Portable Off-Grid Digital Classroom Solution

DCS Reach Kit:

Components and Specifications of the DCS Reach Kit

- The **DCS Reach Kit** is an all-in-one package containing a smart projector and complementary equipment to enable a fully portable, off-grid digital classroom or training unit. The kit includes a high-performance **DCS H10-S smart projector**, a powerful **Bluetooth speaker**, input devices (wireless **keyboard** and **remote control**), an innovative **sodium-ion battery power bank**, foldable **solar panels** with an integrated charge controller, a **tripod stand**, and various **accessories** (cables, adapters, connectors), all housed in a **rugged carry case**. Below is a breakdown of each component and its key technical specifications:

New DCS REACH Video Conferencing Tool

- **How it works**
- The teacher /trainer or presenter simply uses their DCS projector to open a broadcast.
- They set up a session and share the unique code with any invitees around the world
- Invitees can then use the code to Reach Out and join the session on any device (phone, computer, laptop etc)
- At the session, the teacher/trainer can use their DCS Reach projector to:
    - present any content direct to audiences all over the world
    - speak to their audience via an audio/microphone feature
    - be visible via the webcam.
- Attendees can:
    - see the all the content being presented
    - listen to the presenter
    - make comments and ask questions via the messaging tool.
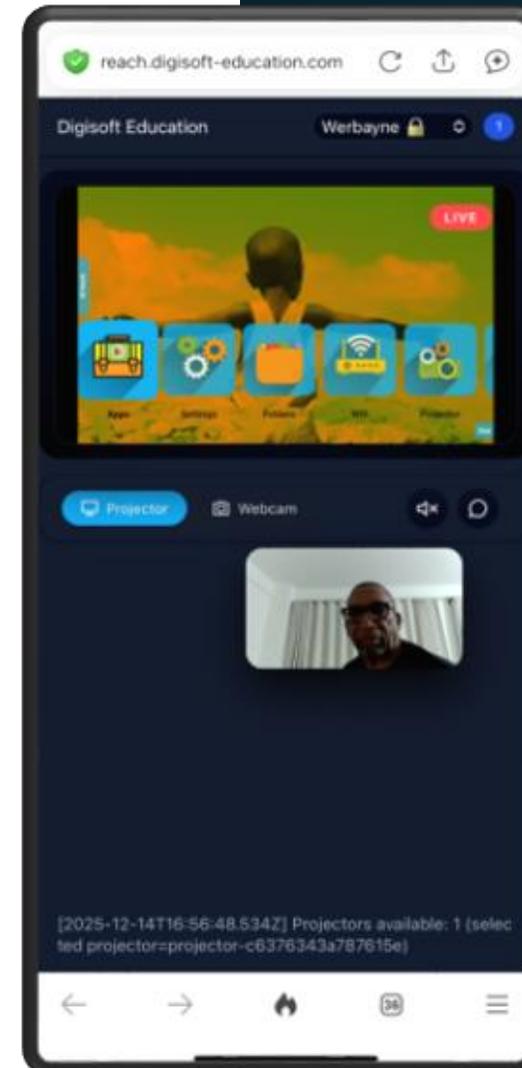
ALL IN ONE HANDY PACKAGE

Projectors

Power Bank

Remote Control

Keyboard

Solar Panel

Speaker

Tripod

Portable Case

Adaptor

Adaptor

1 x 10m cable

1 x 1.5m cable

1 x AV cable

1 x HDMI cable

DCS H10-S Smart Projector

- **Projection Technology:** *Texas Instruments DLP pico chipset with BrilliantColor™; 3-LED light source rated for 30,000 hours. Supports* **3D projection** *via built-in 2D-3D conversion for immersive educational content.*

- **Brightness & Optics:** *600–700 ANSI lumens brightness (suitable for use in daylight shade or semi-dark classrooms). Contrast ratio 1000:1.* **Throw ratio** *1.2:1 (a 2 m distance yields ~76" image), with 4-point keystone correction (auto vertical, manual horizontal) to project a rectangular image even at an angle. Focus can be adjusted remotely or manually.*

- **Resolution & Media:** *Native resolution WXGA (1280×800) for HD-ready clarity. Accepts up to 4K (and even 8K) video input files for playback, with support for common video codecs (H.264/H.265 up to 4Kp60, MPEG-4, etc.), audio codecs (MP3/MPEG-2/3), and image formats (JPEG, GIF, BMP). This flexibility means educational videos, slides, or apps in various formats can be directly played from the projector.*

- **Smart OS & Apps:** *Runs* **Android 9.0** *OS with a custom DCS interface. It has 4 GB RAM and 32 GB internal storage for apps/content. The Android platform allows installation of educational apps, e-learning platforms, and video conferencing tools (the kit features a unique* **Reach** *video conferencing software preloaded). This means teachers and trainers can broadcast to tablets and phones.*

- **Connectivity:** *Dual-band Wi-Fi (2.4 GHz & 5 GHz, 2×2 MIMO antennas) for internet connectivity, plus* **Bluetooth 5.0** *for connecting peripherals. Also equipped with an Ethernet LAN port for wired network access – useful for schools with network drops or offline local servers. Physical I/O ports include 1 × HDMI input (to connect laptops or media players), 2× USB (for flash drives or peripherals – one USB 2.0 and one USB 3.0 for high-speed storage up to 2TB), 1 × AV input (3.5mm AV for older video sources), and 1 × audio output (3.5mm headphone/SPDIF for external sound). This range of ports ensures compatibility with various media sources and audio systems in a classroom.*

