

DIGITAL COMPETENCE FOR RESILIENT EDUCATORS

PROJECT PUBLICATION

MODULE 3

VIRTUAL HORIZONS: EXPLORING AR & VR IN EDUCATION

POLISH CONTRIBUTION

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Project: **Digital Competence for Resilient Educators (DiCoRE)**

Project number: **2024-1-PL-KA210-SCH-000243999**

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DOCUMENT CONTROL

Document title	Digital Competence for Resilient Educators – Project Publication – Module 3 (Poland)
Module title	Virtual Horizons: Exploring AR & VR in Education
Theme (selected focus)	Evidence-informed classroom integration of AR/VR + safety, inclusion, and ready-to-pilot activity pack
Responsible partner	Stowarzyszenie “Aktywne Pogranicze” (Poland)
Project number	2024-1-PL-KA210-SCH-000243999
Version	1.0
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How to use this file

- Start with **Module Overview** to align expectations, target group and outcomes.
- Use Sections **1–5** as a practical guide for planning and risk-aware implementation.
- Use Section **6 Activity Cards** as a ready-to-pilot pack. Each card includes: **low-tech option, inclusion notes, safeguarding reminders, evidence to collect**.
- Reuse templates in **Annex A** for local adaptation and comparable piloting across partner countries.
- Keep the structure and headings for consistency across the project publication series.

MODULE OVERVIEW

Module title - Virtual Horizons: Exploring AR & VR in Education

Purpose:

This module supports teachers and school leaders in integrating **Augmented Reality (AR)** and **Virtual Reality (VR)** into teaching and learning in a way that is **pedagogically meaningful, safe, inclusive, and feasible in real school conditions**. It focuses on:

- selecting AR/VR use cases that add genuine learning value,
- designing short, structured immersive learning sequences (before–during–after),
- managing classroom logistics and learner wellbeing,
- ensuring privacy, safeguarding and equal participation,
- using AR/VR as part of broader digital competence development (including responsible AI-era skills).

Target group:

Primary: primary and lower-secondary teachers and educators in formal and non-formal education.

Secondary: school management, ICT coordinators, support staff, teacher trainers.

Learning outcomes:

Participants who complete this module will be able to:

- Distinguish between AR, VR, 360° content, MR and XR in **school-relevant terms**.
- Decide when AR/VR is appropriate using a **value test** and curriculum-aligned criteria.
- Design a complete AR/VR lesson or mini-unit with outcomes, scaffolding, tasks, reflection, assessment and inclusion options.
- Apply practical classroom procedures for safety, hygiene, time limits, supervision and device management.

- Identify ethical, privacy and safeguarding risks and implement **data-minimisation** solutions.
- Pilot an AR/VR activity, collect simple evidence, and improve the design through reflection.

Recommended delivery format:

- Short input (10–15 minutes) → demonstration/try-out stations → design task → micro-pilot → reflection.
- Use peer feedback: teachers swap lesson drafts and test each other's prompts.
- Use rotation stations (1–4 devices) rather than 1 headset per learner.

Suggested evidence for dissemination:

- Photos of low-tech materials (worksheets, station cards, safety posters).
- Screenshots of lesson templates (no learner personal data).
- Short teacher reflection notes: “What worked? What changed?”
- Anonymous student feedback summary (2 questions) + inclusion notes.

1. AR/VR FOUNDATIONS FOR EDUCATORS (PLAIN LANGUAGE + CLASSROOM REALITY)

1.1 Key terms (what teachers actually need)

Immersive technologies in education are often discussed with complex terminology. For school practice, the most useful distinctions are:

Augmented Reality (AR)

Digital content is layered onto the real world, typically via a phone/tablet camera (e.g., labels, 3D objects, animations).

Virtual Reality (VR)

Learners are placed inside a fully digital environment, usually through a headset. VR can be:

- **360° video** (look around; low interaction),
- **interactive simulation** (move, select, manipulate; higher learning potential),
- **multi-user environments** (collaboration, role-play; higher safeguarding needs).

Mixed Reality (MR)

Digital objects are anchored in the physical space and can interact with real-world geometry. In schools, MR is less common due to device cost.

Extended Reality (XR)

Umbrella term: AR + VR + MR.

Presence

The feeling of “being there” in an immersive environment. Presence can increase engagement, but it can also increase emotional intensity and cognitive load.

Cybersickness

Discomfort (nausea, dizziness, headache, eye strain) that some users experience in VR.

Low-tech fallback

A planned alternative that delivers the same learning objective **without devices** (paper, projector, teacher demo). Low-tech fallback is a core DiCoRE design principle.

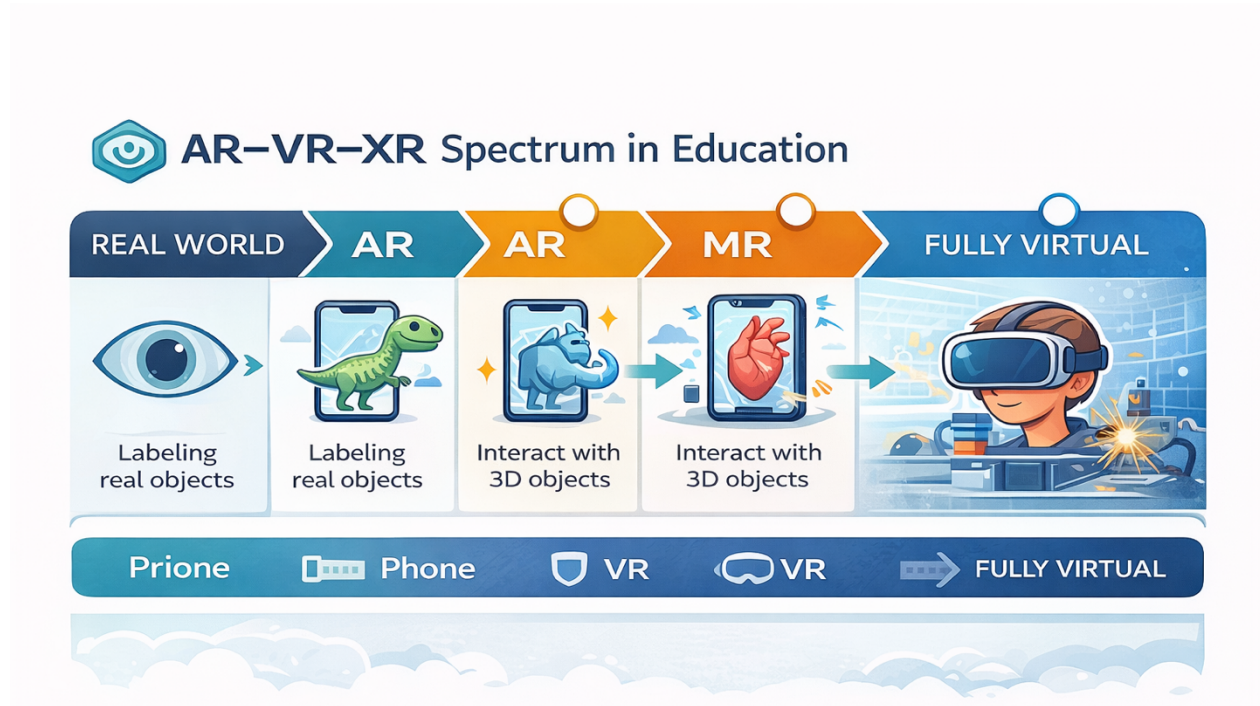


Figure 1. AR-VR-XR spectrum in education.

