African Digital Schools Initiative  
Digital School of Distinction Leadership Module

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UNIT 1

Introduction to ICT in Your School
Unit 1: Introduction to ICT in Your School

What this unit is about

Welcome to unit one of the Leadership Digital School of Distinction (DSD) Module. This module has 5 units – where each unit will be presented in Leadership development cycle of in the GESCI Digital School of Distinction Course.

In this unit we will ask three questions:

- Where are you now with ICT use in your school?
- Where do you want to go with ICT use in school practice?
- What concrete steps do you need to take to get there?

To ensure our schools reap the benefits that ICT can bring and to prepare learners for life in a world that is increasingly dependant upon new technology, effective school planning is essential. ICT planning needs to be managed and coordinated across the curriculum and school.

This unit is essentially about a self-assessment of your current school practices and a review of the essential school conditions that should be in place when developing a school ICT plan.

Leadership Learning Diary

During your work on this unit you will be asked to make notes and collect your thoughts and reflections in your Leadership Learning Diary. You will use the notes to assist you in developing your school ICT Plan.
Leadership E-Portfolio

Your leadership **E-Portfolio** is a folder that you will create in your computer or laptop where you can collect your notes and your plans in one place. The notes you make in your learning diary and the plans you make during workshops and throughout the units of the module you will save to your E-Portfolio.

The notes and plans will be useful for meetings in your school with your Board of Management and PTA, for meetings with your school ICT team and for face to face and online discussions with other school leaders in the ADSI programme.

What the school leader will learn in this unit

By the end of this unit you should be able to:

- Understand the role of ICT in education and development
- Gain insights into the range of technologies that might be used in your school
- Identify the constraints and advantages for technology use in your school
- Assess the achievements and benefits of ICT integration in your current school practice

When you see the **PLAN** icon, it means that you have a task to complete related to your school **ICT Plan** that is the main activity of the module units.
Introduction
Throughout the five units in this module you will develop your ADSI Digital School of Distinction (DSD) ICT Plan. In the introduction we will look at what we mean by ‘Learning with and through ICT’, the ICT Plan and the ADSI ICT Roadmap. We will bring these elements come together as we working through the ADSI ICT Planning toolkit which you will find in the Resources section of the module.

What do we mean by learning with and through ICT?
It is simply learning which takes place with the use of digital technology – hardware and the internet. When computers and other digital technologies are integrated with internet tools and resources, we can say that these are the essential conditions for ICT integration. When digital technologies are integrated with pedagogical strategies to meet the objectives of the curriculum a form of ICT takes place that can enhance the quality of teaching and learning.

For example, learning with and through ICT may involve using digital technologies of word, presentation, video and editing software to conduct research for an English argumentative essay project on health hazards in the school, investigating with members of the school community as well as health officials and websites online to gather more information, publishing the project on the school website to communicate the project essays with the school community.

Groups of girls in Nakuru Secondary School, Machakos County, Kenya work together in ‘webquest’ English project investigation. Soft skills development (working in teams, supporting, sharing and tolerating other group members’ views) has equal value with hard skills of cognitive (report writing) and technical (use of internet and productivity tools) development.

The ADSI holistic digital school of distinction approach focuses on technology use to promote 21st century skills (core subjects, life and career skills, learning and innovation skills, IT skills) important for work in today’s 21st century economy.
What is ADSI?

The African Digital Schools Initiative (ADSI) is designed to provide an effective, sustainable and replicable model of digital school of distinction (DSD) leaderships development and teacher ICT competency development that can contribute to addressing the issues of declining quality, inadequate teacher supply in STEM (Science, Technology, English and Mathematics) subjects, and very limited or non-existent integration of ICT in secondary level education in the countries of Kenya, Tanzania and Cote d’Ivoire. The ADSI model presents a specific focus on the use of ICT to promote innovative practice in STEM subject teaching and learning at secondary level in the target countries.

What is ICT?

ICT (Information and Communications Technologies) is the term used to describe all digital technologies used in education – from computer hardware and software to digital cameras, printers and digital content resources. The definition includes all new and emerging technologies.

What is an ICT Plan?

An ICT Plan describes a series of actions that a school will take to integrate new technology into the learning and teaching activities in the school over a specific timeframe. The ADSI ICT plan outlines how your school will improve and develop new technology integration. The plan outlines how a school will improve and develop the level of ICT integration under five headings of Leadership & Planning, ICT in the Curriculum, Professional Development, ICT Culture and ICT Infrastructure.

Figure 1: Overview of ICT planning domains

What is the ADSI ICT Roadmap?

The ADSI ICT Roadmap provides the school with a snapshot of its strengths and challenges in relation to ICT and allows the school to identify priorities for progression to the next stage of development.

![Figure 2: ADSI DSD Roadmap](image)

Each ADSI school uses the ICT Roadmap to identify where the school is at under the five key areas of:

- Leadership and planning
- ICT in the curriculum
- Professional learning
- ICT culture
- ICT infrastructure

The stages of development in the ADSI ICT Roadmap are described as:

- Initial
- E-Enabled
- E-Confident
- E-Mature

![Figure 3: Stages of Roadmap development](image)
In brief, the ICT road map refers to five key areas and four main stages of ICT development. The roadmap indicates the different milestones that schools need to achieve before they can get to the stage of e-maturity.

It is not unusual that a school may be at different stages across each area. For example schools may find that they are primarily in the Initial stage in terms of their ICT infrastructure but that they are in the E-Enabled stage when it comes to ICT in the curriculum. The ICT plan is not a score card in terms of ICT use, but it is designed to generate discussion among your school planning team around the key areas – where are you now in each area and where do you want to go.

The ICT Roadmap is available in Resource 1.

A brief assessment tool is provided in Resource 2: Snapshot DSD Review

Activity 1a: Where are you now?

Reflect
As you start the journey to develop an ICT Plan for your school, take a moment to reflect on your current school ICT capacity to use technology in teaching and learning and school organization and administration.

Use the DSD snapshot assessment tool in Resource 1a to mark where you believe your school is on the DSD Roadmap and three top priorities to move your school forward.

Discussion
- Join the DSD platform leadership discussion on Where are you now?
- Share with other school leaders what is your overall impression of your school DSD stage
- What are your three top priorities for improving the ICT potential in your school?
- In other words, what do you think you need to urgently address in order to get your school to the next stage of the Digital School of Distinction journey?

Developing your ICT Plan
Developing an ICT Plan will assist you to progress your school through the different Digital School of Distinction stages. When developing an ICT Plan, the school identifies a series of targets and tasks under each of the five development areas to advance the integration of ICT within the school. The ICT Plan contains three main sections: The introduction, the Plan itself, and the Conclusion.
A printed version of the ICT Planning Template is provided in Resource 3.

**The ICT Team**

Working with a strong planning team is the most effective way of developing your school ICT Plan. In choosing the team, it is important to consider the extent to which staff members have the ability and willingness to participate in the team.

In the ADSI pilot project of SIPSE (Strengthening Innovative Practice in Secondary Education) in Kenya and Tanzania, the ICT team was made up of the STEM teachers who took part in the project and members of the school management team.
In the ADSI programme it is important that you consider having a mix of teachers from STEM (Science, Technology, English and Mathematics) core subjects and other subjects – such as the Humanities subjects of History and Geography and practical subjects (Home Economics and technical subjects). Each subject department will be expected to have inputs into the ICT Plan in terms of setting ICT integration targets and tasks. Throughout the process, each teacher will need to consider how they are going to integrate ICT into their class teaching.

**Leadership and Vision**

School leadership is needed to integrate ICT into the culture of a school. Successful integration is more likely to occur in supportive school environment where the principal plays a key role in facilitating the planning process. However the principal does not have to be an expert in ICT use or in ICT.

Integrating ICT into learning and teaching requires schools to have a clear whole school focus on learning, teaching and organisational improvement. This involves strong leadership and vision as pivotal to embed ICT in a whole school approach that takes into account the following aspects

- Philosophical (educational philosophy of the school in relation to ICT)
- Pedagogical (learning and teaching)
- Physical (staff, facilities and equipment)
- Practical considerations (funding and time available)

Watch the video of the ADSI pilot project SIPSE (Strengthening Innovative Practice in Secondary Education). The video presents the voices of school leaders, teachers, students, national policy makers and project managers on the numerous ways that ICT played a positive and transformative role in teaching and learning in Kenyan and Tanzania Schools.

**Video:** GESCI Strengthen Innovation and Practice in Secondary Education stakeholder voices at: https://www.youtube.com/watch?v=JU0JpwdDvTc
**Discussion**

What are the ideas of **vision and action** that students, teachers, head teachers and policy makers present in the video?

- What are the similarities and differences between the voices of the different stakeholders?
- What are the first steps we can take in our schools to accommodate the ideas and voices of all stakeholders?

**Activity 1b: Where do you want to go?**

**Plan - School DSD Assessment**

- Print and insert a copy of your school ICT status to your ICT Plan under the section ‘Overview of Existing Resources’ (Resource 3a).

**E-Portfolio**

- Save a copy to your Leadership E-Portfolio.
- You will use it as a reference when you assess your school again in one year’s time.

**Discussion**

- Join the leader discussion on *Where do you want to go?*
- Now that you know where you are, what is our vision of where we want to go?
- Are our school communities ready for developing towards Digital Schools of Distinction?
- What are the first steps we can take in leading our schools in a pathways from Initial, to E-Enabled to E-Confident to E-Mature stages of DSD development?

The following section present *international and national visions* for the use of ICT to promote ICT that can assist us in developing planning our DSD development pathways

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Education Quality and ICT

In September 2015, the world came together and renewed their commitment toward the next 15 years of global development. In the Sustainable Development Goals (SDGs), the international community has called for global collaboration in 17 critical areas including environment, health, peace and education (UNDP, 2016).²

**SDG4 to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

Focuses on the Quality of Learning to provide the basis for sustainable development toward all other 16 areas.

“By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship”.

**SDG 9 to build resilient infrastructure, promote sustainable industrialization and foster innovation**

Emphasizes the importance of ICT in playing an enabling role to accelerate the progress towards reaching the SDGs.

“Significantly increase access to information and communication technology and strive to provide universal and affordable access to the Internet by 2020”

As we see in today’s world, Information and Communication Technology (ICT) holds tremendous potential for providing inclusive access to information and services, bridging economic and social gaps and improving opportunities for global collaboration and learning.

National Policy and ICT

Most schools are subject to national or regional policy guidelines. What we do in our schools is supposed to reflect national policy.

The Kenya and Tanzania Ministries of Education have clear visions for ICT integration in their education systems as presented in their national policies and strategies.

In Kenya the Ministry of Education Science and Technology policy vision and mission for ICT in Education is set out in the *Kenya National Information and Communication Technology (ICT) Strategy for Education and Training (2006)*

- **The vision** is to facilitate ICT as a universal tool for education and training.
- **The mission** is to facilitate effective use of ICT to improve access, learning and administration in delivery education programmes and services.

The Tanzania Ministry of Education and Vocational Training policy vision and mission for ICT in Education is set out in the *Tanzania Information & Communication Technology (ICT) Policy for Basic Education (2007)*

- **The vision** to achieve a well-educated and learning knowledge society.
- **The mission** is to integrate ICT to enhance access, equity, quality and relevance of basic education, while stimulating and improving teaching and life-long learning.

It is in this context that the ADSI ICT Roadmaps have been produced and contextualized – to assist schools to develop concrete plans and strategies to integrate ICT in teaching and learning across the curriculum with a special focus on the Science, Technology, English and Mathematics (STEM) curriculum.

Each secondary school in the ADSI programme in Kenya and Tanzania will be required to prepare and implement an ICT Plan as part of their whole school strategic plan. You will use the school ICT Plan template in Resource 3 in every activity that you do in this module.

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Activity 2: Review National ICT Policy and Strategy Documents

**Review**

- Spend some time reading through and familiarising yourself with your national policies and strategies for ICT in Education.
- Write in your learning diary one or two paragraphs summing up the major national guidelines relating to technology integration in schools in Kenya or Tanzania.

**School ICT Plan**

- Use Resource 3 ICT Planning template cover sheet to insert details of your school and your summary paragraphs on national guidelines under the ‘Introduction - Background Information’ section.

**E-Portfolio**

- Bear in mind that you will be building your ICT Plan in every unit of this module.
- Save each part of your ICT Plan development to your E-Portfolio.
What technology do your schools access and use?

The Hardware

‘Technology’ includes a large range of different devices such as desktop computers, laptops, mobile phones, smartphones, tablets, projectors, printers, scanners, digital cameras and so on. Some of these can be used on their own, with appropriate software; others can be connected to the internet. In the future, it is likely that phones and tablets will be more readily available than conventional desktop or laptop computers, and so it makes sense to plan around this emerging trend. As a school leader you should try to increase your awareness of technological developments and how they can be harnessed to enhance learning so that you can look for opportunities to provide access to these technologies in your school.

The Internet
The internet is **an immensely powerful resource**. Having access to the internet in a school can make an enormous difference to the opportunities available to teachers and students. Even if the internet is not available in school, some of the benefits can be realized by using devices that can be connected to the internet elsewhere in order to download materials that can then be used offline.

Although the internet is not currently widely available outside the urban areas in Kenya and Tanzania, this will change over time, with mobile devices rapidly offering greater reach and capabilities.

**Technology Access and Use**

The **Kenya ICT Strategy (2006)** outlines the following areas of priority for enabling technology access and use in schools:

- Establish policy framework
- Digital equipment
- Connectivity and network infrastructure
- Technical support
- Harnessing emerging technologies
- Digital content development
- Integration of ICTs in education
- Training (capacity building including professional development)
- Research and development
- Partnerships and resource mobilization
- Legal and regulatory framework, and
- Monitoring and evaluation.

Kenya Ministry of Education 2006, pp vii

The following case studies from SIPSE project schools in Kenya and Tanzania describe where the schools were during school review of technology access and use

<table>
<thead>
<tr>
<th>Case Study 1 - Kenya: Where we were… (Review)</th>
</tr>
</thead>
</table>

**Mumbuni Boys School, Machakos County**

Mumbuni Boys is a rural school located 32 km from Machakos town. The student population is 1,200. There are five classes per stream in the school. Each class has an average of 55 students.

In 2015 the principal worked with an ICT integration team for the development of an ICT policy for the school. The team consisted of the principal, the Science, Technology English and Mathematics (STEM) teachers involved in the ICT integration project of the Strengthening Innovative Practice in Secondary Education (SIPSE) (the pilot project of ADSI).
The Mumbuni School principal and teachers conducted an audit of the school technology resources and its outcomes were:

- There was a computer lab and plans were under way to uplift it with more computers
- Every department had a laptop and there were two projectors
- The school had internet connection
- The school had ICT tools that consisted of 3 hoofer's, white boards in the labs, digital camera, blower and 3 wireless presenters
- Sockets were been installed into the classrooms in two phases
  - the first phase was for form four and three classroom blocks
  - the second phase was for form one and two classroom blocks
- There was a stable supply source of power
- There was ICT resource management sheet
- Each class was allocated time in the ICT lab to accomplish their ICT scheme of work.
- All the departments were able to share documents through an existing LAN.

The Tanzania ICT Policy for Basic Education (2007) has the following objectives for enabling technology access and use in schools:

- Integrate the use of ICT to achieve educational policy objectives;
- Promote the harmonization of activities, approaches and standards in the educational uses of ICT;
- Ensure that there exists equitable access to ICT resources by students, teachers and administrators in all regions and types of educational institutions and offices;
- Ensure the proper management and maintenance of ICT resources and tools;
- Ensure the organized provision of ICT training to students, teachers and educational administrators;
- Facilitate the implementation of communication and information systems for the effective management of the Education Sector;
- Facilitate the use of ICT as a tool for assessment and evaluation of education, as well as administration and management;
- Encourage partnerships between the various stakeholders in the Education Sector;
- Facilitate the use of ICT resources in schools and colleges by the neighbouring community;
- Facilitate the development and use of ICT as a pedagogical tool for teaching and learning, and for the professional development of teachers, administrators and managers; and
- Promote development of local content for basic education and other stakeholders

Ministry of Education and Vocational Training (MoEVT) 2007, pp 3 – 5
**Case Study 2 - Tanzania: Where we were… (Review)**

*Kabila Secondary School, Magu District*

Kabila Secondary school is a deep rural school located about 32 km from Magu town. The school has 634 learners from form 1 to form 4, 16 classrooms and a staff room.

