

Developing Females and Teachers Digital Skills in Ghana

Dr. Mohamed Ally
Professor, Centre for Distance Education
Researcher, Technology Enhanced Knowledge Research Institute
Director, International Association for Blended Learning (IABL)
Founding Director, International Association for Mobile Learning (IAmLearn)
Athabasca University
Canada

Dr. Margarete Grimus
Graz, University of Technology,
ICT4d.at, Austria

UNESCO MLW2018
27 March, 2018, Paris





Outline

- Why develop digital skills
- Use of ICT to develop digital skills
- Project: Use of mobile devices in teaching and learning in a sub Saharan Higher Secondary School
- Follow up independently, Examples
 - Mobile Learning Society
 - “Jungle Girls”: Develop females programming skills, Boot camp to teach students Python programming
- Recommendations for future projects



Why develop digital skills ?

- 21st century digital workplace
- Internet of Things
- Emerging Technologies
- Education for All
- Open Education Resources
- Young generation of students who are using digital technologies
- Fourth industrial revolution

Digital skills are door-openers for partaking in sustainable development efforts by offering continuous access to world wide information and learning opportunities

Taking advantage of the role digital technology can play an important role in everyday life and economy and provides alternative learning opportunities to address education challenges in Africa.

Everyone living in the 21st century has the need to cope with the ever rising demand to learn.



What is the Fourth Industrial Revolution?

- The Fourth Industrial Revolution is changing the world because of new technologies that are combining the physical, digital and biological worlds that is impacting all disciplines, economies, and industries.



Areas associated with 4IR

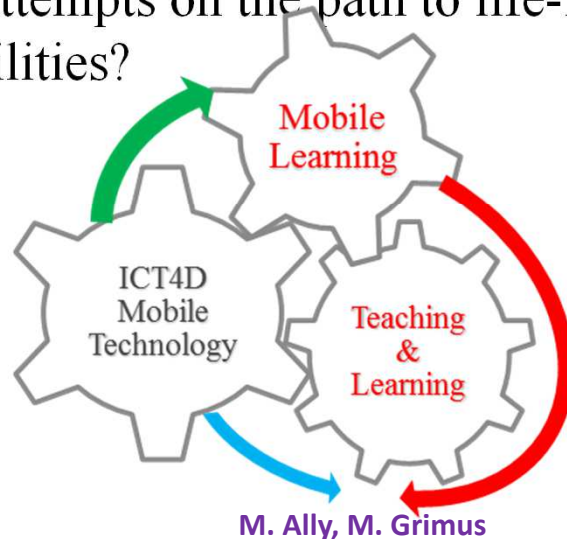
- Robotics
- Artificial intelligence
- Genomics – a genome is a person complete set of DNA
- Autonomous vehicles
- Mobile/ubiquitous computing
- Analytics
- Virtual/augmented/mixed reality
- Internet of things
- Metadata
- Others – not yet identified

Use of ICT to develop digital skills

Project: From basic skills (using ICT) to digital literacy & mobile learning (Ghana)

Important issues to consider

1. How can ICT being integrated in teaching and learning to initiate development of digital skills?
2. How to extend basic skills for developing beneficial attempts on the path to life-long learning abilities?



