BLACKMORE
TECHNOLOGY GROUP LIMITED

COMMUNITY INNOVATION / BOUNDARY COUNTRY, BC



BOUNDARY TECH GENERATION

FULL WORKSHOP BLUEPRINT

Build games. Create apps. Program robots.
Invent solutions. Learn by doing.

FOUR AGE LEVELS · FOUR LEARNING TRACKS
Volunteer-led | App-supported | Hands-on | Safe by design

Prepared for local volunteer and community partner consideration

22 October 2026 • Version 1.0 • Proposed programme — not yet launched

YOUR GUIDE TO THE PROGRAMME

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This blueprint is arranged as an approval-ready programme proposal, practical instructor guide, companion-app specification and operating pack. Choose a section below or use your PDF viewer's bookmarks.

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HOW TO USE THIS PLAN

Decision-makers: begin with chapters 1–6 and 18–25. Instructors: use 7–13 and 26–32. Software engineers: use 14–17. Host safeguarding and privacy reviewers: use 18–20, 28–29 and 33–34.

BTG / BOUNDARY TECH GENERATION · PROGRAMME BLUEPRINT

01 Executive blueprint

A BTG-branded community learning programme that transforms existing interests in games, apps, robotics and inventions into hands-on creations. This is a proposed volunteer-led initiative for children and youth across Boundary Country, British Columbia.

THE PROGRAMME PROMISE

Every participant is invited to imagine a project, make a working version, test and improve it, then demonstrate the result. Four developmentally appropriate levels support different starting abilities; age is a guide, not a ceiling.

Programme identity

Field	Working specification
Working name	Boundary Tech Generation — a proposed Blackmore Technology Group Limited community education initiative.
Delivery model	Volunteer-led, supervised in-person workshops supported by a purpose-built learning app and existing creation tools.
Communities	Grand Forks and other Boundary-region communities, subject to partner venue and participation arrangements.
Participants	Ages 6–17; four starting levels; adjustments for individual readiness and support needs.
Core tracks	Video games, app building, robots, physical computing and independent inventions.
Launch pilot	Eight weekly game-building sessions; 12 seats as a planning assumption, not registrations.
Approval state	Planning blueprint only: no partner approval, booking, background screening or public enrolment is represented as completed.

Outcomes worth measuring

- A child finishes an original, runnable artefact: project file, game, prototype app or robot demonstration.
- Participants can describe their idea, at least one problem, one fix and one improvement.
- Families can see the child's creation without public disclosure of a child's identity.
- Volunteers have reproducible session guides, a safeguarding process and an equipment-ready kit.
- The programme remains accessible without a family purchasing a computer or paid software.

Founding principle

The workshops are community education, **not recruitment into BTG products, data-collection programmes, the Exchange or an investment activity**. Projects and participant information are not transferred into BTG commercial research systems. Adult-approved educational demonstrations may explain general technology concepts without collecting child-created data for commercial use.

02 Mission, vision and boundaries

Vision

Give young people in the Boundary region a practical route from enjoying technology to understanding, building and confidently presenting technology of their own.

Mission

Provide safe, affordable, inclusive, age-appropriate workshops where children build complete games, applications, robots and useful inventions with patient volunteer guidance, local relevance and visible outcomes.

Operating commitments

Commitment	Programme rule
Creation first	At least two-thirds of session time is hands-on making, testing or demonstrating.
Age fit	Use visual play and short tasks for younger learners; progressively introduce code, debugging and independent decisions.
Accessibility	Multiple participation modes; breaks, sensory alternatives, readable instructions and accessible controllers.
Digital safety	No public chat, advertisements, microtransactions, real-money content or public profiles for children.
Ownership	Respect student authorship. Sharing projects beyond the workshop is opt-in with guardian approval where appropriate.
Transparency	No promise of accreditation, qualification or school credit without a formal agreement.
Evidence	Track completed milestones and de-identified feedback; do not profile or rank children publicly.

What the programme is not

- Not an unsupervised childcare service, drop-in internet cafe or public social gaming platform.
- Not a commercial game-development competition, coding boot camp requiring prior experience, or recruitment pipeline.
- Not a high-voltage, autonomous mobile robotics or drone programme.
- Not an automatic pathway for children to license or trade their creations or personal information.

PARTNERSHIP MODEL

BTG may supply the learning structure and visual identity. A host school, library or youth organization would separately approve venue, enrollment, volunteer screening, guardian communications, liability coverage and incident procedures.

03 Age levels and developmental fit

Level	Age	Session length	Instruction	Typical finish
L1 — Little Creators	6–8	50–60 min	Visual blocks, show-and-do, breaks every ~15–20 min	Interactive story, simple game or LED light pattern
L2 — Young Builders	9–11	65–75 min	Guided sequences, collaborative debugging	Three-level game, quiz app or obstacle robot
L3 — Junior Developers	12–14	80–90 min	Design briefs, loops/variables, optional text code	Exported small game, multi-screen app or sensor robot
L4 — Youth Innovators	15–17	90–120 min	Project sprints, versioning, documentation, peer review	Polished Windows game, utility app or modular robotics build

Placement principle

Place learners by age as a default, then use an interest-and-confidence intake conversation. A 15-year-old beginner should feel welcome in a supported entry pathway; an experienced 10-year-old may accept optional stretch tasks. A mentor approves any jump in equipment complexity and confirms safeguarding supervision.