- **Audio & Internal Speaker:** *Built-in stereo speakers (updated model has* **2 × 5 W** *drivers) for basic audio in small rooms. For larger groups, the included external Bluetooth speaker (see below) is used.*

- **Power & Energy Use:** *Efficient LED engine draws ≤60 W at full power. It accepts* **19 V DC input** *(3.4 A) from the power bank or AC adapter. The projector's low power consumption makes it viable for solar and battery use. Noise level is under 35 dB (quiet library-like hush) in standard mode, suitable for learning environments.*

- **Integrated Features:** *The H10-S supports* **wireless mirroring** *(Miracast, AirPlay, DLNA) to easily cast content from smartphones or tablets. It also has "Reach" video conferencing functionality built-in, enabling remote teaching or meetings by connecting a USB webcam or using a paired device. This is valuable for bringing in remote instructors or connecting classrooms.*

Bluetooth Speaker

- *A high-quality **60 W portable Bluetooth speaker** is included to provide loud and clear audio for videos and presentations. It delivers **360° sound** with rich bass and has **DSP with three sound effect modes** to ensure everyone in a classroom can hear clearly.*

- ***Wireless Audio:** Bluetooth 5.1 with A2DP support offers up to 10 m range. The speaker can wirelessly pair with the projector (or any Bluetooth device), reducing cable clutter during setup. It also supports True Wireless Stereo (TWS) pairing – two units can link for broader sound coverage (optionally useful for very large groups). For wired audio needs, the speaker has an AUX input as well.*

- ***Rugged & Portable:** Rated **IPX7 waterproof** – it can withstand rain or splashes, ideal for outdoor use in rural environments. The robust build and **dustproof** design mean it survives field conditions (dusty classrooms, outdoor trainings).*

- ***Battery Life:** Contains a **5200 mAh / 7.4 V (38.5 Wh) rechargeable battery**, giving up to **12 hours** playtime on a 3-hour charge. This easily covers a full day of intermittent use or multiple class sessions without recharging. The speaker recharges via USB, including from the power bank.*

Wireless Keyboards and Remote

- *To facilitate interactive use (typing, app navigation, etc.), the kit offers a **wireless QWERTY keyboard**. There are two versions available: **(1)** a **Bluetooth foldable keyboard**, rechargeable via USB (can be charged from the power bank) for maximum portability; or **(2)** a **standard wireless keyboard** with a 2.4 GHz USB dongle, powered by internal battery. The foldable keyboard is ultra-compact for travel, while the full-size dongle keyboard may offer a more familiar typing experience – the education department can choose either option per kit. Both allow teachers or students to easily enter search terms, write notes, or navigate Android apps on the projector.*

- *An **IR remote control** is included for the projector, providing convenient navigation of the Android interface and basic projector controls (volume, source, etc.) from anywhere in the room. This standard remote allows teachers to pause videos or switch apps without approaching the device, which is useful when the projector is ceiling-mounted or on the tripod.*

Sodium-Ion Power Bank (240 Wh)

- *A robust **240 Wh (watt-hour)** power bank supplies energy to run the projector and peripherals entirely off-grid. Uniquely, this power bank uses the latest **sodium-ion battery** technology. Sodium-ion cells are **safer** than typical lithium-ion – they are far less prone to overheating or thermal runaway and are **non-flammable**, which is a critical safety advantage in school environments. They also contain no cobalt, improving ethical sourcing and environmental impact.*

- ***Capacity and Output:*** *240 Wh capacity (equivalent to a 12 V, 20 Ah battery) provides ample runtime – for example, it can power the 60 W projector for 5 hours continuously. The bank features multiple output ports: a **DC barrel port (DC5521)** providing regulated **19 V output up to 5 A** (ideal for the projector's 19 V input), and a second **DC port (DC5525)** with adjustable voltage **from 5 V to 20 V** (selectable 5/9/12/15/16/19/20 V up to 100 W) to support various devices. This adjustable output means the same power bank can power a range of equipment (other laptops, routers, etc.) by matching their DC input requirements.*

- ***USB Charging:*** *For smaller electronics, the power bank includes fast-charge USB ports. A **USB-A Quick Charge 3.0** port provides 5 V, 9 V, or 12 V output (up to 22.5 W) for phones, tablets or USB-powered devices. There is also a **USB-C Power Delivery port** supporting 5–20 V input/output (up to 65 W in, 100 W out). This USB-C PD port can directly power USB-C laptops or devices – a versatile feature for education use (e.g. charging a teacher's laptop or powering a Raspberry Pi-based lab kit).*

- ***Intelligent Controller & Protection:*** *The power management system includes an LCD or indicator for setting the DC output voltage and shows battery status. Built-in protections cover over-voltage, over-temperature, short-circuit, and current limiting to protect connected devices and users. This reliability is crucial for government deployments.*

- ***Charging Options:*** *The power bank can be charged via **AC adapter** (a mains charger is included in the kit for grid or generator use) and via solar input. It has a USB-C PD input (as noted, up to 65 W) and can also be charged through the DC ports from an external solar charge controller if needed. In practice, with the kit's solar panel and integrated controller (see next), the power bank can recharge from sunlight during the day while the projector is not in use, ensuring a sustainable energy cycle.*

100 W & 120 W Solar Panels (Foldable) with Charge Controller

- The kit comes with a portable **foldable solar panel**, available in two configurations – **100 W** or **120 W** – to recharge the power bank and run the system off-grid. Both panels use high-efficiency SunPower solar cells (~22% efficiency) and fold into a briefcase-like form for transport. For example, the 120 W panel consists of 12×10 W cell units and folds to roughly 36×29×5.4 cm, unfolding to about 115×74 cm in the field. Weight is around 3 kg, making it fairly portable for teachers or field trainers.

