before class ends. This 'exit ticket' from each student shows individual understanding. The groupwork demonstrates collaboration, and the exit tickets show each student's personal takeaway and learning.
- **Rotate spokespersons:** When groups share results from a device-based activity, rotate who speaks for the group each time. If one student presented today, make sure a different member presents next time. This way, everyone practises explaining on behalf of their group, and you get a chance to hear from each student over time.
- **Whole-class quick polls or quizzes:** Use one device to run a quick whole-class quiz or poll. For example, display questions via a projector and have students respond by holding up coloured cards or moving to corners of the room (so you only need one computer to show the questions, but you still get individual responses). Another option is to use an instant poll app on the teacher's smartphone: students hold up coded cards, the teacher scans the room, and the app records each student's answer without every learner needing their own device.
- **Capture student work:** Use one device to take photos of group work or record short audio reflections. Later, review these outputs to assess contributions and understanding. For instance, if each team builds something or creates a poster of their work, take a photo of each poster and you have evidence of each group's output. You can also have each student in the group briefly state their takeaway in a quick audio or video recording using the device, which can be listened to later to gauge each individual's understanding.
- **Shared device for one-by-one tasks:** Even for tests or projects, you can use a single device creatively. For example, each student could come up one by one to a class tablet to complete a quick digital quiz. Or you might use one digital camera to create a portfolio of student work by photographing their drawings or written work. In this way, even summative assessments can be done with one device, by checking in with students one at a time.

Use individual profiles on shared devices

Many learning apps allow each student to log in to an individual profile even when using the same device. This means you can collect formative and summative assessment data for each learner separately, using features like progress dashboards, activity logs and quiz results. In this way, you can monitor each student's strengths, challenges and growth over time through the app's reports for personalized assessment.

For example, in a reading or math station rotation with one tablet, learners take turns logging into their own accounts on an educational app and completing a short activity or quiz in their profile. Later, you review the app's dashboard to see each child's score and any errors. This lets you pinpoint who needs extra help and celebrate individual progress, all from one shared device.

TEACHER STORY:
Grade 8 mathematics (Colombia)

Group rotation and quick checks

To assess geometry understanding with only two tablets, Ms. Valeria combines unplugged stations (a station with no device) with a shared-device check-in. First, five mixed-ability groups rotate through ten unplugged stations, discussing and agreeing on answers together. Next, each group takes a brief turn at one tablet to **submit responses via a simple form**. While waiting, groups complete a one-sentence reflection on the toughest item and why. When all groups finish, she projects the auto-aggregated results, where a quick bar chart highlights common errors. The class revisits those items **immediately, clarifying misconceptions as a team. For an individual** 'snapshot', each student draws a favourite shape on paper and writes one property belonging to that shape (e.g., all the angles in a rectangle are 90 degrees); Ms. Valeria photographs a few examples on the tablet and facilitates a whole-class critique (anonymous, kind, specific). Finally, groups record a 10-second "we learned…" audio note on the tablet. This hybrid approach captures group reasoning, surfaces common errors fast and still checks individual understanding – without needing a device for each learner.

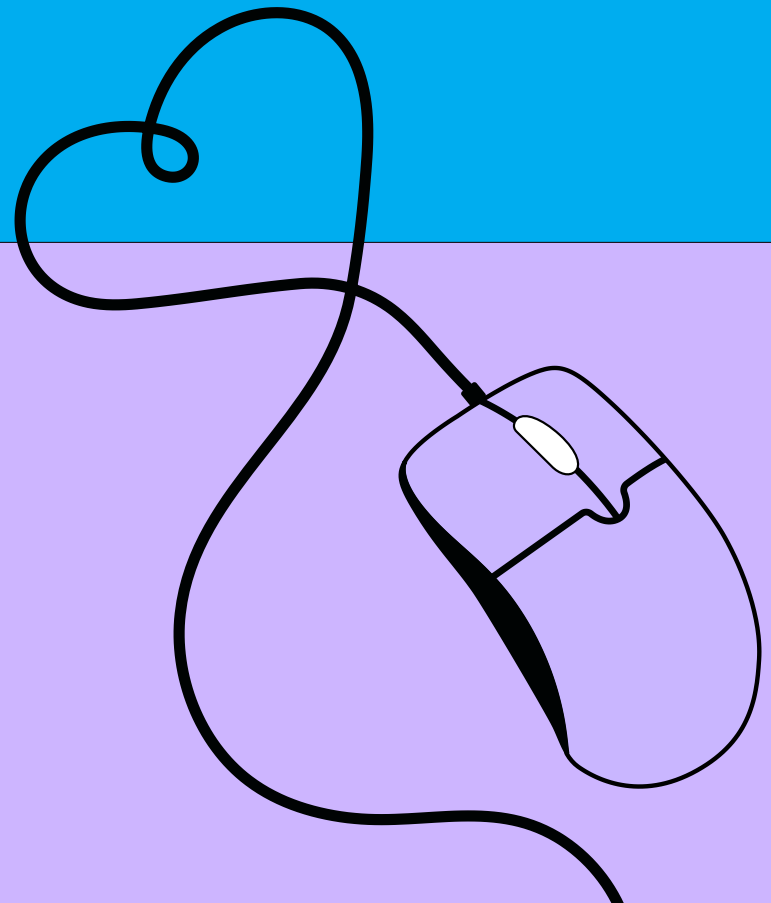
TRANSVERSAL COMPETENCIES: In engaging with these assessment methods, *students* learn self-reflection (like writing their own takeaways or listening to classmates' explanations) and practice giving constructive peer feedback during group work. They also gain confidence using digital tools to demonstrate their learning in non-traditional ways. *Teachers* strengthen their ability to conduct formative assessments in a blended setting – mixing digital and non-digital checks for understanding – and to use evidence from group activities to infer individual progress. *(You can refer to the 'Digital Pedagogy' tool for more ideas on formative and summative assessment techniques.)*

TEACHER DIGITAL SKILLS AND COMPETENCIES: When you use shared devices to check learning, you strengthen your ability to gather useful evidence of student understanding on a regular basis. This might include quick quizzes, polls or short digital tasks that show what students know and where they need support. You also learn to combine digital evidence, such as app scores, photos of student work or short recordings, with your own observations and paper-based work so that you build a fuller picture of each student's progress. When apps or platforms store individual performance data, you can use this information to notice who may need extra support or additional challenge and then adjust your next lessons accordingly. You also build confidence in giving simple and timely feedback based on what shared-device tasks reveal, so that each digital activity becomes a chance to support learning, not just to click through an exercise.

TRY THIS TOMORROW:

After a shared-device activity (for instance, a group of students completing a science simulation on a tablet), have each team **submit one answer or finding** through the class device (e.g., type a summary sentence or take a photo of their solution). Then immediately follow up by asking every student in the class to write one sentence on paper about what they learned or to answer a key question. Collect those slips or hear a few answers – this way, the group submits something jointly and each student responds personally. You've not only used the limited tech equipment available for the class in group exercises but also checked everyone's learning!

06 Inclusion, accessibility and gender balance with shared devices



Shared technology should be a bridge, not a barrier, for diverse learners. In this chapter, we focus on how to include **every** student – regardless of ability, background, gender or learning needs – when using shared devices for learning.

The goal is to make sure that girls and boys, students with disabilities, multilingual learners – **each and every student** – feel involved in and benefit from the use of devices and digital solutions in the class. With a bit of planning and the help of built-in accessibility features, you can ensure shared-device activities are equitable and empowering for all your students.

WHY THIS MATTERS: Without careful facilitation, certain students might get sidelined during shared device use. For example, more assertive students might dominate the use of the computer, or a child with a disability might be excluded altogether. It is important to prevent situations where only a few students (the same ones every time) always control the device while others become passive observers. Prioritizing inclusion and gender balance builds a sense of **belonging and confidence** for every learner. When every student gets a turn and can contribute meaningfully, it boosts not only their learning but also their self-esteem and interest in technology. Paying attention to these issues ensures **equity** – everyone gets a fair chance to participate – and leads to a richer learning experience for the whole class.

PEDAGOGY CONSIDERATIONS:

Making shared tech inclusive (UDL* in practice). To include diverse learners, try these strategies:

- **Equal turn-taking:** Establish clear rules so device time is shared fairly. For example, use a timer or visual cue to signal when it is time to switch who is controlling the device. Make sure everyone knows they will get a turn and enforce this system consistently.
- **Rotating device driver:** In group work, assign a different student each lesson (or each activity) to be in charge of the device. Intentionally rotate this role so the same student is not always the one holding the tablet. This gives quieter students or those less confident with tech a chance to lead and prevents any single student from dominating the use of the device.
- **Intentional grouping:** Mix groups by ability and gender so that no one is left out and students learn to work with classmates of different skills and backgrounds. For example, pair a more confident tech user with a less confident one (who may be anxious about using the device) and encourage them to support each other. Ensure mixed-gender teams and encourage respectful collaboration so that girls and boys both get hands-on time with the device and equal say in group decisions. Keep your eyes on students who may struggle in the group and give them extra support.
- **Leverage device accessibility features:** Use built-in device functionalities to support learners with disabilities. For example, turn on video captions or use text-to-speech for students who are deaf/hard of hearing or who struggle with reading. Use zoom or magnifier tools for students with low vision. If a student has motor difficulties, consider assistive devices like an adaptive mouse or switch if available, or have a peer assist with navigation under your supervision.
- **Bilingual and language support:** If you have students with a different native language than the language of instruction, allow them to use translation apps or a bilingual dictionary on the shared device when needed. You could also allow them to research or read something in their native language on the device and then share with the group in the language of instruction. This way, **you can ensure that** language **does not become a barrier to full class participation and learning.**
- **Multisensory tasks:** Design activities that are not only about interacting with a screen. For example, have students use pen and paper or physical manipulatives alongside the device. A student with attention or sensory needs might engage better if they can move, draw or touch something as part of the task while another student uses the device.
- **Accessible content:** When using digital content, try to choose materials that are easy for different learners to access and understand. For example, look for texts with clear fonts and spacing, videos with captions, images that support meaning clearly, and content with simple language or strong visual support when needed. Accessible content can help more students participate meaningfully, especially when they are sharing one device and need to follow the task together.
- **Culturally relevant content:** When using digital content (stories, examples, images in an app), try to choose ones that reflect your students' diverse cultures and backgrounds and avoid stereotypes. For instance, if you are using a reading app or examples in a math problem, check that they show diverse names, foods or local contexts and do not propagate gender-stereotypical roles. This helps all students feel seen and respected, which increases their engagement when using shared technology.

*'For more information on Universal Design in Learning (UDL), see text box on p. X above.