Scaffolding by level

Dimension	L1 · 6–8	L2 · 9–11	L3 · 12–14	L4 · 15–17
Coding	Pictures / blocks	Events, loops	Variables, text intro	Functions, states, Git optional
Planning	Draw a scene	Simple 3-step plan	Storyboard + tests	User story + milestones
Robotics	Preassembled low-voltage	Build simple kit	Add sensors & logic	Design mechanical/control tradeoffs
Teamwork	Pair-and-share	Partner challenges	Small teams with roles	Independent / peer-reviewed
Showcase	Play one scene	Demo with prompts	Explain a fix	Evidence, documentation and demo

Age-specific workshop care

- For L1, prioritize tactile and visual tools, large buttons, no independent accounts, lots of repetition and facilitator help.
- For L2, use pairs, clear milestones and progressively less guided build steps.
- For L3, teach bugs as normal design feedback, let youth select a challenge and include digital citizenship.
- For L4, add systems thinking, testing, accessibility design, ethical tool use and responsible publication.

04 Programme pathways and outcomes

Path	Hook for young people	They make	Core transferable skill
GAME LAB	“I play games — I want to make one.”	Character, levels, score, win/lose, exported game	Events, state, iteration, testing
APP STUDIO	“I wish there was an app for that.”	Timer, tracker, community guide or mini-game app	Interface logic, user journeys, data care
ROBOT LAB	“I want a robot to do something.”	Low-voltage rover, obstacle avoider or line follower	Circuits, sensors, feedback control
INVENTION LAB	“I want to build something useful.”	Plant alert, safe-room light, weather indicator	Design constraints, prototyping, measurement

Common complete-project criteria

- The learner can open/run the project in the intended environment.
- At least one original choice is visible (idea, art, mechanics, features, circuit behavior or design).
- A basic test has been performed and a problem recorded or described.
- The learner makes or explains at least one improvement.
- An age-appropriate demonstration can be shared privately with a parent/guardian or approved showcase group.

Optional local-interest project prompts

Examples include a fictional mountain-trail adventure game, a wildfire-preparedness memory game built from approved public safety information, a local sports scoreboard, a plant-watering reminder, a simulated community search grid, or an obstacle-avoiding miniature rover. Projects must never create real emergency guidance, unsafe routes, or simulate real-time emergency dispatch.

PROJECT CHOICE RULE

Participants choose a safe project from starter themes or submit their own idea. Volunteers assess feasibility, technical risk, personal-data needs and age fit before any build begins.

05 Delivery model and session rhythm

Standard workshop pattern

Segment	L1 (60 min)	L2 (75 min)	L3 (90 min)	L4 (110 min)
Welcome / safety	5	5	5	5
Show the challenge	7	8	10	10
Build sprint 1	15	20	25	30
Movement / eye break	5	5	5	8
Build sprint 2	15	22	30	42
Test / demo / backup	10	12	12	12
Close / reflection	3	3	3	3

Eight-week course contract

Week 1: idea and orientation → **Week 2:** world/interface → **Week 3:** control → **Week 4:** logic/challenge → **Week 5:** feedback/features → **Week 6:** tests and repairs → **Week 7:** polish/export → **Week 8:** private showcase and reflection.

Participant autonomy

Each session supplies three challenge cards: **START** (guaranteed essential milestone), **BUILD** (standard extension) and **EXPLORE** (optional stretch). Success means an individual's meaningful progress, not completion of the hardest card.

Facilitator method: show, build, test, ask

- Demonstrate one operation in under five minutes, then allow children to repeat it.
- Ask "What did you expect?" and "What happened?" before reaching for the mouse.
- Help participants save versions at predictable points; restore a previous version if stuck.
- End with a working artefact or checkpoint that the child can recognize as their own.

06 Flagship pilot — Build Your First Video Game

RECOMMENDED FIRST COHORT

Eight weekly 75–90-minute sessions for up to 12 participants, using the 9–11 and 12–14 pathways in separately staffed groups where possible. Borrowed Windows computers reduce startup cost. The 6–8 and 15–17 adaptations are included but should not be mixed into a single unmodified session.

Pilot project definition

Working project: **Trail Quest** (name and artwork may be freely replaced by the learner). A character moves through a safe fictional world, collects items, reaches a finish point, shows a score and allows restarting. Younger learners can use visual blocks; intermediate groups can add variables, obstacles and multiple levels; older youth can create a Godot version with polished menus and an export.

Minimum shippable project

- Start screen or visible start instruction; player controls; a clear objective.
- At least one collectible or interactive object; scoring or completion feedback.
- A win/finish event and a restart path.
- A saved project file; a peer play-test result; a final demonstration.

Tool choices

Cohort	Default build tool	Finishing format
Ages 6–8	ScratchJr (tablet) or facilitated Scratch	Local project / supervised play demonstration
Ages 9–11	Scratch desktop or managed web editor	Project file playable in Scratch environment
Ages 12–14	Scratch or Godot visual scene starter	Scratch file or desktop export if tool-ready
Ages 15–17	Godot engine with GDScript	Windows export plus source project and notes

Eight-week acceptance checkpoints

End of W2: scene and player present; W4: playable interaction; W6: one logged test and fix; W7: complete build; W8: demonstration and take-home project package. If a child misses a session, facilitators provide a non-punitive recovery file or catch-up station.

07 Game Lab — instructor plan (weeks 1–4)

WEEK 1 / Dream it / make it move

Make: Child chooses theme, draws hero, opens starter project, moves one character with visible controls.

Teach: Recognize game goal, inputs and rules.

Test / evidence: Save “v1”; show movement to a partner.

Stretch: Alternate control scheme or second character.

WEEK 2 / Build the world

Make: Make a background or tilemap, place start and goal, add collision-free boundaries; younger group adds three scenes.

Teach: Understand scene layout and sequence.

Test / evidence: Child can explain start, finish and hazards.

Stretch: Add second world/level or alternate route.

WEEK 3 / Controls and interaction

Make: Connect keyboard/touch to actions, collision to collectible, and a clear change when picked up.

Teach: Use events, conditions and timing.

Test / evidence: Peer can collect one item; check keyboard/controller access.

Stretch: Introduce acceleration, jump mechanics or gamepad support.

WEEK 4 / Challenges and objectives

Make: Add obstacles, timer or points; create at least one win condition and restart.

Teach: Model simple game rules.