- **Integrated Charge Controller:** Each solar panel includes a built-in multi-channel **solar charge controller**, so it can directly charge devices or the power bank without an external regulator. The controller provides multiple standardized outputs:
    - **USB-A output:** QC3.0 compatible port (5 V/9 V/12 V up to 2 A) to charge phones, tablets, or even run a Raspberry Pi directly from solar.
    - **USB-C output:** PD output (5 V/9 V/12 V/15 V/20 V up to ~4.5 A, i.e. 90 W max) for laptops or fast-charging larger devices directly off the panel. This is particularly useful in sunny conditions if the power bank is full or absent – a teacher could power the projector or a laptop straight from the sun.
    - **DC output (barrel port):** switchable between 12 V, 16 V, and 19~20 V outputs, to charge the included power bank or other 12–20 V devices. For instance, the panel can output ~18–20 V to efficiently recharge the power bank (or run the projector in real-time under strong sun). An adjustable switch with indicators allows selecting the correct voltage for a given device (12/16/20 V).

- **Charging Performance:** The 120 W panel can produce up to 5.5 A at 12 V or 4.5 A at 20 V in peak sun, providing a full charge of the 240 Wh power bank in a day of good sunlight. The 100 W panel offers a bit lower current and comes with slightly different output connectors (including older Micro/Mini USB jacks and a 19 V DC output). Both panels enable continuous operation in remote schools – for example, running daytime classes directly on solar and charging the power bank for evening use. They also allow charging phones or other devices for the community as ancillary benefit.

Tripod Stand and Mounting

- *The kit includes a **tripod projector stand** to set up the projector at an appropriate height in any location. The tripod is lightweight aluminum alloy and **extends up to ~1280 mm (1.28 m)** tall, allowing projection over students' heads onto a wall or screen. It collapses to ~430 mm for portability. The projector mounts securely on the tripod's standard 1/4" camera screw, enabling quick setup even on uneven ground (e.g., in a village setting). A stable tripod ensures a clear image and protects the projector from being knocked over in busy classrooms.*

- *Note: The projector can also be ceiling-mounted or placed on a table, but the tripod gives flexibility for outdoor or impromptu venues (like projecting on a shaded wall or a hung sheet). Some kits might also include a small **projector mini-stand or bracket** for tabletop use.*

Cables, Adapters, and Connectors

- *A set of **high-quality cables** is supplied to connect and charge components: a 1.5 m DC extension cable to connect the power bank to the projector, a 10 m cable to connect the solar panel to the power bank (long length to keep the panel in sun while the class stays in shade or indoors), an HDMI cable for external video sources, and an audio cable for optionally linking the projector or speaker to other sound systems. These cables ensure the kit is plug-and-play in various configurations.*

- *A **multi-region AC adapter** is included for charging the power bank from mains (100–240 V AC, 50/60 Hz). It comes with interchangeable plugs or regional specific power cables (e.g., EU two-pin, UK three-pin) as needed for the country. This allows the kit to be charged from grid power or generators when available.*

- ***Device Adapters:** To maximize compatibility, the kit provides a set of **12 DC adapter tips** for laptops and other devices. These tips connect to the DC5525 output from either the solar panel or power bank, allowing the kit to power common notebook brands and 12–19 V gadgets (useful if a teacher's laptop needs charging or to power a router, etc.). This increases the kit's utility beyond the projector itself, effectively turning the power bank + solar into a general-purpose field power source for education technology.*

- ***Other Accessories:** The kit also contains small but important extras like a **projector remote** (as mentioned), a protective **projector sleeve or case**, and a quick-start **user guide**. Spare fuses or cables may be provided as well. In summary, everything needed to deploy a digital classroom in a remote site is in the box – no additional purchases required.*

Rugged Carrying Case

- *All components pack into a single **rugged carry case** for easy transport. The case is built to **international protection standards (IP rating)** – it is **water-resistant and dust-proof**, protecting the sensitive electronics from rain, humidity, and dust during transit. This is crucial for African field conditions (e.g. desert dust or humid tropics). The case is hardened to prevent damage from drops or rough handling and **can be padlocked** for security during storage or transport. Despite its robustness, the case is designed to be fairly lightweight and has handles so that a single person can carry the entire kit. In practice, educators or facilitators can throw the case in a vehicle or carry it to a village on foot, knowing the contents are protected. The **compactness** of the kit means a digital classroom literally fits in one hand – a key advantage for deployment in hard-to-reach areas. (the kit weighs 11.5kg)*

- *(In summary, the DCS Reach Kit's hardware provides a **self-contained digital teaching platform**: a bright Android projector with built-in computing, quality sound, input devices, robust power for off-grid use, renewable energy charging, and a protective transport case. All components are chosen for durability and ease of use in rural or mobile scenarios.)*

General Uses

Use it like a computer. Show Microsoft Word, Excel, PowerPoint and PDF's. Create documents, show documents, store documents

Use online apps. The projector has PlayStore so any educational apps can be downloaded to the projector and used. These include aps like Kolibri, KnowUnity, Khan Academy, Moodle, Google Classroom and others.