Most of the learners come from poor homes and are often required to assist grandparents to look after younger siblings or relatives, as well as do household chores, such as finding wood and fetching water. The majority of parents are farmers. The school has 26 educators, including the head of school.

The Kabila School principal and teachers **conducted an audit of the school technology resources** as part of the SIPSE project in 2015 and its outcomes were:

- The school was lucky enough to get a donation of 10 computers
- The computers were in the computer lab and one in the administrator’s office
- There was one projector
- There was one laptop
- There were switch socket and wires to enable ICT tools to perform well
- All of the resources mentioned above were well arranged by the STEM teacher to facilitate teaching and learning processes as per school policy on ICT integration

The two case studies raised issues of access to **sufficient equipment in the school labs and classrooms** and the reliability of existing equipment. The staff in both schools were very enthusiastic about ICT integration in school and classroom practice. Overall the schools were progressing from an Initial to an E-Enabled stage of the ICT Roadmap.

The school STEM teachers and principals proceeded to develop School Policies for ICT integration on the basis of their **school review** and technology audit.
Activity 3: Carrying out a technology audit

School ICT Plan

The purpose of this activity is for you to create an inventory of technology that you have in the school.

Using the audit tools in Resource 4 as follows:

- First, carry out a snapshot questionnaire with your teachers to see what technology your teachers access and use inside and outside of the school.
- Second, working with the ICT team in your school, create a detailed ICT audit of equipment, access, internet and staff capacity using the DSD Audit Guidelines and the DSD Audit Tool.
- Print and insert your school audit to your ICT Plan under the section ‘Overview of Existing School Resources’ (Resource 3).

Here is an image of a digital audit of desktop equipment in the school.

E-Portfolio

- Save a soft copy to your Leadership E-Portfolio.
- As well as using the audit for school planning and presentation to your school BOM, PTA and teachers, you can present it to the school support team from national and county levels during school Digital School of Distinction planning and development visits to receive their feedback.
What are 12 ways to optimize technology use in your school?\textsuperscript{5}

The PanAfrican Research Agenda was a research project on the pedagogical integration of ICT that was carried out in 15 countries in Western, Eastern and Southern African regions. The project identified 12 ways in which school leaders can optimize the use of technology in their schools.

See Resource 5 on 12 ways to for optimizing ICT access and use in your schools.

| 1. Ensure equal access to ICT for all students: girls as well as boys |
| 2. Ensure equal access to ICT for all teachers: particularly in the teachers’ room |
| 3. Given the potential of the Web, ensure that all computers are connected to the internet |
| 4. Organize relevant training programmes so that all teachers can use ICT in their practice |
| 5. When teaching computer courses take into account students technology needs and skills |
| 6. Find innovative ways to motivate teachers to make collaborative use of ICT |
| 7. Find ways to make ICT mobile and transportable so that as many students as possible can benefit |
| 8. Use ICT both inside and outside the classroom for teaching and learning school subjects |
| 9. Set up projects that put students in contact with other schools, regions and countries |
| 10. Delegate an ICT resource teacher to each school or a number of schools (no need to computer experts) |
| 11. Promote collaborative work and student interaction by having students use ICT |
| 12. Use ICT to facilitate school organization and administrative management (e.g. student records) |

\textsuperscript{5} \url{http://www.africaict.org/docs/principals.pdf}
Activity 4: Optimizing technology use in your school

Discussion

- Join your leadership discussion group
- Discuss whether you think some ways for optimizing ICT use in your schools are more necessary to prioritize than others.
- Can you identify additional ways to optimize ICT use that might be more relevant to your context? Share these with the school leader group

Reflection

- Open your school assessment document that you saved into your E-Portfolio in Activity 1.
- Assess your school ICT status with regard to the 12 ways to optimize technology use in your school.
- Focus on what are the strengths and weaknesses are of your school context. What are the most effective ways you can use to optimize the potential for technology use in teaching and learning in your school?
- Record your reflections in your Leadership Diary.
- See guidelines and templates for conducting a School SWOT analysis in Resource 6

Summary

We have come to the end of this unit where we have examined the importance of ICT integration to improve access and quality, we have learned how to assess the status of ICT in our schools and we have started to audit access and use of technology in our school practice. We have said that for your school to make progress on the ICT Roadmap, you must start planning for ICT integration.

Once you go back to your school, you will be expected to: set up your ICT team, share the Digital School Status of your school with teachers, BOM and PTA, and start the school audit of technology and internet access.

You should share your notes ideas with the ICT team and school community on strengths and weakness and ways to immediately optimize the use of technology in your school developed in activity 4 as well as way to implement them.
UNIT 2

Shared Vision and Leadership & Planning
Unit 2: Shared Vision and Leadership & Planning

What this unit is about

Welcome to unit two of the DSD Leadership Module.

In Unit 1 you have examined the ICT Roadmap tools to assist you in assessing where your school is now in the DSD development in relation to Initial, E-Enabled, E-Confident and E-Mature stages. You have used the roadmap tool to identify the key priorities for helping your schools progress to the next stage in DSD development journey.

You have examined the ICT Audit tool that will help you to quantify the school ICT resources and staff professional development in ICT.

What we have done so far in unit 1 has prepared you for drafting an ICT Vision Statement and to develop the Leadership and Planning area of your school ICT plan from an informed position.

What the school leader will learn in this unit

By the end of this unit you should be able to:

- Develop an ICT Vision Statement for your school
- Understand the role of school leaders in the digital age
- Develop the Leadership and Planning area in your ICT Plan

About ICT and Vision

Let us start by watching some short video clips of SIPSE teachers and hear their views about the technology they use in their schools and what are their aspirations for technology use to support teaching and learning in their schools.

The first SIPSE teacher speaks about how she uses technology in the English lessons to project written texts and promote student talk and discussion and she describes the use of TVs and DVDs to support her language teaching.

The second SIPSE teacher describes his vision for physical and mental changes in the way teaching and learning is carried out in the schools. He sees technology as a tool that can enable shift from the 19th and 20th century way of teaching to a new 21st century classroom where the quality of learning is paramount.

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6 SIPSE (Strengthening Innovative Practice in Secondary Education) was the ADSI pilot project conducted in 10 schools in Kenya and 10 school in Tanzania
What technology have you used in the classroom? 
http://vimeo.com/76941657

How do you think technology will affect your teaching experience in the classroom after the SIPSE project? 
http://vimeo.com/77593204

The interviews show a contrast between where teachers are now in schools (the first teacher’s description of technology use now in her school) and where you want to go (the second teacher’s vision for technology shifts that will change and transform teaching and learning in schools). It is important to understand the relationship between classroom practices and the way in which they serve to contribute to the implementation of school and national polices.

The Kenya and Tanzania Ministries of Education vision statements for ICT integration in their respective national development and education systems are presented here:

<table>
<thead>
<tr>
<th>Kenya Vision for ICT in Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vision</strong></td>
</tr>
<tr>
<td>The vision of this National ICT Master Plan is: <strong>Kenya as a regional ICT hub and a globally competitive digital economy.</strong></td>
</tr>
</tbody>
</table>

| **Theme**                           |
| The theme of this Master Plan is: **Towards a digital Kenya** |

Access the **National ICT Master Plan** and read the **vision and guiding principles** (see Section 3 pp 38-40 and then look at the small section on Education on page 79). 

<table>
<thead>
<tr>
<th>Kenya Vision for ICT in Education (ICT)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vision</strong></td>
</tr>
<tr>
<td>To facilitate ICT as a universal tool for education and training</td>
</tr>
</tbody>
</table>

The Ministry of Education, Science and Technology (MoEST) recognizes that:

- In order to achieve this vision every educational institution, teacher, learner and the respective community should be equipped with **appropriate ICT infrastructure, competencies and policies** for usage and progress.
- It calls for recognition of the fact that ICT provides **capabilities and skills needed for a knowledge-based economy**.
- It also calls for transforming teaching and learning to incorporate **new pedagogies that are appropriate for the 21st century**.

(MoE 2006, p5) (DOE, 2012)

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Tanzania Vision for ICT in Education

VISION
A well-educated and learning knowledge society

The MOEVT recognizes that:
- Accessibility to and **utilization of knowledge** is fundamental to the development of the country’s citizens;
- In light of the growing impact of advanced ICT on the economy of the country, students should be provided with **access to ICT-based tools so as to make a valid contribution to society**;
- ICT must be exploited to **allow students greater control over their learning** and thus develop skills at their own level and speed;
- The **integration of ICT in the education system will eventually boost the economic engine of the country by preparing its citizens for the knowledge based economy**;
- The **potential of all individuals (including the mentally and physically challenged) can be enhanced** by the use of multimedia packages and other electronic learning tools;
- The implementation and sustenance of ICT in the education system will be via a **partnership approach** involving the community, private and public organizations, and funding agencies;
- The **utilization of ICT management tools** within educational institutions could enhance the effectiveness and efficiency of the education sector; and
- The active participation of teachers and learners in the **development of their own teaching and learning materials** using ICT will have positive impact on the teaching-learning process.

MOEVT (2007, pp3-4)\(^1\)

The national visions define in broad terms **where the countries want to be** in regard to the quality provision and use of ICT in their education systems for development towards **knowledge and learning societies**.

The national policies aspirations echo the aspirations of the teachers in interviews for ICT use to enhance student 21\(^{st}\) century skills, to shift teaching and learning towards pedagogies and skills development that are appropriate for 21\(^{st}\) century - student graduates with the capabilities to participate in and contribute to the development of knowledge societies in their countries.

### Activity 1: Linking National and School ICT Policies

**Reflection**

Reflect on the **benefits of understanding** national ICT policy and strategy.
- Are the national ICT policies and strategies echoed in your **school policies and visions for ICT integration**?
- Does your school have an ICT vision statement that is part of your school vision and mission statements?
- Does the vision reflect national vision and objectives for ICT integration in the school curriculum?

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Preparing an ICT Vision Statement

The ICT vision statement looks to the future and is written in broad terms. In preparing a vision statement, sufficient time, support, commitment, team work and flexibility are required in order to cover a positive attitude toward the use of ICT. This will form the basis for the ICT Plan and, thus, needs to be thought out carefully.

A clear ICT vision statement will support and enhance your school’s overall aims in terms of learning, teaching, management and administration and will sit well with the school’s ethos, beliefs and values. It will reflect national values and vision for ICT integration across the curriculum and to support school administration and organization.

Look at the following examples of ICT vision from the SIPSE pilot project schools in Kenya and Tanzania – and the linkages the schools established in their visions between national, school and ICT visions.

Case Study 1: School Visions Kenya

Jomo Kenyatta High School

NATIONAL VISION
To facilitate ICT as a universal tool in education and training.

SCHOOL VISION
To be a centre of excellence.

SCHOOL ICT VISION
To incorporate ICT as a vital tool in achieving our ultimate goal to prepare our students at Jomo Kenyatta High School (JKHS) in a rapidly changing global Environment, use ICT to give students a link to a vast knowledge base and develop their awareness to approach ICT in a positive and balanced way with focus on increasing knowledge through fun and research, also have all teachers use ICT in the day to day preparation and delivery of their lessons.

Mwala Secondary School, Kenya

SCHOOL ICT VISION
To ensure that all students graduating from Mwala school shall be computer and technologically literate, knowledgeable in the application of IT and be able to apply it in their learning experience and to provide the necessary technological tools, technical assistance and ongoing support to the staff which will enable all individuals to access information and resources to solve problems.

SCHOOL ICT CORE VALUES
- Team work and wide consultation - we shall be committed to teamwork and consult each other
- Excellence, efficiency and effectiveness: We will embrace Excellence and efficiency in all ICT activities
- Commitment Dedication and professionalism - We shall be committed and dedicated to the ICT integration
- Leadership and innovation - We shall instil leadership with use of ICT in all the stakeholders

Jomo Kenyatta High School, Mixed Boarding School, Nakuru County, Kenya

Mwala Secondary School, Machakos County, Kenya
Case Study 2: School Visions Tanzania

Bwiru Boys Technical Secondary School, Tanzania

**MOEV Vision**
A well-educated and learning knowledge society

**School Vision**
Bwiru Boys Technical Secondary school aspire to attain highest academic performance in all secondary schools in Tanzania.

**School ICT Vision**
To improve teaching and learning process through the use of paperless technology and getting rid of chalk and talk.

Sanjo Secondary School, Tanzania

**MOEV Vision**
A well-educated and learning knowledge society

**School Vision**
Be a source of inspiration for the community around it, to strike and improve their lives

**School ICT Vision**
To create conducive academic environment for our students and teachers such that modern teaching and learning facilities are available.

Brainstorming a School ICT Vision

Think critically about how you can prepare a vision statement for your school to reach Digital School of Distinction Status by 2020. Use everything you have read in this unit so far in your reflection.

Activity 2: Brainstorming an ICT Vision

**Brainstorm & Discussion**

In your leadership group brainstorm a collective vision statement about your schools in 5 years time (2020) when the ADSI project for ICT use in STEM and other subject teaching and learning is over.

Imagine that your schools have completed the journey towards becoming Digital Schools of Distinction.

- What will the digital schools have achieved?
- What are the head teachers, teachers, students doing differently – in their actions, relationships and networks?
- In other words, what would total success look like?

Use the template in **Resource 7** to write a first draft of your school ICT Vision. Map and show how the ICT Vision is linked to the School Vision and the National Vision.
Developing a Shared School ICT Vision

Every journey starts somewhere and so does every vision. A school ICT vision is something you will collectively develop with your ICT Team and other school community stakeholders as you move together through each stage of your journey towards Digital Schools of Excellence. It is something that you and your ICT team will keep communicating about to ensure that the vision remains relevant and appropriate.

A strong school vision for ICT, agreed upon by the principal, BOM, PTA and school community stakeholders, along with the principal’s full support for the development of the ICT Plan, are the most important contributing factors to the success of a school’s ICT Plan.

Activity 3: Developing a Shared ICT Vision for your School

Before you formulate your school ICT vision statement, here are some questions to consider:

- How does the school view ICT
- What role do you envisage for teachers in your school using ICT?
- How do you envisage teacher preparing curriculum materials in your school?
  - Will teachers have access to ICT to prepare resources?
  - Will teachers have access to ICT in their classrooms?
- How will teachers and students work together?
- How can ICTs be used to enhance the learning environment of students with special educational needs?
- How will ICT impact on student assessment?
  - Will the school accept digital homework, i.e. word processed documents, digital project work, digital audio files, etc.?
  - Will the school have a virtual Learning Environment (VLE) where student assignments and feedback are stored?
- How will the school link with the home?
  - Will ICT play a part in linking home with school?
- What ICT do you envisage students bringing to the school?
  - Will students bring their own devices (BYOD)?
  - How will ethical and responsible use of ICT (personal or school-based) be communicated to students?
- How will the ethical and responsible use of ICT be integrated across all subjects?
- How do the answers to the above questions dovetail with the school’s vision and the objectives of the Whole School Plan?
**ICT Plan**

- Arrange a meeting with your school ICT Team to discuss the questions to ask for developing your school ICT Vision.
- Develop a first draft of your ICT school vision statement
  - Use ICT visioning questions to assist the team discussion and reflection for developing the school ICT vision statement
  - Open your ICT Plan template (Resource 3) and insert your overall vision and mission statement for the school and your ICT vision statement into section 1 of the plan.