Test / evidence: Run two tests: success and failure; record unexpected behaviour.

Stretch: Two levels, adaptive difficulty or sound feedback.

> **FACILITATOR NOTE**
>
> Screenshots, characters and sprite assets must be appropriately licensed, original or provided as approved workshop resources. Children should not be told to copy proprietary commercial-game artwork into published projects.

08 Game Lab — instructor plan (weeks 5–8)

WEEK 5 / Make it feel like a game

Make: Add sounds, menus, instructions and visual feedback; check if a newcomer understands the controls.

Teach: Apply feedback and usability.

Test / evidence: Invite a peer to play without verbal instructions; note confusion.

Stretch: Introduce options for contrast, volume or difficulty.

WEEK 6 / Become a game tester

Make: Run a guided bug hunt (start, collect, finish, restart), log at least two findings and fix one.

Teach: Observe failures, use simple test cases.

Test / evidence: Save before/after version and explain the fix.

Stretch: Make an automated or repeatable test list.

WEEK 7 / Finish and package

Make: Polish title screen, credits, icons, final scoring; create named version and backup.

Teach: Understand versions, export and handoff.

Test / evidence: Another device or facilitator machine can load the project.

Stretch: Publishable zip with screenshots and release notes (private only).

WEEK 8 / Game showcase

Make: Children set up demo stations, invite approved guests, collect kind feedback and reflect on next steps.

Teach: Communicate design decisions and celebrate work.

Test / evidence: Each youth demonstrates a working game and identifies a change they made.

Stretch: Student-led explanation of architecture or accessibility choice.

Showcase protocol

Collect separate guardian permissions for attendance, photographs, video and distribution. Default is a private event with no recording and no online publishing. Use first names or approved pseudonyms only. Provide a quiet demo option for participants who prefer not to present publicly.

09 Game Lab — acceptance tests and assessment

Test case	Expected outcome	Record
Launch	Game opens to start scene or instructions	Pass / retry
Input	Controls respond reliably, with alternate access if needed	Pass / retry
Goal	Collection or objective updates visibly	Pass / retry
Completion	Finish condition and restart both work	Pass / retry
Stability	No blocking error during 5-minute peer playtest	Pass / retry
Save/reopen	Project restored from copied file or export	Pass / retry
Original contribution	Learner explains one self-selected creative feature	Observed
Reflection	Learner names one bug/test and one improvement	Observed

Rubric: developmental, not competitive

Criterion	Emerging	Working	Independent
Idea and purpose	Can describe with prompts	Explains the goal	Explains intended experience
Build and run	Runs with help	Runs with minor prompts	Runs and demonstrates independently
Testing	Observes a result	Reports and repairs one issue	Tests multiple cases, explains tradeoffs
Communication	Shows a feature	Explains their change	Explains a decision and next step

Do not grade personality, reading speed, language fluency, disability accommodations or the amount of adult assistance. Participation and pride are more important than cross-child rankings.

10 App Studio — complete eight-week pathway

Launch after or alongside the game pilot using the same project rhythm. Suggested first apps: simple timer, practice scoreboard, pocket checklist, plant-care reminder or mini quiz. Avoid GPS tracking, social feeds, real identifiers or children's health/financial records.

Week	Build milestone	Age-specific differentiation
1 · Idea	Choose audience and one job; paper screen map	L1 picture menu; L2 storyboard; L3–4 user stories
2 · UI	Create home screen and navigation	L1 click-through; L2 blocks; L3–4 reusable layout
3 · Events	Wire buttons to actions	L1 tap-response; L2 conditionals; L3–4 state handling
4 · Data	Create basic non-identifying storage	L1 scene variables; L2 local scores; L3–4 structured local records
5 · Feedback	Add confirmations and accessible labels	Age-adjusted contrast, audio, focus and error states
6 · Test	Friend follows use-case without help	Record one issue and revised flow
7 · Package	Export locally or document companion runtime	Account/device limits checked before promising install
8 · Showcase	Demo a task from beginning to end	Private parent demo and design reflection

Platform reality

MIT App Inventor supports learning through a browser and testing on compatible phones/tablets. Android packaging is more straightforward; iOS installation and export paths have additional platform requirements. A working prototype in the Companion app counts as a successful workshop deliverable; an App Store listing is **not** a required finish.

Safe starter app rules

- Use dummy records, local-only state and generic examples; no full names, photo collections or location trails.
- No account creation or cloud synchronization for younger children.
- Volunteer pre-checks permissions, external links and app compatibility on the actual workshop hardware.

11 Robot Lab — complete eight-week pathway

Robotics uses **small, low-voltage educational kits** and adult-managed charging/batteries. Start with programmable lights and sensors, then advance to a paired wheeled robot. No soldering, mains voltage, sharp cutting or unsafe moving mechanisms in the entry programme.

Week	Build and experiment	Acceptance / safety
1	Explore input/output; blink LED or display a heart	Battery and cable briefing; light responds
2	Sequence a programmable path or icon pattern	Predict then run a 3-step program
3	Assemble low-voltage rover in pairs, facilitator supervises	Mechanical inspection, no pinch points
4	Control turn/forward/stop with blocks	Stop instruction tested before movement
5	Add proximity or line-sensing feature	Sensor response tested against safe obstacle
6	Create obstacle course and repeat tests	Document one failure and one repair
7	Add start button, fail-safe stop and project label	Facilitator safety approval and demo rehearsal
8	Present a supervised course run	Child explains sensor, program and adjustment

Age adaptations

- 6–8: LED patterns and a shared, preassembled robot; one command per step.
- 9–11: two-person rover kit, blocks, obstacle course and simple sensor thresholds.
- 12–14: sensor calibration, reusable code blocks, data collection without personal data.
- 15–17: finite-state navigation, PID concepts as optional theory, mechanical design and test log.