The graphic illustrates the continuum from real-world learning to fully immersive virtual environments, highlighting typical educational use cases, interaction levels and device types relevant to school settings.

1.2 What AR/VR is good for (and what it is not)

AR/VR can be extremely powerful when it does one of these “four jobs”:

1. **Make the invisible visible** (e.g., anatomy, physics fields, molecules)
2. **Make the dangerous safe** (e.g., lab safety, workshop hazards, emergency procedures)
3. **Make the distant reachable** (e.g., field trips, cultural heritage, environments that schools cannot access)
4. **Make the complex embodied** (e.g., spatial reasoning, systems thinking, perspective-taking)

AR/VR often fails when:

- it is used mainly as entertainment (“wow effect” without learning task),
- learners are not guided and get lost in exploration,
- there is no reflection and transfer after immersion,
- the lesson depends on perfect Wi-Fi, accounts, or expensive devices,
- inclusion is not planned (some learners cannot use headsets).



Figure 2. What AR/VR is good for (and what it is not).

The graphic contrasts educational scenarios in which immersive technologies add clear learning value with common cases where AR/VR use is ineffective or counterproductive.

1.3 The “novelty effect” and how to handle it

The first AR/VR session may feel exciting regardless of quality. To ensure learning value beyond novelty:

- keep the immersive time **short** (3–10 minutes per rotation),
- add **clear prompts** (what to look for; what to record),

- use **debrief routines** (concept map, explanation, application task),
- assess learning with a product or performance, not with “Did you enjoy it?”

1.4 Classroom reality check (minimum viable setup)

A school does not need a “VR lab” to start.

Minimum viable AR

- 1–5 smartphones/tablets
- printed markers or classroom objects
- projector for whole-class modelling

Minimum viable VR

- 1–4 headsets used in rotation
- a safe area marked on the floor
- a “mirrored screen” if available (others can observe)

Time and roles

To make AR/VR feasible with limited devices, use roles:

- Explorer (uses AR/VR)
- Navigator (reads task prompts)
- Observer (watches for safety/notes)
- Recorder (writes evidence)

2. PEDAGOGICAL DESIGN FOR IMMERSIVE LEARNING (WHAT WORKS, WHY, HOW)

2.1 Design principle: outcomes first, technology second

Start from what students must learn and how they will demonstrate it.

Good AR/VR question:

“What is the learning outcome that becomes easier/better through immersion?”

Bad AR/VR question:

“What cool VR app can I use next week?”

2.2 The Immersive Value Test (IVT)

Use the IVT before selecting AR/VR.

Answer YES/NO:

1. Does the objective require **spatial understanding, simulation, or context-rich experience**?
2. Would AR/VR significantly improve learning compared with video/text/physical model?
3. Can learners participate safely and inclusively (opt-out route exists)?
4. Is the activity feasible in your time, space, and device reality?
5. Can you provide reflection and assessment beyond immersion?

Guidance: If you have **4–5 YES**, AR/VR is justified. If you have **0–2 YES**, choose another method.

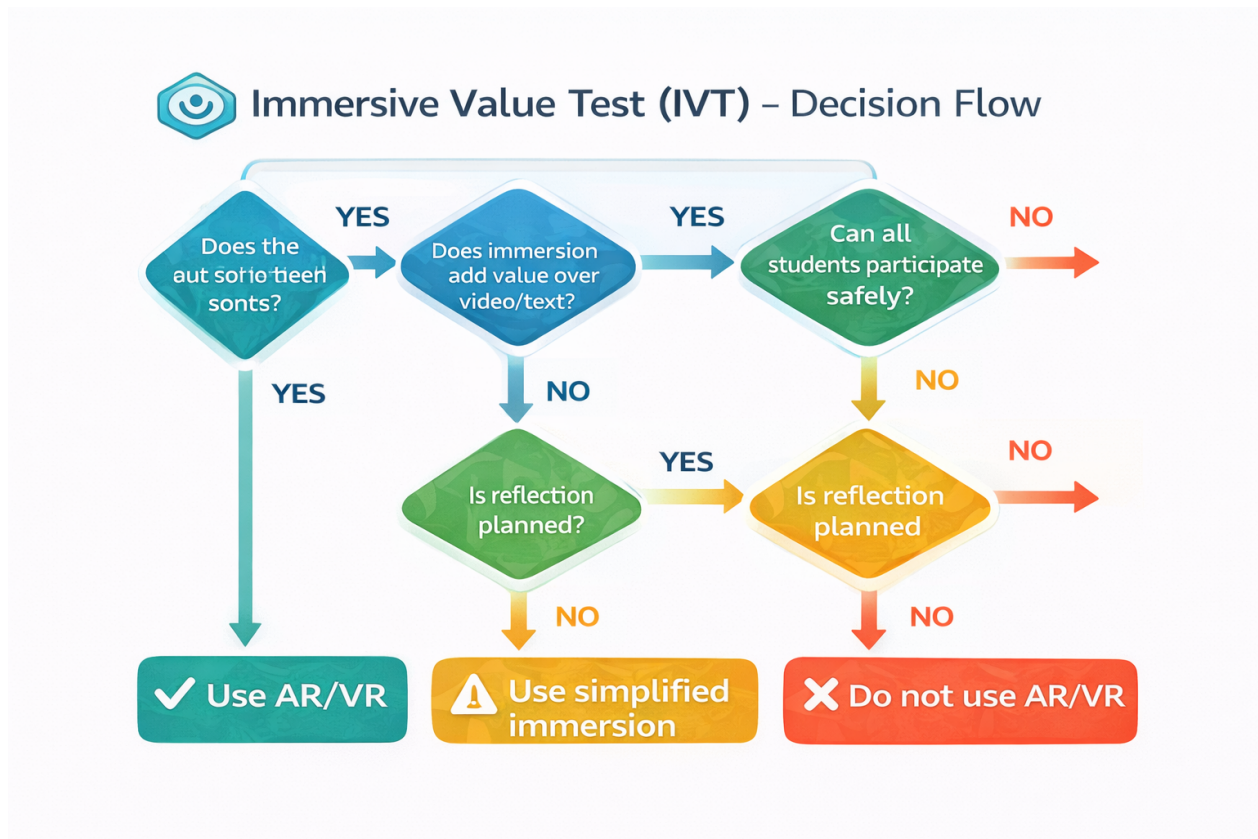


Figure 3. Immersive Value Test (IVT) – decision flow.

A practical decision-making model supporting teachers in determining when AR/VR adds meaningful educational value, when simplified immersion is sufficient, and when immersive technologies should not be used.

