

THE INFORMATION TECHNOLOGY (IT) UNIT OR DEPARTMENT IN THE MINISTRY OF EDUCATION

Issues of function, organization and staffing

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Introduction

As Information and Communication technologies (ICTs) become pervasive throughout the business and social sectors in the developing world, organizations are having to strategically and institutionally re-organize themselves to benefit from these ICTs.

Traditionally, the Ministry of Education, just as other government entities, has had an IT¹ unit or department. However, these IT units have usually been ill conceived, under staffed and generally ineffective. The units have, in most cases, consisted of one or two people and have been relegated to maintaining old and dilapidated equipment. This paper sets to out explore how such a unit could be adequately organized, resourced and staffed in order to make an impact on the Ministry's every day operation.

Role of the IT unit

The main role of the IT unit is to support and enable the use of ICTs as a strategic tool to improve the management and day to day running of the ministry. This unit should be an integral part of the Ministry and lie within the general support or services part of the Ministry's structure.

Functions of the IT Unit

Basically, there are four broad functions that such a unit would cater for:

- Policy and management, which would cover:
 - o Organization-wide IT policy
 - o Developing acceptable use policies
 - o Developing IT technical standards
 - o Contingency planning and disaster recovery

¹ Traditionally, these units have been called IT units and so the name will be adopted here instead of ICT unit. This will also differentiate them from the new and emerging ICT in Education units. See GeSCI paper on Institutional management of national ICT in Education programs which details the set up and operation of ICT in Education units.

- Designing and implementing user support strategies
 - Project management
 - Knowledge management
 - Procurement of IT equipment, systems and services
 - Management of suppliers and contractors
- Infrastructure provision, service and maintenance which will cover:
- Computers, printers, and other hardware
 - Operating systems and standard productivity software
 - Networks, LANs and WANs and servers
 - Connectivity
 - Telephony and PBX systems
 - Power backup
- Applications and Information Systems, their development, customization and maintenance which would cover:
- Email and other communication and collaboration applications e.g. shared calendars
 - Websites and other web based applications such as intranets
 - Financial management and accounting applications
 - Human resource management applications
 - Procurement, supplies and stores management applications
 - General databases
 - Other specialized applications e.g. those relating to EMIS systems
- Help Desk and User Support, which would cover:
- Help desk infrastructure
 - Offer training for new systems and re-training for users

Specific or additional functions could be defined depending on the specific country's or Ministry's needs, local context, resources and constraints.

Maintenance vs. Support

It is important to understand and distinguish between maintenance and user support:

- ***Maintenance***- actions taken on equipment and systems e.g. repair, upgrades, diagnostic, preventive (Usually lumped under technical support)
- ***Technical/ User Support***- actions taken on behalf of users to keep them working or help them get more out of the IT systems e.g. help desk, initial training, FAQs

Typically when users have a problem, they call the help desk staff who diagnose the problem and either fix it or refer it to the infrastructure or applications people for repair or upgrade.

Staffing profile

A review of the areas that need to be catered for would lead to a staffing profile that resembles that below:

- *Head of Unit*- in charge of the policy and management area and providing overall leadership for the unit and the Ministry in the IT field
- *Infrastructure and network staff*- with advanced skills in network installation and management and system administration. These staff would be responsible for managing, servicing and maintaining all infrastructure

- *Information systems and management staffs*- with advanced skills in programming, database management, web development. These staff would be responsible for managing, servicing and maintaining all applications and information systems
- *User support staff*- with basic IT and good communication skills. These staff would be responsible for providing support to users.

Staffing metrics

There are now some standard metrics used to estimate the number of staff required to run an IT department in the education sector. The number of staff is a direct function of the types and amount of infrastructure and applications the Ministry has or plans to have and the number of users. A recent formula² developed by the State of Michigan for their schools and educational institutions and which draws on an initial study³ by IBM, DEC and MIT for distributed computing says that:

“Staff members = (Number of workstations and peripherals/500) +(Number of Users/1,000) +(Number of teachers/150) + (Number of major LANS, servers, databases, etc./5) +Number of applications supported/100) + (Number of staff required to handle telephone, video, satellite, broadcast, and other non-computer technologies/1) -(Number of positions outsourced or handled by volunteers).”

Such a formula would be a starting point to estimate the number of IT staff required by the Ministry of Education. Extrapolating from the formula above, one can estimate the number of people required based on the following metrics:

- Policy and Management- 1 person

² See <http://www.classroomtco.org/howto.html> for details.

³ See <http://www.classroomtco.org/checklist/support.html> for more

- Infrastructure
 - Computer + peripherals + printers- 1 person per 500 devices (1:500)
 - Operating Systems- 1 person per 5 types of operating systems (1:5)
 - Local Area Networks- 1 person per 5 distinct networks. Networks can be considered distinct if you need a router or bridge to connect them (1:5)
 - Telephone networks- 1 person per distinct telephone network (1:1)**** except in cases where using VoIP in which case the telephone network is considered another distinct LAN
 - Servers- 1 person per 5 servers (1:5)
 - Specialized infrastructure e.g. satellite, radio, TV or video broadcast systems- 1 person per system (1:1)

- Applications and Information Systems
 - Database systems- 1 person per 5 databases (1:5)
 - Basic software e.g. Office software like Word and Excel- 1 person per 5,000 licences (1:5000)
 - Other applications e.g. multimedia applications etc- 1 person per 50 types of applications (1:50)

- User support and help desk
 - Basic support- 1 person per 1,000 users (1:1000)
 - Advanced support e.g. to curriculum designers, content developers- 1 person per 150 users (1:150)