12 Invention Lab and integrated projects

Four anchor inventions

Challenge	Beginner form	Advanced extension
Plant monitor	LED reminder based on elapsed time	Moisture sensor and threshold with calibration
Mini weather station	Read light/temp and display icon	Graph environmental samples locally
Desk safety light	Button toggles a lamp	Ambient-light automation with manual override
Accessible game controller	Large-button input panel	Custom adaptive controller + latency tests

Invention sprint sequence

Six repeatable design steps

1. **Spot a need:** Describe the user and why a tool would help.
2. **Draw and choose:** Make two sketches; pick one based on feasibility.
3. **Make a minimum version:** Use teacher-approved low-voltage kits and pretested components.
4. **Measure behaviour:** Define a result and run a repeatable test.
5. **Fix and improve:** Change one thing; compare outcomes.
6. **Show and explain:** Demonstrate what works and identify what remains imperfect.

> **NO UNSUPERVISED FIELD TESTING**
>
> No inventions are installed in public infrastructure, fire alarms, real vehicle systems or emergency equipment. This course uses classroom prototypes and simulations only.

13 Advanced Level 4 capstones (15–17)

Capstone menu

- A short Godot game with original art, title menu, difficulty settings, accessibility options and a signed-off Windows export.
- A useful app prototype with documented audience, task flow, local storage and usability test.
- An obstacle-navigation robot with calibration report, simple state machine and safe stop.
- An integrated sensor-to-screen device with bench test, revision history and build instructions.

Professional practices introduced appropriately

Youth are introduced to source versioning, issue lists, mock pull requests, component boundaries, testing, dependency licensing, user experience and non-commercial open sharing. A mentor may demonstrate **DataChip/Circuit/Genome ideas as educational metaphors** for modular code, but no child project is uploaded into BTG commercial research or economic systems.

Six-part capstone evidence pack

Component	Minimum artefact
Problem statement	Who is it for, and what does success look like?
Design	Two ideas considered, then a chosen approach
Implementation	Runnable project file and clear start instructions
Testing	At least three tests with observed results
Revision	One documented bug fix or improvement
Showcase	Five-minute demonstration and personal reflection

14 The workshop companion app — vision

WORKING APP NAME

Boundary Tech Generation — an educational companion application for supervised learning, not a live product yet. It should launch project activities and support creation tools, not trap participants in proprietary lessons or demand unnecessary accounts.

Core experience

A child selects an age-appropriate learning level, chooses **Build a Game, Create an App, Build a Robot** or **Invent Something**, and works through manageable project steps. Volunteers can project the lesson, assign a challenge and record completion without creating a public profile.

Child-facing screens

Screen	Function	Safety / accessibility
Welcome / level	Simple large cards; choose track	No public feed, child-safe language
Project board	See goals, supplies and time	Printable and offline equivalent
Build step	Picture, text, optional narration and micro-video	Captions, alt text, paced steps
Try and test	Checklist and “what happened?” prompt	No public scores or comparative ranks
My creations	Local project names, screenshots or files	No child photo required; local access
Showcase	Private supervised display or export	Guardian permission before external sharing

Facilitator-facing screens

Session run sheet, cohort-level dashboard, device readiness, lesson unlock, support accommodations, anonymous progress counters, inventory checkout, incident-report redirect to the host organization’s controlled process, and controlled export of a parent-ready project file. Personal/incident records are excluded from student devices.

15 Companion app — functional specification

ID	Requirement	Priority / acceptance
APP-01	Four age bands with manual accessibility overrides	P0: level can be changed without data loss
APP-02	Four track catalogues with 8-session curriculum	P0: games/app/robot/invention projects load offline where possible
APP-03	Step-by-step image + text + optional audio instructions	P0: readable, captioned, keyboard accessible
APP-04	Open approved creation editor or import local project	P0: learner can actually build and retrieve artefact
APP-05	Starter, standard and extension challenge paths	P0: learner progress never publicly compared
APP-06	Local progress and save/recover workflow	P0: workshop device can back up safely
APP-07	Facilitator mode with protected content editing	P1: adult access separated from participant controls
APP-08	Optional private gallery for session day	P1: time-limited, guardian-controlled and moderated
APP-09	Printable pack export, accessibility settings	P0: offline paper equivalent
APP-10	No ads, tracking SDKs, unrestricted chats, paid upgrades	P0: static audit and device tests

App delivery and platform strategy

Pilot: Windows 11 facilitator and shared learner laptops; tablet-friendly activity pages for younger children. **Next:** optional iOS/Android lesson companion and pretested tool deep links. Deliver as a local-first app with exportable lesson packages, not as an unbounded web social network.

Explicit non-goals

Do not implement child-to-child messaging, webcam monitoring, biometric identification, behavioral profiling, activity-data commercialization, a public leaderboard, cloud LLM chat without governance, or direct BTG Exchange wallet/ledger access.

16 Companion app — high-level architecture

Separation of educational data and administration

Layer	What it holds	Who can access
Content pack	Age-level lesson assets, approved project files, tests and captions	Learner and facilitator devices
Local learner workspace	Pseudonymous project label, local file links, progress ticks	Learner during session; facilitator as needed
Facilitator console	Approved session roster mapping, equipment allocation, lesson settings	Authorized screened adults only
Host safeguarding system	Consent, emergency contact, incident and attendance records	Host organization under its separate policy
Optional later reporting	De-identified participation and curriculum completion totals	Programme owner, aggregated only

Illustrative interaction flow

Enter level → Choose project → Read/see step → Open editor → Build → Test → Save locally → Reflect → Export privately. No project is uploaded externally by default. Any future cloud synchronisation would require privacy impact review, verified guardian consent and a data-processing agreement.

Engineering quality gates

- Offline lessons work after installation; no network dependency for essential progress.
- A project remains recoverable after a device restart or application crash.
- No unexpected external requests, trackers or hidden analytics.
- Instructor can reset a shared device without revealing another child's work.
- Screen-reader navigation, font enlargement, reduced motion and high contrast receive physical-device tests.
- Session assets include licence/attribution and do not embed copyrighted commercial game graphics.