2.3 The 3-Phase Immersive Lesson Pattern (before–during–after)

AR/VR works best as a short “experience core” inside a structured sequence.

Phase 1: BEFORE (Prepare – 10–20 minutes)

- activate prior knowledge
- teach key vocabulary and concepts
- explain rules, time limits, stop signal
- assign roles
- explain the task: what learners must find/record

Phase 2: DURING (Experience – 3–10 minutes per rotation)

- use 3–5 short prompts (not open-ended wandering)
- check understanding mid-way (“What did you notice?”)
- keep movement simple (reduce cybersickness)

Phase 3: AFTER (Reflect + Transfer – 15–30 minutes)

- structured debrief (what, so what, now what)
- connect to curriculum concepts
- apply learning to a new task (poster, explanation, scenario decision)

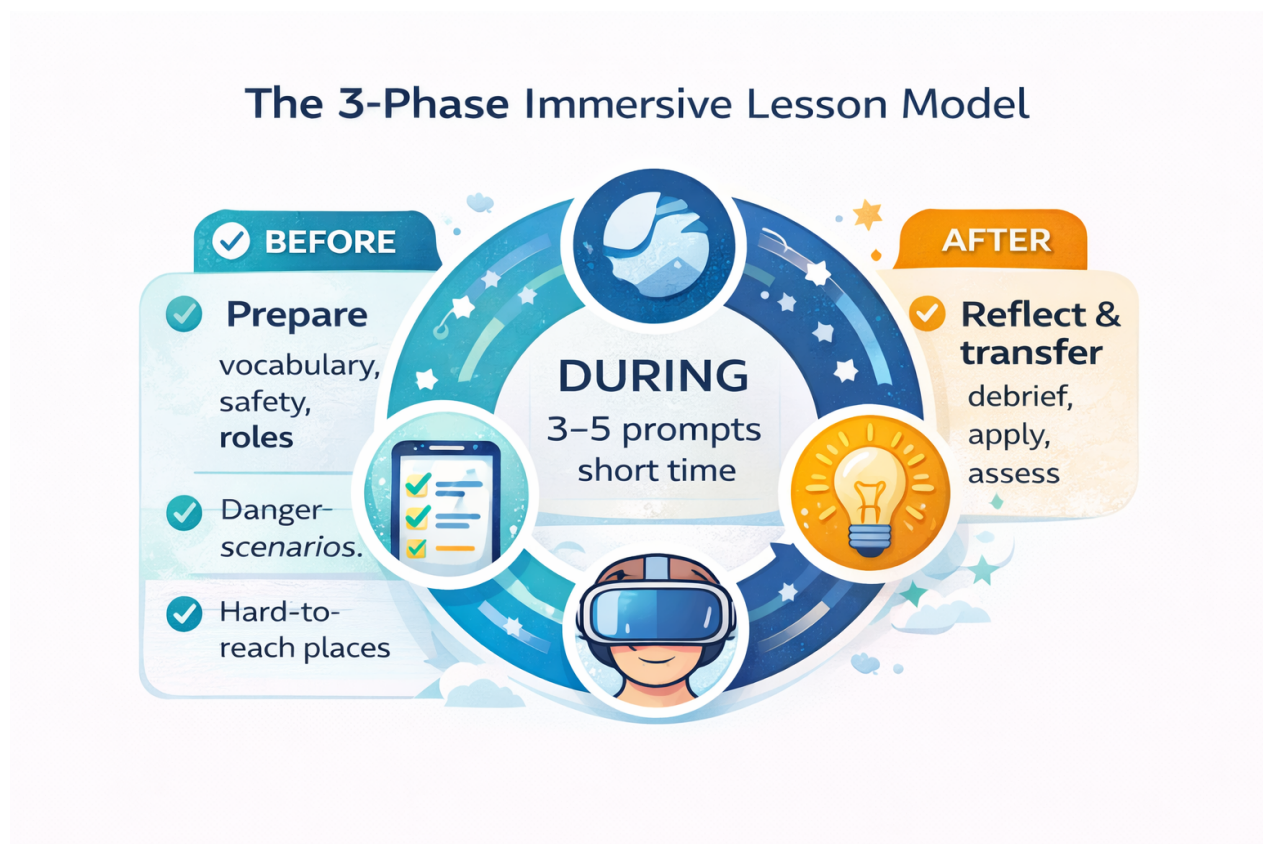


Figure 4. The 3-phase immersive lesson model.

The model presents a structured approach to immersive learning, highlighting preparation before immersion, guided experience during AR/VR use, and reflection and transfer after the immersive activity.

2.4 Cognitive load: keep tasks simple and guided

Immersive environments contain many stimuli. Reduce overload by:

- limiting the number of objectives (1–2 per session)
- using short prompts and checklists
- doing one feature at a time (look, then label, then explain)
- avoiding rapid motion content for beginners