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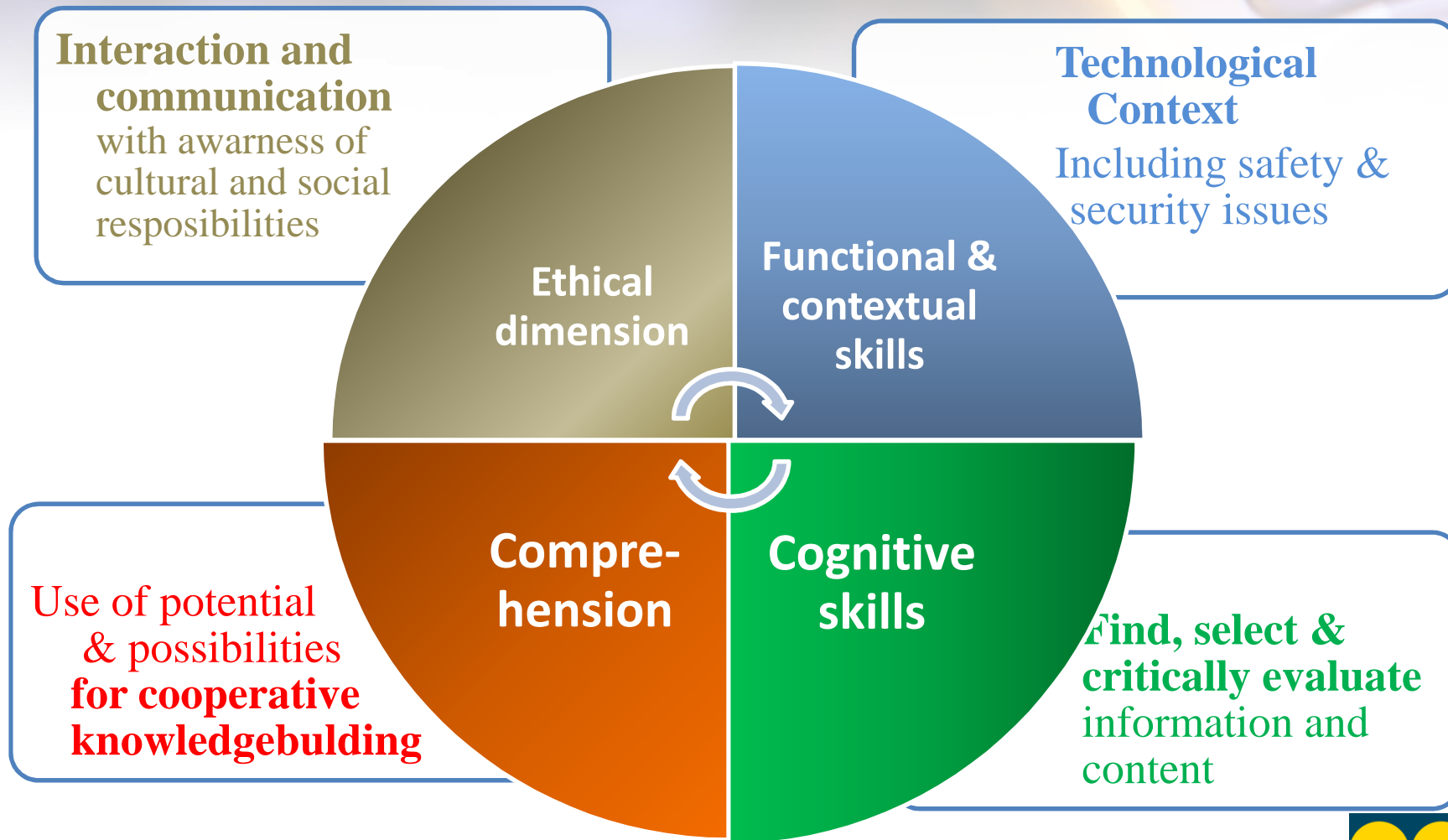


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Digital Literacy

Skills and Competences



Timeframe, Participants, Tasks

Three Workshops
each of 3 weeks (60 - 80 hours)

- **Skills Development**
- **Knowledge Deepening**
- **Teacher-Student-Collaboration**



Sept. 2012

Teacher Workshop (15 T) basic digital skills for integrating ICT in lesson preparation, personal development, sharing material with colleagues

Sept. 2013

Teacher (17) + partly **students** (15)
Engaging teachers for enhancing learning opportunities (strategies), Guidelines, Best Practice, Micro-content development

June 2014

Collaboration: Teacher (11)
+ **Students** (18), teams, OER, Creative Commons, evaluation, Mobile learning & STEM

Tools, Aims

1. WS: Computer Lab, desktop PCs & Laptops (teachers, private)
2. + 3. WS: desktop PCs, Laptops, eBook-Reader, Mobile phones.



TrekStor E-Book Reader Pyrus mini, 4.3" Digital Ink



Nokia E5-00, 256k display colours, 10 days standby, 2 GB Micro-SDHC



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Find and develop appropriate content, Using appropriate devices

- Cloud Storage for sharing material (No Learning Management System needed)
- Digital material is easy to update!
- Formats for mobile devices (adaption for online and offline use; screen-size, download-volume)
- Sharing content on mobile phones via Bluetooth in order to overcome the high costs of data plans.
- SD cards hold content that can be accessed at any time for further studies (enrichment of reports, presentations etc.)

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Follow Up Ongoing Activities, independent

Female students established the **Mobile Learning Society (MLS)** with the aim to organise tutorials and workshops (including STEM). MLS continues with development of micro-content, is taking part in competitions and personal development.

MLS is growing, activities are spread out.....

Blog Ketacomobile (developed during 3rd WS) continued with students only.



<http://grimus.or.at/ketacomobile/>



Mobile Learning Society

Students from KETASCO cooperate with many organizations in Ghana in setting up educational events, e.g. Barcamp Ghana, Django Girls

Examples are published in blogs, FB, (photos, videos, learning apps), e.g.