17 Example companion app user journey

1	2	3	4
PICK	**BUILD**	**TEST**	**SHOW**
Game / app / robot	Follow a small step	Try it; spot a bug	Save / share privately

Walkthrough: a ten-year-old builds “Forest Explorer”

Supervised participant journey

1. **Enter:** Select Young Builders; open GAME LAB; no personal account required.
2. **Choose:** Pick a fictional forest quest and mark a favorite character style.
3. **Make:** Launch a preinstalled Scratch project; add movement and a goal.
4. **Test:** Notice score fails; change one event block; rerun.
5. **Save:** Store project with a workshop alias and session code, not full name.
6. **Show:** Demonstrate privately at the end of the day; export to parent only if approved.

Accessible alternatives

- Keyboard-only navigation and adapted input switches for participants who need them.
- Printable cards and facilitator narration when device use or reading is difficult.
- Quiet table, headphone option, sensory breaks and no requirement to perform publicly.
- Examples with visual/text instructions; alternatives to small drag-and-drop targets.

18 Volunteer operating model

Recommended staffing assumptions — subject to host approval

Cohort	Planning staffing	Why
L1 · ages 6–8, up to 12	3 screened adults, ideally 1:4	Frequent transitions, device assistance and close supervision
L2 · ages 9–11, up to 12	2 screened adults, target 1:6	Pairs, hands-on device troubleshooting and safeguarding
L3 · ages 12–14, up to 12	2 screened adults, target 1:6	Technical coaching, independent group work
L4 · ages 15–17, up to 12	2 screened adults, target 1:6	Advanced coaching and consistent supervision

These are **proposed programme ratios, not a statement of B.C. regulatory staffing requirements**. The host organization must approve ratios, accommodations, entry/exit rules and legally required screening for its setting.

Volunteer roles

- **Programme coordinator:** partner agreements, safeguarding lead, logistics and oversight.
- **Lead instructor:** prepares lessons, runs demonstrations and certifies technical readiness.
- **Support instructor:** one-to-one help, attendance handoff, accommodations and device recovery.
- **Equipment lead:** inventory, charging, maintenance, low-voltage safety and backups.
- **Host safeguarding contact:** owns consent/incident records and escalation procedures.

Volunteer readiness

Each volunteer needs applicable screening/clearance under the host organization's requirements, youth-safe conduct orientation, emergency and mandatory reporting instruction, child privacy training, inclusivity briefing, tool practice, basic first aid coverage as decided by the host, and a signed code of conduct. B.C.'s Criminal Records Review Act coverage depends on the organization and role. [3–4]

19 Safeguarding and child protection

PRE-LAUNCH HARD GATE

No workshop involving minors opens until the named host has approved child-protection procedures, volunteer screening, guardian enrollment/collection procedures, emergency arrangements, venue and insurance responsibilities, and a responsible safeguarding lead.

Minimum operating rules

- Adults do not privately message minors, share personal contacts or make closed-door one-to-one arrangements.
- Use line-of-sight supervision and the host's approved two-adult / open-door rules.
- Parents/guardians sign enrollment, emergency contact, authorized pickup and separate media permissions.
- Set clear arrivals, handover, bathroom and emergency evacuation arrangements; keep attendance securely.
- Moderate every external webpage or software tool; disable unrestricted browsers/social media on shared devices.
- Use low-voltage equipment only in robotics; adult-managed battery handling and safe-stop checks.
- A volunteer receiving a child-welfare concern follows the applicable B.C. reporting duty and host procedures; do not investigate personally. [5]

BC screening and reporting

The host must determine whether the **Criminal Records Review Act** applies and which screening route is required; provincially funded/licensed/contracted organizations and certain volunteer organizations are covered. The B.C. Government explains screening obligations and local RCMP/police alternatives for organizations not covered. Every person in B.C. has a duty to report suspected child abuse/neglect in circumstances described by provincial child-welfare guidance. [3–5]

Emergency readiness

Post the site emergency plan, local emergency numbers, first-aid location, meeting point and designated adult contact. Volunteers must never promise the app is a safeguarding/incident-reporting system. Keep child-protection records within the host's authorized controlled process.

20 Privacy, consent, ownership and ethical AI

Privacy-by-design requirements

Item	Required approach
Enrolment	Only the host organization collects necessary guardian contacts, accommodations, allergies if justified, and pick-up authority through protected systems.
Child identity in app	Prefer alias or first name with cohort code; no full birth date, school ID, location trail or public profile.
Project files	Save local by default; time-limited retention under host policy; secure backups only with permission.
Photography	Separate voluntary opt-in, specific use and audience; no default social posting; withdrawal handling.
Analytics	De-identified aggregate outcomes; no behavior tracking, ad targeting or data monetization.
Student IP	Work remains with its creator(s), subject to any justified assignment for supplied assets. Never claim automatic ownership for BTG.
AI features	Optional and adult-governed only; no free-form unmoderated LLM chat for children. Teach checking AI suggestions rather than trusting them.

B.C. personal information framework

Private-sector organizations and many non-profits in British Columbia are subject to PIPA; a public school or other public body may instead have public-sector obligations. Programmes must identify their actual operator and applicable law, provide notice, collect only reasonably necessary information, and maintain appropriate safeguards. This is an implementation checklist, not legal advice. [6–7]

21 Equipment and venue blueprint

Minimum room

- 12 participant stations with stable tables and 12 accessible chairs; two adult facilitator stations.
- Power and cable routing compliant with host safety review; lockable storage and accessible exits.
- Large display/projector with visible captions and glare control; whiteboard and a quiet corner.
- Reliable Wi-Fi for setup, but downloaded/offline project materials for the actual session.
- Charging, labelled adapters, mouse/keyboard alternatives and cleanable shared peripherals.