Use offline apps: Digisoft provides Wikipedia offline all 7 million references in a searchable clickable browser-based format. We also supply Access Agricultures offline app all 5,000 videos to plug and play in multiple African languages.

Add your own content, via USB flash drive or download it from an internet source
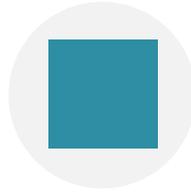
Broadcast your lectures to your students to their phones, tablets or PC's
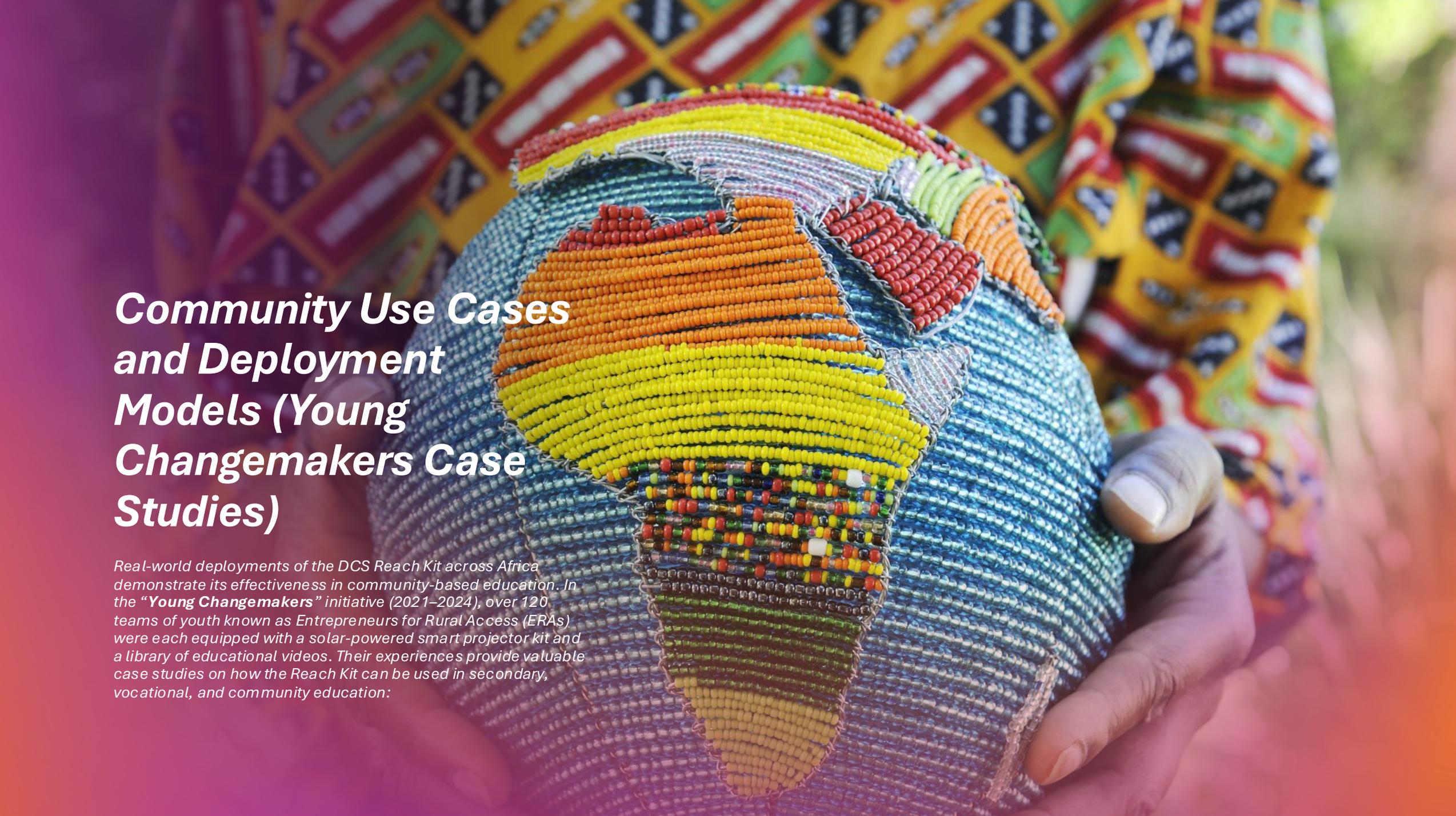
Connect your own device wirelessly using the projectors Ushare application. Play videos you have created on your phone and subject matters via the projector.

Make your own offline apps, we can create these for you with content you own and encrypt the content so that is cannot be stolen.

Attach the projector to other resources, LMS, local AI disc, online library.