TEACHER STORY:
Grade 3 reading (Ghana)

One screen, many access paths

Ms. Abena knows the techniques and technologies for her mixed-ability class and chooses them carefully at appropriate moments in every lesson. Today, her goal is to help learners understand a short story and to show that everyone can access the text in different ways. She starts by briefly introducing the story and reading the first part aloud herself while learners follow on the board and using a few shared printed copies. As she reads, she underlines key words and checks that everyone is following the main idea. Then she moves into short group activities using shared devices and simple supports: she has one tablet, her own phone with an offline audio recording of the story, and a laptop that can connect to the projector when needed.

At the **tablet reading station**, a group reads the same story on the tablet. Kojo, a student with low vision, sits where he can hold the tablet comfortably. The text is set to large font and high contrast, and he uses built-in text-to-speech with one earbud to listen while following the enlarged words on the screen. Peers help by pausing and replaying sections and by pointing to sentences as they discuss what happened in the story.

At the **word and picture station**, another group uses printed story excerpts, picture cards and a simple bilingual word list. This supports language learners and a student with hearing loss, who relies more on visual support aids than on audio. Students match words to pictures, act out verbs and help each other say the new words aloud.

At the **retell and draw station**, learners draw their favourite part of the story in their notebooks and write one or two short sentences about it. A classmate who sometimes struggles with decoding uses a printed version with key words already highlighted; a peer reads those words with him as he writes.

After rotations, Ms. Abena brings the class back together. She connects the laptop to the projector – the ‘one screen’ for everyone – and opens a simple quiz with large, high-contrast text. Kojo comes to the front and uses the trackpad to move between questions, zooming in when needed. The class reads the options together and votes on the answers, explaining their choices. By the end of the lesson, every learner has engaged with the same story through different access paths: listening, enlarged text, pictures, bilingual support, peer explanation and whole-class work on one shared screen. Students leave feeling that the tools are there to help each student succeed. Ms. Abena’s routines and careful use of shared devices make inclusion part of everyday reading.

TRANSVERSAL COMPETENCIES: By focusing on inclusion, *students* develop **empathy and respect –** they learn to share with and help peers, realizing that everyone has different strengths and needs. They also get exposure to **assistive technology** in action (like seeing a screen reader or captions being used), building their awareness and adaptability. *Teachers* improve their skills in **differentiating instruction with technology**. As a teacher, you become more adept at using accessibility features and practising **bias-aware facilitation** (for example, intentionally encouraging girls to handle the device as often as boys and ensuring all voices are heard in group discussions). Ultimately, you grow your ability to create a supportive, inclusive digital learning environment for everyone.

TEACHER DIGITAL SKILLS AND COMPETENCIES: When you plan shared-device activities, you strengthen your ability to make learning more inclusive for students with different abilities, languages and backgrounds. This may mean using captions, read-aloud tools, zoom functions or alternative input methods when needed so that more students can take part meaningfully. You also build your skill in organizing roles and turns carefully, so that no group of learners, such as girls, quieter students or students with disabilities, is left in the background while others dominate the device. As you adapt tasks and supports, for example by using visual prompts, bilingual glossaries or simplified instructions, you help all students engage with the same core ideas. You also strengthen the classroom culture around shared-device use by modelling respectful behaviour and encouraging students to support one another.

TRY THIS TOMORROW:

With one computer and a projector, choose 3–4 key images (for example, a diagram, a page of text or photos that show steps in a process) to support a concept your class is struggling with. Project each image and use the zoom function to enlarge important parts for students with low vision. As you talk, write or type a few key words or short captions on the screen to support students with hearing impairments and language learners. Arrange seating so everyone can see clearly and give a simple printed outline of the images to a few learners who need extra support. Let a rotating driver be responsible for moving to the next image and adjusting the zoom when you ask. This simple shared-device routine makes the explanation more visible, more inclusive and more engaging for the whole class.

TRY THIS TOMORROW:

With one computer and a projector, choose 3–4 key images (for example, a diagram, a page of text or photos that show steps in a process) to support a concept your class is struggling with. Project each image and use the zoom function to enlarge important parts for students with low vision. As you talk, write or type a few key words or short captions on the screen to support students with hearing impairments and language learners. Arrange seating so everyone can see clearly and give a simple printed outline of the images to a few learners who need extra support. Let a rotating driver be responsible for moving to the next image and adjusting the zoom when you ask. This simple shared-device routine makes the explanation more visible, more inclusive and more engaging for the whole class.

Designing science, technology, engineering and mathematics (STEM)- related tasks to include and inspire girls.

Do you sometimes notice that, when it comes to STEM activities, girls quietly move to the background while boys ‘take over’ the device? You can change this by consciously planning tasks and roles so that everyone is invited to lead, create and experiment with technology. The ideas below encourage girls to take active roles in tech-related tasks, even when devices are shared. See the ‘Example activities’ section for lesson topic clues. When art or design elements are intentionally added to STEM, the approach is often called STEAM, with the A standing for arts.

Highlight female role model.

Share brief examples or profiles of women who are creators, coders, scientists or designers, especially those relevant to the task at hand. Use the **shared device** to show a short video, display a photo and quote, or read a short profile together. Seeing women succeeding in STEM on the same tools the class is using helps all students, especially girls, visualize themselves in those roles.

Define diverse team roles.

Assign clear roles, such as researcher, tester, content designer, coder, documenter or presenter, so that all students know how they can contribute. Organize these roles around one shared device in a way that gives girls and boys equal chances to rotate through both driver roles, such as **coding or operating the tablet** or projector, and planning, research and presentation roles. Pay attention to patterns in participation, and avoid situations where girls are left mainly with passive or supportive tasks while boys handle the device more often.

Start with accessible tech, then level up.

Begin with easy, low-barrier tech activities (e.g., a simple animation or digital storytelling app, drag-and-drop coding related to art or a story) on **a single shared device per group.** Let all students build confidence by taking short turns using the device, then gradually introduce more complex tools once they are ready.

Value collaboration and process in assessment.

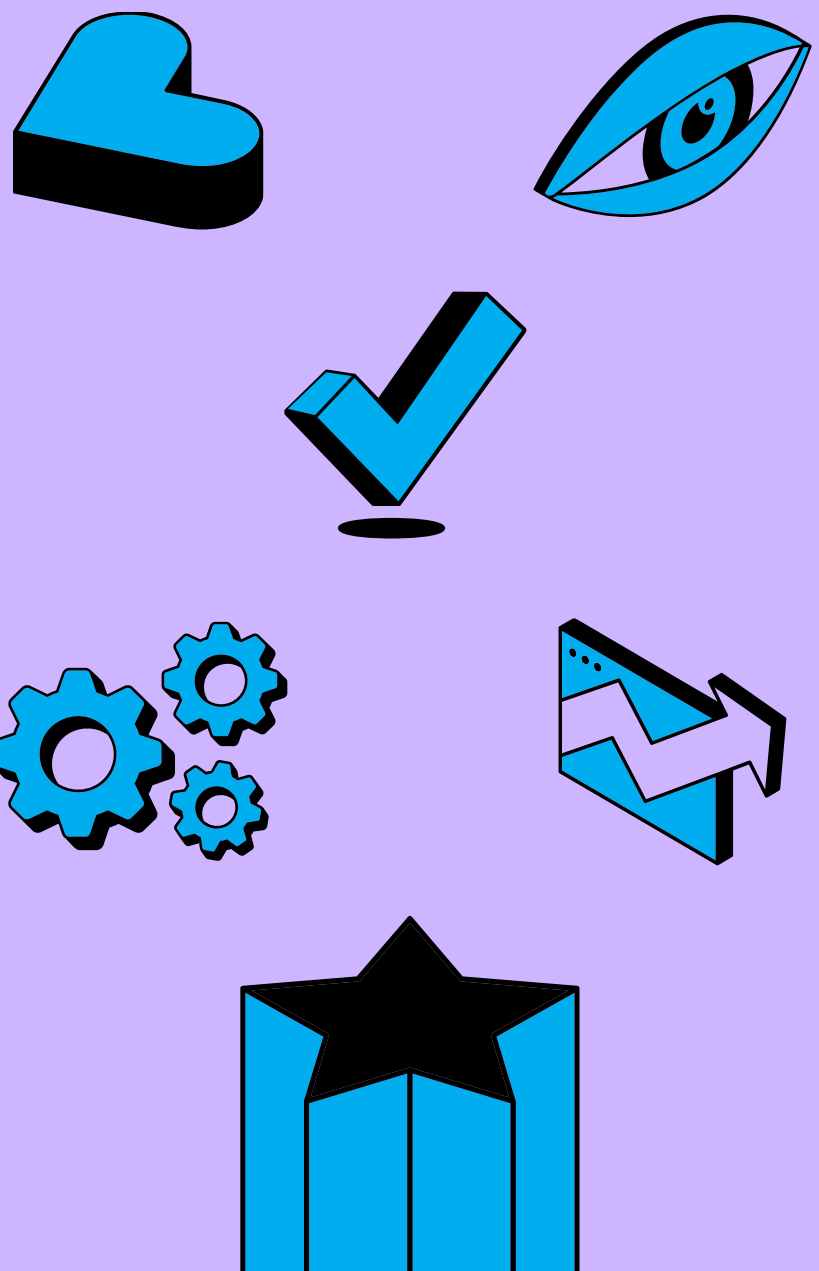
When evaluating projects, give credit for and acknowledge teamwork, creative ideas, design process and perseverance – not just the final product. Make it visible that rotating roles around one shared device (e.g., who coded, who tested, who documented) is part of the learning process experience. Emphasize that many skills (communication, collaboration, creativity, leadership, etc.) are important in tech projects, not only digital and technical skills.

Choose real-world, meaningful themes.

Pick project topics that matter to your students, such as health, environment, community issues or school improvement. Frame the shared device as a tool the team uses together to research, create and share solutions, for example by conducting a quick survey on one tablet passed around, making a short video in turns or designing a digital poster as a group. These kinds of meaningful, community-linked tasks can be especially engaging for many girls, while remaining valuable for all students, because they connect technology to real people, real problems and a visible purpose.

Offer varied creative outputs and a real audience.

Provide options for how students can present their work, such as a video, a podcast, an infographic, a simple coded animation or a photo essay. Make it clear that these products can be created on one shared device per group, with students taking turns in the driver role. Plan to showcase their work beyond the classroom, for example on a wall display, at assembly or to parents, so the project feels purposeful rather than just like a tech demo. This can be especially motivating for many girls because it values creativity, communication, collaboration and problem-solving alongside coding and technical work.



By using these approaches in shared-device activities, you ensure that girls stay engaged and take the lead as often as boys, and you are intentionally designing equitable tasks and roles that give different learners fair access to technology-supported learning. When these shared devices are embedded in practical investigations, projects and hands-on making, you are also modelling how to use technology meaningfully in practical and hands-on subjects.