Starter equipment for a 12-seat pilot

Inventory	Qty	Plan / notes
Windows laptops / Chromebooks	12 + 2 spare	Borrow where possible; pretest operating systems and tools
Headphones / mice	12 sets	Individual volume controls; cleaning plan
micro:bit classroom kits	6 shared	Pair work for robotics/physical computing pathways
Simple battery-powered robot chassis	6 shared	Use only for supervised robotics sessions
Projector or large display	1	Show demonstrations; captions visible
Low-voltage consumables	Assorted	LEDs, USB cables, safe battery packs, tape, cards
Accessible input kits	2 shared	Large-button, adaptive pointer/controller as required
Offline recovery package	1 master + backups	Approved installers, project starters, checksum manifest

Before anyone arrives

Boot all devices; test graphics/sound/input and software; restore a known-safe local profile; verify network restriction and USB/project export; confirm robot batteries are charged without exposed cells; label equipment; test teacher display, backup and privacy reset process.

22 Software selection and deployment

Tool	Primary fit	Implementation conditions
ScratchJr	6–8 (guided)	Tablet-friendly introductory stories; best suited to early visual creators [8].
Scratch	8+; recommended L2	No paid licence; offline desktop available, project files kept private by default [9].
MIT App Inventor	L2–L4 app pathway	Browser-led blocks and companion device testing; check current iOS/Android installation workflow [10].
micro:bit MakeCode	L2–L4 robots/sensors	Offline editor option; micro:bit classroom online sessions can avoid student accounts [11–12].
Godot	L3–L4 game pathway	Free/open engine; Windows export templates and compatible hardware required [13].
BTG learning companion	All levels (proposed)	Not yet developed; can initially use approved PDFs/cards and a local facilitator dashboard.

Preflight tool validation matrix

- Confirm each tool's latest licence, platform compatibility and terms before deployment.
- Verify any account age restrictions and guardian authorization; avoid child-managed third-party accounts where possible.
- Install editors and save two sample projects offline before bringing youth into the room.
- Test Windows export on the actual recipient hardware, not just the facilitator computer.
- Keep a documented fallback when tool registration, Wi-Fi, USB drivers or mobile installation fails.

23 Budget — planning assumptions in CAD

Illustrative owner-side planning estimate for one 12-person, eight-session course. These are **budget allowances, not current supplier quotes**; verify provincial tax, shipping, hardware specifications, venue, insurance and actual availability before approval. Volunteers are assumed unpaid.

Line item	CAD	Basis
Borrowed laptop / venue	0	Partner provides room and computers
Starter electronics (4 kits × $65)	260	Reusable teaching sets
Shared robot kits (3 × $135)	405	Optional robotic demonstrations
Cables, batteries and consumables	200	Low voltage only
Adaptive/accessibility materials	250	Adjust to participant needs
Snacks/water (12 × 8 × $3)	288	Food requirements managed by host
Printing, worksheets and IDs	130	No child photos
Device cleaning, backup/USB stock	145	Secure and inventoried
Sub-total	1,678	Excludes tax/venue fees
Contingency (15%)	252	Rounded planning allowance
Pilot cash allowance	**1,930**	**CAD — borrowed hardware scenario**

Scenario decision

Scenario	Indicative cost	Use case
Lean pilot · partner equipment	$1,930	Borrow room and 12 computers; shared optional robot activities
Equipped pilot · buy 14 laptops	$10,680 + tax/fees	Lean pilot plus 14 × $625 laptop allowance; no hardware vendor quote
Expanded 3-track launch	Build separate approved budget	Add 6 robot kits, more facilitators, storage, content and multiple groups

The fully equipped illustration is $1,930 + (14 × $625) = $10,680 before applicable tax, shipping, warranties or host costs. Include funding for screening, accessibility and safeguarding separately where those are not donated.

24 Pilot delivery timeline and approval gates

Phase	Activities	Gate / proof
T-8 to T-6 weeks	Host partner, room access, safeguarding responsibilities, preliminary interest survey	Partner authorization and project sponsor identified
T-6 to T-4	Safeguarding policy, screening, accessibility review, device/kit inventory	Eligible volunteers and risk signoff
T-4 to T-2	Recruitment; guardian forms; install and test software; staff run-through	12 suitable stations; parent pack approved
T-2 to T-1	Dry run one complete session, offline recovery and evacuation briefing	Operational readiness signed by host
Weeks 1–8	Run workshops, record milestones and issues, maintain assets	Attendance, project saves and weekly debrief
Week 9	Showcase and feedback review	Consent status checked; child work returned
Week 10	Pilot evaluation and decision on next cohort	Go / revise / stop decision documented

Launch criteria

No-enrolment launch approval until:

□ Named responsible legal/host organization confirms safeguarding and insurance responsibilities.
□ Volunteer screening and child-protection briefing are documented.
□ Guardian consent, attendance, pickup and media permission forms are ready.
□ Equipment, applications, backups and offline fallbacks pass dry-run checks.
□ Accessibility accommodations and conduct standards are in place.
□ Budget, venue, dates, public communications and data owner are approved.

25 Recruitment and Boundary-region access

Community partnership possibilities (not confirmed)

Potential outreach categories include public libraries, schools and parent advisory councils, youth organizations, community centres and local volunteer groups across Grand Forks and neighbouring Boundary communities. No partnerships, school-district approvals or facility bookings are assumed.

Inclusive registration approach

- Start with a simple interest expression from parents/guardians, not a public child profile.
- Use transparent age recommendations, mobility/accessibility options and technology skill-independent entry.
- Offer loaner equipment and a no-cost place where grant/partner resources permit.
- Do not require parents to publish a child's photo, name, app or source code.
- Provide alternatives for travel barriers, such as rotating community sites or occasional mobile workshop kits.