Community Use Cases and Deployment Models (Young Changemakers Case Studies)

*Real-world deployments of the DCS Reach Kit across Africa demonstrate its effectiveness in community-based education. In the **"Young Changemakers"** initiative (2021–2024), over 120 teams of youth known as Entrepreneurs for Rural Access (ERAs) were each equipped with a solar-powered smart projector kit and a library of educational videos. Their experiences provide valuable case studies on how the Reach Kit can be used in secondary, vocational, and community education:*

Empowering Community-Based Education:

- *Equipped with the projector kit (often pre-loaded with hundreds of farmer-training videos in local languages), these young facilitators traveled to remote villages to share knowledge on sustainable agriculture, health, and business. The kit's **off-grid capability** enabled them to set up informal "classrooms" under trees or in village halls, **delivering video-based training without need for electricity or internet**. This model effectively turned local youth into **private extension service providers**, bridging the information gap for farming communities. For example, in one West African community, an ERA used the projector to show videos on organic farming techniques; farmers were so enthusiastic that they tried the new methods on small plots and compared results with their usual practices. The ability to visually demonstrate ideas – from planting techniques to veterinary care – in the local language greatly accelerated learning and adoption. Community members who may be semi-literate can **see and emulate** practical skills shown in the videos, making the kit an ideal tool for informal adult education and agricultural extension.*

Youth Entrepreneurship & Vocational Skills Training:

- *Many ERA teams leveraged the kit not just to educate others, but also to spark **youth entrepreneurship** and vocational ventures. The video library's breadth (often covering farming, food processing, crafts, and business skills) acted as a **"bank of business ideas"** for rural youth. For instance, in Benin, one ERA team led by Cédric Agbessi watched videos on composting, soap-making, and food processing and then put those ideas into practice. They started producing **organic fertilizer** and switched their cooperative's soap production to an **organic formula**, improving product value. After seeing a tutorial on making tomato concentrate and juice, they realized they could reduce post-harvest waste of tomatoes – the team began **producing organic tomato paste** for sale, even training local women farmers to grow more tomatoes and buy their produce, thus creating a micro agribusiness supply chain. In another case, women's groups learned how to improve **groundnut oil extraction**, doubling their yield after applying techniques from a video, which increased their income. These examples illustrate how the Reach Kit supports **vocational outreach**: it brings practical, livelihood-oriented training to youth and women in rural areas, who can then start cottage industries (e.g. soap-making, food processing) or improve their existing farm businesses. The **portability** of the kit means trainings can happen on-site in a workshop, garden, or barn – participants immediately practice the demonstrated skills. The projectors also helped the young trainers themselves become entrepreneurs: many started charging modest fees for video shows or consulting. For example, one ERA in West Africa arranged regular screenings for farmer groups and schools, charging about **15,000 CFA (≈€23) per session** as a sustainable business model. By creating a new class of **youth digital entrepreneurs**, the kit deployment addressed rural unemployment while spreading knowledge.*

Enhancing Rural Schools and Colleges

- *A significant discovery in the Young Changemakers program was the demand for the projector kit in **schools, colleges, and vocational institutes**. In fact, over half of the ERA teams ended up organizing video shows in **primary and secondary schools, universities, and TVET (Technical and Vocational Education and Training) centres**. The kit became a mobile digital library that could supplement the formal curriculum. For example, African schools that introduced agriculture into their curriculum (as encouraged by government policy) found that many teachers lacked the practical know-how to teach farming skills. ERAs filled this gap by bringing projectors to schools and showing students expert-led videos on topics like school gardening, beekeeping, or waste recycling. Both teachers and students responded enthusiastically to learning from these audio-visual materials. In Kenya, after an ERA screened a video about integrating agriculture into school activities (a video originally made in Peru), some schools adopted the idea of teaching through **gardens, songs, and poetry about healthy food**. This cross-pollination of ideas, enabled by the kit, made lessons more engaging. Students began to view agriculture and technical subjects as exciting and viable career paths, rather than menial labour. Additionally, ERAs like Stephano Msuya in Tanzania worked with **pastoralist community schools** – he helped set up school gardens for children in Maasai communities using the smart projector to teach ecological farming, even while also educating adult pastoralists on rangeland management. These cases show the kit's value as a **digital teaching aid** in formal education: it can bring demonstrations and outside expertise into rural classrooms that have no internet. Moreover, the projector's **video conferencing feature** means it could connect remote schools with urban teachers or experts for live lessons – though in the case studies it was primarily used for offline content, this capability holds future potential for real-time distance learning.*

Deployment in Diverse Countries

- *The Young Changemakers program spanned **17 countries in Africa and South Asia**, with the DCS Reach Kit supporting various contexts: from francophone West Africa (Benin, Mali, Senegal) to East Africa (Kenya, Tanzania, Uganda) and North Africa (Egypt). In West Africa, content was translated into French or local languages and addressed community needs like grain storage, rice cultivation, and cooperative formation. In East Africa, ERAs worked with mixed groups including women's savings groups, youth clubs, and farmer cooperatives, using the projector to facilitate discussions in Swahili or local dialects. In Egypt, an ERA named Ahmed Hamdi (a software engineer-turned-agripreneur) used an Arabic-version of the video library on his smart projector to promote innovative ideas like growing **Azolla** as animal feed among young farmers. He noted that the projector was "a tool to raise awareness on the importance of agriculture and food among young people", especially where practical agricultural knowledge was lacking in the formal education system. These examples underscore that the Reach Kit is culturally adaptable – local language content and relevant videos can be loaded for each region. The common thread was that **portability and independence from infrastructure** allowed the kit to reach underserved audiences everywhere. Even in areas with security or displacement challenges (e.g. conflict-displaced communities or refugee camps), similar approaches have been piloted by NGOs – the self-contained kit could easily be transported to a camp to run educational film shows or skill training for displaced youth (a potential deployment model for humanitarian education, given the kit's success with other marginalized groups).*

Lessons Learned:

Local Ownership and Training: *The youth ERAs who were trained to use the kit became champions of its use. They learned not only how to operate the projector and moderate discussions, but also basic maintenance (keeping equipment charged, handling with care). This suggests that for education departments, training local teachers or extension officers in using the kit is essential to integrate it smoothly. Once trained, these facilitators can independently organize frequent shows (indeed, most ERAs managed between 100–200 screenings over ~3 years).*