Inclusive planning at the school level (for school leaders):

School administrators can make shared device use more inclusive by setting policies and support systems. For example, include procurement in the school budget for some accessibility aids (like affordable headphones for audio learning or a few large-key keyboards for students who need them). Include gender equity guidelines in your ICT policy, such as ensuring that any tech clubs or initiatives actively encourage girls' participation and leadership. Provide teacher training on inclusive tech practices (covering many of the tips above) and emphasize that all teachers are expected to implement them. When school leaders prioritize inclusion and provide even small resources or policy support, it empowers teachers to use shared devices in ways that benefit every student, every day.

07 Technical management and safety – device care, troubleshooting and student well-being

This chapter is about the **practical routines** that keep your limited devices running smoothly and safely. In a shared-device classroom, taking care of the equipment and ensuring digital safety is not ‘someone else’s job’ – it is part of a teacher’s day-to-day classroom management.

In many schools a single teacher ends up acting as the ICT manager because, in practice, tech responsibilities often fall on one person. Here we cover simple habits for device care (like charging and handling), basic troubleshooting techniques, and tips for protecting students' safety and well-being while using digital tools. With clear routines in place, you will maximize learning time and minimize tech headaches.

WHY THIS MATTERS: If devices are not well maintained or if digital use is not monitored, a lot can go wrong. By instilling good practices, you **extend the life of your devices** (saving precious resources), protect students' privacy and well-being, and reduce last-minute scrambles when something is not working. Good management means the technology serves the learning process – it doesn't disrupt it. It also lowers your stress as a teacher: when you know devices are charged, accounts are secure and there is a plan to deal with technical issues, you can focus on teaching. Plus, clear routines and safety rules teach students responsibility and digital citizenship.

KEY CONSIDERATIONS FOR EVERYDAY DEVICE USE:

- **Care and readiness:** Set up daily habits for charging and storing devices. For example, assign a couple of students as 'tech monitors' to plug in tablets or laptops at the end of each day and to check that all devices are shut down properly. Label or number the devices if you have more than one, so it is easy to track them. Teach a simple cleaning and storage procedure – devices should be used with clean hands and returned to their designated spot after use. Also, make sure students know the quick steps to get a device ready (like logging in or connecting to the projector) so any student can help set up when needed.
- **Basic troubleshooting:** Teach yourself and your students a few basic fixes for common issues. Show them how to calmly handle problems: if an app freezes, try closing it or restarting the device; if a device will not turn on, check if it is charged; if it is not connecting to the internet, verify the Wi-Fi or try restarting. Keep a class 'tech log' where students can write down issues they encounter (e.g., "Laptop would not play sound") so you can address issues when possible. You might even designate some tech-savvy students as 'tech helpers' to assist classmates when minor issues arise, under your supervision.
- **Safety and well-being:** Establish rules for digital safety and healthy use of tech equipment. Use class or shared accounts on devices instead of personal student logins to protect privacy. Have a routine for logging out and clearing any personal data when a student is done using a device. Stick to apps and websites that are approved or vetted by the school, system or trusted partners, and consider using a 'white list' or preset browser bookmarks. When selecting tools, it is also useful to keep in mind UNICEF's EdTech for Good approach, which encourages the use of digital tools that are safe, inclusive and designed to support learning. If devices have cameras, set guidelines and obtain any needed permissions for taking photos or videos in class. Remind students about physical health too: encourage brief eye and stretch breaks if using a device for an extended period, and have everyone wash their hands or use hand sanitizer before using shared keyboards or touch screens. By making these practices part of your daily classroom routine, you can create a safe and orderly digital learning environment.
- **Consistent and confident use:** While clear routines for safety and proper handling matter, and school policies or regulations on device use should always be followed, it is equally important to remember that devices are there for students to use. Devices should not be protected to the extent that students are not allowed to touch or use them for fear of the devices becoming dirty, faulty or broken. Devices have a limited lifespan, and some wear and tear is part of normal use. They are learning tools, so they should not be overprotected at the expense of student use, but rather used purposefully to support learning.

TEACHER STORY:
Secondary science (Nepal)

Curating offline, low-friction tools

With spotty internet and two tablets, Mrs. Shanti, a teacher with an ICT manager role, curates devices to work offline and in rotations. She installs an ad-free circuit simulator for science, a lightweight quiz app for math, and an e-reader stocked with short science texts in Nepali and English on local ecosystems, energy use, health and climate. Groups co-use each app in short turns during the appropriate lessons to investigate circuits, play team quizzes or listen to narrated texts with highlighting.

Even when the internet connection is intermittent, one shared account is enough for the few moments when a login is needed. Short videos are pre-downloaded and a simple offline drawing app lets students create quick diagrams or timelines. During rotations, one group views a subtitled video and then teaches classmates what they learned. The tablets now serve as a mini lab, library and studio – reliable, predictable and ready to use. Students learn content and device etiquette, while Mrs. Shanti spends less time troubleshooting and more time teaching because the tools ‘just work’, even without internet connection.

TEACHER STORY:
Grade 8 science (India)

Student tech helpers play a key role

Mr. Nikhil assigns two weekly tech helpers (with volunteers that change every week) to keep two aging tablets lesson-ready. Each morning, they check battery levels, restart devices to clear memory and confirm the right apps are open. During group work, helpers handle small glitches: they reopen frozen apps, locate missing downloads and note any bigger problems for Mr. Nikhil to check after class. If one tablet stops working, the tech helpers first try simple fixes; if it still does not respond, Mr. Nikhil quietly merges that group with another and helps them continue with an offline discussion or paper-based task so learning does not stop. At day’s end, the tech helpers close the apps, wipe screens and plug in devices to charge. These routines take minutes but change the culture: students solve small problems, respect turn-taking and keep the class on schedule. Mr. Nikhil’s message to colleagues is simple: start with one routine (like timed turns or tech helpers), then add another over time. User confidence grows (for both teachers and students), tech feels calmer and the whole class benefits from smoother, shared use.

TRANSVERSAL COMPETENCIES: When *students* take part in routines for device care, safe use and basic troubleshooting, they build more than technical know-how. They strengthen their responsibility, self-management, collaboration and problem-solving skills as they learn to handle devices carefully, follow agreed routines, respond calmly when something goes wrong and help each other in practical ways. Students also develop digital citizenship by using shared devices respectfully, protecting privacy and balancing screen-based work with healthy classroom habits. *Teachers* likewise strengthen their own competencies by creating reliable routines, guiding students in safe and responsible technology use and keeping learning moving even when technical issues arise.

TEACHER DIGITAL SKILLS AND COMPETENCIES: When you establish clear routines for safe and responsible use of shared devices, you strengthen your ability to manage technology in ways that protect both learning and student well-being. This includes guiding students in how to treat each other respectfully online, protect personal information and follow agreed school rules and policies. You also build confidence in handling the practical side of shared-device use, such as organizing charging routines, checking batteries, closing unused apps and responding calmly to small technical problems so that lessons are not disrupted unnecessarily. As you observe students during device use, you learn to balance screen time with offline activities, noticing signs of fatigue or distraction and adjusting tasks when needed. You also model good digital citizenship through your own practice by showing students how to search, share and communicate appropriately when using digital tools in class.

Schoolwide device management (for school leaders):

It helps if the whole school is consistent in how devices are managed. School leaders/principals/managers can implement things like a shared booking system or timetable for device use to avoid conflict over usage. A basic ‘device care’ policy can be introduced – for example, every class follows the same rules for charging and storing devices, uses a sign-out sheet if devices move between rooms, and meets clear expectations that all students treat equipment respectfully. Also, consider data-protection measures at the school level, such as training teachers not to store sensitive student information on shared devices. When clear policies are in place and everyone knows the expectations, it supports teachers in managing technology consistently and shows how school leadership can actively manage infrastructure and resources for educational technology in a planned way.

Maintenance and support (for ICT support, tech teams, school leaders):

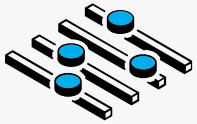
If your school has an ICT technician or a tech team, they play a vital role in keeping shared devices ready to use. If your school does not have formal tech support, consider assigning a tech-savvy teacher some extra time or support to handle basic upkeep tasks. Here are some ways tech support can maintain devices for classroom use:

Regular updates:

Schedule software and app updates during after-school hours, so teachers do not lose class time to updates. Keep antivirus and security software up to date as well.

Inventory and spares:

Maintain an inventory of all devices and their accessories. Try to have a couple of spare chargers or batteries (and even a spare device, if possible) on hand so a lost charger or a broken tablet does not derail a lesson.



Simple management tools:

If possible, use mobile device management (MDM) software that only allows certain apps to be accessed, or implement standardized settings on student devices. This can block access to any apps and websites that are not allowed or vetted by teachers and make troubleshooting easier by keeping devices uniform.

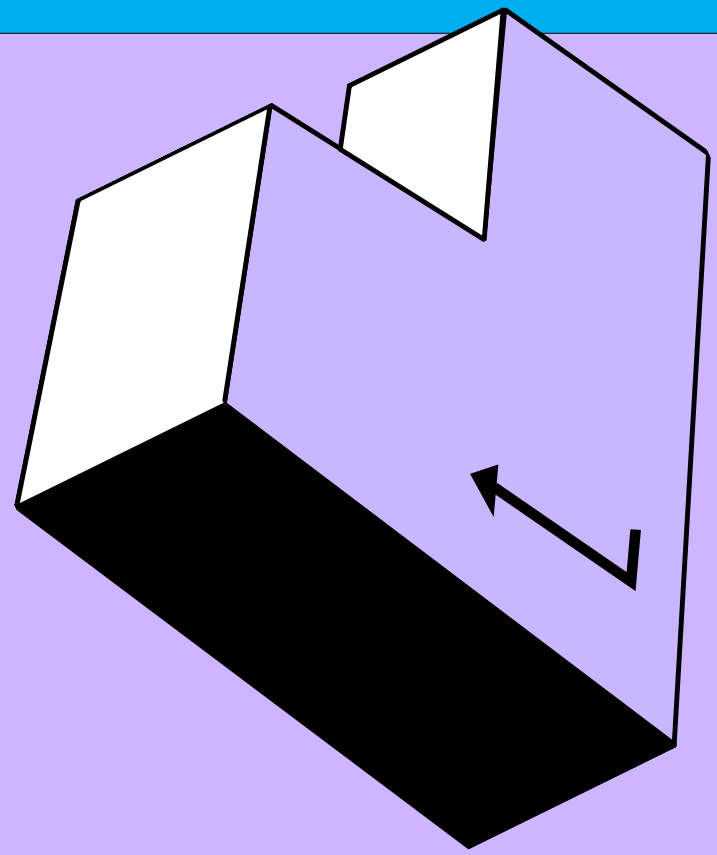
Repairs and warranties:

Address broken devices promptly. Keep track of which devices are under warranty or support contracts, and coordinate repairs or replacements quickly when hardware issues come up.

