"In times of change, learners (children, addition mine) inherit the earth, while the learned find themselves beautifully equipped to deal with a world that no longer exists” (Eric Hoffer quoted in Jordan & Follman, 1993, p.1)
Focus

• Global and Local contexts
• Understanding learning- 20th century assumptions about education
• Comparison of conventional and 21st century learning
• Learning in workplace
• Shifts in assumptions about learning
• The new learning environment
• What Skills will learners need in 21st century
• The New teacher – roles, skills and responsibilities
• Teacher education for the new teacher

The Global Context

• The rapidity with which the world is changing is unprecedented:
  – the relentless advance of technology,
  – the diminishing half-life of knowledge,
  – the sweeping effect of globalization, and
  – Drastic changes in the economy,- changes in nature of jobs, outsourcing & offshoring
21st Century Context cont’d

It is said that:

• Information doubles every 5.5 years (American Association of Student Librarians),
• Technical information doubles every 2 years (Jukes, 2007), and
• Electronic information doubles every hour (Oppenheimer, 1996).

21st Century Context cont’d

• In addition, in Africa we are faced with
  – Competitive global market,
  – environmental degradation,
  – financial crisis,
  – food scarcities,
  – poverty,
  – Poor sanitation
  – health issues, including HIV/AIDS
  – terrorism threats, conflicts and wars, etc.
21st Century Context cont’d

• Increase in unemployment of school leavers, and more recently, university graduates,
• Isolation of educational institutions and industry from one another, resulting in the lack of engagement with the economy,
• Lack of governmental encouragement for and investment in the application of research in higher education,
• Poor infrastructural base –ICT, labs/workshops; there is digital and infrastructural divide between urban and rural areas
• Curricula focuses mainly on teaching and not on learning,
• High student-teacher ratio
• Reliance on decontextualised instructional strategies
• Lack of national direction for human capital development

20th Century assumptions about Education

• Intelligence and creativity are regarded as being largely innate.
• The older children became the more significant was their learning.
• Learning is dependent on instruction and extrinsic reward (behaviourism).
• Learning is enhanced through the break down of content or instruction into smaller isolated units.
• Learning is logical, objective and linear.
• Learning is based on a deficit model of the student.
• Valid learning is that which enable people to become functionally literate within an industrial society.
• Effective learning is that seen as being formal and measurable.
Assumptions cont’d

- Learning is a process of information transfer and reception.
- Learning is an individual or solitary process.
- Basic skills are those of reading, writing, and calculation.
- Most people, it was assumed, would not need “higher order skills,” as they were not expected to show any form of personal creativity.
- All life could be subdivided into separate disciplines, and only those appropriate to a child’s potential status in life would be taught.
- Learning was dependent on the technology of the time: talk, paper and pencil, and textbooks.

Comparison of conventional and 21st century skills

**Conventional (Surface) Learning:**
- Focuses on descriptions and textbook application of disciplinary concepts and methodologies.
- Learners treat the course as unrelated bits of knowledge.
- Learners memorize facts and carry out procedures routinely.
- Learners find difficulty in making sense of new ideas presented.
- Learners see little value or meaning in either courses or tasks.
- Learners study without reflecting on either purpose or strategy.
- Learners feel undue pressure and worry about their work.

**21st Century (Deep) Learning:**
- Focuses on the development of conditionised knowledge and metacognition through communities of inquiry.
- Learners relate ideas to previous knowledge and experience.
- Learners look for patterns and underlying principles.
- Learners check evidence and relate it to conclusions.
- Learners examine logic and argument cautiously and critically.
- Learners are aware of the understanding that develops and the application of what is learnt.
- Learners become actively interested in the course content.
- Focuses on skill development.
- Uses technology to enhance skills dev.
### Conventional and workplace organization of learning

<table>
<thead>
<tr>
<th>Conventional Academic</th>
<th>Workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Mastery of basic skills</td>
<td>• Mastery of basic skills</td>
</tr>
<tr>
<td>• Largely solitary study</td>
<td>• Working with others</td>
</tr>
<tr>
<td>• Generally uninterrupted work</td>
<td>• Constant distractions</td>
</tr>
<tr>
<td>• Concentration on a single subject</td>
<td>• Working at different levels across different disciplines</td>
</tr>
<tr>
<td>• Much written work</td>
<td>• Mainly verbal skills</td>
</tr>
<tr>
<td>• A high analytical ability</td>
<td>• Problem-solving and decision-making</td>
</tr>
</tbody>
</table>

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The 20\textsuperscript{th} century teacher is faced with ......
Infrastructural and digital challenges

A classroom of Yesterday, 20th century

Huge Challenges
Carrying 20\textsuperscript{th} century assumptions into 21\textsuperscript{st} Century

The 21\textsuperscript{st} century teacher is faced with ....
Being Digital?