Community Engagement: *The case studies showed the importance of involving the community – e.g. inviting village leaders, or in a school setting, inviting parents and committees to video shows. This builds trust and enthusiasm for the new technology. One ERA reported that when he first brought the strange gadget (projector) to a village, people thought it was a camera or other device, but once they saw useful videos, they were eager to have more sessions and even willing to pay small fees. The lesson is that early demonstrations and word-of-mouth help normalize the kit as a community learning tool.*

Relevant Content is King: *The impact was greatest when the video content matched the audience's language and needs. In the Young Changemakers project, the **vast video library (often 150–200 videos) included translations to local languages and covered appropriate technologies**. For an education department, this means that pairing the hardware with curriculum-aligned content (e.g., videos on science experiments, English literacy, or vocational trades in local languages) will drive usage. The kit itself can store dozens of hours of video or documents offline.*

Sustainability: *With proper use of the solar panels and battery, operational costs were zero. Some ERAs earned income to sustain their activities, but even in school contexts, the costs (mainly projector lamp and battery replacements over time) are low compared to running generators or providing printed materials to every student. One challenge noted was the need for occasional replacement parts (like a damaged cable or needing additional solar panels in very cloudy regions). Therefore, a maintenance plan or spare inventory at a district level is advisable when integrating kits at scale. Overall, the case studies provide a **proof of concept** that portable projector kits can support secondary and tertiary education in resource-poor settings,*

Strategic Opportunities for Education Departments

- Education planners and policymakers in Africa can leverage the DCS Reach Kit in several visionary ways to expand access to quality learning. Some strategic opportunities and models include:

- **Off-Grid Digital Classrooms:** Deploy Reach Kits to create "pop-up" digital classrooms in remote or off-grid schools. Even under a tree or in an under-equipped rural school, a teacher can use the kit to project digital content (educational videos, e-textbooks, interactive apps) to a full class without needing electricity. This is a cost-effective way to extend e-learning to areas beyond the electric grid. For example, a government could equip each off-grid primary or secondary school with a kit, instantly enabling multimedia teaching aids and even basic computing (via the Android system) in places that have never had such facilities. The solar power feature aligns with green initiatives and ensures continuity of learning during power outages. Essentially, any space can become a **digital classroom-in-a-box,** which is transformational for inclusion. Officials can also use these in pilot "digital village" projects or to support double-shift schooling (one kit serving multiple schools on rotation schedules).

- **Blended Learning in Vocational & Agricultural Colleges:** The kit provides an excellent platform for **blended learning** at technical colleges, vocational training centres, and agricultural institutes. Instructors can combine traditional hands-on training with instructional videos and digital content projected for the whole class. For instance, an agricultural college in a semi-rural area can use the kit to show improved farming techniques or safety procedures on the big screen before students go out to the field. Because the system is portable, it can be moved between classrooms, taken to demonstration farms, or even loaned out to student groups for community outreach. **TVET educators** can project trade tutorials (plumbing, carpentry, machine repair videos, etc.) and pause to demonstrate with real tools. This not only enriches the curriculum but also standardizes quality – all instructors can access the same proven content. The kit's ability to run **interactive Android apps** means it could also host virtual simulations (for example, an automotive repair app or a science lab simulation) in class. Moreover, many vocational centres lack good libraries; with the Reach Kit, a digital library of instructional media becomes accessible. As observed in the ERA program, some of the young trainers worked with formal TVET institutions, reflecting this potential. Education departments can formally integrate the kits into vocational training programs to modernize pedagogy without heavy infrastructure investments.

Strategic Opportunities for Education Departments

- **Remote Teacher Training and Support Hubs:** *Teacher professional development, especially for rural educators, is often hampered by distance and lack of resources. The Reach Kit can be used to establish* **mobile teacher training hubs**. *Master trainers can travel with the kit to cluster meetings or training workshops and use it to show pedagogical videos, model lessons, or even conduct live webinars if an internet connection is available. The video conferencing capability means that a few central experts (e.g. national trainers or curriculum specialists) could connect to multiple remote hubs where groups of teachers watch via the projectors – creating a hybrid in-person/remote training session. This system could also enable recording and playback of model classrooms: teachers can film a good lesson, and share it via the projector with peers for discussion. In-service training content (like new curriculum orientations, educational TV programs, etc.) can be distributed on USB and played on the kit for teachers in remote districts. Because the kit is easy to transport, a single unit could service multiple schools over a training calendar. Government education departments could maintain a pool of kits at county or district offices, to be checked out by teacher trainers or inspectors. Additionally,* **teacher resource centers** *equipped with the kit can become e-learning access points where teachers come to watch online courses or certification modules together. This way, the Reach Kit helps upgrade teacher skills as part of national quality improvement initiatives.*