By handling these maintenance tasks, ICT support ensures that teachers can confidently use shared devices without worrying about unexpected technical failures. By doing this, schools can ensure that their use of technology remains sustainable over time.

08 Key takeaways, next steps, and resources

Now that you have gone through the **‘Pedagogical Approaches for Using Shared Devices for Learning’** tool of the Superstar Teacher Toolbox, a key next step is to apply what you have learned.



The bottom line is that pedagogy leads technology – good teaching practices come first, and the devices simply support it.

Even with just a few gadgets, you can implement structured routines, inclusive practices and engaging tasks to give all students meaningful digital learning experiences.

Start small: try just one new model or approach mentioned above (like a simple rotation or a role assignment) in your next lesson. Then reflect on what worked and build up from there. Each success will increase your confidence. Remember, you do not have to do it alone – share your experiences with colleagues. Teaching with limited tech can be challenging, but it is also a chance to be creative. Every big journey begins with a single step, so pick one idea from this tool and try it tomorrow.

COMMUNITY AND SHARING: You are part of a larger community of educators tackling the same challenges. It might not feel like it if you are the only teacher in your school using tech this way, but there are others out there finding solutions. Reach out to fellow teachers in your school or online who are working with limited devices. Share your stories, ask questions and exchange tips. Sometimes a quick chat in the staff room or on a credible teacher forum about “How do you manage with one laptop?” can spark a new idea or at least remind you that you are not alone in this. By building a supportive community (even informally), teachers can collectively improve their practice and advocate for the resources and support they need, while also growing their professional learning networks and engaging in ongoing learning for their own digital skills. When you use simple tools like messaging apps, shared documents or online groups to connect with colleagues, you are also practising how to use digital communication and collaboration platforms to work with others.

By now, you should feel equipped with a variety of ideas to get started (or continue) using shared devices effectively in your classroom. **Remember:** it is not about how many devices you have, but how you use them. With clear structure, inclusivity and a bit of creativity, even one device can open up a world of learning for all your students.

TEACHER STORY:
Grade 6 English/Kiswahili
(Kakuma–Kalobeyei, Kenya)

Shared tablets, two rooms, one story

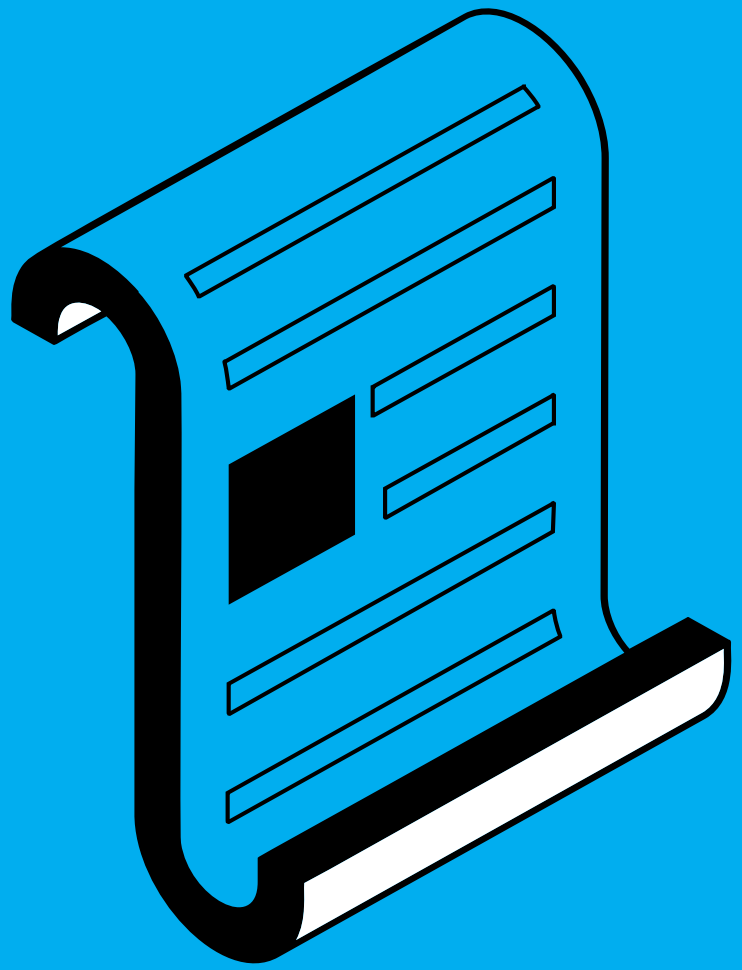
In a large refugee-settlement school, Ms. Elizabeth teaches Grade 6 English/Kiswahili to nearly 150 learners. Internet connection is unreliable, so before the unit she downloads a picture story from African Storybook and saves it on the African Storybook Reader app for offline use. In an earlier lesson, she and the ICT coach, Mr. Simon, brought the class to the ICT room. Using one tablet connected to the projector, Ms. Elizabeth read the story aloud while students followed the text and pictures on the big screen. Everyone could see and hear the story clearly, even in the crowded room.

For the follow-up lesson, the class is split into two groups that will swap activities halfway through. One half goes with Mr. Simon to the ICT room for a comprehension quiz; the other half stays with Ms. Elizabeth in their regular classroom for creative writing. In the ICT room, students sit in groups of three or four, sharing one tablet per group. Mr. Simon has already opened a Blooket quiz based on the story's vocabulary and events. He projects the game code and helps groups log in quickly. While one student taps the answers, teammates read the questions aloud and debate the options. At the end of the game, Blooket shows group scores and item-by-item results, which Ms. Elizabeth later uses to see which parts of the story need revisiting.

Meanwhile, in the classroom, Ms. Elizabeth's half of the class works in mixed-ability groups on a continuation of the same story. Using exercise books, they brainstorm "What happens next?", write short paragraphs and sketch simple illustrations. Roles such as writer, illustrator and presenter rotate so everyone contributes. After the midpoint, the groups swap rooms and repeat the activities so all learners experience both the digital quiz and the creative writing task.

Over several lessons, groups polish their continuations and present them to the whole class, turning one downloaded story into many new endings. With careful scheduling, shared tablets and collaboration between the language teacher and the ICT coach, even a very large class in a refugee settlement can enjoy rich reading, writing and digital learning experiences.

Glossary (key terms):

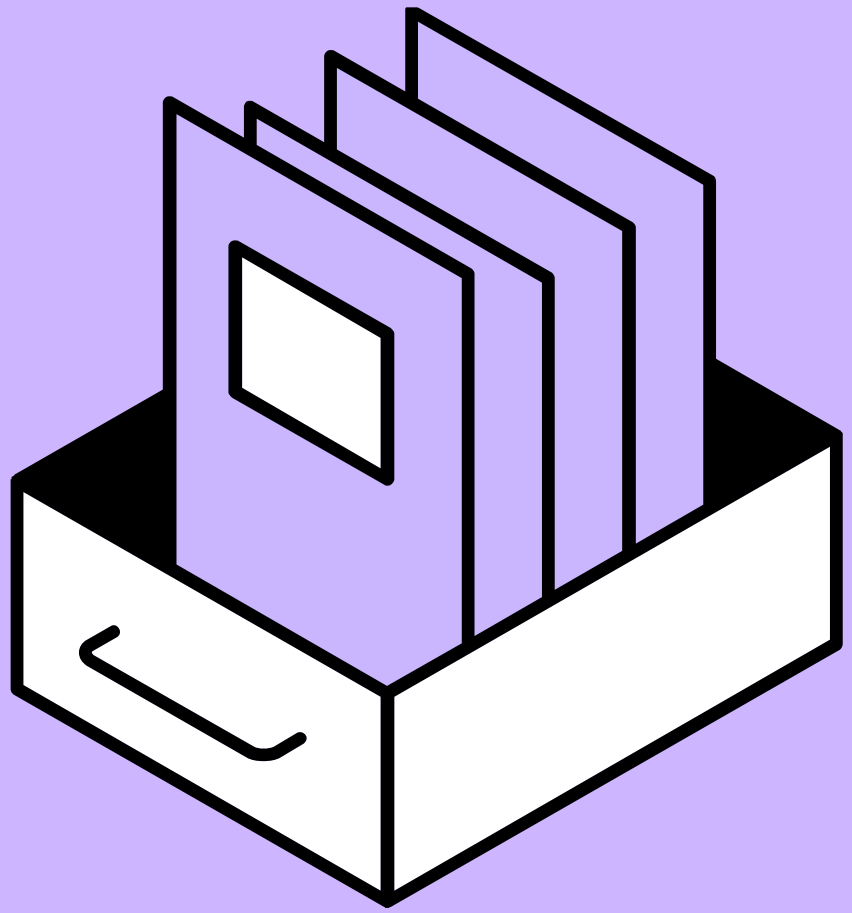


- **Accessible content:** learning materials designed so that many different learners can use them (for example, using clear fonts, captions on videos, alt-text for images, high contrast or simplified language where needed).
- **Assistive technology :** tools or settings that help learners with disabilities or learning differences access content (for example, screen readers, text-to-speech, captions, magnification or alternative input methods).
- **Blended learning:** an approach that combines traditional face-to- face instruction with online or digital learning activities (for example, students might watch an educational video or complete an interactive quiz online at one point, and have a live discussion or written exercise in class at another point).
- **BYOD (bring your own device):** a policy or practice where students bring personal devices (like their own smartphones or tablets) to school to use for learning activities, under the teacher's guidance.
- **Digital citizenship:** responsible, safe and respectful use of digital tools and online spaces, including how students treat others, protect their information and follow agreed rules when using devices.
- **Drag-and-drop coding:** a beginner-friendly way of coding in which students build a program by moving and connecting visual code blocks on the screen instead of typing code; it is often used in animation, storytelling and robotics activities.