Sample family-facing announcement

PROPOSED PROGRAMME — NOT YET OPEN FOR REGISTRATION

"Boundary Tech Generation is a proposed series of hands-on workshops where children and teenagers learn to build their own video games, apps, robots and inventions. Activities will be offered in separate age-appropriate levels with supervised volunteer support. Dates, eligibility, registration and venue will be announced only after partner and safeguarding arrangements are approved."

26 Facilitator run sheet and reset procedure

Twenty-four-hour preparation

Facilitator checklist

□ Confirm roster and host-approved accommodation notes stored in the secure host system.

□ Print session challenge cards and project backup/restore steps.

□ Check battery charge, peripherals, safety-stop mechanism and kits.

□ Verify screen sharing, instructor software, network restrictions and offline editor.

□ Prepare starter project, troubleshooting samples and a stretch task.

□ Assign adult roles for arrival, lead instruction, tech support and dismissal.

On the day

Arrival: verify handover, assign device. **Welcome:** safety rule and one exciting demonstration. **Build:** progress through start/build/explore. **Break:** short movement or sensory break. **Test:** children show one observed change. **Close:** safe save, inventory check, parent pickup, no child data left on a shared public computer.

When things break

Failure	Immediate response	Back-up
Internet unavailable	Continue installed/editor local projects	Printed guides and offline assets
App crashes	Reopen latest named checkpoint	Restore starter + prior saved project
Robot fails	Disconnect / stop and inspect battery safely	Simulated MakeCode exercise
Child overwhelmed	Offer quiet space and simpler task with adult supervision	Alternative paper task or pair help
Missing participant at pickup	Follow approved sign-out and escalation policy	Never release to unlisted adult

27 Quality control, metrics and pilot review

What is measured

Indicator	Pilot target (proposal)	Evidence / fairness
Course completion	At least 9 of 12 learners attend 6+ sessions	Attendance held only by host
Working creations	At least 9 make a runnable artefact	Private checklist; accessible formats count
Test and improve	At least 9 can identify one fix	Facilitator observes age-appropriate explanation
Participant enjoyment	At least 80% positive anonymous response	Simple smiley/scale; do not coerce
Guardian clarity	At least 80% satisfied with project handoff	Optional non-identifying feedback
Safeguarding	Zero unresolved high-severity incidents	Any concern triggers immediate policy response
Technology reliability	At least 95% sessions start with usable tools	Device/backup log; no learner blame

Pilot evaluation method

Collect minimum necessary, aggregate-level attendance and project milestone counts. Ask participants, “What did you build?”, “What did you change?” and “Would you choose this again?” The host should review unintended barriers, safeguarding reports, equipment failures, volunteer strain and overall spending before approving expansion.

GO / REVISE / STOP

GO only if the programme is safe, inclusive, delivered within capacity and most participants can demonstrate meaningful creation. REVISE if pacing, tools or access barriers persist. STOP or suspend promptly for unresolved safeguarding or equipment hazards.

28 Operational risk register

Risk	Prevention / control	Owner & escalation
Unscreened or unapproved adult	Host applies screening and conduct policy before contact	Safeguarding lead: do not open cohort
Student identity disclosure	Pseudonyms, private files, specific media consent	Privacy owner: remove exposure and follow incident plan
Battery/electronics incident	Low voltage, adult charging, safety checks	Equipment lead: stop, isolate, first aid
Cybersecurity incident	Shared-device isolation, no passwords, offline resources	Technical lead + host privacy response
Inaccessible lesson	Accessible tool option, adaptive input, flexible activity	Facilitator / guardian coordination
Unreliable internet	Offline editors, checked installers, local backups	Technical lead: continue offline
Youth IP misappropriation	No automatic BTG licences; clear project handover	Programme sponsor / rights review
Over-promised app capability	Use staged scope and verified release readiness	Technical owner: revise claims
Funding shortfall	Lean pilot with partner devices; no compulsory youth fees	Sponsor: rescope before purchase
Child-welfare disclosure	Mandatory-reporting briefing and approved escalation	Safeguarding lead; report as required [5]

Risk ownership

A named individual must be assigned to every control before opening enrollment. Severity and residual risk should be evaluated with the host organization. The table is a blueprint, not a completed risk assessment for a specific venue.

29 Appendix A — parent/guardian intake template

This is a **draft field outline**. The host organization should issue the final secure form after privacy and safeguarding review. Do not collect completed youth forms in a public Google folder.

Required administrative information

□ Parent/guardian name and contact route; child preferred first name and age band.

□ Emergency contact and authorized pickup persons, held by host rather than workshop app.

□ Accessibility/support information necessary to participate, with restricted visibility.

□ Acknowledgment of workshop rules, basic electronics and supervised device use.

□ Permission for private project file transfer to parent/guardian (yes/no).

Separate optional consent choices

□ Internal programme photographs for participant families (yes/no).

□ Public photograph or video for publicity (yes/no, separate purpose).

□ Share participant project beyond session/private family handoff (yes/no).

□ Use approved external online tools/accounts if age eligible and necessary (specific list).

Notice elements: identify the operating organization, purposes, lawful basis, authorized recipients, security measures, retention period, contact for access/correction, complaint route and ability to withdraw optional consent where applicable. No bundled consent for publicity or data commercialization.

30 Appendix B — student project brief

Printable template — may be completed with drawings, symbols or spoken answers. Avoid full legal names on classroom display copies.

Prompt	Student response space
My project is called	_____
I chose it because	_____
It does this	_____
Three things I will build	1. _____ 2. _____ 3. _____
How I will know it works	_____
What surprised me	_____
A bug I found	_____
One thing I improved	_____
I will show it to	Parent/guardian or approved group only

Adult observation

Challenge completed: □ start □ build □ explore; age-appropriate support provided: □ light □ moderate □ extensive; artefact safely stored: □ yes □ no; next practical step: _____.