PHONETICS LABORATORY – Analysing language structures
Active Teaching in an African Classroom

Challenges in a 21st century classroom

Classroom without Walls

Student teachers in a computer application class
What do you see here?

What do you see?  
This is not the Past.  
It is the Future.
There is No Choice:  
The World is Moving Fast…  
With or Without You!

Are Teachers Moving into the 21st C...
Shifts in assumptions

- Perception of the human brain
- Teacher control
- School as learning organization
- Learning as self-organizing system
- Teachers as facilitators
- Students as information seekers...
- Learning as a cooperative process

Nature of learning

Get rid of that damn machine model of the brain. It’s wrong! The brain is a biological system, not a machine. Currently we’re putting children with biologically shaped brains into machine-oriented schools. The two just don’t mix. –Prof. Robert Sylwester
### Shifts in Assumptions cont’d

- From abstract to learning of skills in authentic situation
- Learning based on strength model of students abilities instead of deficit model
- Learning as integrative and contextualized
- Use of authentic assessment
- Use of learner friendly delivery tools
- Learning as a process that proceeds through multiple paths
- Learning based on critical thinking
- Passive to active learning

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**The New Learning Environment**
FROM CONVENTIONAL TO 21ST CENTURY LEARNING

CONVENTIONAL

Teacher control

21ST CENTURY

Teacher and student collaboration

Student Control

Curriculum
Content
Technology
Pedagogy
Assessment

Level: HIGH
Learners: Passive

minimal
moderately Active
not at all
Highly Active

Shift in Curricular Focus …..

Teaching

Learning

Entrepreneurship
How Digital kids Work?

- Involve in Multi-tasking processes of data & information
- Used to multimedia and hypermedia environments- mobile phone use is commonplace
- Prefer working with peers to adults
- Need instant response to activities
- Customize things to their needs
- Need to do things
- Want to reach people of their own age
- Are achievement orientated

What Skills will our graduates need in the 21st Century?

ISTE’s Skills for Student

- Creativity and innovation
- Communication and collaboration
- Research and information fluency
- Critical thinking, problem solving and decision making
- Digital citizenship
- Technology operations and concepts

International society for technology in Education
UNICEF’s Child-Friendly Schools

• New CFS Teacher
  – Reflective practitioner
  – Facilitator of learning
  – A child rights focus and child-centered pedagogy

• Empowerment
  – Grounded in the local
  – Geared to the national
  – Visioning the global

Partnership for the 21st Century skills

• Core subjects and 21st century themes
  – English and language arts, maths, economics, science, geography, history government and civics
  – Global awareness, financial, economic, business literacy
  – Civic literacy, health literacy

• Learning and innovation skills
  – Creativity and innovation
  – Critical thinking and problem solving
  – Communication and collaboration
• Information literacy, media and technology skills
  – Information literacy
  – Media literacy
  – ICT literacy
• Life and career skills

21st Century Skills Needed by our Graduates

DIGITAL-AGE LITERACY
  - Basic, Economic, Scientific and Technological Literacies
  - Visual and Information Literacies
  - Global Awareness

INVENTIVE THINKING
  - Adaptability, Managing complexity and Self-direction
  - Curiosity, Creativity and Risk taking
  - Higher order thinking and sound reasoning

EFFECTIVE COMMUNICATION
  - Teaming, Collaboration and Interpersonal Skills
  - Personal, Social, Digital and Civic responsibility
  - Interactive Communication

HIGH PRODUCTIVITY
  - Prioritize, Plan and Manage for results
  - Effective use of real world tools
  - Ability to produce Relevant High quality Products
  - Entrepreneurship

Adapted from Source: enGauge 21st Century Skills
The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn. - Alvin Toffler

What Characteristics Should the Teachers Have?

