Final version

MODULE STRUCTURE AND DESCRIPTION

School: Istituto Tecnico Statale – indirizzo: Periti informatici

Time: 6 hours

Class: 5th year   **Level**: B1+

Topic: *Networks*

Curriculum: Informatica	Main topic	Time needed
Progettazione di una base di dati	DataBase	September-December
Ambienti software per DataBase	SW: Access - SQL	January-February
Operare con il DataBase	Access e SQL	March
Progettare interfacce per Data Base	Visual Basic	April
Comunicare con il computer	Network e Internet	May-June

Module of IT- according to the colleague's plan

Module: Comunicare con il computer		
Unit title	Main topic	Time needed
Introduction to Networks and Networking planning	Basics of networking	8 hours
Communicating among computers	Protocols and Internet	8 hours
Assessment	Project work	3 hours

Unit title: Introduction to Networks and Networking planning

Unit description and structure

This unit is part of the last module of the curriculum for a fifth class in a technical school for IT. It is the first unit that introduces the main aspects of networking features and the procedure to design a network. At the beginning there will be the presentation of the most common standards used to describe how a network is organized, with a specific reference to the OSI model. Then there is the classifying typologies of networks and their main advantages and disadvantages. The central part of the unit deals with connectivity devices and cabling. Finally, there is the introduction to the guide line for planning a network according to customer's needs and technical equipment. According to what the colleague and I decided together, the English part will consider different aspects of the whole unit in order to give students all the necessary vocabulary and other linguistic features useful for the final project. Usually the

English lesson will offer just a brief introduction to key concepts and will not enter too specific mathematical and physical or technical matters, which will be developed by the colleague.

General objectives of the unit:

➢ Students will learn what a network is

➢ Students will learn how a network works

➢ Students will learn how to plan and implement a network

➢ Students will learn how to talk about the previous topics in English

Part only for the English teacher	*Part only for the Content Specialist*	*Part to be done in co-presence*
• Introduction to the vocabulary and linguistic structures to describe networks and their main characteristics (advantages and disadvantages), in specific network topologies; • Introduction to the main NTW devices necessary for the physical realization of a network.	• Exploration of network utility; • Description of the different models/standards to define a network; • Introducing network typologies according to geographical extension, work stations and media relationships; • Definition of advantages and disadvantages for each typology; • Explanation of technical details related to quality and quantity of transmitted data; • Basics of networking and cabling a place;	Assessment of the module • Division of the class into groups of three • Handing out project paper and explaining the procedure for its elaboration • Giving time limit • Observing and aiding where necessary (both on technical and on language side)

Assessment and Evaluation: The assessment will be made according to different aspects. On the one hand, together with the colleague we will take into account the content of students' production. On the other hand, we will consider the linguistic production of each student in English. The evaluation, finally, will be based on the result of the assessment sessions (both in progress and in the end), but also on the participation and interest shown. The module assessment will consist of a project work where students are asked to work in small groups in order to design and plan a network for a customer, identifying the best network typology both physically and logically speaking, its costs, the material needed for its realization.

Objectives of the English lessons:

➢ Students will learn to describe a network in English (topology classification).

➢ Students will learn to compare network topologies and identify their main advantages and disadvantages.

➢ Students will learn most of the vocabulary related to network components and devices.

➢ Students will learn to understand the difference between guided and unguided media.

➢ Students will learn to be familiar with twisted-pair cable.

➢ Students will learn to be familiar with shielded twisted-pair cable.

➢ Students will learn to be familiar with coaxial cable and optic fibres.

➢ Students will learn to understand how the air (or vacuum) can be a transmission medium for signals.

Linguistic functions: describing pictures, graphs and processes (a network, its components and its functions).

Linguistic features: affirmative sentences, modals (can, must), passives, superlatives and comparatives, linking words, relative clauses.

Skills/Abilities:

➢ Speaking: answering direct questions; describing a picture, creating an oral description of a network starting from a picture

➢ Reading: a text to get information, a technical text to identify main concepts, using a glossary of technical terms to get necessary information

➢ Writing: note taking; create a short paragraph to describe a network, completing a text with missing elements, matching terms and definitions.

Vocabulary: networks and networking components, computer devices and components.

Type of activities: class work, single work, pair/group work.

Pre-requisites:

➢ Students should be able to use computer programmes such as a word editor, excel sheet, a picture manipulator;

➢ Students should have a good B1 level of English, at least in receptive skills (reading);

➢ Students should know how to describe a location, how to build main clauses and relative clauses.