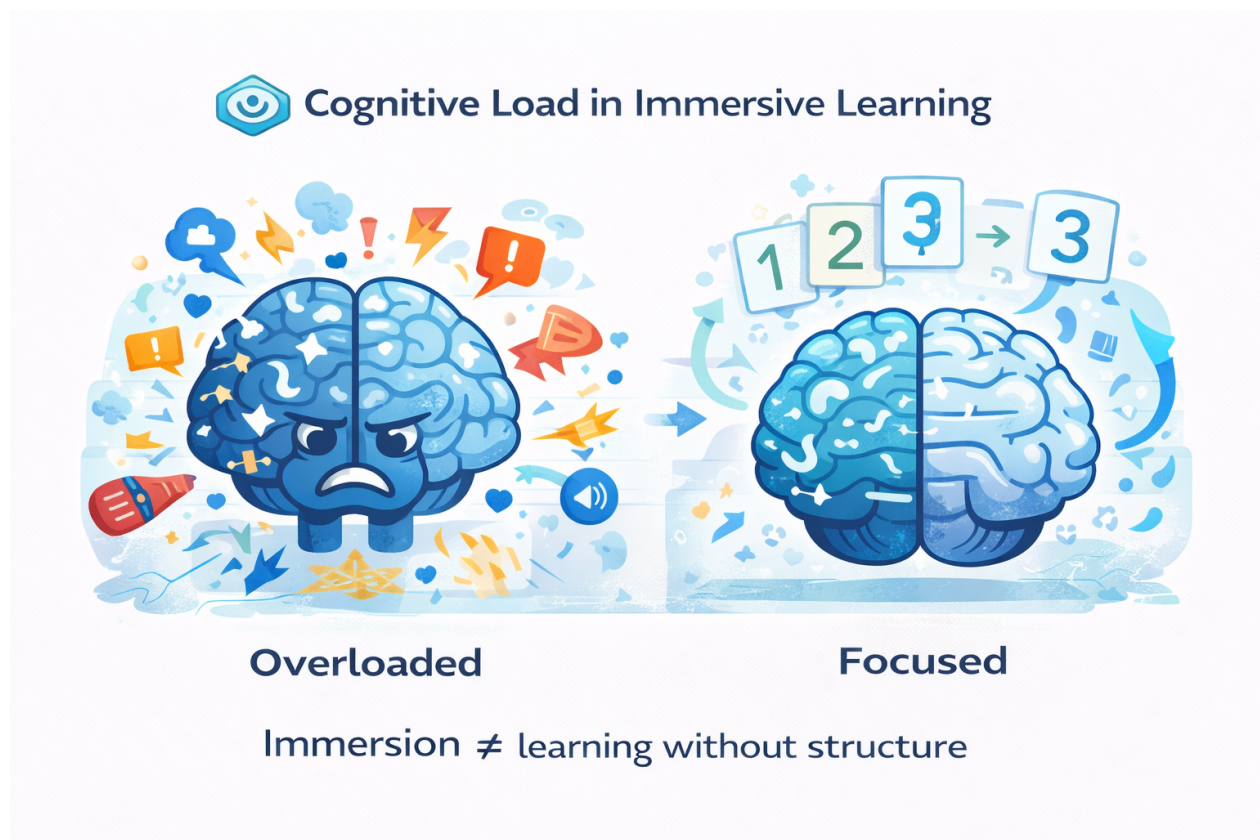


Figure 5. Cognitive load in immersive learning.

The graphic contrasts cognitive overload caused by unstructured immersion with focused learning supported by short prompts, scaffolding and clear instructional structure.

2.5 Assessment: measure learning, not excitement

AR/VR assessment should capture:

- conceptual understanding (explain, compare, justify)
- application (solve a problem, make a decision)

- reflection (what changed in my thinking?)

Avoid grading “who was best in VR.” Grade the learning evidence (notes, explanation, product).

3. TOOLS, CONTENT TYPES AND RESOURCE SELECTION (NON-PRESCRIPTIVE)

3.1 Design principle

A low-tech baseline that works with **paper + projector** is essential. AR/VR is an optional enhancement.

3.2 Common AR/VR content types (what to look for)

Content type	What it is	Best for	Typical risks
AR overlays	Labels/3D objects on real items	vocabulary, science objects, museums	distraction if cluttered
AR marker tasks	Scan markers to trigger content	station work, inquiry prompts	device access equity
360° tours	Look around a real place	geography, history, culture	passive viewing without tasks
VR simulations	Interactive environments	safety training, STEM, vocational	cybersickness, logistics
Social/multi-user VR	shared space with avatars	collaboration, role-play	safeguarding, privacy



Figure 6. AR/VR content types map.

The map positions common educational AR and VR content types along the dimensions of interactivity and virtuality, supporting teachers in selecting formats aligned with learning objectives, classroom feasibility and risk level.

3.3 Tool selection criteria (use across partners for comparable piloting)

Use these criteria consistently:

- **Low friction:** teachers can learn it in under 30 minutes; templates can be reused.
- **Accessibility:** captions/subtitles; readable UI; options for reduced motion; works with assistive tools.
- **Child safety and data minimisation:** avoid student accounts; prefer teacher-controlled modes.
- **Works on available devices:** runs on mobile; works with limited bandwidth; export/print options.
- **Cost and sustainability:** free or school-licensed; avoid paywalls that block reuse.
- **Language flexibility:** supports multilingual classrooms.

3.4 Resource sources (recommended categories)

Prioritise:

- open educational resources (OER)
- museum/cultural heritage repositories
- curriculum-aligned simulations
- partner-created templates and activity cards

3.5 A practical curation workflow

1. Define the learning outcome and evidence (1 sentence).
2. Choose content type (AR overlay, 360 tour, VR simulation).
3. Check privacy and account needs.
4. Create prompts (3–5) and a worksheet.
5. Plan inclusion: opt-out route + non-headset roles.
6. Pilot for 20–30 minutes with a small group.
7. Revise and scale; document evidence.

4. INCLUSIVE AND SAFE AR/VR (WELLBEING, ACCESSIBILITY, SAFEGUARDING)

4.1 Physical safety (minimum rules)

- Clear the play area (chairs, cables, sharp edges).
- Mark boundaries with tape.
- Establish a **stop signal** (hand up / “STOP”).
- One adult supervises the headset user at all times.
- Use seated experiences for beginners.

4.2 Time limits (recommended classroom practice)

- VR turns: **3–10 minutes** depending on age and content.
- Rotate roles so everyone contributes.

- Build reflection time while others rotate.

4.3 Cybersickness protocol

If a learner reports discomfort:

- stop immediately, remove headset,
- sit down, drink water, rest,
- switch to opt-out role (no penalty),
- note which content triggered discomfort and adjust next time.

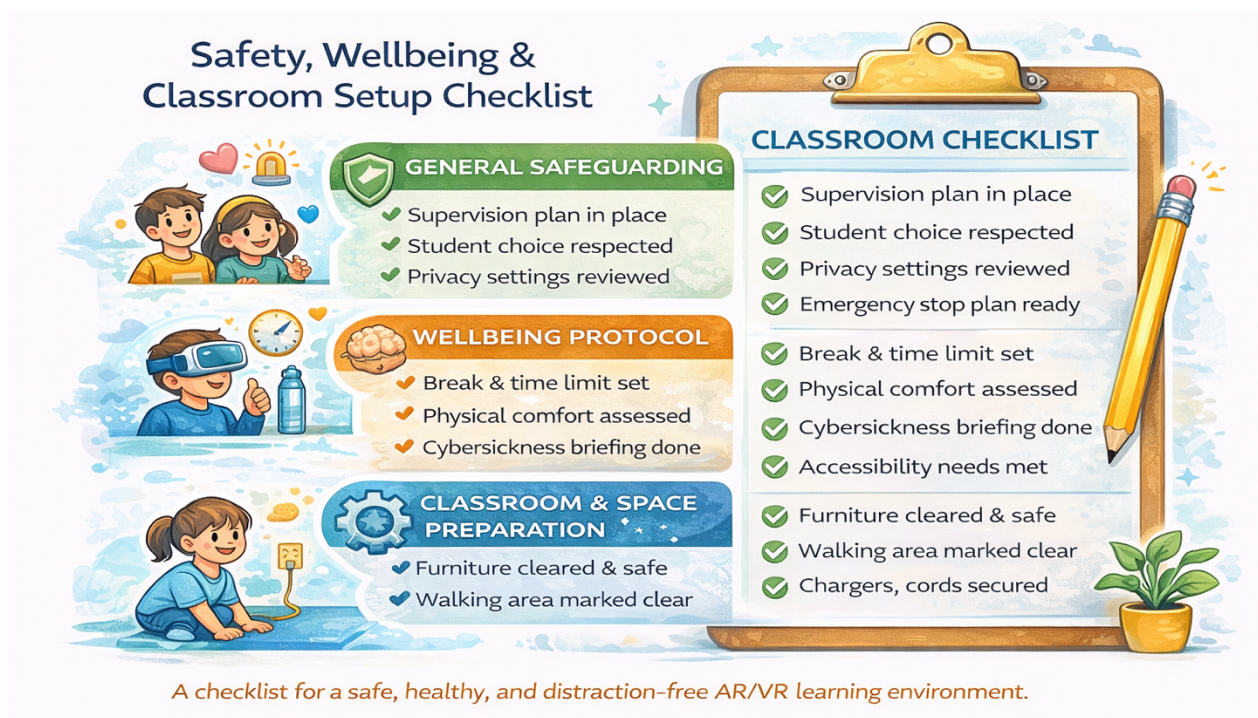


Figure 7. Safety, wellbeing and classroom setup checklist for AR/VR sessions.

