



The Pi and The BeLL

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At the core of the technology to be deployed in the USAID sponsored Ghana Reads project is the Raspberry Pi. In this issue of Agenda 2015, we bring you a special feature on the 'famous Raspberry Pi' and indicate how it fits into the Ghana Reads agenda.

The Raspberry Pi is a credit sized single board computer. A single board computer (SBC) is a complete computer built on a single circuit board with microprocessor, memory, input/output (I/O) and other features of a functional computer. Unlike a typical personal computer, an SBC may not include slots into which accessory cards (daughterboards) may be plugged. However it can plug into a keyboard and a TV. It is therefore a capable little PC which can be used for many of the things that your desktop PC does, like spreadsheets, word processing and games. It also plays high definition videos.

The Pi was developed in the UK by the Raspberry Pi Foundation. The Raspberry Pi Foundation is a charitable organization registered with the Charity Commission for England and Wales. The Foundation is supported by the University of Cambridge Computer Laboratory and Broadcom

According to co-founder, Eben Upton the lack of programmable hardware for children – the sort of hardware we used to have in the 1980s – was undermining the supply of eighteen year olds who know how to program, making it a problem for universities, and then undermining the supply of 21 year olds who know how to program, thus causing problems for industry. The Foundation expected that the introduction of the device would promote the study of computer science and related topics, especially at school level, and to put the fun back into learning computing

In the last quarter of 2011 the first batch of Pis were manufactured. The Raspberry Pi measures 85.60mm x 56mm x 21mm, with a little overlap for the SD card and connectors which project over the edges. It weighs 45g. Currently there are two models: Model A and Model B

Model A has 256Mb RAM, one USB port and no Ethernet (network connection). Model B has 512Mb RAM, 2 USB port and an Ethernet port.

General initial expectations when the device was produced were that children would take to programming using languages such as Scratch and that the input/output functionality would be used to control external devices. Additionally, it was expected that the low power requirement would facilitate battery-powered usage in robots, while the video capabilities would lead to interest in its use as a home media centre.

Open Learning Exchange (OLE) Ghana has taken the Raspberry Pi and placed it at the center of its Basic eLearning Library (BeLL) concept. The BeLL is a low cost digital library replete with high quality teaching and learning resources as well as resources for teacher support and professional development and for community education.

The Raspberry Pi best suits the BeLL concept because of the following:



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- The price is just right. Together with the required cabling and SD cards the costs is around \$50
- It is right for the terrain. It is robust and portable. It does not require internet but supports wi-fi and LAN. It also has low power consumption.
- It does the trick. With an SD Card and the right app the Pi supports the organization, packaging as well as distribution of library resources.
- It would facilitate the processing and onward transmission of vital feedback collected from the usage of the BeLL by teachers and pupils.

OLE Ghana as part of the USAID sponsored Ghana Reads project hopes to create a mesh network of low cost digital libraries using the Raspberry Pi to be updated by either Coaches who will provide support to teachers even as they use the technology in their classrooms and/or via internet where internet is present.