**E-Portfolio**

- Print a hard copy and save a soft copy of each section of your plan into your ICT Portfolio.
- Bear in mind that you may have to work with your school community stakeholders in developing ownership of your ICT Vision.

Use the checklist below to assess your vision statement\(^\text{11}\)

<table>
<thead>
<tr>
<th>Criteria – The vision statement...</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaks about the future of my school</td>
<td></td>
</tr>
<tr>
<td>Is concise, yet memorable (a short sentence that is easy to remember)</td>
<td></td>
</tr>
<tr>
<td>Uses simple language my school community stakeholders will understand</td>
<td></td>
</tr>
<tr>
<td>Paints a compelling picture of my school and community in the future</td>
<td></td>
</tr>
<tr>
<td>Alludes to how technology may contribute to enabling improvement</td>
<td></td>
</tr>
</tbody>
</table>

**ICT Vision Resources**

You may like to watch this video on how to write an inspirational vision statement and then review your vision statement.

**Video: How to write a vision statement that inspires** ([https://www.youtube.com/watch?v=ioY-YSOKBtY&feature=youtu.be](https://www.youtube.com/watch?v=ioY-YSOKBtY&feature=youtu.be))

You may like to review this guideline for School Principals on Managing ICTs in South African Schools: Chapter 5 – How can a school build a shared vision for ICT use?\(^\text{12}\)

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**Leadership and Planning**

There is a clear need for school leadership to play a central role in the development of the ICT Plan. This does not mean that school principals have to become experts in how ICT can enhance learning and teaching – but they do need to learn the process.

**Reading, Video and Case Study Resources**

Access and review the following videos and readings on African leadership and Digital School Leadership

- Watch the TED Talk video of Fred Swaniker (2014) *The leaders who ruined Africa, and the generation who can fix it* where he describes how leadership at national and grassroots levels can transform Africa\(^\text{13}\)
- Read Pellissier, R. (2001). *Instructions to Leaders in the Digital Age* (Resource 2) which introduces the role teachers need to play when ICT is introduced to build the school as a learning and knowledge creation organization
- Watch the video of school principals in primary and secondary schools in Ireland talking about their vision for ICT in their schools and how they set about planning for technology use to support innovative pedagogical instruction and subject teaching.\(^\text{14}\)

Consider the Kenya and Tanzania case studies of school principals’ visions and actions plans for ICT use in their schools

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### Case Study 1: Kenya – what is the school leadership vision and action plan for ICT integration?

**Mrs. Chumba, Principal, Nakuru Girls**

The school management endeavors to ensure that the school operations are highly computerized to ensure timely delivery of services.

**Mr. Wambua, Principal, Mumbuni Boys**

All teachers and learners in our school to become confident users of ICT so that they can develop the skills, knowledge and understanding which enables them to use appropriate ICT resources effectively as powerful tools for teaching & learning.

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\(^\text{13}\) [https://www.ted.com/talks/fred_swaniker_the_leaders_who_ruined_africa_and_the_generation_who_can_fix_it?language=en](https://www.ted.com/talks/fred_swaniker_the_leaders_who_ruined_africa_and_the_generation_who_can_fix_it?language=en)

\(^\text{14}\) [https://vimeo.com/25713691](https://vimeo.com/25713691)
**Case Study 2: Tanzania – what is the school leadership vision and action plan for ICT integration?**

**Kitangiri Secondary School**

The Principal is highly respected in the school and has the support of all the educators and of the families of learners.
- She is a skilled educator and communicator who was involved in the provincial discussions on Curriculum 2005.
- She leads by example and the SMT does the same.
- She is very positive about ICTs, and to some extent she tries to implement the policy.

**Mr. Salim, Principal, Sanjo Secondary School**

The school headmaster has a positive attitude towards the use of ICT in classrooms as well as in administrative activities.
- He is currently working hard to ensure that the school gets electricity so as to enhance smooth running of the teaching activities as far as ICT integration is concerned.
- Also the headmaster has a full support from the teaching staff and the community as well in dealing with challenges the school faces.

From your reading, you may have realised the digital age requires national and school leaders to perform management functions in a different way. A major management function is school planning. We see that the **ICT vision needs to fully integrated with the vision expressed in the Whole School Plan** whereby teachers and students work together to use ICT in innovative ways.
## Activity 4: Getting ready to develop your ICT Plan

**Discussion**

- From the Irish Video and the Kenya and Tanzania case studies what do you see are the most important factors to consider in ICT planning?
- When we see the many priorities in secondary schools, from providing classrooms, to getting electricity, to improving transition rates to third level, where do you think ICT integration should rank? Why?
- What expertise and capacities do we have in our schools that we can tap to help us systematically plan for 21st century digital learning environments?
- Where can we apply for funding to support the E-Planning activities?
- What are the first planning steps we could or should take to integrate technology into teaching, learning and assessment strategies in the school?

The creation of such a culture requires time and significant teacher support. We see that the role of the Principal, the BOM, the PTA, the School Based Coordinator and the ICT Team is core to the development of structures (electricity, equipment, mobile technologies, internet) that will enable such a culture to flourish within the school.

Having worked through the National ICT Frameworks, ICT Vision and Case Study examples, you are now ready to address the questions ‘How will we get the school to where we want it in relation to Digital School of Distinction (DSD) roadmap?’ The progressive DSD route will be outlined in a 4 step ICT Planning Cycle for each of the Roadmap areas. In this unit we will work on the first 2 steps of the planning cycle with a focus on the Leadership and Planning area.

### Step 1: Review and Prioritize

![Step 1: Review and Prioritize Diagram](image)

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The first step is to identify your **ICT Priorities** for each DSD area. These priorities will emerge from the review process that you have explored in units 1 and 2 using the national *ICT Framework, the Case Studies, the ICT Audit and the ICT Roadmap*.

**Activity 5: What are your Leadership and Planning priorities?**

**ICT Roadmap**
- Use the **Resource 1** DSD Roadmap and **Resources 3** ICT School Plan template and to identify your school’s immediate priorities for the **Leadership and Planning** area.
- Discussing each LP area at the **Initial** Stage of the roadmap to progress it to the **E-Enabled** stage is a good starting point.
  - Vision: What will be the focus of your vision for ICT?
  - Plan: Who will develop the ICT Plan?
  - Integration: Where will the focus of ICT integration be?
  - Acceptable Use Policy (AUP): Who will be consulted to develop the AUP?
  - Inclusion: What groups of students will be the inclusion target of ICT use?

**E-Portfolio**
- The process of identifying priorities should be coordinated with the ICT Team.
- Note your priorities in your Leadership Journal and keep a copy in your E-Portfolio. You will insert these priorities in your ICT plan.

See **Resource 3b** links to a sample extract from an ICT Plan illustrating ICT Priorities and to samples of AUP policies from primary and secondary schools in Ireland.
Step 2: Develop Plan

The second step involves the use of two linked components – the ICT Plan overview and the Action Plan (Resource 3).

The ICT Plan Overview
The ICT Plan overview contains the school’s identified ICT priorities (established in Step 1). For each priority the plan identifies:

- Targets – to be achieved that will meet the stated priorities
- Tasks – to be achieved to meet the stated targets
- Timeframe – or deadline for the completion of each task

<table>
<thead>
<tr>
<th>PRIORITIES</th>
<th>TARGETS</th>
<th>TASKS</th>
<th>TIMEFRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership and Planning</strong></td>
<td><strong>Target 1:</strong> Task 1:</td>
<td>Task 2:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Target 2:</strong> Task 1:</td>
<td>Task 2:</td>
<td></td>
</tr>
<tr>
<td><strong>ICT in the curriculum</strong></td>
<td><strong>Target 1:</strong> Task 1:</td>
<td>Task 2:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Target 2:</strong> Task 1:</td>
<td>Task 2:</td>
<td></td>
</tr>
</tbody>
</table>

See Resource 5 examples of ICT priorities, targets, tasks and SMART task indicators.
The ICT Action Plan
The action plan records the ICT Priorities already identified. For each ICT priority there may be one or more associated targets. For each target there may be one or more associated tasks.

The action plan identifies who will carry out the task, what resources are needed to do this, what are the expected outcomes and the monitoring and evaluation procedures.

The example below from Ireland illustrates the different sections of the action plan.
## Action Plan

### ICT in the curriculum

**Priorities:**

**Teachers use ICT for Lesson Planning and as a teaching tool**

**Target (What do we want to achieve?):**

_A range of e-Learning activities will be developed for use in classrooms_

<table>
<thead>
<tr>
<th>TASK (What needs to be done?)</th>
<th>TIMEFRAME (When is it to be done by?)</th>
<th>REMITS (Who is to do it?)</th>
<th>RESOURCES (What resources are needed?)</th>
<th>SUCCESS CRITERIA (What are the desired outcomes?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop a (multimedia) PowerPoint for English</td>
<td>Spring Term 2011</td>
<td>Each teacher in the English Department</td>
<td>Images Video clip CPD Microphone, Audacity, Imagebank, Irish Times etc.</td>
<td>PowerPoint developed for teaching a topic on Poetry in English</td>
</tr>
</tbody>
</table>

**Agreed Monitoring Procedures:**

Staff meetings; Individual teachers; e-learning team

**Agreed Evaluation Procedures:**

Peer Evaluation among teachers and students; NCCA framework

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**Example**
Activity 6: Developing Leadership and Planning Overview and Action Plan

**ICT Plan**
- Open your ICT Plan (Resource 3) that you have been working on so far in the Introduction section.
- Complete the overview and action plan sections related to the Leadership and Planning area.
- Use your learning in this unit for drafting an overview of your priorities, targets and tasks and an action plan in this area for the current school year.

**E-Portfolio**
- Save a soft copy of your Leadership and Planning draft to your E-Portfolio.
- You will develop your plan fully when you return to your school working with your ICT Team and sharing it with your BOM, PTA and school community stakeholders.

**Reflection**
- Do you feel you have a clearer idea of what is required for your school to move along the DSD roadmap towards achieving your vision?
- What is your personal role as a leader going to be along the DSD roadmap?
- Write your reflections in your leadership diary and/or save them into your E-Portfolio.

2. Conclusion

We have come to the end of this session where we have learnt how to create a Vision Statement and how plan for the Leadership and Planning area of the DSD roadmap. We have said that for your school to make progress on the ICT Roadmap, you must involve your ICT Team, your BOM and PTA in the planning for ICT integration.

**Once you go back to your school**, you will be expected to: ensure that the ICT Team is formed with clear terms of reference. The first task of the ICT Team should be to develop the vision, overview and action plan that you have explored in this unit. Your task will be to lead and facilitate the process based on your learning and interaction with school leaders in the workshop sessions.
UNIT 3

ICT in the Curriculum and ICT School Culture
Unit 3: ICT in the Curriculum and ICT School Culture

What this unit is about
Welcome to unit three of the Leadership DSD Module.

In Unit 2 you have developed a first draft of your ICT Vision statement and Leadership and Planning Overview and Action Plan. You have explored the review of your National ICT Framework, Case Studies, ICT Audit and ICT Roadmap to identify key priorities for helping you to plan your schools progress to the next stage in DSD development journey.

What we have done so far in units 1 and 2 has prepared you to develop overview and action plans for the ICT in the Curriculum and the ICT School Culture areas of your school ICT plan from an informed position.

What the school leader will learn in this unit
By the end of this unit you should be able to:

- Understand the role of technology to support new constructs for teaching and learning across the curriculum
- Develop the ICT in the Curriculum area in your ICT Plan
- Examine how to support teachers in the use of technology
- Develop the ICT School Culture area in your ICT Plan

ICT in the curriculum
ICT integration is a key component of any ICT Plan. It describes how ICT can add value to learning and teaching throughout the school. When completing this section of the ICT Roadmap, you will need to consider carefully your national ICT Frameworks for technology integration in the curriculum.

Your job as a school leader will be to ensure that teachers and students in your school have access to technology that is required for you to collectively achieve your curriculum objectives and educational goals. Your job is also to consider how teachers and students can change and transform teaching and learning with the use of technology and be transformed by technology use.
ICT and Curriculum Reform: Reading and Video Resources

Access and review the following videos and readings on ICT, curriculum reform and pedagogy for a 21st century school.

- **Presentation Case Study:** Kenya Institute of Curriculum Development (KICD) (2016) Highlights of Key Findings from a Needs Assessment Research for Curriculum Reform

- **Video:** An interview with Dr. Julius Ouma Jwan of the Kenyan Institute of Curriculum Development talks about curriculum reform and ICT

- **Video:** Greg Whitby, Executive Director of School, Parametta Catholic Diocese, Australia speaks of new pedagogy for the 21st century learning (21CL).

The curriculum reform research and videos present **dilemmas and opportunities** for teaching and learning in the 21st century due to a knowledge explosion that is driven by technology.

- In the first video Dr. Jwan discusses curriculum reform for modernizing the way students learn with a focus on learning outcomes that are relevant for the 21st century workplace and society.

- In the second video Greg Whitby discusses curriculum reform for modernizing the way we prepare teachers with relevant pedagogies to support student 21st century learning.

- In the curriculum needs assessment research Kenyan stakeholders (learners, teachers, parents and leaders at all education system levels) emphasised the need for use of participatory pedagogical approaches, experiments and field trips to relate learning to real life. The Kenyan public propose a shift in assessment modalities from purely academic to other domains of education (KICD, 2016, pp19 - 23).

However real or authentic learning, especially the kind that brings real life experiences into the classroom, is **not the norm in most schools** – whether nationally, regionally or internationally. Authentic learning in the classroom relies on learning strategies such as incorporating real life experiences, technology, tools students are familiar with, and interactions with the community. These strategies and instructional approaches may help **retain students in school and prepare them for further education, careers and citizenship** in ways that traditional practices often do not (Horizon Report, 2016, p15). 

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Activity 1: Leading with Curriculum and Pedagogy for 21st Century Learning

Discussion

- Can we create **real learning opportunities** for students without having to drastically change the curriculum?
- How can **technology support** real / authentic learning opportunities for our students?
- What kinds of **resources and supports** will our teachers need to integrate authentic learning into their regular teaching practices of STEM and other subjects?
- What should the **role of local employers, policy makers, community leaders and school leaders** be in helping our school access needed expertise and resoruces?

ICT and 21st Century Competencies

The Kenya curriculum reform research identified **core competencies basic education** – among them are the ‘4C’ 21st century competencies of **Communication, Collaboration, Critical Thinking and Creativity** as well as **Digital Literacy** (KICD, p36).

The ADSI programme will integrate these core competencies into the teacher module for ICT use in STEM (Science, Technology, English and Mathematics) and other subjects. A common mistake in ICT integration is to focus on the technology rather than what you intend to do with it. Being clear about your educational and curriculum priorities will enable you to select the technology that is most likely to help you meet those priorities.

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Activity 2: Linking technology to 21\textsuperscript{st} Century Learning

Working with your leader group, complete the table below. The purpose of this exercise is to encourage you to focus on the curriculum learning outcomes of technology use rather than on the technology itself.

*Identifying the benefit of technology for supporting Student 21\textsuperscript{st} Century Learning*

<table>
<thead>
<tr>
<th>21\textsuperscript{st} Century Competencies</th>
<th>How can technology help?</th>
<th>What technology would be needed?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CRITICAL THINKING</strong> - students being able to analyze complex problems, investigate questions for which there is no clear-cut answers, evaluate different points of view or sources of information, and draw appropriate conclusions based on evidence and reasoning</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COLLABORATION</strong> - students being able to work together to solve problems or answer questions, to work effectively and respectfully in teams to accomplish a common goal and to assume shared responsibility for completing a task</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COMMUNICATION</strong>- students being able to organize their thoughts, data and findings and share these effectively through a variety of media, as well as orally and in writing</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CREATIVITY</strong> - students being able to generate and refine solutions to complex problems or tasks based on synthesis, analysis and then combining or presenting what they have learned in new and original ways.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DIGITAL LITERACY (INFORMATION LITERACY, MEDIA LITERACY)</strong> - student use of technology as a tool for learning – to manage their learning and produce different products using appropriate information and communication technology</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources: Hixon et al. (2012); Wachira (2016)

**Planning**

- What are the *first steps* we can should take to address the challenges of real 21\textsuperscript{st} century learning and competency development?
- What are the *measures of success* that we can apply if we shift from academic measure to integrate more real learning opportunities and 21\textsuperscript{st} century competencies?