Developing learning units and educational videos on basic computer skills for download (August to September 2016)

- Building a solar panel (2015)
- Oxygen Preparation Using Low-Cost Materials (KETASCO Ghana Think's Junior Camp 2014 together with Webster University)



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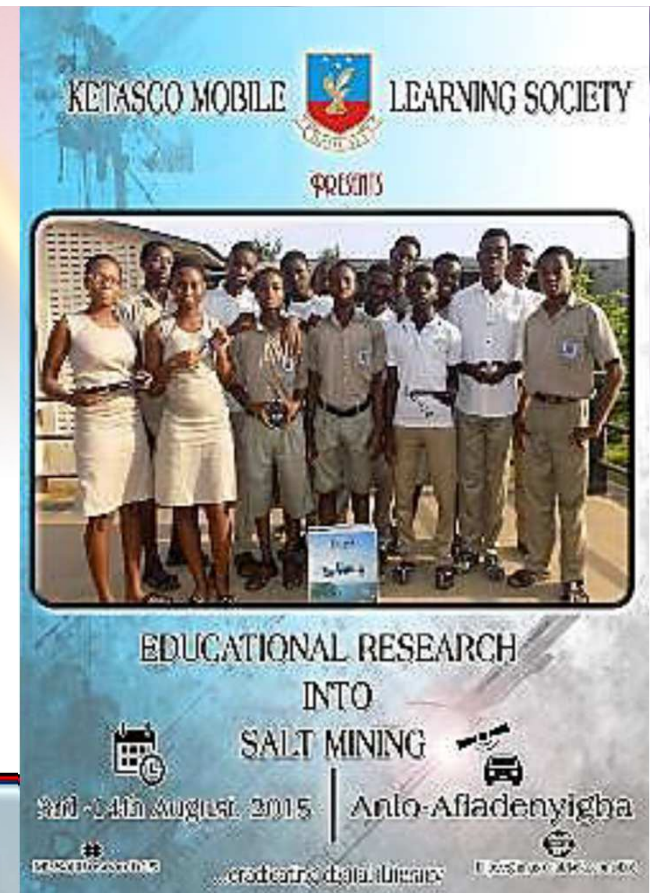
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Research on local salt-depletion

Crowd funding (2015) for a drone and experimenting in different environments.

The camp was organised by students, they invited teachers and published the research.

'We are working on a project on salt evaporation ponds in a local community, exploring the making of the salt by using a drone. With the drone, full landscape images can be taken of the environment and fed into a computer to study the land topography; this makes it possible to study the structure of some environments to prevent certain natural disasters', especially earth tremors.



Independent Activities (cont.)

- **Lucienne** (16 years old) developed a desktop application called **Motion Calculator**, which helps students to calculate Velocity, Acceleration, Distance and Speed at a click.

Her dream is to encourage girls in the evolution of technology. She was invited to Ghanaian TV to present her App.



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Django Girls

Django Girls organise workshops about programming in **Python** especially tailored for women. Attendees don't need any previous knowledge about programming and there is no age limitation. Coaches, speakers or organizers are volunteers.

- **Django Girls Ho** (29.-30. Sept 2017) was the first IT workshop that involved ladies from **Ho Volta Region** and its environs in **Ghana**.

A skype discussion was organised with participants about their plans and visions.

- Upcoming Django Girls Workshop 6.- 7. April 2018 at KNUST in Kumasi (workshop is aimed at total beginners.)





PHP RAIL leact Javascript sudo mkdir pip in <html> </html> Django css <a href=

Django Girls Ho Workshop

📅 29 - 30th September, 2017
📍 KK HUB Ho



mobile learning week

29-30th September 2017

KK Hub - Ho

free

Accommodation | Food | Certificate will be provided

Apply

www.djangogirls.org/ho/apply

OOKS

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Summary Recommendations

- Participation - dominance of male teachers (only 2 females)
- Students - dominance of girls, taking the advantage for shifting traditional roles (life and learning)
- Girls represent quite often the majority of participants in projects and workshops

Teacher-Student Cooperation enables new learning strategies for both

Workshops

- Voluntary participation!
- Duration! Time-frame, allowing ample time for practice and feedback between WS for individual practice, sharing with colleagues-



Conclusion

Lessons Learned



- Using **locally available devices**
- Starting with **teachers only**- *develop basic skills, experience, try out new tools*
- Integrating students allows both groups to experience how (available) technology can support new approaches/ strategies / models for learning.
- Combining student-generated content and learning context *can create ideas for developments appropriate to the environment and needs (actuality, interest in new developments, online support, technological matters)*
- Taking advantage of cooperative methods with two generations - reducing the digital divide.
- Students continue independent with activities, *often in cooperation with local (sometimes international) organizations, spread out digital knowledge and developments*
- Develop competences for self-guided learning.

Acknowledgements

We would like to thank our colleagues in Ghana who are actively involved in developing digital skills of females and teachers in Ghana. They could not join us in Paris for this presentation.

- Noah Alorwu, now studying IT, final year)
- Gameli Adzaho,
Ghana National Association of Teachers
Ghana Association of Science Teachers;
Global Lab Ghana (brings together students, teachers),



THANK YOU

Comments, Questions



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