Strategic Opportunities for Education Departments

- ***Mobile Learning Units for Displaced or Nomadic Communities:*** *In regions with nomadic populations (pastoralists) or displaced people (refugee camps, IDP settlements), traditional schooling is challenging. The Reach Kit can serve as the backbone of **mobile learning units** that bring education to these populations. For example, an education department might deploy teams that travel with vehicles/ biikes in pastoralist communities – much like mobile libraries or "book buses," but in this case with a digital projector showing educational content to children and adults. The kit's **rugged, battery-powered design** thrives in such conditions: an instructor can set up a screen on the side of a truck or tent and show lessons on basic literacy, numeracy, or public health in the local language. In East Africa, ERAs successfully used the kit to engage **women pastoralists** in learning about milk hygiene and marketing, overcoming barriers of distance and literacy. Governments could build on this by incorporating the kits into their outreach services for nomadic education (for instance, Kenya's Nomadic Education program or similar efforts in the Sahel). In refugee or IDP camps, the kit can turn any common tent into a classroom or cinema – useful for both formal education and psychosocial support (e.g., showing educational cartoons for children or informational videos on health and vocational skills for youth). The solar power means even in an open field settlement, education doesn't have to wait for electrical infrastructure. **Content flexibility** also allows collaboration with humanitarian organizations to load protection and life-skills messages alongside the standard curriculum. By adopting Reach Kits in emergency education, authorities ensure learning continues during crises with a tool that is far more engaging than printed booklets alone.*

Key Benefits of the Reach Kit for Education Initiatives

- *Investing in DCS Reach Kits offers several compelling benefits for national education systems, particularly in rural and underserved regions:*

- ***Complete Portability:*** *The entire kit is mobile and self-contained – a single case holds all components, so programs can bring it to any location (no matter how remote). This portability lets education services **"reach" the last mile**. A trainer or teacher can hike with the kit to a village, or load it on a motorcycle, and immediately set up a learning session. This dramatically expands the reach of educational content beyond static classrooms. It also enables shared use: one kit can serve multiple sites on different days. For ministries targeting widespread training (e.g. voter education, health campaigns in schools, etc.), the ease of transport means rapid deployment and flexibility.*

- ***Off-Grid Operation:*** *The Reach Kit is designed for **power autonomy**. With its high-capacity battery and solar charging, it can run completely off-grid, relying solely on sunlight for recharging. This reduces dependency on unreliable power grids and eliminates fuel costs associated with generators (and the noise/fumes they bring). From an education planning perspective, this means digital education programs are not tied to electrification timelines – learning can happen now in off-grid schools, not "after the grid arrives". The kit's components are optimized for low power draw (the LED projector, efficient speaker, etc.), ensuring maximum runtime. **Solar panels** provided are portable and quick to deploy, enabling sustainable energy use that aligns with climate-friendly policies. Off-grid capability also builds resilience: during natural disasters or power outages, schooling can continue with these kits as they are independent of external power.*

Key Benefits of the Reach Kit for Education Initiatives

- **Local Language Content Delivery:** The kit is essentially a content-agnostic platform – education departments can curate and preload it with appropriate digital content in local languages. As seen in the case studies, having **educational videos in students' mother tongue** greatly enhanced comprehension and enthusiasm. Governments can utilize existing repositories of multilingual educational content (for example, translated Khan Academy videos, local curriculum materials, or create new content) and distribute them via the kits. The projector's Android system can store video files, PDFs, or even interactive content packages. This ensures that **language is not a barrier** to quality learning resources, even for minority language communities. Additionally, because content is delivered offline, it circumvents the need for internet connectivity which is often limited in rural areas. Teachers can replay and reuse the stored content as needed and update it periodically by USB – a scalable approach for ministries to push new curriculum content or public service messages to all regions at once (simply by providing USB updates or swapping SD cards).

- **Reduced Infrastructure Dependency:** Traditional ICT-in-education initiatives often require significant infrastructure – computer labs, wired internet, electricity, and climate-controlled buildings – which can be costly and hard to maintain in rural areas. The Reach Kit flips this model: it brings **infrastructure-light technology** that works in a hut or under open sky. There is no need to install projectors in every classroom with fixed wiring, or to build new computer labs. This not only saves construction and utility costs but also sidesteps maintenance headaches. The rugged design of the kit (dustproof, water-resistant case, solid-state LED projector) is meant for harsh conditions, reducing failure rates. Moreover, each kit requires minimal technical expertise to operate – one day of training is usually enough for a teacher to learn how to charge the battery, position the projector, and play content. From a systemic viewpoint, the Reach Kit lowers the **barriers to entry** for digital education. Rural schools can leapfrog into the digital age without waiting years for grid power or fiber-optic internet. This is a strong benefit when aligning with SDG4 (Quality Education) and SDG9 (Infrastructure) goals: more immediate impact with lower dependency on heavy infrastructure.

Key Benefits of the Reach Kit for Education Initiatives

- *Scalability and Customization: The modular nature of the kit allows education departments to **scale programs gradually and cost-effectively**. They can start with pilot projects (say, 10–50 kits in select districts) and evaluate impact, then scale up to hundreds or thousands of kits for nationwide rollout. Each kit can be standardized in terms of hardware, but **customized in content or configuration** for specific programs. For example, a country might configure some kits specifically for secondary science education (loaded with science experiment videos, interactive simulations, etc.), others for vocational agriculture training (with farming how-to videos), and others for community adult education (with health and civic information). The core hardware remains the same, which is beneficial for bulk procurement and support, but the learning experience can be tailored to different audiences. This customization extends to language (different regions can have different language media preloaded). The kit approach is also vendor-neutral on content – it can integrate with national digital curricula or open educational resources. In terms of scaling, training can be cascaded: master trainers at national level train regional trainers, who then train school teachers or youth leaders in using the kits. Since the kit is not very complex, the scaling is **human-limited rather than tech-limited** –*