**E-Portfolio**

- Write notes from the discussion in your Leadership Diary and save them to your E-Portfolio for integrating your ideas and priorities for ICT in the curriculum into your ICT Plan.

See Platform Resources: Examples of 21\textsuperscript{st} Century Skills and Active Teaching and Learning Frameworks to promote relevant and meaningful learning with and through technology.
**ICT School Culture**

Schools should consider how they can integrate ICT into the school culture to enable sharing and mutual support among teachers, collaboration with other schools locally and globally while also improving communications with parents and the wider local community. In developing the ICT School Culture Plan, the school should look beyond the curriculum to see how ICT is used in other areas such as:

- Teacher collaboration and peer to peer support for development of lesson plans and observations of ICT use in STEM and other subjects
- Creating and sharing digital resources among colleagues both within the school and through professional learning networks (PLNs) or communities of practice (COPs)
- Use a virtual learning environment (VLE)
- Communicating with parents and the wider community
- Providing access to ICT outside the classroom
- Developing and updating the school website

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**Case Studies: Promoting an ICT Culture in the School**

<table>
<thead>
<tr>
<th>ICT Content Sharing</th>
<th>STEM Teachers Educating Other Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mumbuni Boys SS, Machakos County Kenya</td>
<td>Ngudu Secondary School, Tanzania</td>
</tr>
</tbody>
</table>

---

**Open Education Resources**

In the first video of this unit Dr. Jwan of KICD discussed the importance of digital content at three levels, namely: 1) the digitization of the curriculum and syllabus to ensure access, 2) building the capacity of educators to produce their own digital content and 3) providing guidelines for vetting and approval of digital content for us in schools.

As a school leader, one of the first steps in creating an ICT school culture in your school, and encouraging your teachers to do the same, is to explore the resources that are freely available on the internet. You should share those that are helpful and extract any elements that can be recycled in your own context.

- OERs are resources that are **designed to be used flexibly** so that they can be adapted for a variety of uses and purposes
• You can ‘pick and mix’ resources from OERs you find to meet your needs
• However as discussed by Dr. Jwan in the video, it is important to take a critical view of these resources and evaluate their quality.
• The global freedom to write or publish on the internet means that anyone can produce and publish an OER

See Resource 1 for a list of OERs for Science, Technology, English and Mathematics that will be introduced in the teacher modules.

**Activity 3: Exploring and Reviewing OERs**

<table>
<thead>
<tr>
<th>Planning</th>
<th>Discussion</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>When you have access to the Internet, explore OERs</th>
<th>Pedagogical practices in schools worldwide are shifting focus as students across a wide variety of disciplines are learning by making rather than from the simple consumption of content.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Explore some of the resources for STEM available on the internet. Resource 1 has some suggestions of websites that you might try</td>
<td>• Do we provide students with enough opportunity to create and make projects and content that demonstrate their learning?</td>
</tr>
<tr>
<td>• For each website, take a critical look at the resources.</td>
<td>• Are our teachers prepared to support and guide students to create?</td>
</tr>
<tr>
<td>• Resource 9a has a checklist that you could use in order to decide if the resources might be helpful to your teachers and comply with national curriculum requirements and student learning outcomes</td>
<td>• Are there specific content areas or subjects in which student – created projects/content can greatly enhance learning and engagement?</td>
</tr>
<tr>
<td>• Resource 9b has a template where you can do a more in-depth review of the quality, relevance and appropriateness of the resources for the learners in your schools</td>
<td>• How can we evaluate the real learning benefits of creativity and student created content?</td>
</tr>
</tbody>
</table>

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19 Adapted: TESS-India at: [http://www.tess-india.edu.in/search/node/Leadership](http://www.tess-india.edu.in/search/node/Leadership)
ICT Plan – ICT in the Curriculum & ICT School Culture

Step 1: Review and Prioritize

Activity 4: What are your ICT in the Curriculum and ICT School Culture priorities?

**ICT Roadmap**
- Use the **Resource 1** DSD Roadmap to identify your school’s immediate priorities for the ICT in the Curriculum and ICT School Culture area
- Discuss each area at the Initial Stage of the roadmap to progress it to the E-Enabled stage

**E-Portfolio**
- The process of identifying priorities should be coordinated with the ICT Team.
- Note your priorities in your Leadership Journal and keep a copy in your E-Portfolio. You will insert these priorities in your ICT plan.
Unit 4: Professional Development and ICT Infrastructure

What this unit is about
Welcome to unit four of the DSD Leadership Module.

In Units 1, 2 and 3 you have developed a first draft of your ICT Plan Introduction and Leadership and Planning, ICT in the Curriculum and ICT School Culture Overviews and Action Plans. You have reviewed your National ICT Framework, Case Studies, ICT Audit and ICT Roadmap to identify key priorities for helping you to plan your school’s progress to the next stage in DSD development journey.

What we have done so far in units 1, 2 and 3 has prepared you to develop the final parts of your overview and action plans for the Professional Development and the ICT Infrastructure areas of your school ICT plan from an informed position.

What the school leader will learn in this unit
By the end of this unit you should be able to:

- Appreciate the role of staff professional development in ICT integration
- Develop the Professional Development area in your ICT Plan
- Review guidelines for developing ICT infrastructure in the schools
- Develop the ICT Infrastructure area in your ICT Plan

Professional Development
Welcome to this session on professional development. Did you know that every twelve to eighteen months, computers double their capabilities, and so do the information technologies that use them. For teachers to keep up with technological changes, they need continuous professional development.

Below is an illustration of the different types of knowledge required for effective teaching:
UNIT 4

Professional Development and ICT Infrastructure
The second step involves the use of two linked components: Overview and Action Plan.

Activity 5: Developing ICT in the Curriculum and Action Plan

**ICT Plan**
- Open your ICT Plan (Resource 3)
- Complete the overview and action plan sections related to the ICT in the Curriculum and ICT School Culture areas
- Use the learning and deeper analysis you have done in this unit for planning in these areas.

**Reflection**
- Have you been exposed to new ideas in this unit?
- If so how are they going to influence your E-Plan and your practice for ICT integration and promoting a School Culture in your school?
- Write your reflections in your leadership diary and them into your leadership portfolio

3. Conclusion

We have come to the end of this session where we have support curriculum reform, new pedagogies for 21st century learning, and promoting a school culture for ICT integration. Once you have understood the tools, you are expected to develop each section of the overview and action plan as provided in this unit. Your task will be to lead and facilitate the process of ICT implementation with the school leaders in the workshop sessions.
The TPACK Model

The TPACK model emphasizes the importance of teachers having the necessary technological knowledge to be able to effectively integrate ICT with pedagogical knowledge and content knowledge. Teachers require the necessary competencies to effectively use technology to enhance teaching and learning.

In this session, we shall look at how the school management can help the teachers and other school staff to develop competence in integrating ICT. We shall look at how a school can conduct an ICT audit and develop a training plan.

Case Study 1: How do teachers currently use technology?

Read the following extract from “ICT integration in Education” Module by the Kenya Education Management Institute:

Teachers’ expertise in using ICTs in their teaching
- Schools that report the highest levels of teacher ICT-related skills and experience are often not those with heavy computer infrastructure, but rather ones that make use of ICTs on a routine basis throughout the teaching and learning process.
- Teacher inexperience and skill deficiencies may often be an important factor inhibiting the effectiveness of ICT use in education for improving student outcomes.

Teacher usage of ICTs:
Teachers most often use ICTs for ‘routine tasks’ (record keeping, lesson plan development, information presentation, basic information searches on the Internet). Teachers more knowledgeable in ICTs use computer assisted instruction less than other teachers who use ICTs, but utilize ICTs more overall. Types of usage of ICTs correlate with teacher pedagogical philosophies:

21 Koehler, M. 2013. Technology Pedagogy and Content knowledge (TPACK), http://tpack.org/
Case Study 1: How do teachers currently use technology?

- Teachers who use ICTs the most -- and the most effectively -- are less likely to use traditional 'transmission-method' pedagogies.
- Teachers who use more types of software tend to practice more "constructivist" pedagogies.

Teacher participation in professional development:
The following issues are critical to teacher participation in professional development:

- **Motivation**: Teachers require additional motivation and incentives to participate actively in professional development activities.
- **Access to ICTs**: The most significant factor for continuing the development of teachers’ ICT-related skills is for them to have regular access to functioning and relevant ICT equipment.
- **Teachers’ subject knowledge**: The way ICT is used in lessons is influenced by teacher knowledge about their subjects, and how ICT resources can be utilized and related to it.
- **Teacher self-learning**: ICTs can aid teacher self-learning in subject matter; By providing access to updated and additional learning resources, ICTs can enable teacher self-learning in his/her subject area.
- **On-going in-service training**: Traditional one-time teacher training workshops have not been seen as effective in helping teachers to feel comfortable using ICTs, let alone in integrating it successfully into their teaching. On-going professional development is more effective.

Case study 1 raises the issue of teacher confidence as a key factor in terms of how teachers integrate ICT into their practice. Teachers require the technical skills to use technology and the pedagogical skills to integrate ICT into their teaching. It is also clear that teachers are more interested in attending pedagogically focused, as opposed to technically focused, ICT professional development.

The ADSI Teacher Professional Development Model

Read **Resource 10a** on the ADSI teacher professional model which integrates two frameworks of **ICT Competency Framework for Teachers** (ICT-CFT) and **Technology Pedagogy and Content Knowledge** (TPACK) to build teachers confidence and competency in the use of ICT in their teaching of Science, Technology, English and Mathematics (STEM).

Access the following video on the ICT Competency framework for teachers (ICT-CFT). The video describes the ICT-CFT phased approach for developing teachers’ ICT competencies through three cycles of technology literacy, knowledge deepening and knowledge creation. It also explains how teachers apply their competencies across in their work across six domains of education and policy, curriculum, pedagogy, ICT, organization and administration and professional learning.
Activity 1: Carry out a development –prioritization scan of your teacher ICT competencies

The purpose of this activity is for you to begin think about where teachers are at in technology integration in your school and where are there gaps.

Use Resource 10B ICT-CFT development-prioritization tool to

- Rate where you see the ICT competency level of teachers in your school (technology literacy, knowledge deepening and knowledge creation)
- Identify the top three ICT teacher competency priorities that you would want to focus on in support your teacher professional development in your school
- In your E-Portfolio use the scan to make a summary of the main challenges and opportunities you see that teachers in your school will have with technology integration.
Discussion

What are your expectations of your teachers in the following five areas of professional development?

1. **Developing key ICT skills:** Is it possible that some of your teachers need help with basic skills such as using a mouse, or opening and closing documents. Your challenge is to give them the confidence to use ICT as something that will help them with their work.

2. **Using ICT to develop pedagogical skills:** Are we providing enough support for teachers to help them integrate technology successfully into their instructional approaches? If you are deciding what technology to buy for your school, a major consideration will be to what extent the technology helps teachers to improve their teaching.

3. **Using ICT to support STEM subject learning:** ICT can be used to support STEM teaching and learning. Recording devices can enrich language for example, and simulations can enrich the teaching of science. Do we provide direction and encouragement to teachers who want to evolve their skills, content knowledge and collaboration?

4. **Using ICT to support professional learning:** Are we providing enough time and opportunity for teachers to mentor and support one another? In identifying OERs for use in their classrooms? They could work in pairs to film each other in the classroom and then discuss the films with a view to improving their teaching.

5. **Using available ICT infrastructure:** Are there resources, tools and expertise our teachers need to use technology more effectively with and for students? Teachers who have gaps in their subject knowledge will have a huge number of resources on the internet to help them, including quizzes, simulations and sample test papers with answers.

E-Portfolio

Go back to the summary you made from the development-prioritization scan in Activity 1 and your list of challenges and opportunities.

- In the light of the case study and activities so far in this unit, how can encourage your teachers to better use technology for real learning
- For each of the five areas above, identify a specific activity you could undertake with a group of teachers in your school.
- Save your ideas to you E-Portfolio for integration into your ICT Plan.

---

ICT Infrastructure

A well-managed and maintained school ICT infrastructure is essential to support successful ICT. However ICT infrastructure and technical support underpins a school’s vision, it is not meant to drive it. Furthermore, the question of availability of ICT infrastructure needs to be dealt with at institutional level in order to give a true picture of the specific operational environment. Such infrastructure includes connectivity to various networks (internet, intranet, and mobile-telephone); sources and reliability of energy (UPS, electricity, standby generators); equipment (computers, radios, videos, television, LCD projectors and software), ICT laboratories furniture and stores and information storage facilities such as flash disks, CD-ROMs, DVDs. Integrating new and old infrastructure may require an ICT infrastructure audit. Many ICT integration projects in public schools have been faced by challenges. However see the case studies below from the SIPSE schools in Kenya and Tanzania on priorities identified to address challenges.

<table>
<thead>
<tr>
<th>Case Study 2: Professional Development &amp; ICT Infrastructure Priorities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bahati P.C.E.A., Girls SS, Kenya</strong></td>
</tr>
<tr>
<td>Continuing professional development in ICT</td>
</tr>
<tr>
<td>1. School to sponsor teachers in in-service in the use of</td>
</tr>
<tr>
<td>ICT.</td>
</tr>
<tr>
<td>2. Organising forums where teachers with expert</td>
</tr>
<tr>
<td>knowledge shares it with other teachers within the</td>
</tr>
<tr>
<td>school.</td>
</tr>
<tr>
<td>Building ICT infrastructure in the school</td>
</tr>
<tr>
<td>3. Improve internet connectivity in the school.</td>
</tr>
<tr>
<td>4. Install sockets in all classrooms.</td>
</tr>
<tr>
<td>5. Increase the number of laptops and projectors in the</td>
</tr>
<tr>
<td>school.</td>
</tr>
</tbody>
</table>
**Sanjo SS, Tanzania**

- The school is very lucky for having, a few, modern computers, digital camera, projectors, scanner and printer. This is a big help for teachers to enrich their knowledge and skills about ICT integration.
- Sanjo secondary school administration is willing to support teachers who are ready to attend ICT programs and seminars and also encouraging teachers to observe and learn from SISPE teachers.
- However, there is very little formal staff development. This is due to less self-motivation, curiosity and ambition of the teachers themselves.
- Some of them feel that the use of ICTs specifically computers in classrooms is an embarrassment, thinking that students and their colleagues might laugh at them.

**Jomo Kenyatta High School, Kenya**

We would like to...

1. Practice on the already gained skills from the SIPSE training on ICT integration.
2. Teachers are sharing materials and collaborating within their subject areas.
3. Acquire more computers and projectors.
4. Construct more rooms that can be used during ICT integrated lessons and enhance security of the rooms.
For support on planning for ICT Infrastructure related to school broadband, websites/ blogs, computing devices/ tablets, networks/ networking, cloud based tools and applications, purchasing frameworks, check out the PDST website at: 
http://www.pdsttechnologyineducation.ie/en/Technology/

ICT Plan – Professional Development & ICT Infrastructure
Step 1: Review and Prioritize
### Activity 4: What are your Professional Development & ICT Infrastructure priorities?

**ICT Roadmap**
- Use the Resource 1 DSD Roadmap to identify your school’s immediate priorities for the Professional Development & ICT Infrastructure area.
- Discuss each area at the Initial Stage of the roadmap to progress it to the E-Enabled stage.