- **Driver–navigator:** a collaborative strategy where one student ('driver') operates the device while another ('navigator') observes, guides or assists, with the pair switching roles regularly so both get to control the device; some teachers may use another local name for the driver role, and other roles.
- **Exit ticket:** a quick activity at the end of a lesson where each student writes down or submits an answer to a question or a thing they learned, providing the teacher with a brief assessment of each student's understanding.
- **Formative assessment:** ongoing checks for understanding during the learning process (like quick quizzes, observations, exit tickets or app-based tasks) that help the teacher adjust instruction and support students.
- **Gallery walk:** an activity where student work (posters, diagrams, digital artifacts shown on a projector, etc.) is displayed around the room and learners move in small groups to observe, discuss and leave feedback at each 'station'.
- **Jigsaw/expert groups:** a cooperative learning structure where each group becomes 'expert' on one part of a topic (often using a shared device or resource), then members move to new groups to teach others what they learned.
- **LMS (learning management system):** an online platform where teachers can share resources, post assignments, collect student work and sometimes track progress (for example, platforms like Moodle, Google Classroom or local equivalents).
- **Low-resource setting:** a context where schools have limited access to devices, internet, electricity, materials or space, and where teachers need to be especially creative and efficient with what is available.
- **MDM (mobile device management):** software or services that allow a school to manage multiple devices centrally (for example, installing apps or setting restrictions on all student tablets from one dashboard).
- **Microcontroller:** a small, programmable electronic board that can be connected to sensors, lights or motors to build simple interactive projects; it is often used in STEM or coding lessons so students can write basic programmes and see real-world results (for example, a light turning on, a sound playing or a measurement being displayed).
- **Offline-first:** a planning approach where lessons and resources are designed to work without internet, with online features seen as a bonus rather than a requirement.

- **Pass-and-play:** a way of using one device where students take short turns using an app or game (for example, answering one question or completing one level) before passing the device to the next student, while everyone watches and helps.
- **Rotation model:** a planned pattern for how students move between activities or stations (for example, every 8–10 minutes groups move from an offline task to a device task and then to a teacher-led task).
- **Shared account:** a single login used by a group or class on a device or app (instead of individual accounts), often chosen to reduce login time and simplify access when devices or connectivity are limited.
- **Shared device:** a digital device (such as a tablet, laptop or smartphone) used by more than one student, either at the same time (in a group) or in turns during a lesson.
- **Shared screen/projector:** using one computer, tablet or phone connected to a projector or large display so that the whole class can see the same content at once (for example, a video, simulation or collaborative document).
- **Split-screen pair work:** a way of using one device (often a tablet or laptop) where the screen is divided into two windows so that two students can work side by side, taking short turns with the keyboard or touch input while comparing and discussing their work.
- **Station rotation:** a model where groups of students rotate through different activity stations (one station may have a device).
- **Summative assessment:** assessment at the end of a unit, term or course (such as a test, project or final assignment) used to judge what students have learned against learning goals or standards.
- **Tech helper/tech monitor:** a student role where a learner supports the teacher and peers with simple technical tasks (like opening apps, plugging in chargers or helping classmates find the right file).
- **Transversal competencies:** broad, cross-curricular skills such as collaboration, communication, critical thinking, creativity, digital literacy and self-management that students use across many subjects and in real life.
- **Universal Design for Learning (UDL):** an educational approach that designs lessons to be accessible to all learners, including those with disabilities (e.g., offering multiple ways for students to engage with content and show their understanding).

Additional resources:



- **Practice guides and research:** Look for quick-read guides on topics like *classroom management with limited devices, cooperative learning strategies* or *UDL in tech*. These can give you more ideas grounded in research. For example, UNESCO, UNICEF or other educational organizations often publish **free PDFs or articles** on using ICT in resource- constrained settings, for example UNICEF's *Making Digital Learning Work* or EdTech Hub's *Making the Most of What We Have.*
- **Curated tools:** Explore offline-capable apps or 'pass-and-play' -style educational games that work well on a single device. Some math and reading apps are designed for turn-by- turn use on one tablet. Also consider collaboration tools that do not require every student to have an account – for instance, a shared class Google Slide or a Padlet board projected for all to see. There are also low-tech polling/quizzing tools (like the Plickers system mentioned in the 'Further reading' section below) that let you collect input from every student with just one device. A quick web search for 'single-device classroom activities' or browsing teacher forums can reveal a treasure trove of ideas from other educators.
- **Learning Cabinet:** Explore the Learning Cabinet, a free online platform that showcases curated, evidence-based EdTech tools reviewed by UNICEF and its partners. The platform is designed to help education decision makers and practitioners discover tools that have been reviewed for issues such as safety, scalability and learning impact. It can be a useful place to browse options for reading, mathematics, teacher support and offline use, especially when you are looking for tools that may suit low-resource contexts. Available at <www.learningcabinet.org/>.

Pathways: Digital competency framework for educators in sub-Saharan Africa

As your own digital skills grow, it becomes easier to create meaningful, safe and well-structured learning with technology, even when devices are limited. In this tool, we refer to *Pathways: Digital competency framework for educators in sub-Saharan Africa*, a UNICEF framework designed for low-resource and low-connectivity settings. It can help you reflect on your practice and recognize the digital teaching skills that matter most in your context.

The *Pathways* references in this tool are included to help you see how teaching with shared devices connects to wider digital competencies. They show that good shared-device teaching is not only about access to technology; it is also about planning, inclusion, classroom routines, assessment, safety, communication and professional learning. Use these references as a practical guide for reflection and growth, not as extra theory to master.

The *Pathways* PDF book can be downloaded here:

<www.unicef.org/digitaleducation/reports/pathways-digital-competency-framework-educators-sub-saharan-africa>

PATHWAYS ALIGNMENT THROUGH CHAPTERS 2–8 IN THIS TOOL:

Chapter 2

9.1 – Changing practice for digital learning;
9.2 – Embedding technology in lesson planning;
9.3 – Making digital learning accessible and inclusive in all classrooms;
9.4 – Using classroom techniques for blended learning;
9.5 – Using technology to support differentiated learning.

Chapter 3

8.3 – Managing infrastructure and resources for digital education;
8.5 – Leading and supporting staff development for digital learning;
9.2 – Embedding technology in lesson planning;
9.4 – Using classroom techniques for blended learning;
10.6 – Using technology where electricity or internet is unreliable;
14 – Supporting digital literacy of learners.

- **Chapter 4**
  3.3 – Using collaborative platforms to work asynchronously with others; 4.1 – Creating and adapting text-based documents; 4.2 – Creating and adapting presentations; 4.4 – Creating and adapting videos; 9.1 – Changing practice for digital learning; 9.4 – Using classroom techniques for blended learning; 14.2 – Supporting learners to find and use information online; 14.4 – Supporting learners to create and use digital resources.

- **Chapter 5**
  9.4 – Using classroom techniques for blended learning; 11.1 – Using technology for learning assessment; 11.2 – Using digital evidence to support learning.

- **Chapter 6**
  2.5 – Supporting rights-based use of technology; 5.2 – Making digital content accessible and inclusive; 9.3 – Making digital learning accessible and inclusive in all classrooms; 9.5 – Using technology to support differentiated learning; 10.2 – Using technology with learners who speak another language; 10.3 – Using technology for teaching practical or hands-on subjects; 12 – Using technology with learners who have disabilities and learning support needs; 12.1 – Using technology with learners who are blind or have low vision; 12.2 – Using technology with learners who are deaf or hard of hearing; 12.4 – Using technology with learners who have physical disabilities.

- **Chapter 7**
  2.1 – Keeping devices safe and secure; 2.2 – Keeping myself safe and secure in online environments; 2.3 – Keeping learners safe and secure in online environments; 2.5 – Supporting rights-based use of technology; 7.3 – Managing user access and data protection; 8.3 – Managing infrastructure and resources for digital education.

- **Chapter 8**
  3.1 – Using digital messaging for communication; 3.3 – Using collaborative platforms to work asynchronously with others; 6.2 – Engaging in digital professional learning opportunities.

Example activities for using shared devices:

1. Using a computer and a projector or smart screen as shared learning devices

FOR GROUP WORK

- **Group problem-solving board:** One group member is the ‘scribe’ at the computer, typing or dragging items while the rest of the group (or class) suggests ideas that everyone sees on the screen.
- **Rotating group presentations:** Small groups prepare short answers or diagrams on paper; each group takes a quick turn at the computer to type or photograph their result and show it to the class.
- **Sorting/matching on screen:** Students come up in turns to move digital cards, pictures or words into correct categories while their group guides them from their seats.
- **Story building together:** The class builds one story or explanation sentence by sentence; different students come to the computer to add or edit the next sentence while others suggest improvements.
- **Gallery of student work:** Teacher quickly photographs or scans group posters or notebook pages and projects them; groups discuss similarities and differences and give feedback.

FOR INDIVIDUAL OR SMALL-GROUP HELP

- **Step-by-step modelling:** Teacher projects the steps of a reading, writing or math strategy and talks through them slowly so learners who need more support can follow and copy.
- **Highlighting key errors:** Project one anonymous student example with common mistakes and correct it together, discussing why the change is needed.
- **Vocabulary/picture support:** Show key words with images, colour coding or sentence frames on the projector while students work in their notebooks.
- **Quiet help corner:** While the rest of the class works independently, the teacher brings a small group to sit near the screen for a short reteaching mini-lesson using enlarged text or visuals.

2. Practical lesson clues: Shared-device pedagogies in action

- **Station rotation science lab:** In this science lesson, the teacher sets up several experiment stations and **one station includes a tablet activity**. For example, students rotate through a circuit of four stations: three hands-on experiments (e.g., testing simple magnetism or observing plants) and one digital station with a tablet. **Each group spends a timed interval at the tablet station** to, for example, watch a short simulation or video, record data using a sensor app, etc., then moves to the next station. This rotation ensures every student gets a turn using the device to enrich the lab, while others are engaged in offline experiments at the same time.
- **Group web quest challenge:** The class splits into small groups for a **research race using a single device per group.** The teacher provides each group with a list of specific questions (for example, about different planets or famous historical figures). Students **huddle around one tablet or computer** to find answers online, with one student acting as the ‘driver’ (controlling the device) and others suggesting search ideas or taking notes. They swap roles periodically to give everyone a turn with the device. After a set time, groups reconvene and **share their findings** – turning the web quest into a fun competition to see who uncovered the most interesting facts.
- **Collaborative story writing on one laptop:** In a language arts activity, a team of 3–4 students **co-write a story using a single laptop.** The teacher provides a story starter or theme, and one student begins as the ‘typist’ while the others brainstorm ideas. They take turns typing: each student adds a sentence or two, then **passes the laptop to the next author.** Students actively discuss the plot and characters together, helping the current typist with spelling or ideas. By the end, the group has created a joint story, demonstrating creative writing and teamwork even with just one device.

- **Pass-the-tablet math quiz game:** For math practice, the teacher loads a quiz app or slideshow of math problems on **one tablet** and organizes students into a circle. One student reads the first question aloud, solves it (with scratch paper if needed), then enters the answer on the tablet. **They then pass the tablet to the next student,** who gets a new question. The game continues with each student answering one question and passing it on. This 'pass-the-tablet' format turns review time into a fun, active quiz game. Everyone stays alert because **their turn is coming up**, and the single device is shared fairly as each child answers a question.