The checklist summarises key preparation steps related to physical safety, learner wellbeing and classroom organisation, supporting responsible and inclusive implementation of immersive learning activities.

4.4 Inclusion by design (UDL in AR/VR)

Offer equal-status participation options:

- Explorer (headset)
- Navigator (reads prompts)
- Analyst (maps concepts)

- Recorder (evidence)
- Presenter (explains)

Provide alternatives for learners who:

- cannot tolerate headset use,
- have sensory sensitivities,
- have visual/vestibular issues,
- feel anxious in closed headsets.

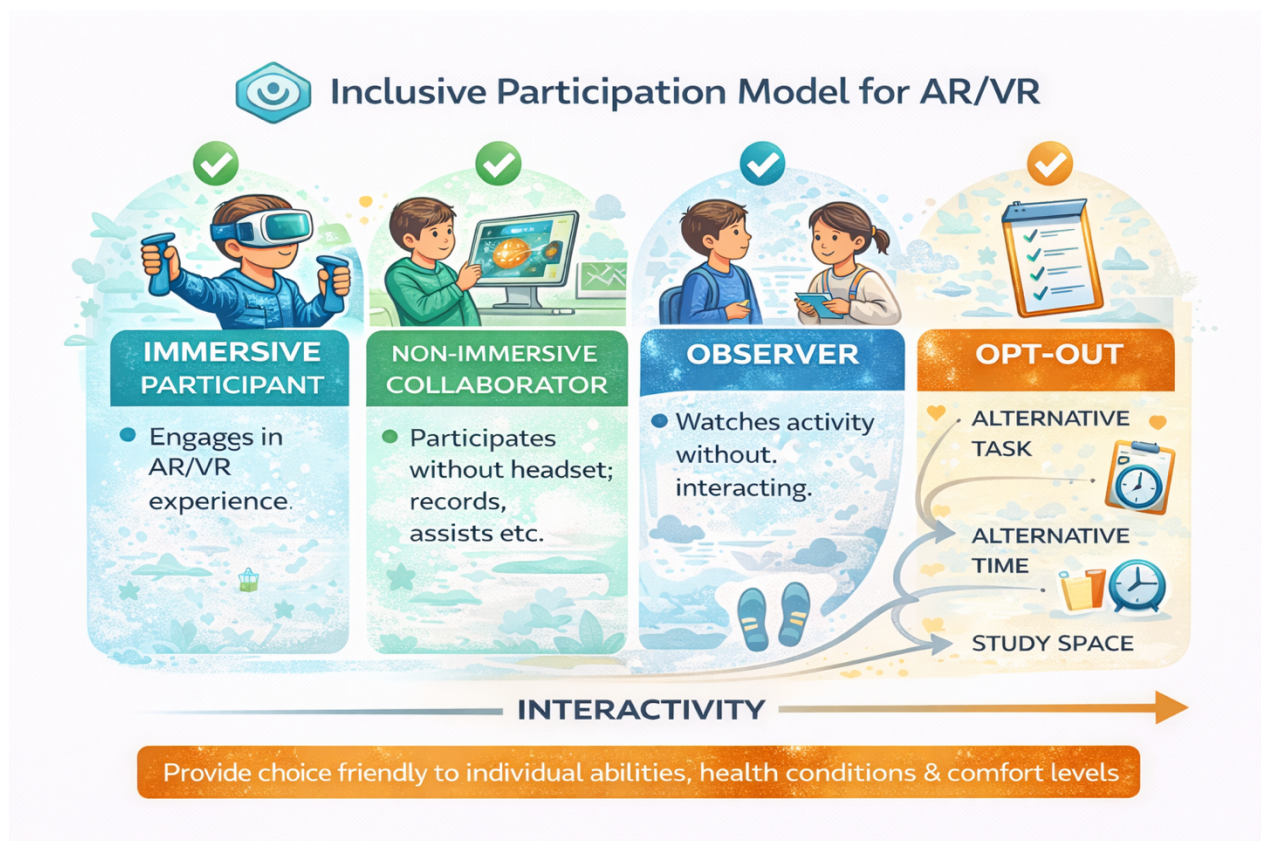


Figure 8. Inclusive participation model for AR/VR learning.

The model illustrates equal-status participation roles in immersive learning activities, including headset and non-headset pathways, ensuring accessibility, learner wellbeing and meaningful engagement for all students.

4.5 Privacy, data protection and safeguarding

AR/VR platforms may collect identifiers, location data, movement tracking, voice or video.

Minimum school-safe approach:

- avoid student accounts if not necessary,
- use teacher-controlled login/session,
- disable recording and public sharing,
- no open social VR with minors,
- collect only the learning evidence needed (worksheet, reflection).

4.6 Parent communication (recommended)

For school transparency, provide:

- short description of the activity,
- safety rules and time limits,
- opt-out route,
- data/privacy approach.

5. CHALLENGES AND SOLUTIONS (IMPLEMENTATION TROUBLESHOOTING)



Figure 9. AR/VR challenges and solutions map.

The graphic summarises common pedagogical, technical, organisational and equity-related challenges in AR/VR implementation and presents practical response strategies suitable for school contexts.

Challenge	What it looks like	Practical solution
Too much “wow”, too little learning	Students explore randomly	Add 3–5 prompts + worksheet + debrief routine
Device shortage	Only 1 headset	Rotation roles; mirrored screen; station work
Weak internet	Content fails	Download offline; have low-tech fallback ready
Cybersickness	Dizziness, nausea	Shorter sessions; seated mode; calm content

Data/privacy concerns	Accounts required	Choose tools with teacher mode; avoid learner logins
Inclusion gaps	Some learners excluded	Opt-out route; non-headset roles; alternative evidence
Classroom management	Noise, chaos	Clear rules; timekeeper; quiet zones; small groups
Teacher confidence	Fear of tech failure	Start with 360° + worksheet; pilot small

6. TRAINING MODULE ACTIVITIES AND LESSON PLAN SAMPLES (ACTIVITY CARDS)

How to use Activity Cards

- Each card can be piloted as a stand-alone lesson (45–90 minutes) or combined into a mini-unit.
- All cards include: low-tech option, inclusion notes, safeguarding reminders, and evidence to collect.
- The “Pilot notes (4 countries)” section is intentionally left as a structured placeholder for partner inputs after piloting.

ACTIVITY CARD 1 – “AR LABELS IN THE REAL WORLD” (Science / Language)

Purpose: Use AR overlays to strengthen vocabulary and concept understanding by connecting terms to real objects.