**E-Portfolio**
- The process of identifying priorities should be coordinated with the ICT Team.
- Note your priorities in your Leadership Journal and keep a copy in your E-Portfolio. You will insert these priorities in your ICT plan.

### Step 2: Develop Plan

![Diagram of Step 2: Develop Plan]

The second step involves the use of two linked components – the ICT Plan overview and the Action Plan.
**Activity 5: Developing Professional Development & ICT Infrastructure**

**Overview and Action Plan**

<table>
<thead>
<tr>
<th><strong>ICT Plan</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Open your ICT Plan (Resource 3)</td>
<td></td>
</tr>
<tr>
<td>• Complete the overview and action plan sections related to the Professional Development &amp; ICT Infrastructure areas</td>
<td></td>
</tr>
<tr>
<td>• Use the learning and deeper analysis you have just done in this unit for planning in these areas.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Reflection</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Have you been exposed to new ideas in this unit?</td>
<td></td>
</tr>
<tr>
<td>• If so how are they going to influence your E-Planning and your practice for ICT integration and promoting an ICT culture in your school?</td>
<td></td>
</tr>
<tr>
<td>• Write your reflections in your leadership diary and save them into your leadership portfolio</td>
<td></td>
</tr>
</tbody>
</table>

4. **Conclusion**

We have come to the end of this session where we have learnt how to plan for the technology use to support Professional Development & ICT Infrastructure. **Once you go back to your school**, you will be expected to develop each section of the overview and action plan that you have explored in this unit. Your task will be to lead and facilitate the process based on your learning and interaction with school leaders in the workshop sessions.
UNIT 5

Monitoring and Evaluation
Unit 5: Monitoring and Evaluation

What this unit is about
Welcome to unit five of the DSD Leadership Module.

In Units 1, 2, 3 and 4 you have developed a first draft of your **ICT Plan Introduction** and the Leadership and Planning, ICT in the Curriculum, ICT Culture, Professional Development and ICT Infrastructure Overviews and Action Plans. You have reviewed your National ICT Framework, Case Studies, ICT Audit and ICT Roadmap to identify key priorities for helping you to plan your schools progress to the next stage in DSD development journey.

Now it is time to complete your ICT Plan – with the **monitoring and evaluation** activities to ensure that you achieve your targets and tasks and progress you school to the next stage of the Digital Schools of Distinction roadmap.

What the school leader will learn in this unit
By the end of this unit you should be able to:

- Clarify the **roles and responsibilities** of all staff members in relation to the plan
- Develop procedures to monitor how the plan is progressing
- Establish **evaluation procedures**
- Use the results to guide the next cycle of the ICT plan
ICT Planning Cycle

Once the ICT Plan has been completed and signed –off by the principal and the chairperson of the Board of Management, the school is now ready to implement the plan.

Activity 1: What are the challenges impeding ICT innovative practice?

Reflection

- Now that we are at the end of the ICT Planning phase, what do we see are the challenges of implementation?
- Are our school environments ‘ICT and innovation-friendly’?
- Can we use the small success stories to model the first steps towards ICT and innovative practice in our schools?
- Where have we seen technology enhanced innovative teaching and learning in our schools and counties/ districts?
- Can we use these success stories as a model to scale ICT and innovation in our schools?
- What are the first steps we can/ should take to address the challenge?
Next steps

Step 3: Implement and monitor

Integrating an active ICT Plan that adds value to the students’ learning and achieves the goals outlined requires continual effort on behalf of all staff members and requires active monitoring of its progress.

Role and responsibilities

Creating and implementing a successful ICT plan requires a whole school approach where each staff member plays their part. The following individuals play a key role in facilitating successful implementation.

School principal

Leadership is critical and the school principal is a pivotal person in leading the ICT process by:

- Supporting the role of the School-based Coordinator
- Ensuring that all staff members have a copy (hard or soft copy) of the plan and that their roles are understood
- Monitoring how the plan is progressing and consulting regularly with staff members, both formally and informally, in relation to the plan
- Facilitating an annual evaluation of the ICT Plan and its continuing year-on-year progression
- Ensuring the involvement and support of the Board of Management and the Parents Teachers Association in the ICT process
- Ensuring that the objectives of the Whole School Plan are being met
School-based coordinator
- Providing support to teachers on implementing ICT use in STEM and other subjects
- Facilitating peer-to-peer lesson planning and observation
- Ensuring that the staff have access to all of the ADSI modules and documentation – online or offline.

Teaching staff – each teacher can contribute to the successful implementation of the ICT plan by:
- Being aware of and be being committed to the school ICT Plan
- Sharing ideas and resources with colleagues in relation to e-eLearning
- Using the ADSI materials to assist them to integrate ICT in STEM and other subject teaching and learning

ICT Team
- Discuss ICT regularly at staff meetings and/or subject department meetings
- Having formal/ informal discussions with individual staff members
- Facilitating peer-to-peer coaching where more ICT confident teachers work with other teachers on a one-to-one basis
- Sharing ideas, resources and/or classroom management approaches that prove positive or effective for individual teachers with other staff members

Step 4: Evaluate plan
Evaluation is the final step in the planning cycle and provides the basis for the next planning cycle. It is at this point that the school asses how well it has met the targets set out in the ICT Plan overview and whether or not the priorities identified there have been addressed. In reality, the process of evaluation requires ongoing review and reflection and is facilitated by good monitoring procedures.
Evaluation prompts
The ICT Audit and the ICT Roadmap you completed in Step 1 establish the baseline against which progress can be measured at the end of the planning cycle.

The following activity presents questions which may assist the ICT team to evaluate if the school is getting to where it wants to be.

**Activity 2: Questioning progress on targets**

**Leadership and Planning**
- How is the school leadership directing and managing the implementation process?
- Is the school leadership proactive in supporting the teachers in their integration of ICT into their classroom practice?
- Are students with special educational needs catered for in an inclusive school environment?
- Is the vision statement adequate for the guidance of the ICT Plan?
- Is the safe and ethical use of all ICT a priority both within and outside of the classroom?

**ICT in the Curriculum**
- Are teachers using the ICT Plan to inform their lesson planning?
- Are the ICT action plans assisting teachers in integrating ICT activities into learning and teaching?
- How are teachers reviewing progress of the ICT action plans in their own classes?
- Do students feel that the implementation of the ICT Plan has changed how they learn?

**Professional Development**
- What provision has been made within the school for teachers to engage in ongoing ICT knowledge-sharing, collaboration on lesson planning and observation activities for ADSI?
- Has the school organised or facilitated professional development opportunities for the ADSI STEM teachers to share with teachers of other subjects?
- What courses or other professional development programmes have staff members availed of?
**ICT Culture**

- Has the school utilised ICT to communicate with parents and with the wider community?
- How has the school developed its web presence?
- Does the school showcase student work in digital formats – e.g. on the school website, digital artwork on the school notice board etc.?
- Has the school introduced the use of a virtual learning environment?

**ICT Infrastructure**

- What new infrastructure has the school acquired?
- Is the technical support for it adequate?
- What digital resources is the school using and do they provide suitable ICT opportunities?
- Has the school ensured that licenses for digital resources are catalogued?

**Final Critical Reflection**

- What have you learned about planning for ICT implementation in the school?
- How can we evaluate the benefits and re-thinking of how our schools work with ICT integration?
- What are the barriers to beginning a process of implementation and evaluation of school e-transformation?
- How do we engage the larger school community in planning the school e-transformation and digital school of distinction journey?

**Conclusion**

We have come to the end of unit 5 and of the E-Enabled module 1. You are now ready to take your notes, your e-Portfolio draft ICT Plan for 2017 back to your school, to share and consolidate with your BOM, PTA, ICT team, and teaching staff.

You should be ready to submit your completed and validated ICT Plan on to the ADSI platform - consisting of:

- ICT Audit,
- Introduction overview with background information, national, school and ICT vision
- Digital School of Distinction Report establishing the ICT status
- Acceptable Use Policy
- Leadership and Planning plan
- ICT in the Curriculum plan
- ICT plan
- Professional Development plan
• ICT Infrastructure plan
• List of ICT Team members
RESOURCES
### Resource 1: The ADSI Digital Schools of Distinction Roadmap

<table>
<thead>
<tr>
<th>ADSI DIGITAL SCHOOLS OF DISTINCTION ROADMAP</th>
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</thead>
<tbody>
<tr>
<td><strong>LEADERSHIP</strong></td>
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<tr>
<td><strong>Vision</strong></td>
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<tr>
<td><strong>Plan</strong></td>
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<tr>
<td><strong>Integration</strong></td>
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<tr>
<td><strong>Acceptable Use Policy</strong></td>
</tr>
<tr>
<td><strong>Inclusive Education</strong></td>
</tr>
<tr>
<td>ICT IN THE CURRICULUM</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>Teacher Understanding</td>
</tr>
<tr>
<td>A few of teachers understand methodologies to integrate ICT into the curriculum.</td>
</tr>
<tr>
<td>Most teachers understand how ICT can be used in the curriculum to improve student learning.</td>
</tr>
<tr>
<td>Teacher Awareness &amp; Participation</td>
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<tr>
<td>Planning</td>
</tr>
<tr>
<td>Focus</td>
</tr>
<tr>
<td>Teacher Confidence</td>
</tr>
<tr>
<td>Informal Learning</td>
</tr>
<tr>
<td>Inclusive Education</td>
</tr>
<tr>
<td>ICT SCHOOL CULTURE</td>
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<td></td>
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<tr>
<td>ICT INFRASTRUCTURE</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Planning for Acquisition of Resources</strong></td>
</tr>
<tr>
<td>Basic level of planning for purchasing ICT equipment exists.</td>
</tr>
<tr>
<td>Some level of ICT purchase planning takes place, including standardisation of ICT</td>
</tr>
<tr>
<td>equipment, use of laser printers, and purchasing with warranty.</td>
</tr>
<tr>
<td>Procurement planning and standardisation of ICT equipment takes place. Older</td>
</tr>
<tr>
<td>computers are disposed of environmentally.</td>
</tr>
<tr>
<td>There is an integrated approach to procurement which takes into account full</td>
</tr>
<tr>
<td>operating costs of ICT equipment and technical support provision.</td>
</tr>
<tr>
<td><strong>LAN &amp; Broadband Access</strong></td>
</tr>
<tr>
<td>A network exists in some areas of the school. School is connected to the</td>
</tr>
<tr>
<td>Schools Broadband Programme. Internet access is distributed through the Local</td>
</tr>
<tr>
<td>Area Network.</td>
</tr>
<tr>
<td>Most rooms and computers are connected to the school network, facilitating</td>
</tr>
<tr>
<td>access to online and network resources.</td>
</tr>
<tr>
<td>A high speed and reliable network extends to all areas of the school. All</td>
</tr>
<tr>
<td>computers are connected to the network facilitating access to online and locally</td>
</tr>
<tr>
<td>based server resources. Resources are accessible from a central server. All</td>
</tr>
<tr>
<td>teachers and students have secure access to server space, and their e-portfolio,</td>
</tr>
<tr>
<td>from within the school and remotely.</td>
</tr>
<tr>
<td><strong>Technical Support</strong></td>
</tr>
<tr>
<td>Technical support is carried out using mainly voluntary assistance. Occasionally</td>
</tr>
<tr>
<td>a technician is paid to carry out urgent work.</td>
</tr>
<tr>
<td>Technical Support is provided by an external company on a call-out basis as</td>
</tr>
<tr>
<td>required. No technical support contract is in place.</td>
</tr>
<tr>
<td>Technical support is factored into procurement planning, all equipment is</td>
</tr>
<tr>
<td>procured with an appropriate warranty. Formal technical support contract with</td>
</tr>
<tr>
<td>Service Level Agreement (SLA) is in place with an external provider.</td>
</tr>
<tr>
<td>Technical support is planned and integrated with ICT procurement planning and</td>
</tr>
<tr>
<td>takes into account full ICT operating costs.</td>
</tr>
<tr>
<td><strong>Software and Digital Content</strong></td>
</tr>
<tr>
<td>Limited digital content is available. KICD digital content is used regularly.</td>
</tr>
<tr>
<td>Central licensing agreements are availed of.</td>
</tr>
<tr>
<td>The school has a range of appropriate digital content resources to support</td>
</tr>
<tr>
<td>learning at all levels.</td>
</tr>
<tr>
<td>There is easy access to appropriate digital content that teachers have</td>
</tr>
<tr>
<td>catalogued by subject/curriculum area.</td>
</tr>
<tr>
<td>The school creates its own customized digital content which is accessible from</td>
</tr>
<tr>
<td>home and school.</td>
</tr>
<tr>
<td><strong>ICT Equipment</strong></td>
</tr>
<tr>
<td>Some classrooms have desktop computers. A laptop and portable projector, printer,</td>
</tr>
<tr>
<td>digital camera, drop down screen whiteboard... are available as shared</td>
</tr>
<tr>
<td>resources.</td>
</tr>
<tr>
<td>Some rooms have digital projectors and computers. Peripherals, such as digital</td>
</tr>
<tr>
<td>cameras and scanners are used for ICT integration activities.</td>
</tr>
<tr>
<td>All learning areas have access to a range of ICT equipment including digital</td>
</tr>
<tr>
<td>projectors and wirelessly enabled tablet PC’s. Laptop trollies are used to</td>
</tr>
<tr>
<td>improve access to resources.</td>
</tr>
<tr>
<td>All learning areas have access to a range of ICT equipment. Provision is</td>
</tr>
<tr>
<td>made for the incorporation of students’ mobile devices.</td>
</tr>
<tr>
<td><strong>Licensing</strong></td>
</tr>
<tr>
<td>It is unclear whether all software in use in the school is properly licensed.</td>
</tr>
<tr>
<td>The school is developing a software licensing programme for the applications</td>
</tr>
<tr>
<td>installed on the school’s equipment.</td>
</tr>
<tr>
<td>The school has a log of all licenses for software and applications in use</td>
</tr>
<tr>
<td>throughout the school.</td>
</tr>
<tr>
<td>The school ensures that all new installations of hardware and software meet the</td>
</tr>
<tr>
<td>required licensing standards.</td>
</tr>
</tbody>
</table>
Resource 2: DSD Snapshot Assessment Tool: School ICT Status

Snapshot Rating and Prioritization of your Digital School of Distinction Status and Needs

- Where do you think your school sits on the DSD roadmap – at initial, e-enabled, e-confident or e-mature stage? (Please tick as appropriate).
- What are the top three priorities you would like the ADSI programme to focus on for assisting you as head teacher and your school board to develop your school to Digital School of Distinction level.