- **Class brainstorm via projector:** In this whole-class activity, the teacher uses **one computer connected to a projector** to collect ideas from everyone. For example, to kick off a creative writing unit, the class might brainstorm setting ideas together. Students raise hands and call out their suggestions while the teacher (or a student volunteer) types keywords into a visible mind map or list on the projected screen. **Every contribution appears instantly for all to see,** sparking even more ideas. With only one device needed for the entire class, the projector brainstorm engages all students in generating and organizing ideas collectively.

- **Photo scavenger hunt:** The teacher turns one tablet or smartphone into a **camera for an educational scavenger hunt**. Students are grouped and given a checklist of items or examples to find related to the lesson – for instance, in a science unit on habitats, they might search the schoolyard for signs of insects, different leaf types or examples of erosion. Each group takes **turns using the single device to snap a photo** whenever they find an item on the list, then hands it to the next team or member. The limited device means groups must collaborate closely: deciding together what to photograph and ensuring everyone gets a chance behind the camera. After the hunt, the class gathers to **review the photos on the device or projector**, discussing each find and how it connects to the lesson topic.

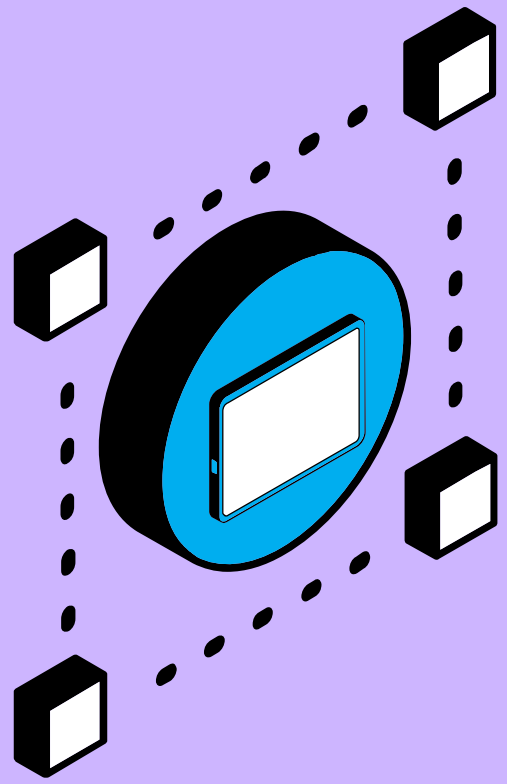
- **Jigsaw research teams:** In a social studies project, the teacher uses the **jigsaw method with limited technology**. The class is divided into expert groups, each assigned a subtopic (e.g., different continents or aspects of a single historical event). **One tablet or computer is available, so groups use it in turns:** while group 1 has the device to explore an online encyclopedia or video about their topic, other groups work with textbooks, posters or teacher-provided printouts on theirs. After a set time, groups **switch device access**, so each team gets a chance to dig up digital information on their subtopic. Once research is done, students regroup into mixed teams so that each new team has one 'expert' from every subtopic. They then teach each other what they learned, perhaps using a few images or facts they found on the device. This way, even with a single device, **every group becomes knowledgeable** and shares their expertise with peers.

- **One-device coding challenge:** In a coding lesson (suitable for upper primary or lower secondary students), pairs of students share **one laptop or a micro:bit device** to tackle a simple programming task. For example, the challenge might be to write a short programme that makes an LED blink in a pattern or solves a math puzzle. One student starts as the 'coder' typing the code, while the partner is the 'navigator', giving suggestions or checking for errors. They **swap roles every few minutes or after each code iteration** so both experience writing and debugging. Despite having just one device, the pair practises essential programming skills together – discussing solutions, catching mistakes and celebrating when their code finally runs, all through cooperative turn-taking.

- **Digital gallery walk:** After a creative project, student groups prepare to share their work using **a single digital display.** Suppose each group made one digital artifact on a shared device (for example, a short slideshow explaining a science concept or a piece of art created in a drawing app). Now it is time for a gallery walk: if a projector is available, the teacher projects each group's artifact one at a time as groups come up to present their work. Alternatively, with one tablet, group 1 might display their creation on the screen and place the tablet at a station while classmates **rotate in small groups to view it,** then swap in group 2's artifact, and so on. During each viewing, listeners leave feedback or ask questions. This format lets **everyone appreciate each group's digital work** in turn, simulating a gallery walk experience with minimal devices.

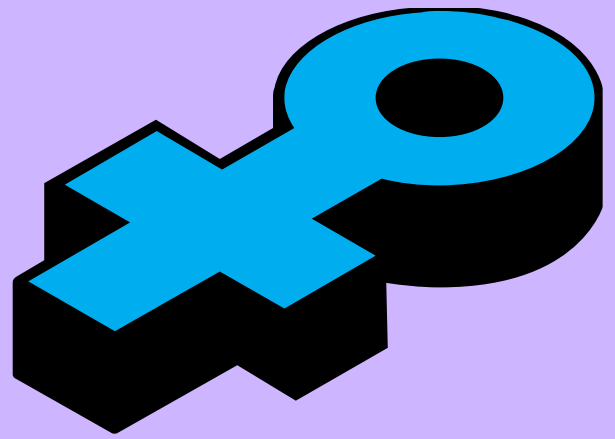
- **Peer teaching with a shared tablet –** Students work in pairs, taking turns as **teacher and learner using one tablet** as a support tool. For instance, in an English vocabulary lesson, student A uses the tablet to pull up pictures, translations or a drawing app to illustrate a new word while explaining it to student B. Student A may show an image or act out an example on the screen to make the meaning clear. After a few minutes, they swap roles: now B uses the tablet to teach A a different word from the list. This one-device peer teaching approach can work for many subjects (e.g., one student might demonstrate a math concept with a digital manipulatives app, then switch). **Both partners get to teach and learn,** and the tablet serves as an interactive visual aid, all while being shared one-on-one.

- **BYOD clusters –** In a mixed classroom where some students bring their own phones or tablets, the teacher groups all students into small 'device clusters'. Each cluster has at least one student with a device and one or more without. The teacher sets **clear rules** first (e.g., only approved apps or websites, no messaging or games) and gives each cluster a simple task, such as looking up facts for a mini-poster, checking a map or watching a short explanation video. Students decide roles: for example, the device owner acts as the 'driver' while others suggest search terms, read the information aloud or take notes on paper. After a few minutes, they **swap roles** so different students get to handle the device and lead. In this way, personal devices become shared learning tools, and all students – not only those who own a phone – are included in the activity.



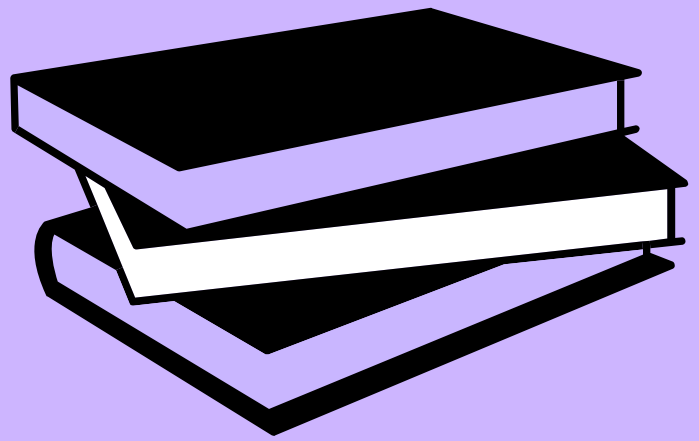
3. Inclusive STEM example ideas (engaging girls with shared devices):

- **Community problem mini-hack:** Students identify a local issue (e.g., conserving water at school or reducing cafeteria waste). Using one shared device for research, they gather facts or examples, then as a group create a solution prototype or presentation (like a poster or a 60-second video pitch on the device) to share their ideas.
- **Health myth busters:** Each group takes a common belief like “Eating carrots improves eyesight” or “You catch a cold from being in the rain” and uses one device to check its accuracy. They compile credible sources or data and then make a one-page infographic or brief report to present the truth behind the myth.
- **Map our place:** Using a simple mapping app or Google Maps on one device, students map something relevant to their community (such as safe routes to school, important landmarks or accessibility features around the school). They work together to add markers or notes, then present their community map and recommendations to the class.
- **Design-a-service:** Students brainstorm a helpful service for the school or community. They sketch it out on paper and then use one device to create a simple digital mock-up or slideshow of how it would work. For example, they might design a ‘homework help’ app or a library book finder and show key screens or features. Finally, they present their service idea to the class.



- **STEM role-model cards:** Using one internet-connected device, small teams research local women (or men and women) who work in STEM fields. They then create 'trading cards' or mini-posters featuring these role models with a photo and key facts (this can be done on paper or digitally). The activity highlights diverse role models in science and technology.
- **Eco-sensor journal:** Students use a shared sensor or a smartphone with a sensor app to collect environmental data (e.g., temperature, light or sound levels) in various locations around the school. They log the data and take photos or notes with the device. Later, they chart the results and discuss implications (for instance, which area of the school has the most light or the highest noise).
- **Story-to-code:** Students take a local folktale or story and animate it using a simple block-coding tool on one device. For example, they can programme a short animation of a scene from the story, complete with captions or recorded narration. They take turns coding different elements. In the end, they present their mini digital story to the class, blending culture with coding.
- **Photo-essay:** *"Women Who Inspire Us"* – Armed with one camera or tablet, students photograph women in their community (or find photos online of notable women) who inspire them (teachers, community leaders, scientists, etc.). In groups, they compile five images into a digital slideshow or a poster with captions, telling a story of why those women inspire them.
- **Assistive tech challenge:** Students identify a simple challenge faced by people with disabilities at school (e.g., carrying books for someone on crutches, or a way to signal if a student is non-verbal). They brainstorm and prototype a low-tech aid or solution using simple materials, documenting their work with photos or a short video on a shared device. Each group presents their prototype and explains how it helps, showing their photos/video on the device.
- **Data for good:** The class comes up with a question about their own habits or community (e.g., "How do students in our class get to school each day?" or "What is our average screen time per day?"). Using one device, they collect data via a quick survey or tally (perhaps using a Google Form or just a show of hands recorded on the tablet). They then analyze the results together and present one or two findings using a simple chart or graph (drawn on paper or generated on the device). They discuss what actions or awareness might come from the data (for example, if many classmates have high screen time, discussing digital balance).