- *Cross-Sector Benefits: Although aimed at education, the Reach Kit offers co-benefits to other government initiatives. For instance, agricultural extension officers could use school-owned kits on weekends for farmer training, or health workers could borrow them for community health campaigns in the evenings. Because the kit can serve multiple purposes (education, extension, training, information dissemination), inter-departmental collaboration can maximize utilization. For education departments, this means any investment in the kits could be partly shared or supported by budgets from agriculture, health, or youth programs, if those sectors also use the equipment. Such synergy was hinted in the ERA stories where the same videos helped in farming cooperatives and in school clubs. It underscores that deploying these kits creates a **platform technology** that can uplift rural knowledge ecosystems broadly, not just in formal classrooms.*

Integrating the Reach Kit into National Policies and Programs

- To fully leverage the DCS Reach Kit, it should be woven into the fabric of national education and extension strategies. Here are recommendations on integration:

- **In National Digital Education Policies:** Governments should recognize portable projector kits as a viable component of their ICT in education plans, especially for **last-mile schools**. For example, if a country has a policy for "One Digital Classroom per School" or is rolling out e-learning resources, the Reach Kit can be the delivery mechanism for schools lacking electricity or computer labs. Education ministries can set targets to equip a certain number of rural schools or community learning centres with the kits each year, making it an official program (possibly under titles like Solar Classroom Initiative or Mobile Digital Teacher resource). The kits should be paired with curriculum-aligned content. This could mean curating video lessons for each subject and grade – the ministry can work with local content creators to produce lessons in local languages that are preloaded onto the kit's storage or on USB drives distributed periodically. **Teacher training colleges** should introduce modules on using digital content and projectors in pedagogy, ensuring new teachers are comfortable with the technology. Policy can also mandate that inspectorate or support officers carry kits during school visits to demonstrate effective usage. Crucially, as observed in Kenya and Uganda, having agriculture or practical subjects in the curriculum created organic demand for these videos. Thus, policy-makers could design curricula that explicitly incorporate multi-media learning (with the understanding that the Reach Kits will be available to implement it). For secondary and tertiary institutions, the kits could be part of the accreditation standards – e.g., every new vocational college must have a plan for digital learning materials; providing them with a few Reach Kits would satisfy this without heavy infrastructure. In summary, embedding the kit in policy ensures budget allocation and continuity. Governments might also seek partnerships with organizations (e.g., UNESCO, NGOs, private sector CSR) to fund the initial procurement of kits as part of their national strategy.

Integration into Rural Extension and Community Programs

- **Integration into Rural Extension and Community Programs:** *The success of the ERA program suggests that agriculture and other extension services can significantly amplify their reach with these kits. Ministries of Agriculture (and Livestock, Health, etc.) could integrate Reach Kits into their **rural extension programs** by equipping extension agents, or by setting up networks of certified youth or community-based facilitators (similar to the ERA model) who are given kits and training. Policymakers are encouraged to adopt this **video-based extension approach** and formally "integrate the smart projector into the national extension system". Concretely, this could mean each extension office at sub-county level has one kit that officers take for village demos, or a program where unemployed agri graduates are funded to run mobile video shows in target communities, complementing government extension efforts. The extension content library can be managed by the ministry (for example, ensuring videos promote government-approved practices on crop production, climate adaptation, financial literacy for farmers, etc.). Likewise, health educators can use kits to show immunization videos or sanitation practices in villages as part of public health campaigns. Governments could also leverage existing social structures – for instance, training school agriculture club patrons or youth leaders to use the kits for both school and community benefit, effectively creating a continuum between formal education and community practice. Such integration requires coordination: education and agriculture ministries could jointly develop a scheme to share content and evaluation data from kit usage. By institutionalizing the kit in extension services, governments ensure that the knowledge gains seen in pilot projects scale up. Importantly, monitoring and evaluation frameworks should be built in – for example, tracking how many people attended video trainings and what actions they took after, as was done informally by ERAs. This data can reinforce the policy with evidence, and adapt content as needed.*

Policy Alignment and Vision:

- ***Policy Alignment and Vision:*** *Finally, integrating the Reach Kit supports broader national and continental visions. It aligns with the African Union's goals for digital transformation and education access. It can be cited in policy as a tool for achieving equitable access to digital learning (helping bridge the urban-rural divide). In the long run, one could envision a **nationwide network of solar-powered digital libraries** (each kit being a node) that not only educate but also inspire innovation in communities. As one young ERA noted, the smart projector and its rich library of local-language videos gave him a "unique tool" to catalyze outreach and change attitudes. If ministries of education and agriculture integrate such tools systematically, they can institutionalize that catalytic effect. Over time, local teachers and extension workers will create their own videos (perhaps recording best practices or local case studies on smartphones) and share them via the kits – a bottom-up enrichment of the content pool. Thus, the policy should not just see the kit as a hardware distribution, but as seeding a **culture of knowledge-sharing and digital empowerment** at the grassroots. By incorporating the DCS Reach Kit into national educational and rural development programs, governments in Africa can accelerate progress toward inclusive, quality education and skills training, ensuring no community is left behind due to infrastructural limitations.*

Who Are We

- **Supporting Global Education and Training**

- Digisoft Education is a social impact company, set up to develop products and solutions which deliver education and training in countries which face infrastructure challenges.

- **Because Education is Everything**

- Digisoft Education www.Digisoft-education.com

- AM Consultancy London LLP T/A Digisoft Education

- Address; 124 City Rd, London EC1V 2NX

- Tel. +44 203 475 0971

- Email: info@digisoft-education.com