<table>
<thead>
<tr>
<th>ADSI Kenya Digital Schools of Distinction Domains</th>
<th>General Performance Indicators</th>
<th>Initial</th>
<th>E-Enabled</th>
<th>E-Confident</th>
<th>E-Mature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DSD Areas</strong></td>
<td><strong>DSD Sub-Areas</strong></td>
<td><strong>Sub-Areas</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Leadership &amp; Planning</strong></td>
<td>Vision</td>
<td>ICT vision is shared by all stakeholders in the school and evidenced in the student learning experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plan</td>
<td>Comprehensive ICT plan is integrated in the school strategic plan. Teacher implement ICT plan in their daily practice.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Integration</td>
<td>School focus is on ICT integration in all subjects and the exploration of more effective approaches for ICT integration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acceptable use policy</td>
<td>School developed and ratified policy for a responsible and ethical approach to internet and ICT Use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inclusive Education</td>
<td>School supports the use of a wide range of ICT resources and technologies to facilitate the inclusion of students with special educational needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ICT in the Curriculum</strong></td>
<td>Teacher Understanding</td>
<td>Teachers understand how ICT integration can be used in syllabus topics to improve student learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planning</td>
<td>Teachers plan in a structured way through timetabling and scheduling of ICT integration in their lessons and classroom practices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teacher Use</td>
<td>Teachers use ICT to provide learning opportunities that support cross-curricular, subject-based and constructivist learning approaches</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Student Experience</td>
<td>Students experiences ICT activities regularly and use ICT to collaborate on curriculum activities within the school and with other schools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inclusive Education</td>
<td>Teachers use ICT diagnostic tools and ICT resources to address curriculum objectives and support students with special education needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Professional Development</strong></td>
<td>Teacher Awareness &amp; Participation</td>
<td>The majority of staff have availed of professional development opportunities for using ICT in teaching and learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planning</td>
<td>The school ICT coordinator facilitates the overall ICT needs of the staff to develop continuous professional development programmes regularly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Focus</td>
<td>The school identifies whole school professional development programme based on school needs for ICT use in administration and in the curriculum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teacher Confidence</td>
<td>The majority of teachers are confidently integrating ICT in their daily practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Informal learning</td>
<td>Teachers regularly share new ICT ideas and good practice with each other via staff meetings, subject teacher meetings, email and/ or social media (facebook, whatsapp etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSD Areas</td>
<td>DSD Sub-Areas</td>
<td>General Performance Indicators Sub-Areas</td>
<td>Initial</td>
<td>E-Enabled</td>
<td>E-Confident</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------</td>
<td>------------------------------------------</td>
<td>---------</td>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>ICT Culture</td>
<td>Inclusive Education</td>
<td>Teachers are confident and have acquired the skills to use a wide range of technologies to facilitate the inclusion of students with special educational needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access</td>
<td>ICT resources are readily available to staff and all students throughout the school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evidence of Use</td>
<td>Evidence of ICT is visible in all areas throughout the school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Website/ Online Presence</td>
<td>The school website contains content developed by teachers and students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Projects</td>
<td>School has experience in integrating ICT in inter-disciplinary and large scale project work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organization &amp; Communication</td>
<td>School makes regular use of ICT to communicate with teachers, parents, Board of Management and the wider community. School has an email newsletter.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT Infrastructure</td>
<td>Planning &amp; Acquisition of Resources</td>
<td>Procurement planning and standardization of ICT equipment takes place. Older computers are disposed of environmentally.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LAN &amp; Broadband Access</td>
<td>A high speed and reliable networks extends to all areas of the school. All computers are connected to the network facilitating access to online and locally based server resources.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical Support</td>
<td>Technical support is planned and integrated with ICT procurement planning and takes into account full ICT operating costs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Software and Digital Content</td>
<td>There is easy access to appropriate digital content that teachers have catalogued by subject / curriculum area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICT Equipment</td>
<td>All learning areas have access to a range of ICT equipment including digital projectors and laptops for use in the classrooms.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Licensing</td>
<td>The school has a log of all licenses for software and applications in use throughout the school</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Resource 3a: School ICT Planning Templates

School ICT Plan – Section 1

Section 1: Introduction
The introduction section of a school’s ICT Plan provides background information on the plan. The background information can include information on the national context of ICT integration. It can also provide summary information on the school location, no of teachers and students, facilities, general curriculum and extra-curricular activities etc.

The introduction contains the school’s vision statement along with an ICT vision statement (to be covered in Unit 2). This section also lists the members of the ICT team and the timeframe taken to develop the plan.

The introduction lists the school’s ICT resources and the level of ICT skills among the teaching staff. This is completed using the ICT Audit and ICT Roadmap assessment tools, covered in Unit 1, which need to be attached to this section of the ICT Plan.

<table>
<thead>
<tr>
<th>Name of School:</th>
<th>Click to enter school name here</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of completion:</td>
<td>Click to enter date</td>
</tr>
<tr>
<td>Timeframe for ICT Plan:</td>
<td>Click to enter timeframe (eg, 2016 - 2017)</td>
</tr>
</tbody>
</table>

Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1</td>
<td>Introduction (background information – national and school context)</td>
</tr>
<tr>
<td>Section 2</td>
<td>Overview (priorities, targets, tasks)</td>
</tr>
<tr>
<td></td>
<td>Action plans (detailed target and task breakdown)</td>
</tr>
</tbody>
</table>
**Section 2: Overview and action plans**

This stage involves the use of two linked components – the ICT Plan **Overview** and the **Action Plans** for each area of the DSD roadmap. The ICT Plan **Overview** contains the school’s identified priorities in relation to ICT (established in Step 1) and the associated targets and tasks.

See the **Case Studies from Kenya and Tanzania School Reviews** for samples of Vision Statements.
<table>
<thead>
<tr>
<th>PRIORITIES</th>
<th>TARGETS</th>
<th>TASKS</th>
<th>TIMEFRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership and Planning</strong></td>
<td><strong>Target 1:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td><strong>Enter priorities here:</strong></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td><strong>Target 2:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td><strong>ICT in the curriculum</strong></td>
<td><strong>Target 1:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td><strong>Enter priorities here:</strong></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td><strong>Target 2:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td><strong>Professional Development</strong></td>
<td><strong>Target 1:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td><strong>Enter priorities here:</strong></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td><strong>Target 2:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td><strong>ICT School Culture</strong></td>
<td><strong>Target 1:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td><strong>Enter priorities here:</strong></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td><strong>Target 2:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td><strong>ICT Infrastructure</strong></td>
<td><strong>Target 1:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td><strong>Enter priorities here:</strong></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td><strong>Target 2:</strong> Enter text here</td>
<td><strong>Task 1:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Task 2:</strong> Enter text here</td>
<td>Enter dates here</td>
</tr>
</tbody>
</table>

Note: There is no set number of required priorities, targets and tasks.
The Overview is further broken down in the **Action Plans**, which describe the targets and tasks and also outline the following:

- timeframe during which the ICT priorities will be implemented
- person or persons responsible for the implementation of the priorities and/or teachers who will assist in this activity
- resources required to ensure the successful implementation of the priorities
- criteria to be used in measuring the successful implementation of the priorities

<table>
<thead>
<tr>
<th>Leadership and Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIORITIES: Enter priorities here</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Task (What needs to be done?)</th>
<th>Timeframe (When is it to be done by?)</th>
<th>Remits (Who is to do it?)</th>
<th>Resources (What resources are needed?)</th>
<th>Success Criteria (What are the desired outcomes?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
</tr>
</tbody>
</table>

| Agreed Monitoring Procedures: Enter text here | Agreed Evaluation Procedures: Enter text here |
**ICT in the curriculum**

**PRIORITIES:** Enter priorities here

**Target (What do we want to achieve?):** Enter text here

<table>
<thead>
<tr>
<th>Task (What needs to be done?)</th>
<th>Timeframe (When is it to be done by?)</th>
<th>Remits (Who is to do it?)</th>
<th>Resources (What resources are needed?)</th>
<th>Success Criteria (What are the desired outcomes?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
</tr>
</tbody>
</table>

**Agreed Monitoring Procedures:** Enter text here

**Agreed Evaluation Procedures:** Enter text here
<table>
<thead>
<tr>
<th>Task (What needs to be done?)</th>
<th>Timeframe (When is it to be done by?)</th>
<th>Remits (Who is to do it?)</th>
<th>Resources (What resources are needed?)</th>
<th>Success Criteria (What are the desired outcomes?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
</tr>
</tbody>
</table>

Agreed Monitoring Procedures: Enter text here

Agreed Evaluation Procedures: Enter text here
<table>
<thead>
<tr>
<th>Task (What needs to be done?)</th>
<th>Timeframe (When is it to be done by?)</th>
<th>Remits (Who is to do it?)</th>
<th>Resources (What resources are needed?)</th>
<th>Success Criteria (What are the desired outcomes?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
</tr>
</tbody>
</table>

Agreed Monitoring Procedures: Enter text here

Agreed Evaluation Procedures: Enter text here
## ICT infrastructure

**PRIORITIES:** Enter priorities here

**Target (What do we want to achieve?):** Enter text here

<table>
<thead>
<tr>
<th>Task (What needs to be done?)</th>
<th>Timeframe (When is it to be done by?)</th>
<th>Remits (Who is to do it?)</th>
<th>Resources (What resources are needed?)</th>
<th>Success Criteria (What are the desired outcomes?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
<td>Enter text here</td>
</tr>
</tbody>
</table>

**Agreed Monitoring Procedures:** Enter text here

**Agreed Evaluation Procedures:** Enter text here

## ICT Budget

List the digital technologies to be procured with costings - to assist you the NCTE has provided a list of ICT equipment suitable for schools and with associated indicative pricing. This is available from www.ncte.ie/elearningplan

Click here to enter text
## ICT Policy Checklist

<table>
<thead>
<tr>
<th>Category</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Safety</td>
<td></td>
</tr>
<tr>
<td>Acceptable Use Policy</td>
<td></td>
</tr>
<tr>
<td>Health and Safety</td>
<td></td>
</tr>
<tr>
<td>Other ICT related policies and procedures including:</td>
<td></td>
</tr>
<tr>
<td>☐ homework policy</td>
<td>☐ behaviour policy</td>
</tr>
</tbody>
</table>

This ICT Plan has been written for <insert name of school> and has been presented to and approved by the Board of Management.

Signed: _______________________________ Date: ____________
Chairperson of Board of Management

Signed: _______________________________ Date: ____________
Principal
Resource 3b: Examples – ICT Planning

Examples: ICT Plans and Acceptable Use Policies

- See sample extract from an ICT Plan illustrating priorities at this link: https://www.dropbox.com/s/904rc9dn6irv8x5/Sample-extract-from-ICT-Plan.pdf?dl=0
- See sample of Acceptable Use Policy created by teachers and students at primary level at this link: https://www.dropbox.com/s/4np0l4r44pn74/Example%20-%20PS%20-%20Ireland%20-%20ICT%20Acceptable%20Use%20Policy%20AUP.pdf?dl=0

Examples: ICT Priorities, Targets, Tasks

**ICT priorities**
The school will by now have identified a number of ICT priorities following the use of the ICT Roadmap; the ICT Plan will describe how the school plans to implement these. The timescale for implementing these priorities may vary. Some priorities may be achieved in a short timeframe (e.g. over the course of a school term), while others may take longer (e.g., 1 to 3 years). For each priority, the school will establish a target or a set of targets. Each target will have a number of associated tasks that need to be completed in order to achieve the target.

**Sample priority**
That teachers use of ICT focuses on the development of science and mathematics 21st century critical thinking and problems solving skills in STEM subjects.

**ICT targets**
Each priority is divided into a small number of attainable targets. These targets are used to aid the monitoring of the overall progress towards achieving the specific priority.

**Sample target**
The STEM departments will identify appropriate open education resources (OERs) for interactive engagement of students in authentic problem solving tasks.

**ICT tasks**
Each target, in turn, is broken down into one or more tasks that will translate the desired targets into practical achievements.

**Sample task**
The STEM departments will use the identified OERs), focussing on specific learning objectives for deeper learning through authentic problem solving, and integrate these into the individual educational plans. This will be carried out in the first term.
When setting tasks, schools may find it useful to apply the SMART principle, thus ensuring that each task is Specific, Measurable, Achievable, Relevant and Time Bound.

<table>
<thead>
<tr>
<th>S</th>
<th>SPECIFIC</th>
<th>Specify a task to be completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>MEASURABLE</td>
<td>Is this task measurable and how will it be evaluated. This will help indicate when the task has been accomplished.</td>
</tr>
<tr>
<td>A</td>
<td>ACHIEVABLE</td>
<td>Is the task achievable and what are the resources and actions required to achieve this task?</td>
</tr>
<tr>
<td>R</td>
<td>RELEVANT</td>
<td>Is the task relevant to achieving the particular stated priority in the eLearning plan and relevant to the school’s current circumstances?</td>
</tr>
<tr>
<td>T</td>
<td>TIME BOUND</td>
<td>How long will the task take and in what timeframe will it be achieved?</td>
</tr>
</tbody>
</table>
# Resource 4: The School ICT Audit

## 1. Snapshot Assessment Tool: Teacher Access and Use of Technology

The purpose of this questionnaire is for school leaders to find out knowledge and skills of teachers in order to plan how technology might be used to support teaching and learning in school.

Please indicate in the table which technology you currently use both in school and outside school.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Do you use this outside school?</th>
<th>On a scale of 1-5, how confident are you in using this equipment? (1=not at all confident and 5=highly confident)</th>
<th>Do you use this in the classroom?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop computers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laptop</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet access</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic mobile phone (but with calculator, voice recorder and camera)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smartphone (with internet access)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tablet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social media (Twitter, Facebook)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projector/ screen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loudspeakers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital camera (perhaps linked to a phone or tablet)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD/ tape player</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television/ DVD player</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. DSD School ICT Audit Tool

- Technology Audit – ICT Equipment
- Software and Digital Content
- ICT-Teacher Professional Development (ICT- TP D)
3. DSD School ICT Audit Guidelines

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Access and networking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>List of hardware, peripherals (mouse, keyboard, monitor, printers, hard drives, flash drives, internet bundles etc.) and other equipment in the school</strong></td>
<td><strong>Information about the availability of ICT throughout the school including:</strong></td>
</tr>
<tr>
<td><strong>Equipment warranties and expiry dates</strong></td>
<td></td>
</tr>
<tr>
<td><strong>List of software titles currently being used including details of:</strong></td>
<td></td>
</tr>
<tr>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The class/subject/special needs spread of software resources</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Licenses in place/ pending</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Range of online resources</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internet connectivity, technical support</th>
<th>Staff capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information about internet connectivity in the school including:</strong></td>
<td><strong>Details of ICT training courses undertaken by staff including:</strong></td>
</tr>
<tr>
<td>o The number and location of computers connected to broadband</td>
<td>o Courses offered by national institutions and other providers</td>
</tr>
<tr>
<td>o The number of hours usage per day/week</td>
<td>o Statistics on the numbers of staff who have attended courses</td>
</tr>
<tr>
<td>o The status and quality of the internet Acceptable Use Policy (AUP)</td>
<td>o Staff willingness or internet in progressing to Diploma and Masters programmes in ICT</td>
</tr>
<tr>
<td><strong>Details of the management and security procedures in place, procedures for reporting and tracing of technical support issues. Antivirus and software update procedures</strong></td>
<td><strong>Information on how staff are currently using ICTs</strong></td>
</tr>
<tr>
<td><strong>Details of the level and appropriateness of current maintenance and technical support contracts, including equipment warranty information</strong></td>
<td>o In their planning and preparation for teaching</td>
</tr>
<tr>
<td></td>
<td>o In their classroom lessons</td>
</tr>
</tbody>
</table>
12 ways to optimize the use of ICT at your school

1. Ensure equal access to ICT for all students: girls as well as boys.
   Girls find it more difficult than boys to get access to computers. To ensure equal access for all, one school made its computers and technology resources available on an alternative schedule: one day reserved for girls, the next day for boys, and so on.

2. Ensure equal access to ICT for all teachers, particularly in the teachers’ room.
   Not all teachers are comfortable using computers in front of their students, especially when their computer skills are weak. To encourage teachers to use computers, a number of schools have put computers in the teachers’ room. This allows teachers to work on computers without facing criticism by their students.

3. Given the potential of the Web, ensure that all computers at the school are connected to the Internet.
   The Internet provides access to a vast store of resources that can be used to improve the quality of teachers’ lessons and provide new stimuli for student learning. A reliable Internet connection is therefore indispensable to tap the full educational potential of ICT.

4. Organize relevant training programs so that all teachers can use ICT in their teaching practice.
   Appropriate training for teachers is a determinant factor in the pedagogical integration of ICT. To be effective, the training must meet the teachers’ needs and be appropriate for their level of computer skills and respective subject area.

5. When teaching computer courses, take into account the students’ technology needs and skills.
   Students are increasingly using technologies outside the school. Schools can effectively help students develop computer skills by being aware of their computer habits and skills and adapting computer courses accordingly.