Age group: 9–14 (adaptable)

Duration: 45–60 minutes

Group format: Teams of 3–4

Learning outcomes (examples):

- Students correctly use 10–15 key terms (science objects / classroom items / body parts).
- Students explain the function/meaning of at least 5 terms using examples.

Tools (typical): smartphone/tablet AR app or web-AR (teacher-selected)

Low-tech fallback: printed labels + matching cards + object stations

Materials:

- 10–15 objects or posters
- prompt worksheet (Annex A template)
- timer

Steps (teacher script):

1. **Prepare (10 min):** Introduce target vocabulary; show one example label; explain roles.
2. **Station rotation (20–25 min):** Each group scans/activates AR labels and completes prompts:
 - “Name it.” “Describe it.” “Where do we see it in real life?” “One common mistake.”
3. **Debrief (10 min):** Each group shares 2 terms + explanations.
4. **Transfer (10–15 min):** Students create a mini-glossary page (paper or digital) with 5 terms.

Differentiation (routes):

- Route A (support): fewer terms; sentence starters.
- Route B (standard): full list.
- Route C (challenge): add “compare/contrast” or “cause/effect” prompt.

Inclusion notes:

- Learners who avoid AR can be Recorders/Presenters.
- Provide printed labels with identical prompts.

Safeguarding / privacy:

- No student accounts required.
- No recording/photos unless school policy allows.

Evidence to collect: worksheet + mini-glossary page + 2-question feedback.

Pilot notes (4 countries):

- PL: ...
- RO: ...
- TR: ...
- BE: ...

ACTIVITY CARD 2 – “360° VIRTUAL FIELD TRIP WITH THINKING ROUTINES” (History / Geography)

Purpose: Transform passive virtual tours into active learning through structured observation and reasoning.

Age group: 10–16

Duration: 60–90 minutes

Learning outcomes:

- Students produce evidence-based observations and inferences.
- Students connect place-based details to historical/geographical concepts.

Tools: 360° tour on projector + optional phones/headsets

Low-tech fallback: photo pack + printed map + short text descriptions

Steps:

1. **Prepare (10–15 min):** Teach the routine **Observe → Infer → Question**.

2. **Guided exploration (15–20 min):** Whole-class on projector; teacher models 3 observations.
3. **Group task (20–25 min):** Teams explore selected scenes and complete prompts:
 - 5 observations (what you see)
 - 3 inferences (what it might mean)
 - 2 questions (what you want to know)
4. **Debrief (10–15 min):** Share and compare different interpretations.
5. **Transfer (15 min):** “One-minute curator label” (60–80 words) with evidence.

Inclusion notes:

- Works fully without headset; headset is optional.

Safeguarding:

- Avoid open VR platforms with chat.

Evidence: observation sheet + curator label.

ACTIVITY CARD 3 – “VR SAFETY SCAN” (Vocational / STEM)

Purpose: Use VR simulation to practise hazard identification and decision-making safely.

Age group: 13+ (adapt based on content)

Duration: 60–90 minutes

Learning outcomes:

- Students identify hazards and propose prevention measures.
- Students justify actions using safety principles.

Tools: VR safety simulation (teacher-approved)

Low-tech fallback: hazard photo cards + classroom walk-through checklist

Steps:

1. **Prepare (15 min):** Teach hazard categories; explain safety rules and stop signal.
2. **Rotation (25–30 min):** 4 roles; 5–7 minutes per Explorer.
3. **Debrief (15 min):** Sort hazards by category; discuss prevention.
4. **Transfer (15–20 min):** Create a safety poster/checklist for the real classroom/workshop.

Inclusion notes:

- Non-headset roles are equal status; use mirrored display or teacher screenshots.

Safeguarding:

- Supervision required; no learner accounts.

Evidence: hazard list + prevention plan + poster.

ACTIVITY CARD 4 – “AR STORY LAYERS” (Language / Literature)

Purpose: Use AR to add “hidden layers” (audio, annotations, alternative endings) to a text or story.

Age group: 11–16

Duration: 60 minutes

Learning outcomes:

- Students interpret a text and support claims with evidence.
- Students create an AR layer that adds meaning (not decoration).

Tools: AR trigger (marker/poster) + audio/text overlay

Low-tech fallback: QR codes to audio/text + printed annotation strips

Steps:

1. **Prepare (10 min):** Define what a “meaningful layer” is: explanation, context, viewpoint.
2. **Group creation (25 min):** Each group creates one layer:
 - character perspective
 - historical context
 - vocabulary support
 - alternative ending
3. **Gallery walk (15 min):** Groups experience each other’s layers.
4. **Debrief (10 min):** Which layer best improved understanding and why?

Inclusion:

- Audio alternatives, captions/transcripts.

Privacy:

- Use school-controlled sharing; no personal images.

Evidence: layer script + reflection paragraph.

ACTIVITY CARD 5 – “NO-HEADSET VR: OBSERVER + ANALYST MODE” (Any subject)

Purpose: Ensure inclusion when some learners cannot use headsets, while still leveraging immersive content.

Age group: 10–18

Duration: 45–60 minutes

Core idea: Only one student uses headset; others engage through structured roles with equal learning value.

Roles:

- Explorer (headset)

- Navigator (reads prompts)
- Analyst (builds concept map)
- Recorder (evidence)

Steps:

1. Teacher models one “think aloud” observation.
2. Explorer describes what they see while others complete prompts.
3. Group synthesises: concept map + explanation.

Low-tech fallback: teacher video + same roles.

Evidence: concept map + group explanation.

ACTIVITY CARD 6 – CAPSTONE “AR/VR LESSON DESIGN STUDIO” (Teacher training)

Purpose: Teachers design a complete AR/VR lesson that is safe, inclusive and feasible.

Audience: teachers / trainers

Duration: 90–120 minutes

Output: One complete lesson plan using Annex A templates.

Steps (facilitator script):

1. **Outcome selection (10 min):** Choose one curriculum outcome.
2. **Immersive Value Test (10 min):** Decide AR/VR/no immersion.
3. **3-phase lesson design (25 min):** Before–During–After.
4. **Inclusion & opt-out plan (15 min):** Roles + alternatives.
5. **Privacy & safeguarding plan (10 min):** Data minimisation decisions.
6. **Assessment design (15 min):** Evidence + rubric.
7. **Micro-pitch (10 min):** Present to peers; receive feedback.

Evidence: finished lesson plan + peer feedback notes.

7. BEST PRACTICES AND GUIDELINES (QUALITY CHECKLIST)

7.1 Practical best practices

- Start small: 360° + worksheet before full VR simulation.
- Keep immersive time short; invest in debrief time.
- Use roles and rotation to solve device shortage.
- Always provide an opt-out route of equal status.
- Avoid public sharing of learner data; minimise accounts.
- Document what worked and iterate.

7.2 Data protection and safeguarding

- Use school-approved platforms.
- Avoid unnecessary student accounts.
- Collect minimum data; keep for the shortest time.
- Disable recording; no open social VR with minors.