Further reading (with links):



CHAPTER 1: INTRODUCTION

- **Digital Education (UNICEF)** www.unicef.org/digitaleducation/
- ***Global Education Monitoring Report: Technology in education – A tool on whose terms?*** **(UNESCO, 2023)** <gem-report-2023.unesco.org/>
- ***OECD Digital Education Outlook 2023: Towards and effective digital education ecosystem*** **(OECD, 2023)** <www.oecd.org/content/dam/oecd/en/publications/reports/2023/12/oecd-digital-education-outlook-2023_c827b81a/c74f03de-en.pdf>
- ***Making Digital Learning Work: Lessons from the UNICEF-Akelius Digital Learning Initiative in 12 countries*** **(UNICEF, 2024)** <www.unicef.org/innocenti/media/9806/file/UNICEF-Innocenti-Making-Digital-Learning-Work-Akelius-Initiative-2024.pdf>
- **'Students, Digital Devices and Success' (OECD, 2024)** <www.oecd.org/en/publications/students-digital-devices-and-success_9e4c0624-en.html>
- **Superstar Teacher Toolbox: 'Digital Pedagogy' (UNICEF, 2024)** <www.unicef.org/digitaleducation/media/1051/file/Unicef_Superstar-Teacher-Toolbox_Digital-Pedagogy.pdf.pdf>
- **Superstar Teacher Toolbox: 'Mobile Messaging for Learning' (UNICEF, 2024)** <www.unicef.org/digitaleducation/media/916/file/UNICEF Superstar Teacher ToolboxMobile Messaging.pdf>
- **Superstar Teacher Toolbox: 'Digital Pedagogy' online course (UNICEF, 2025)** <https://global.learningpassport.org/#/course/659/item/9037>
- **Superstar Teacher Toolbox: 'Mobile Messaging for Learning' online course (UNICEF, 2026)** <https://global.learningpassport.org/#/course/706/item/9566>
- ***Pathways: Digital competency framework for educators in sub-Saharan Africa*** **(UNICEF, 2026)** <www.unicef.org/digitaleducation/reports/pathways-digital-competency-framework-educators-sub-saharan-africa>

CHAPTER 2: CLASSROOM SETUP MODELS AND GROUPING STRATEGIES

- **'Teaching with Limited Devices' (Classtime, 2019)**
  <www.classtime.com/blog/teaching-with-limited-devices/>
- **Superstar Teacher Toolbox: 'Digital Pedagogy' (UNICEF, 2025)**
  <www.unicef.org/digitaleducation/media/1051/file/Unicef_Superstar-Teacher-Toolbox_Digital-Pedagogy.pdf.pdf>
- ***Educators' Digital Competency Framework*** **(UNICEF, 2022)**
  <www.unicef.org/eca/reports/educators-digital-competence-framework>
- **'Students, Digital Devices and Success' (OECD, 2024)**
  <www.oecd.org/en/publications/students-digital-devices-and-success_9e4c0624-en.html>
- **'UNICEF Regional Digital Learning and Transformation of Education Strategy for Europe and Central Asia' (UNICEF, 2023)**
  <www.unicef.org/eca/media/33221/file/Digital Learning and Transformation of Education Strategy.pdf>
- **'Digital Learning, Real Classrooms: Insights from implementation research in Ghana' (UNICEF, 2025)**
  <www.unicef.org/innocenti/media/11531/file/UNICEF-Innocenti-Digital-Learning-Working-Paper-Ghana-2025.pdf>
- ***Global Framework on Transferable Skills*** **(UNICEF, 2019)**
  <www.unicef.org/reports/global-framework-transferable-skills>
- ***Future of Jobs Report 2025*** **(World Economic Forum, 2025)**
  ≤www.weforum.org/publications/the-future-of-jobs-report-2025/>
- **'Children and Screens' (Institute of Digital Media and Child Development)**
  <www.childrenandscreens.org/>
- **'Engaging Parents in Digital Homework' (Edutopia, 2018)**
  <www.edutopia.org/article/engaging-parents-digital-homework/>

CHAPTER 3:
LESSON PLANNING AND DELIVERY WITH SHARED DEVICES

- **'Making the Most of What We Have: A practical guide to EdTech in low-resource settings' (EdTech Hub, 2025)** <https://edtechhub.org/2025/08/28/making-the-most-of-what-we-have-a-practical-guide-to-edtech-in-low-resource-settings/>
- **'Two Visions for EdTech: Lessons from yesterday for the technology of tomorrow' (World Bank, 2024)**
  <https://blogs.worldbank.org/en/education/Two-visions-for-EdTech>
- **'Leaders of the TPACK: Blended learning for effective teaching and learning' (RTI International, 2023)**
  <www.rti.org/insights/leaders-tpack-blended-learning-effective-teaching-and-learning>
- **'Optimize Station Rotation in Blended Learning' (AVID Open Access)**
  <https://avidopenaccess.org/resource/optimize-station-rotation-in-blended-learning/>
- **Learning Passport *Blended Learning Handbook* (UNICEF, 2024)**
  <www.learningpassport.org/reports/learning-passport-blended-learning-handbook>
- ***Educators' Digital Competency Framework* (UNICEF, 2022)**
  <www.unicef.org/eca/reports/educators-digital-competence-framework>

CHAPTER 4:
TYPES OF PEDAGOGICAL TASKS SUPPORTED BY SHARED DEVICES

- **'Using the SAMR Model of Tech Integration in the Classroom' (Edutopia, 2025)**
  <www.edutopia.org/article/model-implementing-technology-classroom/>
- **'Teaching Tips' (retrievalpractice.org)**
  <www.retrievalpractice.org/strategies>
- **'Retrieval Practice Improves Learning for Neurodiverse Students' (retrievalpractice.org)**
  <www.retrievalpractice.org/strategies/neurodiversity>
- **'Integrating Technology into PBL' (Edutopia, 2025)**
  <www.edutopia.org/article/integrating-technology-pbl/>

CHAPTER 5:
ASSESSMENT STRATEGIES WITH SHARED DEVICES

- **'Innovative Low-Tech Assessment Solutions Build Teacher Capacity and Bring Fun to the Classroom' (All Children Learning, 2021)**
  <https://allchildrenlearning.org/innovative-low-tech-assessment-solutions-build-teacher-capacity-and-bring-fun-to-the-classroom/>
- **'Tried and True – and Quick – Methods for Formative Assessment' (KQED MindShift, 2024)**
  <www.kqed.org/mindshift/64706/tried-and-true-and-quick-methods-for-formative-assessment>
- **'13 Super-Quick Formative Assessments' (Edutopia, 2025)**
  <www.edutopia.org/article/quick-formative-assessments/>
- **Plickers card assessment tool**
  <www.plickers.com/>
- **'Get Plickers Cards' (Plickers)**
  <https://help.plickers.com/hc/en-us/articles/360008948034-Get-Plickers-Cards>
- **Classroomscreen online board & templates for timers, exit tickets, rotations**
  <https://classroomscreen.com/>

CHAPTER 6:
INCLUSION, ACCESSIBILITY AND GENDER BALANCE WITH SHARED DEVICES

- **'The UDL Guidelines 3.0' (CAST, 2024)** <https://udlguidelines.cast.org/>
- ***Childhood in a Digital World: Screen time, digital skills and mental health* (UNICEF, 2025)**
  <www.unicef.org/innocenti/media/11296/file/UNICEF-Innocenti-Childhood-in-a-Digital%20World-report-2025.pdf>
- ***Global Education Monitoring Report: Gender report: – Technology on her terms* (UNESCO, 2024)**
  <www.unesco.org/gemreport/en/publication/2024-gender-report>
- **'Digital Skills Development: Competence frameworks, assessment tools, and pedagogical approaches' (World Bank, 2025)**
  <https://thedocs.worldbank.org/en/doc/a607bb6e3b76d2be0f3db8db34dcf73e-0140022025/related/3EDU-WP-14-Digital-skills-development.pdf>
- **'Closing the Digital Divide for Women and Girls in Africa through Education' (UNESCO, 2025)**
  <www.unesco.org/en/gender-equality/education/digital-divide>

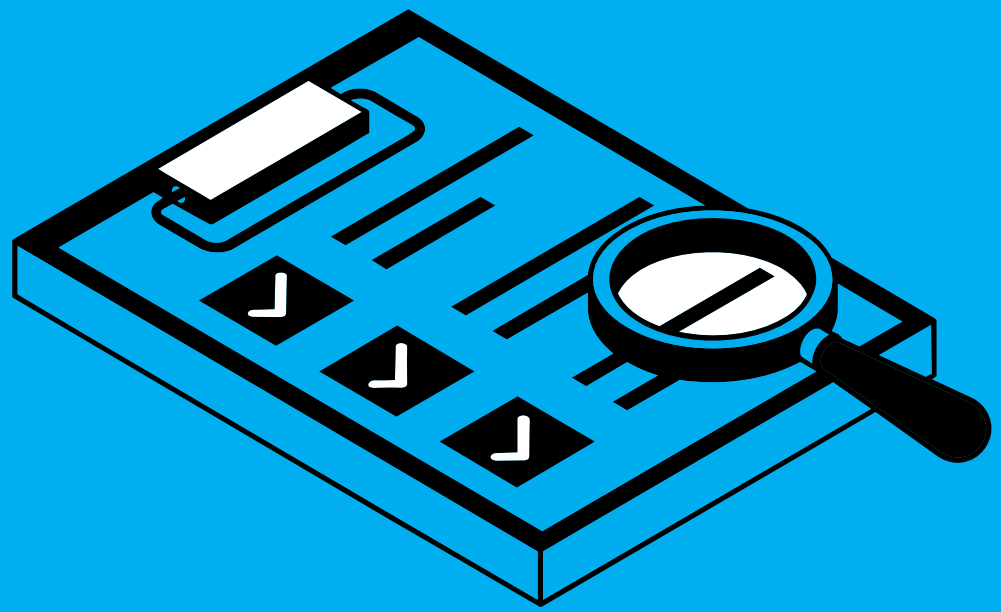
CHAPTER 7:
TECHNICAL MANAGEMENT AND SAFETY – DEVICE CARE, TROUBLESHOOTING AND STUDENT WELL-BEING

- ***2023–2024 Digital Citizenship Curriculum Impact Report*** **(Common Sense, 2024)**
  <www.commonsensemedia.org/sites/default/files/featured-content/files/digital-citizenship-curriculum-impact-report_june-2024.pdf>
- **'Toolkit for Schools' (Australia eSafety Commissioner, 2026)**
  <www.esafety.gov.au/educators/toolkit-schools>
- **'Meeting Digital and Technology Standards in Schools and Colleges: Cyber security– Core standard' (UK Department for Education, 2022)**
  <www.gov.uk/guidance/meeting-digital-and-technology-standards-in-schools-and-colleges/cyber-security-standards-for-schools-and-colleges>
- **Cyber Security Toolkit for Boards (UK National Cyber Security Centre, 2023)**
  <www.ncsc.gov.uk/collection/board-toolkit>
- **'The School Cybersecurity Handbook 2024–25' (Secure Schools, 2024)**
  <www.secureschools.com/hubfs/School%20Cyber%20Security%20Handbook/UK/Secure%20Schools%20Cybersecurity%20Handbook%202024-25.pdf>

CHAPTER 8:
KEY TAKEAWAYS, NEXT STEPS AND RESOURCES

- **'Connect: Community for educators' (ISTE+ASCD)** <https://iste.org/connect>
- **International Task Force on Teachers for Education 2030 (Teacher Task Force) resource and knowledge hub**
  <https://teachertaskforce.org/>
- **'Building Your Professional Learning Network' (Edutopia, 2023)**
  <www.edutopia.org/article/professional-learning-networks-teachers/>
- ***OECD Digital Education Outlook*** **(OECD periodical)**
  <www.oecd.org/en/publications/oecd-digital-education-outlook_7fbfff45-en.html>
- **'5 Tips to Build Your Professional Learning Network' (Digital Promise, 2024)**
  <https://digitalpromise.org/2024/04/16/5-tips-to-build-your-professional-learning-network/>

References (academic documentation):



Calder, Nigel, and Carol Murphy, 'A Socio-technological Assemblage when Teaching with Apps', *Waikato Journal of Education*, vol. 28, no. 1, art. 1028, 2023.