6. Find innovative ways to motivate teachers to make collaborative use of ICT.
   Some teachers resist bringing technology into their teaching practice. They can be motivated by talking it over, showing them simple and efficient ways to use technology for teaching, pointing out the advantages, and providing them with support when they introduce technologies into their teaching practice.

---

7. Find ways to make ICT mobile and transportable so that as many students and teachers as possible can benefit.

A major obstacle to the pedagogical integration of ICT is the difficulty of accessing technologies at school, largely due to rigid management and scheduling policies. To address this problem, some schools have set up mobile computer labs to increase access for students and classes.

8. Use ICT both inside and outside the classroom for teaching and learning school subjects.

In addition to teaching computers as a subject, ICT can be used as support for teaching and learning other academic subjects such as French, math and history. Online teaching resources (e.g., dictionaries, grammar books, interactive novels, self-correcting French exercises) can greatly enrich classroom lessons, and students can access them after school hours.

9. Set up projects that put students in contact with students from other schools, regions and countries.

The Internet has opened up possibilities for communication and sharing that transcend the usual space–time limitations. Today it is easy to interact, in real time or not, with all kinds of people that we would never meet in daily life. Teachers and students have a golden opportunity to meet up with their peers and learn about them as well as themselves by participating in collaborative educational projects.

10. Designate an ICT resource teacher to each school or to a number of schools (no need for computer experts).

A teacher who is adept at technopedagogical applications can help his or her colleagues integrate ICT into their teaching practice. Having an ICT resource teacher is a good way to motivate other teachers to start incorporating technologies into their work.

11. Promote collaborative work and social interaction by having students use ICT.

Of all the aspects that have been affected by ICT, communication has surely been the most radically transformed. ICT have opened up undreamt-of ways to share and collaborate, which have in turn provided new and enormously diversified ways to teach and learn. This means that students can be better prepared for the professional and personal lives that lie ahead of them.

12. Use ICT to facilitate school organization and administrative management (e.g., student’s records).

ICT can be used to manage information more efficiently, resulting in better organization and administration. All information is centralized in one place (the computer). A large number of documents are readily accessible and can be rapidly shared via the Internet. In schools, ICT have become indispensable tools for managing student records, compiling exam scores, handling finances, and so on. Schools can only benefit from this innovation.

Need more information about these recommendations? Visit our Web site and find out what our researchers have to say! africaict.org
Resource 6: How to Conduct a School SWOT Analysis

What will help you identify the areas that need to change in order to implement ICTs in your school?

The tool you use here is called a **SWOT analysis**. Many organisations, including corporations, universities, and businesses, use this approach to planning and development.

SWOT stands for:

- **S** = Strengths
- **W** = Weaknesses
- **O** = Opportunities
- **T** = Threats

**Strengths** and **weaknesses** refer to things **inside** your organisation or school.

**Examples of a Strength:**
Staff are very advanced in their ICT knowledge and are able to use it to enhance instructional activities and to do administrative tasks. Management is organised and efficient in leading the process of introducing ICTs at the school. The school has good infrastructure. The buildings allow for good security arrangements, so that the risk of theft of ICT equipment at the school is minimised.

**Examples of Weaknesses:**
Staff are not equipped with ICT skills. There is not any clear planning at the school around using ICTs either for administration and management and/or instructional purposes. Staff have negative attitudes towards learning how to use ICTs for administrative and instructional purposes.

At your school, you should seek to **build on your strengths** and **address your weaknesses**. Planning will help you to achieve this. Planning is the basis of organisational improvement.

**Opportunities** and **threats** refer to things **outside** your school or organisation, in its context or environment. While you do not have direct control over these things, your plans need to take them into account.

**An example of an Opportunity:**

The Department of Education is willing to increase the budget for staff development at schools so that educators’ ICT skills can be improved. A large corporation has donated 5 well-functioning computers to the school, after the school approached them for assistance.

**An example of a Threat:**
In the community in which the school is situated, there are high levels of violence and crime due to poor socio-economic circumstances and a general lack of employment in the area. This makes the school vulnerable to the possibility that ICTs may be stolen or that the buildings in which they are housed are vandalised.

Source: Col CCTI at:
[http://www.schoolnet.org.za/Col/ACE/course/planning/content/documents/plan.conducting_swot_analysis.htm](http://www.schoolnet.org.za/Col/ACE/course/planning/content/documents/plan.conducting_swot_analysis.htm)
**SWOT ANALYSIS TEMPLATE**

Review of Current ICT Access and Usage in Our School

Name of School: _______________________

Name of ICT Team: _______________________

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Example School SWOT Analysis

**Nakuru Girls, Nakuru County, Kenya**

<table>
<thead>
<tr>
<th><strong>Our Strengths</strong></th>
<th><strong>Our Strengths</strong></th>
</tr>
</thead>
</table>
| - The school has a computer lab that has a number of networked computers which the students can use.  
- The school has a number of accessible computers in all academic departments for teachers in the departments to use.  
- The school administration is very supportive on the use of ICT in the teaching and learning process.  
- The school administration encourages ICT professional development.  
- The STEM teachers give a report in staff and other departmental meetings.  
- The school strategic plan upholds the use of ICT in various domains.  
- Students use ICT to source for science projects and prepare for science congress competitions with other schools. | - ICT is used to prepare newsletters for communication with parents and notices for communication with members of staff and students.  
- Materials used in AGM and other meetings are ICT generated.  
- The internet is connected to the administrative offices, in the staffroom, science labs and some classes.  
- Teachers use ICT to prepare teaching and learning materials like schemes of work, lesson notes, and exams across all subjects.  
- The rest of the staff know about SIPSE and are learning a lot from the SIPSE teachers.  
- STEM teachers are confident in integration of ICT in daily teaching.  
- Content rich and content free software are available for use in the STEM curricular. |

<table>
<thead>
<tr>
<th><strong>Weaknesses</strong></th>
<th><strong>Weaknesses</strong></th>
</tr>
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</table>
| - The numbers of computers in the school are not sufficient for teacher and student use.  
- The projector is only one so not possible to have more than one ICT integrated lesson at a time.  
- Some teachers in our school lack basic ICT skills.  
- Lack of an organized program for staff training on ICT. | - The teachers have many lessons hence lack sufficient time to prepare for the lesson using ICT.  
- Some members of staff are not keen on incorporating use of ICT in the teaching and learning process.  
- The students lack direct access to the internet for research. |

<table>
<thead>
<tr>
<th><strong>Opportunities</strong></th>
<th><strong>Opportunities</strong></th>
</tr>
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</table>
| - The ministry of education policy is supportive on ICT integration in the learning process.  
- Parents of the learners are willing to support school programs including the ICT integration.  
- Installation of the fiber optic cables in the nearby Nakuru town has created accessibility of wireless internet in the school which is a cheaper option. | - The school admits learners from diverse backgrounds with majority that have a background on ICT use.  
- The broad based curriculum offered at school includes computer studies as one of the subjects offered in school which exposes learners to IT in high school. |

<table>
<thead>
<tr>
<th><strong>Threats</strong></th>
<th><strong>Threats</strong></th>
</tr>
</thead>
</table>
| - Lack of sufficient funds from the ministry of education to support ICT  
- Parents already overloaded with levies to put in place physical infrastructure so not keen on paying extra ICT levies. | - Lack of adequate security system in the community which poses a risk to ICT equipment. |
Resource 7: The School ICT Vision Statement

Name of School: ____________________________

<table>
<thead>
<tr>
<th>What is the National ICT in Education Vision?</th>
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</thead>
<tbody>
<tr>
<td></td>
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<table>
<thead>
<tr>
<th>What is the School Vision?</th>
</tr>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>What is the School ICT Vision?</th>
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<table>
<thead>
<tr>
<th>What are the links between National ICT Vision, School Vision and School ICT Vision?</th>
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</table>
Resource 8: Leaders in the Digital Age

Pellissier, R. (2001). Instructions to Leaders in the Digital Age

As a leader, think of climbing a ladder. Every time you take one step up the rung of the ladder, you gain a broader view of everything around you. Since the Digital Age requires a new type of leader, the new age leader needs to be quick to embrace a systems view of the school. In other words, get on the ladder and climb!

Climbing higher up the ladder means that you are now able to see more than others who are not on the same rung. It also means that while you climb, you need to let go of the practices and ways of seeing things that are no longer suitable to the next rung. While on a new rung, you can retain those practices, views and structures which are of value to the school and which can be integrated into what you find on the new rung.

Each rung that you step onto is going to challenge you to change and to see things differently. The success of the school will, to a large degree, depend on your own openness to an age of complexity and possibility.

Instructions to leaders in the digital age


- Manage the change or transition.
- Build a resilient school.
- The old way of repeating and imitating just doesn’t ‘cut it’, so get ready to de-stabilise!
- Manage the present and future, eulogise the past where necessary.
- Create and maintain the school as a learning and knowledge-creating organisation.

1. Manage the change or transition

Leading a school into the new age will be the most important thing you do as a leader or ICT champion. This will mean letting go of old styles of control and of placing greater responsibilities on educators, administrators, etc. Educators and administrators at the school (and in the District) will have to learn new ICT skills and new behaviours. They, too, should be able to identify new problems, seek solutions, experiment with possibilities, make decisions and generate new ways of doing things.

Creating a sense of urgency about the need for change in the school, will only be successful if the leader communicates effectively and ensures that all understand the extent of the changes. Allowing people to mourn that bit of the past that they will have to leave behind is part of the process. It helps to create some form of ‘closure’ on the past.

Strategic change will not be effective if people do not understand the consequences for failing to integrate into the new way of doing things. Incentives for attitudinal and behavioural change need to be identified as well.

2. Build a resilient school

While concrete ceilings are one form of security that schools are investigating in order to protect their new ICT tools and assets, this is not what we are talking about here.

Leaders need to help workers see the logic in the digital new age system. They need to encourage staff and administrators to be able to ‘bounce back’ from staring complex change in the face. Educators and other school stakeholders need to be given the chance to absorb and adapt to complex change, so that they are able to weather the ICT ‘storm’.

29 http://kictcft.or.ke/mod/page/view.php?id=122
Encouraging the formation of multidisciplinary teams and even virtual expert groups can help educators, for example, to redefine themselves and the way they work.

3. The old way of repeating and imitating just doesn't 'cut it', so get ready to de-stabilise!

'De-stabilising' or disrupting the old status quo can have the benefit of improving the situation for learners and educators alike.

Allowing for a state of creative tension in the school, means that the leader and/or ICT champion nurtures creativity. In the business world, organisations are increasingly having to rely on their ability to innovate to survive. This is no less true of schools. A school that produces learners able to compete in the workplace effectively will have better standing in the community than one that does not.

Challenging old mental models is difficult for leaders and for stakeholders alike, but sticking to old ways can be more counter-productive than beneficial.

4. Manage the present and future, eulogise the past where necessary

More than ever, leaders are needed to encourage change at the same time as he or she maintains enough stability in the school (or District) to prevent a total breakdown. The leader in the new age needs to be tremendously agile and able to match styles appropriately to the situation. Rather than having an 'either/or' way of thinking, leaders need to think more inclusively by adopting a 'both/and' way of thinking.

This is an age where 'opposites' complement each other and exist in a continuum. The leader's role is to find a balance between a long list of pairings that include the following:

- 'chaos/order,
- mind/matter,
- autonomy/interdependence,
- stability/dynamism,
- quality/efficiency,
- freedom or letting go/control,
- workplace democracy/financial performance
- predictability/unpredictability' (Pellissier;2001, 220).

Leaders in schools need to remind schools that despite ICT integration, the core function and role of the school has not changed. As in the past, the focus of the school is teaching and learning for improved learner achievement and progress. The only difference is that ICT integration will introduce, require and support new ways and levels of expertise in the school to deliver learning programmes and meet curricular objectives with ICT tools.

5. Create and maintain the school as a learning and knowledge-creating organisation

Leaders and ICT champions have a responsibility to create school conditions where the existing culture of the school supports continuous learning and knowledge generation. This culture should be tolerant of healthy debate and conflict and see everyday problems as learning opportunities.

The school and the school's leader should not penalise experimentation, risk-taking and 'failure', since in this new age there are no 'sure-fire' recipes to follow. The starting points are intelligence or vision, flexibility, resilience and purpose as we move towards new understandings in our schools.

Despite tensions and/or constant pressure in this age of rapid change educators need to be given the space to work out solutions for themselves and explore new areas of competence. In learning and knowledge-creating organisations, the impulse to learn, develop, improve, grow and create comes from within, while the eye that appreciates external changes and trends stays open. Leaders particularly must move their school forward with both eyes open.
Resource 9a: Exploring OERs

Below is a list of websites that have OERs for Science, Technology, English and Mathematics:

**Science Websites**
- **Compass** – Maths & Science – [http://www.compass-project.eu/](http://www.compass-project.eu/)
- **OER@AVU** – maths, science, ICT, teacher education at: [http://oer.avu.org](http://oer.avu.org)
- **ORBIT**: The Open Resource Bank for Interactive Teaching (University of Cambridge/ JISC) – maths, science, ICT [http://oer.educ.cam.ac.uk/wiki/ORBIT](http://oer.educ.cam.ac.uk/wiki/ORBIT)
- **Discovery Education** at: [http://school.discoveryeducation.com](http://school.discoveryeducation.com)
  Science problems solvers and general education resources.
- **BBC Education** at: [http://bbc.co.uk/education](http://bbc.co.uk/education)
- **Science Literacy** in the programme for International Student Assessment (PISA) at: [http://www.pisa.gc.ca/eng/science.shtml](http://www.pisa.gc.ca/eng/science.shtml)
- **School Science** at: [http://www.schoolscience.co.uk](http://www.schoolscience.co.uk)
- **Science lessons** by subject and grade at: [http://www.reachoutmichigan.org/funexperiments/agesubject/subject.html](http://www.reachoutmichigan.org/funexperiments/agesubject/subject.html)
- **The Physics Education Technology (PHET) Project** Interactive Simulations website at: [http://phet.colorado.edu/en/simulation/circuit-construction-kit-ac#software-requirements](http://phet.colorado.edu/en/simulation/circuit-construction-kit-ac#software-requirements)
- **Biology teaching resources** at: [http://www.biology-resources.com/](http://www.biology-resources.com/)
- **BBC Education Science Resources** at: [http://www.bbc.co.uk/learning/subjects/science.shtml](http://www.bbc.co.uk/learning/subjects/science.shtml)
- **School Science UK** – Resources & news for science education at: [http://www.schoolscience.co.uk/](http://www.schoolscience.co.uk/)
- **Doc Brown's Science Chemistry Website** at: [http://www.docbrown.info](http://www.docbrown.info)
- **Solve Elec** - helps users to experiment with various electrical circuits in easy settings at: [http://www.physicsbox.com/indexsolveelec2en.htm](http://www.physicsbox.com/indexsolveelec2en.htm)
- **Planet Earth Online** – News form the Natural World at: [http://planetearth.nerc.ac.uk/index.aspx](http://planetearth.nerc.ac.uk/index.aspx)
- **Khan Academy** – free educational resources that include short videos for Mathematics and Science at: [http://www.khanacademy.org/](http://www.khanacademy.org/)
- **The OpenScience Laboratory**: [http://www.open.ac.uk/researchprojects/open-science/](http://www.open.ac.uk/researchprojects/open-science/)
- **TESSA Africa** – Literacy, maths, science, social studies, life skills [http://tessafrica.net](http://tessafrica.net)