7.3 Quality checklist (before classroom use)

- Objective is clear and visible to students.
- AR/VR adds value (IVT score 4–5).
- Instructions are simple (max 3–5 rules).
- Students have a support route (Route A) without stigma.
- There is an offline backup plan.
- Safety and opt-out procedures are prepared.
- Reflection and transfer are planned.

8. TEACHER COMPETENCIES AND DIGITAL SKILLS

Competency areas

- Instructional design: align immersive experiences with learning outcomes.
- Facilitation: manage rotations, roles, attention and reflection.
- Inclusive practice: provide equal-status alternatives and reduce sensory load.
- Digital safety: apply data minimisation and safeguarding routines.
- Evaluation: collect feedback and iterate.

Self-assessment checklist (example)

- I can justify AR/VR use using the Immersive Value Test.
- I can design a 3-phase AR/VR lesson with prompts and reflection.
- I can run AR/VR with limited devices using rotation roles.
- I can provide an opt-out route that does not punish learners.
- I can explain my privacy and safeguarding approach for the tool I use.

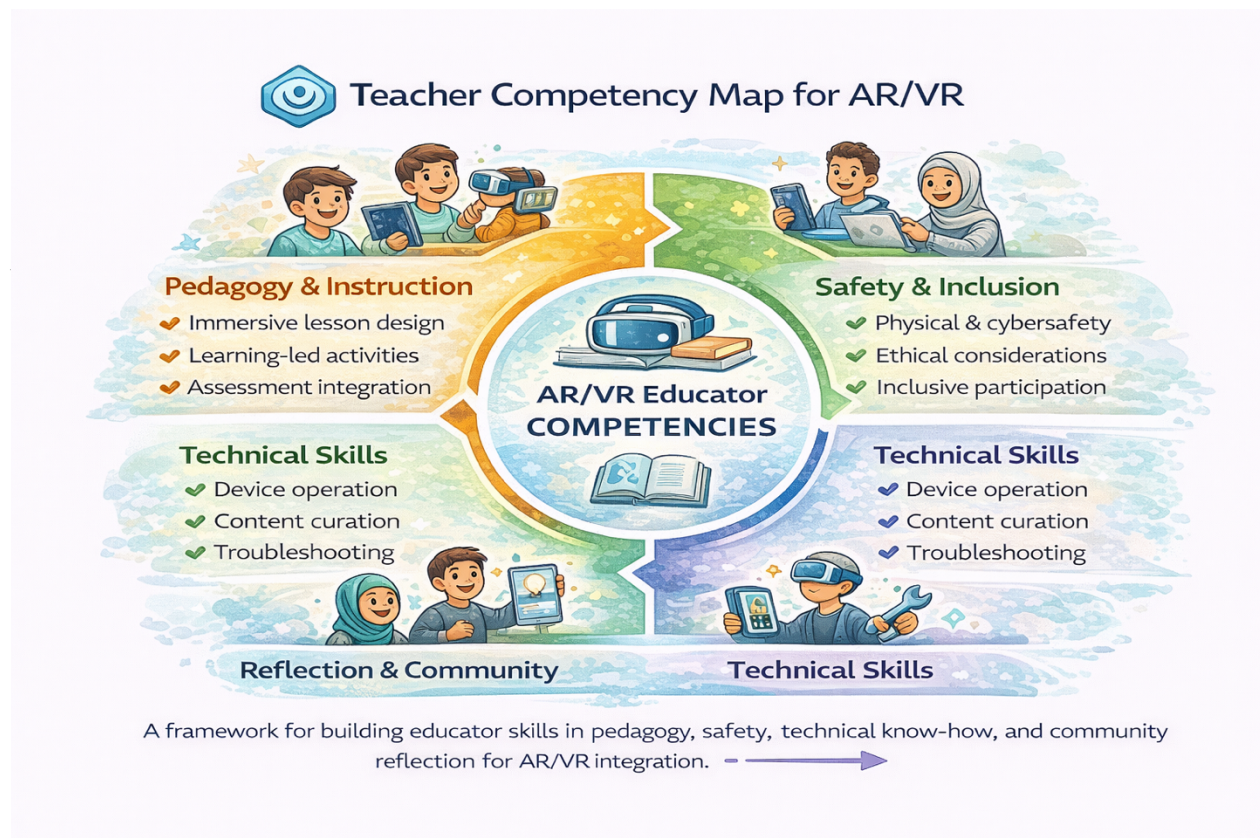


Figure 10. Teacher competency map for AR/VR integration.

The map presents key competency areas required for effective and responsible use of immersive technologies.



Figure 11. AR/VR lesson design workflow – from outcome to evidence.

The workflow summarises the recommended process for designing immersive learning activities, guiding educators from defining learning outcomes through content selection and lesson planning to assessment, reflection and evidence collection.

ANNEX A – REUSABLE TEMPLATES

A1 – AR/VR Lesson Plan Template (copy/paste)

Lesson title:

Subject / Age group:

Time:

Learning outcomes (2–4):

Immersive Value Test score (0–5):

Why AR/VR (value-add statement):

Format: AR / VR / 360° / no immersion

Hardware / device setup:

- Number of devices/headsets:
- Mirroring available (yes/no):
- Headset mode (seated/standing):
- Internet requirement (online/offline):

Tool / content source (teacher-controlled):

- Tool category (AR overlay / 360 tour / VR simulation):
- Access method (QR link / app / browser):
- Account needs (teacher only / student / none):

Materials:

- Worksheets/prompts:
- Station cards / role cards:
- Safety boundary tape / signage:
- Hygiene items (wipes, covers if used):

BEFORE (Prepare)

1. Prior knowledge activation (3–7 min):

- What students recall/notice first:
- Quick check question:

2. Vocabulary / concepts (5–10 min):

- Key terms (max 8–12):
- Mini-model (teacher shows one example):

3. Safety briefing + rules (2–4 min):

- Stop signal:
- Time limit:
- Movement rules:
- Cybersickness protocol:

4. Roles and rotation plan (2–4 min):

- Team size:
- Roles (Explorer/Navigator/Observer/Recorder):
- Rotation timing (minutes per Explorer):

DURING (Experience)

Task prompts (3–5 prompts total; short and observable):

- Prompt 1:
- Prompt 2:
- Prompt 3:
- Optional Prompt 4:
- Optional Prompt 5:

Evidence capture method (no personal data):

- Notes / checklist / diagram / photo of paper output:

Checkpoint question (ask every rotation):

- “What is one thing you noticed that relates to our learning outcome?”

AFTER (Reflect + Transfer)**Debrief routine (10–15 min):**

Use: What? → So what? → Now what?