Aids: video beamer; task and work sheet, class book, language laboratory, computer lab.

Assessment and Evaluation for the English lessons: the content and language assessment for each English lesson will be based on the observation of students' production and work and a final matching test with terms and definitions.

Lesson 1 – **Aim**: introducing the topic, vocabulary – classifying networks according to 'topographical' criteria.
The colleague has already introduced a definition of networks according to their extension, to their configuration, identifying advantages and disadvantages of these typologies. The aim of this one-hour lesson is to provide students with the necessary terminology to describe a network according to physical description criteria and to compare network topology characteristics in view of a better choice when designing a NTW plan .

	Time	Type of Activity	Aims	Procedure	Skills	Material
Warm up:	5 min	brainstorming Class work Location: class	- Revising previous knowledge of vocabulary and notions - Introducing new expressions related to the world of networks	T shows a slide with two of the ways of classifying NTWs and asks Sts to tell what categories goes into each classification.	- Speaking	PP presentation (NTWslesson1) + video beamer/ slide Board
Activity1	35 min	Single work Pair work Class work	- Introducing the topic: NTW topologies; - Practicing NTW (written and oral) description.	1. T hands out a worksheet made of different sections and asks Sts to follow the instructions and complete the texts and pictures (exercises 1-4). Together with the worksheet T gives a glossary for each pair of Sts. 2. After a time limit of 15 minutes T asks Sts to compare their answers in pairs. 3. T asks Sts to work in pairs and to do exercise 5. 4. After 5 minutes, T calls some Sts and asks them to describe the token ring procedure to all the class. 5. T checks all the answers given showing a PP presentation illustrating all NTW topologies.	-Writing -Drawing -Interpreting a description - Note taking - Speaking	Photocopies (topologies) Glossary PP presentation (NTWslesson1) + video beamer/ slides
Activity 2	15 min	Single work	Introducing the topic development about adv and disadv of NTW topologies	1. T shows a PP presentation where there are the most important advantages and disadvantages for each topology they have previously analysed. Sts take notes using a grid. 2. Sts compare their answers with their desk mate.	- Note taking - Listening	PP presentation (NTWslesson1) + video beamer/ slides Photocopy(Note taking1)
Assessment	5 min	Class work	Checking Sts understanding of analysed topic	At the end of Activity 2, T draws a schematic representation of each topology and asks questions to some Sts to see if they got the correct information.	- Speaking	Board

Lesson 2 **Aim**: students will examine the components of a computer system involved in networking (hardware and media, devices)
The colleague has just analysed some technical aspects related to signal analysis and transmission and is preparing to define all the steps necessary to create a complete and detailed network plan. In this lesson the English teacher introduces some other NTW devices (switches, routers, cables and other transmission -related elements).

	Time	Type of Activity	Aims	Procedure	Skills	Material
Warm up	15 min	Location: Computer lab Pair work Matching words and objects	- Introducing vocabulary - Revising vocabulary - Checking previous knowledge	T shows a list of components and devices related to computer and asks Sts to label their working station with each noun using some post-its of different colour. This is a sort of game: the fastest pair wins! To check the answers T shows a picture with labels and objects. Sts check their own solutions	- matching words and objects	- Slide (computer parts.ppt) - Coloured post-its - Felt-tip pens
Activity 1	15 min	Single work	- Defining topic: NTW connection - Introducing vocabulary - Introducing cables and other computer communicating media	1. T draws a diagram on the board asking Sts to reproduce it on their note books. T explains the function of the grid 2. Sts draw the diagram on their note books. 3. T shows a PP presentation while Sts take notes on their note books completing the diagram that summarizes types of communication media in NTW and drawing a sample of each typology.	- Note taking - drawing	- PP presentation (cables&co) - note book - board (notetaking2)
Activity 2	20 min	Single work	- Introducing devices and components and NTW devices	1. Teacher hands out some texts describing NTW devices Sts read the texts and try to identify the device matching the text with its summary. If necessary they can use their NTW glossary 2. T asks Sts to read their answers out loud and then shows the correct matches.	- Reading and matching summaries and terms	photocopy (NTWdevices) NTW glossary
Assessment	10 min	Single work	To check Sts knowledge of analysed topics	T gives Sts a copy of an interactive test and Sts have to fulfill their task (matching terms and definitions) in a 3 min time limit. To take the test Sts need to use the LAN NTW of their computer lab: 1. they have to connect to their NTW resources 2. they have to open the shared folder of the administrator, where the T has saved the file 3. they have to take the file and then do the test	- Matching words and definitions	Computer Interactive test(final test.htm)