Čarapina, Mia, and Klaudio Pap, 'Exploring Colocated Synchronous Use of Tablets Based on Split Screen Feature', *IEEE Access*, vol. 11, 2023, pp. 123418–123432.

Čarapina, Mia, 'Encouraging Collaborative Learning on a Shared Tablet through the Split Screen Feature and Crisscross Technique', paper presented at the 30th International Conference on Collaboration Technologies and Social Computing (Collabtech), Barcelona, Spain, 11–14 September 2024.

Chen, Fen, and Gaowei Chen, 'Technology-Enhanced Collaborative Inquiry in K–12 Classrooms: A systematic review of empirical studies', *Science & Education*, vol. 34, no. 3, June 2025, pp. 1731–1773.

Christensen, Ingrid Maria, et al., 'Computing Educational Activities Involving People Rather Than Things Appeal More to Women (Recruitment Perspective)', *ICER 2021: Proceedings of the 17th ACM Conference on International Computing Education Research*, virtual event, 16–19 August 2021, pp. 127–144.

Dorris, Claire, et al., 'Mobile Device Use in the Primary School Classroom and Impact on Pupil Literacy and Numeracy Attainment: A systematic review', *Campbell Systematic Reviews*, vol. 20, no. 2, art. e1417, June 2024.

Drelick, Alicia M., Michelle L. Damiani and Brent C. Elder, 'One Teach–One Tech: An emerging co-teaching strategy', *Journal of Special Education Technology*, vol. 39, no. 2, June 2024, pp. 298–305.

EdTech team, ‘Knowledge Pack: Devices for education’, World Bank Group, Washington, D.C., 2022.

Fabian, Khristin, and Donald MacLean, ‘Keep Taking the Tablets? Assessing the use of tablet devices in learning and teaching activities in the Further Education sector’, *Research in Learning Technology*, vol. 22, art. 22648, 2014.

Forsström, Sanna, et al., ‘The Impact of Digital Technologies on Students’ Learning: Results from a literature review’, OECD Education Working Papers No. 335, Organisation for Economic Co-operation and Development, Paris, 29 September 2025.

Hagos, Tadesse, and Dereje Andargie, ‘Effects of Technology-Integrated Formative Assessment on Students’ Retention of Conceptual and Procedural Knowledge in Chemical Equilibrium Concepts’, *Science Education International*, vol. 33, no. 4, 2022, pp. 383–391.

Happe, Lucia, et al., ‘Effective Measures to Foster Girls’ Interest in Secondary Computer Science Education: A literature review’, *Education and Information Technologies*, vol. 26, no. 3, May 2021, pp. 2811–2829.

Haßler, B., L. Major and S. Hennessy, ‘Tablet Use in Schools: A critical review of the evidence for learning outcomes’, *Journal of Computer Assisted Learning*, vol. 32, no. 2, April 2016, pp. 139–156.

Iannone, Paola, et al., *Proceedings of FAME 1 – Feedback & Assessment in Mathematics Education*, 14th European Society for Research in Mathematics Education Topic Conference, Utrecht, Netherlands, 5–7 June 2024.

Junaidah, Ambiyar, and Fahmi Rizal, ‘Mobile-Based Digital Assessment Transforming the Learning Support Efficiency’, *International Journal of Interactive Mobile Technologies*, vol. 18, no. 23, 3 December 2024, pp. 44–56.

Kaahwa, Yuda Taddeo, Florence Nansamba and Charles Muweesi, ‘The Role of Technology-Enabled Teaching and Learning in Enhancing Student-Student Interaction in Secondary Schools in Kampala District’ , *East African Journal of Education Studies*, vol. 6, no. 3, 8 September 2023, pp. 322–334.

Labonté, Chantal, and Veronica R. Smith, ‘Learning through Technology in Middle School Classrooms: Students’ perceptions of their self-directed and collaborative learning with and without technology’, *Education and Information Technologies,* vol. 27, no. 5, June 2022, pp. 6317–6332.

Lachand-Pascal, Valentin, et al., ‘Challenges and Opportunities for Multi-device Management in Classrooms’, *ACM Transactions on Computer–Human Interaction*, vol. 29, no. 6, art. 54, December 2022.

Lauricella, Alexis R., and Missi Jacobson, ‘iPads in First Grade Classrooms: Teachers’ intentions and the realities of use’, *Computers & Education Open*, vol. 3, art. 100077, December 2022.

Li, Jiayuan, et al., ‘Game-Based Assessment of Students’ Digital Literacy Using Evidence-Centered Game Design’, *Electronics*, vol. 13, no. 2, art. 385, January-2 2024.

Lohr, Anne, et al., ‘Digital Learning in Schools: Which skills do teachers need, and who should bring their own devices?’, *Teaching and Teacher Education,* vol. 152, art. 104788, December 2024.

Ottenbreit-Leftwich, Anne T., et al., 'The Impact of an Issue-Centered Problem-Based Learning Curriculum on 6th Grade Girls' Understanding of and Interest in Computer Science', *Computers and Education Open,* vol. 2, art. 100057, December 2021.

Oyarzun, Beth, and Florence Martin, 'A Systematic Review of Research on Online Learner Collaboration from 2012–21: Collaboration technologies, design, facilitation, and outcomes', *Online Learning*, vol. 27, no. 1, March 2023, pp. 71–106.

Sage, Kara, Kayden Stockdale and Larissa Mauer, 'Let's Just Work Together! Paper, laptop, and tablet as equally effective tools for groupwork in college', *Discover Education*, vol. 2, art. 51, 2023.

Selfa-Sastre, Moisés, et al., 'The Role of Digital Technologies to Promote Collaborative Creativity in Language Education', *Frontiers in Psychology*, vol. 13, art. 828981, 2022.

Simon, Patricia D., Luke K. Fryer and Kaori Nakao, 'Assessing Class Participation in Physical and Virtual Spaces: Current approaches and issues', *Frontiers in Education*, vol. 8, art. 1306568, 2023.

Sun, Daner, et al., 'Identifying the Roles of Technology: A systematic review of STEM education in primary and secondary schools from 2015 to 2023', *Research in Science & Technology Education*, vol. 43, no. 1, March 2025, pp. 145–169.

Uchidiuno, Judith, et al., 'Designing Appropriate Learning Technologies for School vs Home Settings in Tanzanian Rural Villages', *COMPASS '18: Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies*, Menlo Park and San Jose, Calif., 20–22 June 2018, art. 9.

Valenza, M., et al., 'Digital Learning, Real Classrooms: Insights from implementation research in Ghana', Working paper, UNICEF Office of Global Research and Foresight, Florence, Italy, August 2025.

Wang, Bin, and Ping-ping Li, 'Digital Creativity in STEM Education: The impact of digital tools and pedagogical learning models on the students' creative thinking skills development', *Interactive Learning Environments*, vol. 32, no. 6, August 2024, pp. 2633–2646.

Wang, Cixiao, and Huixiao Le, 'The More, the Merrier? Roles of device–student ratio in collaborative inquiries and its interactions with external scripts and task complexity', *Journal of Educational Computing Research*, vol. 59, no. 8, January 2022, pp. 1517–1542.

Wang, Cixiao, and Shufan Yu, 'Tablet-to-Student Ratio Matters: Learning performance and mental experience of collaborative inquiry', *Journal of Research on Technology in Education*, vol. 55, no. 4, August 2023, pp. 646–662.

Williams, L., et al., 'Strengthening the Case for Pair Programming', *IEEE Software,* vol. 17, no. 4, July–August 2000, pp. 19–25.

Yonezawa, Takashi, and Yuka Nakai, 'ICT Self-Efficacy, Self-Efficacy for Teamwork, and Collegial Collaborations: An exploratory study of elementary school teachers' ICT uses in inquiry-based learning in Japan', *Frontiers in Education*, vol. 9, art. 1410886, 2024.

Zainil, Melva, et al., 'The Influence of STEM-Based Digital Learning on 6C Skills of Elementary School Students', *Open Education Studies*, vol. 6, no. 1, art. 20240039, 2024.

UNICEF Global Learning
Innovation Hub

SUPERSTAR TEACHER TOOLBOX

Acknowledgements:

This tool was developed as part of the UNICEF Superstar Teacher Toolbox. It has been developed primarily by **Matti Rossi**, Education Specialist-Finnish Expert on Loan from FinCEED to the UNICEF Global Learning Innovation Hub, with overall guidance and inputs from **Leotes Lugo Helin, Iñaki Sanchez** and **Sakina Tayyebi** of the Learning Innovation Hub.

The authors would like to thank **Brenda Haiplik, Auken Tungatarova, Anna Childs** and **Marina Samardzija** for their careful review and thoughtful comments on earlier drafts. We also thank **Carin Holmroos** and **Yonas Kitaba** for contributing feedback and supporting content development through teacher stories that strengthened the practical focus of the tool.

The content further benefited from discussions with teachers working in shared-device school environments, whose practical experience helped shape and validate the approaches described. A few EdTech providers that are part of the UNICEF Blue Unicorn Portfolio of EdTech tools shared views and suggestions on how shared devices can be used effectively in classrooms.

The development of this tool also benefited from notes, idea exchange, reflections and numerous discussions with colleagues in the UNICEF Global Learning Innovation Hub, including their guidance on relevant policies, papers and reports that supported the content development. Helpful reflections and field experiences were also shared by colleagues and partners in **Teachers Without Borders-Finn Church Aid** and the **Finnish National Agency for Education (EDUFI)**, which helped shape the ideas and the longer-term vision for the Superstar Teacher Toolbox. We also thank **Antti Peltoniemi** for valuable discussions on the Toolbox development process and on alignment across the chapters.

We are grateful to the many teachers and school leaders whose everyday work in shared- device classrooms continues to inspire and inform the strategies presented here. Any remaining errors or omissions are the responsibility of the authors.