- What did we observe?
- So what does it mean? (concept link)
- Now what can we do with it? (application)

Transfer task (10–25 min):

- Product/performance students create:
- Success criteria (2–3 bullet points):

Assessment**Assessment evidence:**

- What students submit/produce:

Rubric criteria (3–5):

- Accuracy of concept use
- Use of evidence from experience
- Clarity of explanation
- Transfer/application quality
- Collaboration/role responsibility

Differentiation (A/B/C)

- Route A (support):
- Route B (standard):
- Route C (challenge):

Inclusion & opt-out route

- Equal-status alternative role(s):
- Non-headset pathway deliverable:
- Sensory adjustments (reduced motion, calm zone):

Privacy / data minimisation notes

- Student accounts (yes/no):
- Data collected (what/why/how long):
- Recording/screenshots policy:

Low-tech fallback plan

- If tech fails, students will still meet the outcome by:

A1b – Completed Example (Filled Lesson Plan)

Lesson title: VR Safety Scan – Hazard Identification in a School Workshop

Subject / Age group: Vocational education / STEM (Safety & Technology), ages 14–17

Time: 80 minutes (single lesson block)

Learning outcomes (2–4):

1. Students identify at least **8 hazards** in a simulated workshop environment.
2. Students propose at least **5 prevention actions** (PPE, procedures, layout changes).
3. Students justify their decisions using **hazard categories** (electrical, mechanical, chemical, organisational).

Immersive Value Test score (0–5): 5/5

Why AR/VR (value-add statement): VR allows students to practise hazard recognition and decision-making **without real risk**, and to experience rare but high-impact scenarios that are hard to set up safely in school.

Format: VR simulation (rotation stations)

Hardware / device setup:

- Number of devices/headsets: 2 VR headsets (shared) + 1 mirrored screen via teacher laptop
- Mirroring available: Yes (one headset mirrored to projector)
- Headset mode: Seated for first-time users; standing only for experienced learners
- Internet requirement: Offline-ready content (downloaded) + internet not required during lesson

Tool / content source (teacher-controlled):

- Tool category: VR interactive simulation
- Access method: Teacher-controlled headset app (no student logins)

- Account needs: Teacher only

Materials:

- Worksheets/prompts: “Hazard Hunt Sheet” (Annex A printable) + hazard category table
- Station cards / role cards: Explorer / Navigator / Observer / Recorder
- Safety boundary tape / signage: 2×2 m taped area + “Stop = hand up” sign
- Hygiene items: wipes + disposable facial covers (if policy requires)

BEFORE (Prepare)

1. Prior knowledge activation (5 min):

- Teacher asks: “Name one hazard you noticed in our real workshop last month.”
- Quick check: Students write 1 hazard on mini whiteboards; teacher clusters them.

2. Vocabulary / concepts (8 min):

- Key terms: PPE, trip hazard, guarding, ventilation, lockout/tagout (simplified), chemical label, emergency stop, safe distance.
- Mini-model: Teacher shows one photo of a messy workshop and models: “I observe... I classify... I propose...”

3. Safety briefing + rules (3 min):

- Stop signal: Hand up + say “STOP.”
- Time limit: 6 minutes in headset per Explorer.
- Movement rules: No running; one step at a time; seated option is always allowed.
- Cybersickness protocol: Stop immediately; sit; water; switch to non-headset role (no penalty).

4. Roles and rotation plan (4 min):

- Team size: 4 students

- Roles: Explorer (headset), Navigator (reads prompts), Observer (safety + notes), Recorder (writes evidence)
- Rotation timing: 6 min per Explorer + 1 min checkpoint = 7 min per turn; 3 turns total per headset

DURING (Experience)

Task prompts (3–5 prompts total):

- Prompt 1: Find **2 trip/slip hazards** (floor, cables, clutter).
- Prompt 2: Find **2 tool/electrical hazards** (damaged cable, missing guard, unsafe tool placement).
- Prompt 3: Find **2 chemical/air hazards** (open containers, poor ventilation, missing labels).
- Prompt 4: Find **1 behaviour hazard** (unsafe posture, distraction, missing PPE).
- Prompt 5: Find **1 emergency issue** (blocked exit, hidden extinguisher, unclear signage).

Evidence capture method (no personal data):

- Recorder completes the Hazard Hunt Sheet (hazard → category → why risky → prevention).

Checkpoint question (each rotation):

- “Name one hazard and explain the prevention in one sentence.”

AFTER (Reflect + Transfer)

Debrief routine (12 min):

What? → Teams share top hazards (one per category).

So what? → Class discusses which hazards are most dangerous and why.

Now what? → Decide 3 safety rules for the real workshop.

Transfer task (20 min):

- Product: Create a **Safety Checklist Poster** for the school workshop.

- Success criteria:
 - includes 8–10 checklist items across categories
 - each item is written as an action (“Wear...”, “Keep...”, “Report...”)
 - includes a “What to do if...” section (incident protocol)

Assessment

Assessment evidence:

- Hazard Hunt Sheet (team) + Safety Checklist Poster (team) + 3-sentence individual reflection

Rubric criteria (3–5):

- Accuracy of hazard identification
- Logic and feasibility of prevention actions
- Use of categories and correct vocabulary
- Quality of transfer product (clarity, completeness)
- Collaboration (role fulfilment)

Differentiation (A/B/C)

- Route A (support): Provide hazard categories pre-filled + sentence starters (“This is risky because...”)
- Route B (standard): Full sheet; students complete categories and prevention
- Route C (challenge): Add a “risk priority” rating and justify top 3 risks

Inclusion & opt-out route

- Equal-status alternative roles: Navigator/Observer/Recorder/Presenter
- Non-headset pathway deliverable: Students complete the same sheet using mirrored view + teacher screenshots
- Sensory adjustments: Calm zone; reduced headset time; seated mode; no penalties for opting out

Privacy / data minimisation notes

- Student accounts: No
- Data collected: Only paper worksheets and anonymous feedback (kept 2 weeks)
- Recording/screenshots policy: Teacher may capture screenshots of the simulation environment only (no students)

Low-tech fallback plan

- If tech fails, students meet the outcome by using hazard photo cards + a guided “workshop walk-through” checklist in the real classroom.
-

A2 – Quick Student Feedback (2 questions) – Quick Student Feedback (2 questions)

- What helped you learn today?
 - What would you change for next time?
-

A3 – Safety & Wellbeing Checklist (before session)

- Space cleared and boundaries marked.
 - Stop signal explained.
 - Time limits set.
 - Cybersickness protocol prepared.
 - Hygiene plan prepared.
 - Opt-out route prepared.
-

A4 – Evidence Collection Sheet (teacher)

- Activity name:
- Age group:

- What worked:
- What was difficult:
- Inclusion notes:
- One change for next time:

ANNEX B – GLOSSARY

Term	Meaning (plain language)
360° video	Video that captures a scene in all directions; learners can look around using a device or headset.
AR (Augmented Reality)	Digital content layered onto the real world, often via a phone/tablet camera.
VR (Virtual Reality)	A fully immersive digital environment, typically experienced via a headset.
MR (Mixed Reality)	Digital objects anchored in real space with interaction.
XR (Extended Reality)	Umbrella term for AR, VR and MR.
Presence	Feeling of “being there” in an immersive environment.
Cybersickness	Discomfort some users feel in VR (dizziness, nausea, headache).
Data minimisation	Collecting and storing only the data necessary for a specific educational purpose.
Safeguarding	Policies and actions protecting learners from harm (including emotional harm and unsafe content).
Opt-out route	Planned alternative participation option of equal status (no stigma, no penalty).

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LICENSING

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