**English websites**
- **BBC Learning English** at: [http://www.bbc.co.uk/worldservice/learningenglish/](http://www.bbc.co.uk/worldservice/learningenglish/)
- **English Accent Coach** at: [http://www.englishteacherwebsites.com/resources/englishaccent.html](http://www.englishteacherwebsites.com/resources/englishaccent.html)
- **English Club** free website for Learners and Teachers of English at: [http://www.englishclub.com/listening/index.htm](http://www.englishclub.com/listening/index.htm)
- **Links Learning Reading** at: [http://www.linkslearning.org/Kids/2_Reading/1_Introduction/index.html](http://www.linkslearning.org/Kids/2_Reading/1_Introduction/index.html)
- **English Teaching** – UK Online Secondary Schemes of Work, Lesson Plans for teaching English at: [http://www.english-teaching.co.uk/](http://www.english-teaching.co.uk/)
- **TeachIt** – English Teaching Online UK at: [http://www.teachit.co.uk/](http://www.teachit.co.uk/)
• Web English Teacher at: http://www.webenglishteacher.com/grammar.html
• Reading Literacy in the Programme for International Student Assessment (PISA) at: http://www.pisa.gdc.ca/eng/reading.shtml
• Selingu is a vocabulary training program with built-in dictionaries - more than 2,000 words in each of the following languages: English (both American and British), German, Spanish, French and Swedish at: http://www.wartoft.nl/software/selingu
• Sephonics a Windows program that will teach you the English phonetic alphabet, which is a subset of the International Phonetic Alphabet (IPA, in short) at: http://www.wartoft.nl/software/sephonics/
• Mc Millan Education – the pronunciation app at: http://www.soundspronapp.com/
• World of Teaching – English Language Powerpoint Presentations at: http://www.worldofteaching.com/englishpowerpointpresentations.html
• British Council - Teaching English at: http://www.teachingenglish.org.uk/
• Tools for Writers at: http://www.pw.org/toolsforwriters
• Purdue Online Writing Lab at: http://www.englishteacherwebsites.com/resources/purdueowl.html
• OER Humanities – English at: http://www.oercommons.org/browse/general_subject/humanities?batch_size=20&sort_by=search&f.search=english
• Nolwazi – all subject primary and secondary – exam papers, videos, simulations, lesson plans teacher produced resources – at: http://www.nolwazi.co.za

Mathematics websites
• ACE Maths (OER Africa) – Maths (primary & secondary) http://www.oerafrica.org/african-teacher-education-oer-network-aten/ace.maths
• Maths Forum - an international website with resources, materials, activities, person-to-person interactions, and educational products and services at: http://mathforum.org/
• Malati (Mathematics Learning and Teaching Initiative) - MALATI is a co-operative project of mathematics educators at the Universities of the Western Cape, Stellenbosch and Cape Town at: http://www.sun.ac.za/mathed/MALATI/
• Discovery Education - an American website that provides innovative teaching materials for teachers, useful and enjoyable resources for students, and smart advice for parents about how to help their children enjoy learning and excel in school at: http://school.discoveryeducation.com/
• Mathsnets - MathsNet.net is an independent British educational website providing free mathematics resources to the education community at: http://www.mathsnet.net
• Consortium for Mathematics and its Applications (COMAP) is an award-winning non-profit organization in the United States of creating learning environments where mathematics is used to investigate and model real issues in our world at: http://www.comap.com
• Shodor Interactive tools: Shodor interactive tools’ goal is to improve Mathematics and Science education through the effective use of modeling and simulation technologies at: http://www.shodor.org/interactivate/tools/
• Maths is Fun at: http://www.mathsisfun.com/link_to_maths_is_fun.html
• Technology for Secondary/ College Mathematics at: http://www.tsm-resources.com/mlink.html
• Links Learning Mathematics at: http://www.linkslearning.org/Kids/1_Math/1_Introduction/index.html
• Mathematics Literacy in the Programme for International Student Assessment (PISA) at: http://www.pisa.gdc.ca/eng/math.shtml
• Ask Dr. Math – High School Archive at: http://mathforum.org/library/drmath/drmath.high.html
• Geogebra - a dynamic mathematics software for all levels of education that joins arithmetic, geometry, algebra and calculus at: http://www.geogebra.org
• Graph - Graph assists user to draw mathematical graphs in a coordinate system at: http://www.padowan.dk/graph
• **GraphCalc** - GraphCalc provides an all-in-one solution from everyday arithmetic to statistical analysis, from betas to Booleans, from cubes to calculus, from decimals to derivatives at:
• **Maxima** – Maxima is a system for the manipulation of symbolic and numerical expressions, including differentiation, integration, Taylor series, Laplace transforms, ordinary differential equations, systems of linear equations, polynomials, and sets, lists, vectors, matrices, and tensors at:
• **Khan Academy** – free educational resources that include short videos for Mathematics and Science at: [http://www.khanacademy.org/](http://www.khanacademy.org/)

**General websites**

• **ExamFear videos**: [https://www.youtube.com/user/ExamFearVideos](https://www.youtube.com/user/ExamFearVideos)
• **OpenLearn**: all subjects- [http://www.open.edu/openlearn/](http://www.open.edu/openlearn/)
• **Scratch (Massachusetts Institute of Technology)**: teaching computing at: [https://scratch.mit.edu/](https://scratch.mit.edu/)

Here is a checklist for assessing the quality of the materials that you find:

• Are the materials relevant to your context?
• Would they engage and motivate teachers and students?
• Do they help to address an identified need in your school?
• Are they well-written and easy to understand?
• Do they add value?
• Do they provide learning opportunities beyond those available in the textbook or through other sources?
## Resource 9b: Reviewing an OER Website

<table>
<thead>
<tr>
<th>Name of repository reviewed:</th>
<th>URL:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Who has developed this website? Who has written the materials? How reliable trustworthy is this group? What is their reputation?</th>
<th>Who is the intended audience? Who else might it appeal to?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Subjects covered, levels (primary, secondary, higher education)</th>
<th>Will the resources support new pedagogies? Could the ideas be useful? Could the resources be adapted?</th>
</tr>
</thead>
</table>

| Evaluation summary |
Resource 10a: The ADSI TPD Model

The ADSI Teacher Professional Development Model

The ADSI programme aims to explore the innovative use of Information, Communication & Technology (ICT) to deliver and enrich teaching and learning in secondary schools in Kenya. The programme uses a blended learning approach combining face-to-face workshops and on-line course to build teacher capacity in ICT competencies for enhancing the teaching of Science, Technology, English and Mathematics (STEM) subjects in secondary schools and to increase access to, and quality of teaching and learning materials.

ICT Teacher Competencies

The ADSI teacher ICT competencies are drawn from the UNESCO ICT Competency Framework for teachers (ICT-CFT) and have been contextualized for teachers in Kenya and Tanzania.

The course materials will provide teachers with a curriculum pathway through three levels of ICT competencies – starting with technology literacy competency materials for ICT application in STEM and moving to knowledge deepening competency materials for ICT infusion and on to knowledge creation levels for ICT use for transforming in STEM subject teaching and learning.

Figure 1: UNESCO ICT-CFT Matrix:
3 development levels & 6 Focus areas

Each level presents one module one and five units that cover 6 different focus areas – understanding ICT use in policy, curriculum, pedagogy, ICT, organization and administration and professional development. The course uses Open Education Resources (OERs) in the development of the course modules and focus on ICT integration in STEM teaching and learning. The ADSI course will introduce three modules for ICT use in Science, Technology, English and Mathematics (STEM) - and they are:

1) A technology literacy level for applying ICT in your STEM teaching and learning
2) A knowledge deepening level for infusing ICT in your STEM teaching and learning
3) A knowledge creation level for transforming STEM teaching and learning through the use of ICT

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30 UNESCO 2008, 2011. UNESCO ICT Competency Framework for Teachers (ICT-CFT), retrieved from: 
Technology Pedagogy and Content Knowledge (TPACK)

We can see that the integration of ICT in teaching and learning is a process which goes through a number of phases. In a first phase teachers and learners both need to learn how to work with technology and they need to acquire ICT skills (emerging phase of ICT use). Another important phase is when teachers undergo professional development on how to use ICT to support their content and pedagogy strategies in teaching and learning of their subject areas (technology literacy and knowledge deepening phases).

The TPACK model (Technological Pedagogical Content Knowledge) gives an overview of the three forms of knowledge that a teacher needs to have to integrate technology effectively into their teaching: Technology Knowledge (TK), Pedagogical Knowledge (PK) and Content Knowledge (CK) as well as the interplay and intersections between them.31

Overview of Module Instructional Design

Each module is made up of five units. Each unit of the ADSI module contains TPACK elements and activities - where activities focus on technology to support STEM Exemplary Curriculum materials (TCK), technology to support pedagogy (TPK), computer practicals, (TK) and knowledge and competency application of ICT in classroom practice (TPACK-in-practice).

Table 2: Online and School Based TPD - TPACK-in-practice Unit

<table>
<thead>
<tr>
<th>TPACK-in-Practice Activity</th>
<th>TPACK-in-Practice Aim</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online practice</td>
<td>• Model exemplary curriculum materials – technology enhanced STEM lesson plans – (TCK)</td>
<td>2 weeks</td>
</tr>
<tr>
<td>- STEM case studies (lessons &amp; resources)</td>
<td>• Engage pedagogical dialogue on technology and strategies to support student understanding of STEM concepts (TPK)</td>
<td></td>
</tr>
<tr>
<td>- Teacher community discussion forums &amp; chats</td>
<td></td>
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<tr>
<td>School based practice</td>
<td>• Build teacher capacity in the use of ICT – from basic to advanced skills levels (TK)</td>
<td>2 weeks</td>
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<tr>
<td>- Computer practicals</td>
<td>• Peer-to-peer lesson planning &amp; observations – technology use in didactic/ problem based / project based teaching and learning (TPACK)</td>
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<tr>
<td>- Peer-to-peer technology support</td>
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</tbody>
</table>

31 Koehler, M. 2013. Technology Pedagogy and Content knowledge (TPACK), retrieved from: http://tpack.org/
## Resource 10b: Teachers Professional Development / Priority Scan

### The ICT Competency Framework for Teachers – Professional Development/ Priority Scan

- Rate each competency statement in terms of how you see the **ICT professional development level** of teachers in your school by circling the corresponding number.
- Circle and number the **top three ICT teacher competency priorities** that you would want to focus on in teacher professional development in your school.

(1 = 1st priority; 2 = 2nd priority; 3 = 3rd priority)

<table>
<thead>
<tr>
<th>Competency Statements</th>
<th>Development</th>
<th>Emergent Level</th>
<th>Technology Literacy Level</th>
<th>Knowledge Deepening Level</th>
<th>Knowledge Creation</th>
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</thead>
<tbody>
<tr>
<td><strong>Policy</strong></td>
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<tr>
<td>Policy awareness</td>
<td></td>
<td>1</td>
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<tr>
<td>Teachers contribute to discussion of education reform policies and participate in the design, implementation and revision of programmes to implement these policies.</td>
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<tr>
<td><strong>Classroom practice</strong></td>
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<td>4</td>
</tr>
<tr>
<td><strong>Curriculum and Assessment</strong></td>
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<tr>
<td>Curriculum Planning</td>
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<tr>
<td>Teachers use their knowledge of their subject area, of teaching and learning strategies and technology to advance student learning, creativity and knowledge building.</td>
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<tr>
<td><strong>Learning Environment</strong></td>
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<tr>
<td>Teachers identify authentic problems and technology tools that can support learning environments for enabling student's understanding of key subject-specific concepts.</td>
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<tr>
<td><strong>Student experience</strong></td>
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<td>1</td>
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<tr>
<td>Teachers design or adapt relevant learning experiences that incorporate ICT tools to promote student research and understanding.</td>
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<tr>
<td><strong>Assessment</strong></td>
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<tr>
<td>Teachers provide students with technology-based formative and summative assessments to assess content and technology skills and knowledge.</td>
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<tr>
<td><strong>Communication &amp; collaboration</strong></td>
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<tr>
<td>Teachers select and use ICT effectively to communicate and collaborate with students, peers and parents.</td>
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<tr>
<td><strong>Special Needs Education</strong></td>
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<tr>
<td>Teachers use ICT diagnostic tools, assistive technologies and ICT resources to address curriculum objectives and students with special educational needs.</td>
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<tr>
<td><strong>Pedagogy</strong></td>
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<tr>
<td>Planning</td>
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<tr>
<td>Teachers design or adapt unit plans and classroom activities to engage students in exploring real world issues and solving authentic problems using technology tools and resources.</td>
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<tr>
<td><strong>Problem-based learning</strong></td>
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<tr>
<td>Teachers promote, support and model problem-solving and knowledge creation strategies while teaching students with the support of technology tools and resources.</td>
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<tr>
<td><strong>Student experience</strong></td>
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<tr>
<td>Teachers engage students with the support of technology in project plans and activities for collaborative problem solving, research, creative thinking and innovation.</td>
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<tr>
<td><strong>Project-based learning</strong></td>
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<tr>
<td>Teachers promote project based learning using technology tools and resources to support student social interaction, collaboration and reflection on their own learning.</td>
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<tr>
<td><strong>Communication &amp; collaboration</strong></td>
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<tr>
<td>Teachers structure lessons to incorporate multi-media production, web production and publishing technologies to support student knowledge production and communication with other audiences.</td>
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<tr>
<td>Competency Statements</td>
<td>Development</td>
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<tr>
<td></td>
<td>Emergent Level</td>
<td>Technology Literacy Level</td>
<td>Knowledge Deepening Level</td>
<td>Knowledge Creation</td>
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</tr>
<tr>
<td>ICT</td>
<td>Beginning</td>
<td>Applying</td>
<td>Proficient</td>
<td>Transformative</td>
<td></td>
</tr>
<tr>
<td>Productivity tools</td>
<td>Teachers demonstrate ability to use ICT production tool functions to support students' innovation and knowledge creation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Authoring tools</td>
<td>Teachers set up authoring environments to promote student knowledge construction and development of innovative products</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Internet</td>
<td>Teachers develop student capacity to critically evaluate the accuracy and usefulness of web resources to support learning goals and strategies</td>
<td>1</td>
<td>2</td>
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<td>4</td>
</tr>
<tr>
<td>Communication &amp; collaboration</td>
<td>Teachers use common communication and collaboration technologies to locate information, people and resources for solving selected problems and for developing local and global</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Administration</td>
<td>Teachers use technology software to manage, monitor and assess development and progress of student learning and projects</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Educational software</td>
<td>Teachers evaluate and use educational software to support students knowledge acquisition, thinking, reflection, planning and creative processes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Organization &amp; Management</td>
<td>Beginning</td>
<td>Applying</td>
<td>Proficient</td>
<td>Transformative</td>
<td></td>
</tr>
<tr>
<td>Teacher understanding</td>
<td>Teachers exhibit a leadership role in creating a vision for technology infusion into curriculum and classroom practice</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Leading ICT integration</td>
<td>Teachers seek and participate in shared decision making for use of ICT in school planning and the development of technology skills in others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Classroom management</td>
<td>Teachers address learner diverse needs by using learner centred strategies and managing individual, group and class access to ICT resources</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Acceptable &amp; appropriate uses</td>
<td>Teachers advocate, model and teach procedures and policies for safe, ethical and responsible use of technology and the internet</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Teacher Development</td>
<td>Beginning</td>
<td>Applying</td>
<td>Proficient</td>
<td>Transformative</td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td>Teachers evaluate current research and practice to make effective use of ICT in support of their own professional development and student learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Teacher awareness</td>
<td>Teachers participate in local and global learning communities to explore creative applications of technology and share and discuss good practices</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Informal learning</td>
<td>Teachers support, experiment with and continuously learn and use ICT to build professional learning communities working toward creating new knowledge</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
**Resources Links - All Units**

**Reading**


**Planning**


**Videos:**


Government of Ireland, Department of Education and Skills, PDST Technology in Education (n.d.) *Leadership and Planning*. Available at: [http://www.pdsttechnologyineducation.ie/en/Good-Practice/Videos/Post-Primary/#25713691](http://www.pdsttechnologyineducation.ie/en/Good-Practice/Videos/Post-Primary/#25713691)


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