



Technology & Education

TECHNICAL BRIEF

Background

The use of technology in education has transformed both how teachers teach as well as how students learn. When technology fills a gap, and is meaningfully integrated as part of a fully-developed educational “package”, rather than a stand-alone substitute, it can be a valuable tool. While countless websites, programs, and apps exist, the transformative impact of Information and Communications Technology (ICT) on education and learning systems is still being explored and understood. The use of digital devices and enhanced access to and distribution of information have been at the heart of efforts to bring 19th and 20th century “paper and pencil” learning tools, and “chalk and talk” teaching methods into the 21st century. The potential of ICT for education can be captured in the following dimensions of learningⁱ:

- **Access:** ICT is expected to broaden **access to learning opportunities** at different levels and in varied educational contexts.
- **Quality:** ICT is hoped to **improve the quality of learning**, materials, and resources to develop 21st Century skills.
- **Equality:** ICT is believed to be able to **help equalize learning opportunities for girls and boys** in favor of economically, geographically, demographically, or socially disadvantaged populations.

Addressing these dimensions of learning, ICT has the potential to facilitate an approach to learning and development that integrates educational pedagogy, social interaction, and the use of technology.

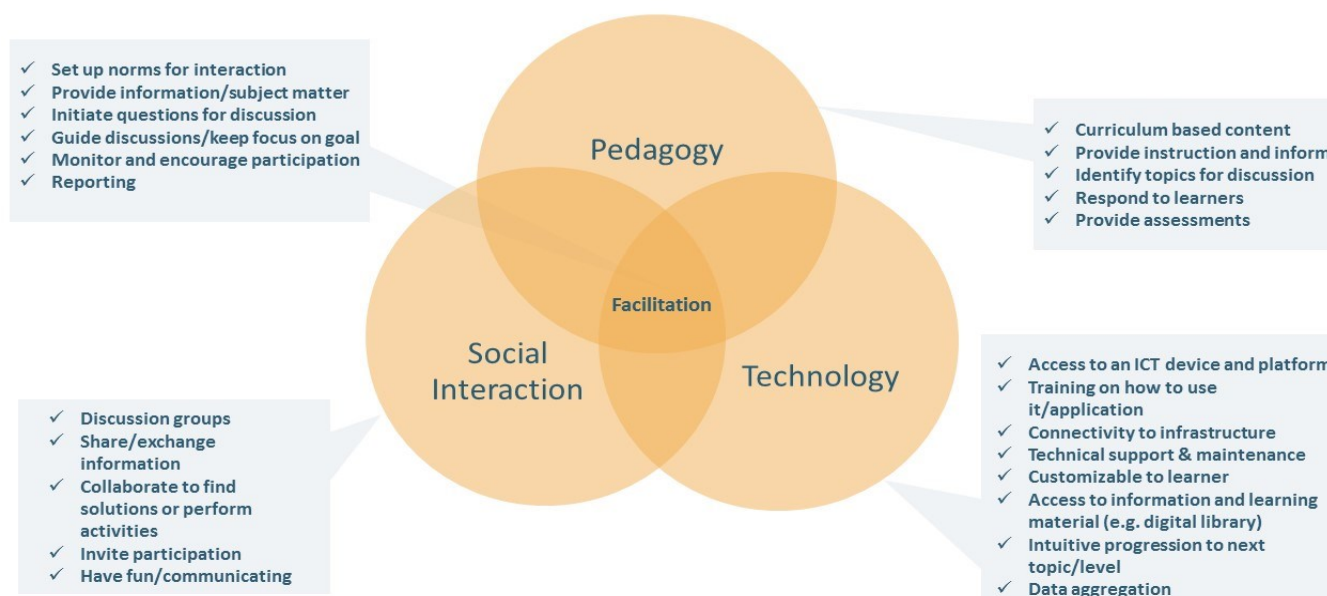
As UNESCO puts it, *“Under the right conditions, it is believed that ICT can have a monumental impact on the expansion of learning opportunities for greater and more diverse populations, beyond cultural barriers, and outside the confines of teaching institutions or geographical boundaries.”*ⁱⁱ

Yet in the developed world as much as the developing one, grandiose, poor and untested plans litter the landscape of this dream. To date, limited success has been documented. Some of the reasons for the lack of success include: not knowing how to use the technology to support teaching and learning; allowing the device to drive instruction; and the lack of planning for both the use of technology and the evaluation of its effectiveness.ⁱⁱⁱ

CARE’s Approach to Innovative Technology for Education

CARE’s programming explores how education, ICT, age-appropriate and comprehensive sexual and reproductive health, and economic empowerment activities for adolescents and their families can best create conditions that empower individuals and communities to make

Basic Model of Operation/Interaction



informed decisions and lay the foundations for more stable and prosperous futures. The inclusion of ICT in education is aimed to help us understand *what are the right conditions for ICT to enhance access, quality of learning and equality?*

A set of **core objectives** inform the development of ICT for education in CARE. These include:

- **Make learning more efficient.** Give opportunities for those who are self-motivated learners to explore not only the different ways to learn, but also how they learn best. Promoting access to information/knowledge on specific subject matter and also self-learning or outside-of-the-classroom learning. This may not work for subjects or students requiring a lot of guided instruction.
- **Develop a model that is replicable** or can be scaled up – technology in itself may not be able to sustain itself given cost, capacity and maintenance.
- **Increase connections and interactions** – drive collaboration in education delivery, assimilation, and co-learning amongst students and out-of-school adolescents.
- **Enhance learning outcomes** in relation to access to learning material/information at the learner and teacher/facilitator level.