31 Appendix C — session record and lesson-authoring card

Session record fields

Field	Example or blank
Track / level / session	GAME LAB / L2 / Week 3
Learning outcome	Participant can connect an input to a visible response
Starter artefact	Approved project file and checksum
Materials / devices	Laptops, keyboard/mouse, printed card
Mini-demonstration	Under five minutes, one operation only
Start / Build / Explore	Required / standard / stretch tasks
Acceptance test	A peer completes one specific interaction
Accessible alternative	Large keyboard, spoken steps or offline paper plan
Privacy/safety controls	No account, no remote upload, supervised environment
Backup / recovery	Named local project save / alternate worksheet
What to improve next time	Short note without child-identifying information

Project file naming rule

Use cohort pseudonym or assigned code, project name, and safe version marker, e.g. **BTTL-L2-P07-TrailQuest-v03.sb3**. Do not put full names, birth dates, medical notes or home addresses into filenames.

32 Appendix D — workshop safety card

OUR SIX WORKSHOP RULES

1. Be kind. 2. Ask before connecting or sharing. 3. Keep passwords private. 4. Use tools only with permission. 5. Stop and call an adult if something feels unsafe. 6. Save your work, clean your station and enjoy making things.

Electronics and robotics

- Use preapproved low-voltage kits; adult handles battery maintenance and any repair involving exposed conductors.
- No mains connection, soldering, improvised lithium battery packs or unrestricted power supplies.
- Stop any rover before touching a motor or sensor; keep hair, clothing and hands clear.
- Do not take workshop robots outside the supervised area without approval.

Digital and game content

- No inappropriate/hateful content, harassment, online strangers or posting another child's work.
- No weapons-building, real-world hacking, personal tracking or dangerous electronics instructions.
- No copyrighted music or commercial-game assets copied into distributable projects without appropriate permissions.

Emergency contacts

The final printed card must be completed by the approved host with venue emergency address, designated adult contact, evacuation location and current applicable emergency numbers. These values intentionally remain blank in the blueprint.

33 Approvals, roles and delivery handoff

Decision register for BTG and the host

Decision	Accountable sign-off	Current state
Programme sponsor and public name	BTG designated executive	Proposal; not formally approved
Host organization, venue and dates	Host/venue owner	Not selected or booked
Safeguarding procedure + screening	Host safeguarding authority	Not verified
Insurance, transport and parent release	Host / insurer / legal reviewer	Not verified
Budget and equipment provision	Sponsor / funding partner	Estimated; not committed
Workshop lesson and tool readiness	Lead facilitator / technical lead	Blueprint; pilot build pending
Companion app construction	BTG technical owner	Specified, not built
Enrollment and public announcement	Host / privacy owner	No enrollment open
Launch readiness and pilot decision	Named sponsor plus host	Pending evidence

Proposed ownership of deliverables

BTG owns its original programme brand standards, lesson scripts and app implementation to the extent lawfully created. Volunteer/partner-created materials require explicit rights agreements. Young participants own their original personal project contributions subject to the actual laws and tool licences; the programme will not require broad commercialization rights as a condition of access.

Project next steps

Sequence for implementation

1. **Approve concept:** Approve age levels, volunteer nature, programme name and pilot scope.
2. **Secure host:** Select partner organization, space, safeguarding and insurance pathway.
3. **Build pilot assets:** Prepare 8 Game Lab lessons, starter projects and facilitator guides.
4. **Qualify tools:** Pre-test workshop devices, private storage and emergency/offline paths.
5. **Run pilot:** Deliver with adult/guardian procedures in place; record outcomes privately.
6. **Decide scale:** Revise and then add App Studio, Robot Lab and Invention Lab based on measured demand.

34 Sources, review notes and limitations

The educational design is BTG's proposal, informed by current official technical and provincial resources. Sources below were reviewed 22 October 2026. Bracketed references in the blueprint correspond to this list.

[1] B.C. Curriculum — Applied Design, Skills and Technologies
https://curriculum.gov.bc.ca/curriculum/adst/introduction

[2] B.C. Curriculum — Grade 5 applied design competences
https://curriculum.gov.bc.ca/curriculum/adst/5/core

[3] Province of B.C. — Criminal Records Review Act organizations
https://www2.gov.bc.ca/gov/content/safety/crime-prevention/criminal-record-check/organizations/criminal-records-review-act

[4] Province of B.C. — Screening workers and volunteers
https://www2.gov.bc.ca/gov/content/safety/crime-prevention/criminal-record-check/organizations/screen

[5] Province of B.C. — Duty to report child welfare concerns
https://www2.gov.bc.ca/gov/content?id=A9E711005942446B9BA511694A2A1FEF

[6] Province of B.C. — PIPA for private sector organizations
https://www2.gov.bc.ca/gov/content/employment-business/business/managing-a-business/running-a-business/protect-personal-information

[7] B.C. Personal Information Protection Act
https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/00_03063_01

[8] ScratchJr — age-appropriate introductory coding
https://scratchjr.org/

[9] Scratch — about Scratch / suitable learning ages
https://scratch.mit.edu/help/about/

[10] MIT App Inventor — official platform
https://appinventor.mit.edu/

[11] micro:bit — classroom workflows
https://microbit.org/get-started/user-guide/microbit-classroom/

[12] micro:bit — offline programming
https://microbit.org/get-started/user-guide/offline/

[13] Godot stable docs — exporting to Windows
https://docs.godotengine.org/en/stable/tutorials/export/exporting_for_windows.html

Editorial and legal limitations

This is an implementation blueprint and educational planning document, not an executed partner agreement, government-approved curriculum, legal opinion, safeguarding policy, insurance confirmation or active enrollment announcement. Cost figures are illustrative planning allowances. The companion app is a proposed engineering deliverable, not a released product. Volunteer screening and child protection requirements must be assessed for the actual host organization and roles.

CONTROLLED DOCUMENT

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