What teachers should know and be able to do to prepare students to learn effectively and live productively in an increasing digital world…

RESOURCEFUL DIGITAL TEACHER
Skills of the 21st Century Teacher

The Nature of Teacher Education
The Curriculum

- Mastery of core content areas: English, Math, science, history, social studies, geography, creative arts, etc
- Inclusion of interdisciplinary themes: global awareness, financial, civic and health literacies
- Weave skill areas – innovation, creativity, communication and collaboration, research and information fluency, critical thinking, problem solving and decision making – into core content areas.
Instructional strategies

• Use social constructivist and cooperative learning to promote teamwork
• Teach students to use metacognitive strategies and reflective thinking
• Encourage the formation of communities of learners for the sharing of ideas among students (e.g., chatrooms)
• Customise the curriculum to ensure real problems are tackled.
• Techniques in using open and distance learning delivery modes,
• Use of blended learning and flexible pacing of instruction
• Transform the school into a learning and entrepreneurial organisation instead of a teaching organisation,
• Support and sharpen the multitask learning skills of the digital learner,
• Manage learning in S&T innovation parks and incubator facilities.

• Use of Open and distance learning,
• Blended learning,
• Flexible pace of instruction,
• Shift from teaching through learning to entrepreneurial organisation,
• Community engagement,
• Multitask learning,
• Create science and technology innovation parks and incubator facilities
Assessment

• The skills to be acquired by the 21st century digital learner cannot be assessed using conventional standardized tests and high stake examination.
• Use of alternative/authentic/performance assessments such as project-based, activity-based, inquiry-based, problem solving-based and cooperative/group-based assessments.
• Common tools used in alternative assessment include
  – extended essays, oral presentations, demonstrations, hands-on-practical tasks, portfolio, self assessment, peer assessment, group assessment,
  – concept map, open book tests, student-designed assessment,
  – rating of performance or products, project-based, inquiry-based and problem solving-based instruments.
• Keeping of portfolios including e-portfolios can help in tracking and monitoring students’ progress over time

Conclusion

• The new teacher in the 21st Century must be a continuous and active learner and not just instructor.
• Teachers must change their instructional strategies and philosophy about teaching and learning in line with 21st C
• Teachers need 21st century skills to effectively cope with the challenges of the 21st Century. Teacher education programmes should take cognizance of this critical need of a modern teacher.
• ICT infrastructure, facilities, and resources for Teachers and students should be provided in all schools to address the intra-digital divide in the African educational system.
• "In a world where countries that out-educate us today will out-compete us tomorrow, the future belongs to the nation that best educates its people, period," Obama, 2009

'The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.'

Alvin Toffler
“He who rejects change is the architect of decay. The only human institution which rejects progress is the cemetery.”

Harold Wilson

THANK YOU
Can we make it? and Are we ready?

Yes and Yes

....with political commitment
The challenge:
to produce school leavers who:

• Are global as well as local workers (“glocal”),
• Can keep up to date with the changes in knowledge & technology,
• Can apply their knowledge to solve societal problems, (contextualised knowledge)
• Are lifelong learners,
• Have acquired workplace attitudes and skills,
## Traditional vs. New Learning Environments

<table>
<thead>
<tr>
<th>Traditional</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher-centered instruction</td>
<td>Student-centered instruction</td>
</tr>
<tr>
<td>Passive learning</td>
<td>Active learning</td>
</tr>
<tr>
<td>Primarily words and text</td>
<td>Multimedia</td>
</tr>
<tr>
<td>One path</td>
<td>Multiple paths</td>
</tr>
<tr>
<td>Individual work</td>
<td>Collaborative work</td>
</tr>
<tr>
<td>Delivery of information</td>
<td>Exchange of information</td>
</tr>
<tr>
<td>Focus on facts and knowledge</td>
<td>Critical thinking and problem solving</td>
</tr>
<tr>
<td>Artificial “school” context</td>
<td>Authentic real-world context</td>
</tr>
<tr>
<td>Assessment by testing</td>
<td>Authentic assessment</td>
</tr>
</tbody>
</table>
The Disconnect between teachers and students....

- There is a wide digital disconnect between how students want to use digital tools for learning and living, and how the adults think these tools should be used.
- Digital learners view the world through a new lens framed by technological devices while teachers and adults tend to perceive the world with their old world view.