- **Uncover how ICT facilitates girls' and adolescent empowerment** – explore how we can monitor changes in power dynamics to be more empowering for girls.
- **Increase accountability and more inclusive governance and reform in facilitating learning** – assess how ICT in education can influence education delivery and promote accountability.

This list of objectives is not exhaustive. Yet, it hints at CARE's initial rationale for turning to the integration of ICT as a tool and approach to support learning and empowerment for marginalized girls.

The opportunity of designing and implementing ICT in education projects can be captured as follows:

By purposefully and thoughtfully designing education programs that incorporate ICT, we seek to not repeat the historical efforts that often ignored context, conditions and instead focused on the shine of electronics.

CARE's Approach to User-Driven ICT

CARE's approach to ICT is grounded in principles of "human-centered design" (sometimes called "design thinking"). One of the key strengths of human-centered design is the active involvement of end-users who have knowledge of the context in which the system will be used. This means a clear commitment to working with adolescents to understand and

We seek to explore how CARE's Education programming can achieve lasting change in the education and empowerment of adolescents, especially girls, while harnessing the potential power of ICT to identify and address the root causes of challenges holding them from realizing their full potential.

design for their needs in education, accessing information, adolescent sexual and reproductive health, financial literacy, and resilience to cope with and navigate the changing world around them.

CARE's ICT approach draws on a human-centered design process:

- **Inspiration** – where the focus will be on understanding the adolescents and girls with whom we will work. This will be done through observation, consultation, interviews and challenging our understanding of and assumptions about their problems.
- **Ideation** – a stage to make sense of, or bring ideas to, understanding the perspectives heard from adolescents and others and to test and refine the identification of opportunities.
- **Prototyping**. Developing a “low-scaled” version of an ICT service or tool can serve as a useful way of gaining immediate feedback. Prototyping allows for early testing and can quickly show what does or does not work. Given the potential for technology costs in funding, staff time and social capital with partners, counterparts or communities to spiral exorbitantly, the prototyping step is critical.
- **Iterate, and failing fast and early**. Hand-in-hand with prototyping is the goal of taking many small and fast risks. Taking risks early and quickly can produce rapid learning. The key is to iterate and make changes in ways that are documented, thought-through, and assessed in order to go to scale in the project with an ICT tool that holds the highest likelihood of success.
- **Implementation** – is the phase where the ICT solution will be operationalized, delivered to adolescents and others, and leveraged to maximize its impact for the goal.



- **Establishing and listening to intentional feedback loops:** Feedback loops are essential to capture, maintain, and adapt the use of evidence to improve programming, in the present projects and future ones. ^{iv}

Use of ICT to Support Data-Driven Programming

In addition to using technology within our project approaches, activities, and methodologies, we also use technology to modernize and streamline the data and information we collect from our projects. We collect data on regular bases to help us understand what impact the projects are having. By digitizing the methods and surveys used in this process, we save valuable time and money. As a result, we know much quicker what's happening in the communities where we work, and we can adjust our approaches so they match the needs and situations.

How We're Doing It

CARE is committed to responsible, responsive, and cutting-edge programming that not only helps us understand the challenges facing individuals and communities, but also how to do so in efficient manners. Within our education programming, there are a number of ways in which we're already incorporating ICT. For example:

In new and existing projects, we're going 'green'. Instead of collecting thousands of surveys from individuals using pen and paper, we're now using smart phones and tablets. This saves thousands of hours in time traditionally spent manually typing the survey responses, as well as ensures that it is entered correctly.

We're connecting adolescents with knowledgeable adult experts on a host of issues that impact them as well as to

engage with peers around these issues for support. These kinds of virtual opportunities are vital in countries where youth-friendly, age-appropriate, comprehensive, and reliable information is sorely lacking and where the ability to engage with others with different viewpoints/life trajectories can offer hope/motivation.

In Cambodia, we are building adolescents' computer and digital literacy focused on content creation, and critical thinking skills, as well as opening new avenues of information available to students. An app is being developed that will provide career counseling advice and resources to adolescents; by pairing this with in-person counseling support, we hope that more students will have the skills and confidence to proactively plan their futures. The adolescents will also be closely involved in the design of the app to ensure it is user-centered and responsive to their needs and comfort with technology.

In Mali, we are using mobile phones to build connections between adolescents across rural communities. They will be able to access information on adolescent sexual and reproductive health, as well as information on disaster risk reduction, allowing for faster identification of risks and mobilization of adolescents and their communities.

In Kenya and Zimbabwe CARE is working with ICT service providers and schools to set up secure platforms to enable adolescents to engage with knowledgeable adult "experts" on a host of issues related to their sexual and reproductive health and skills needed for work in the formal and informal sectors, as well as to engage with peers around these issues for information sharing.

References

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ⁱⁱIbid.

ⁱⁱⁱSheninger, E. (2016). Why pedagogy first, tech second stance is key to the future. *EdTech Magazine*, April 25, 2016. Retrieved from http://www.edtechmagazine.com/k12/article/2016/04/why-pedagogy-first-tech-second-stance-key-future?utm_content=buffer075cf&utm_medium=social&utm_source=linkedin.com&utm_campaign=buffer

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