



# Ethiopian TVET-System

## INFORMATION TECHNOLOGY SUPPORT SERVICE

Level I

# LEARNING GUIDE # 22

<b>Unit of Competence:</b>	Connect Hardware Peripherals
<b>Module Title:</b>	Connecting Hardware Peripherals
<b>LG Code:</b>	ICT ITS1 L04-LG-22
<b>TTLM Code:</b>	ICT ITS1 TTLM M06 1019v1

LO 4: Connect Workstation to the  
Internet



## Instruction sheet

## Learning Guide # 22

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:-

- Connecting workstations to the internet and confirming its functionality
- Launching internet browser software to access the internet

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:-

- Connect workstations to the internet through the existing internet connection and functionality confirmed
- Launch internet browser software is launched to enable access to the internet and functionality confirmed

### Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, in page 3 and 8 respectively.
4. Accomplish the “Self-check 1, Self-check 2, in page 7 and 9 respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1 in page 10.
6. Do the “LAP test” in page 16.



<b>Information sheet 1</b>	<b>Connecting Workstations to the Internet and Confirming Its Functionality</b>
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#### 4.1. Connecting computer to the Internet

To connecting computers to the internet connection for accessing information over a network either by using connection based or connectionless internet infrastructure the user must be connected to the internet access through internet service providers (ISP). There are three types of connection such as:-

##### 4.1.1. Dialup connection

- Dial-up internet access is a form of Internet access that uses the facilities of the public switched telephone network (PSTN) to establish a dialed connection to an Internet service provider (ISP) via telephone lines. allows you to connect to the internet via a local server using a standard 56k modem
- Your PC literally dials (hence the name) a phone number (provided by your ISP) and connects to the server and therefore the internet
- Internet service providers charge by the minute for your dial-up connection
  
- **Advantages of dial up internet connection**
  - ✓ Very economic and widely available
  - ✓ Hardware cost are minimal since it uses a standard modem
  - ✓ Easy configuration
  - ✓ Convenient for one computer or small network
  
- **Disadvantages of dial up internet connection**
  - ✓ The slowest connection
  - ✓ Since it uses a 56k modem, it transfers 56 kilo bits a second(7 kB) of data
  - ✓ The average webpage size is about 50Kbyte
  - ✓ So it takes 7 seconds to load a webpage
  - ✓ Your telephone line will be busy when connected

##### 4.1.2. Leased connection

- Use a dedicated line to connect to the internet
- We will have a direct internet connection to the internet
- Always on

Page 3   20	Author: Federal TVET Agency(FTA)	IT Support Service Level 1	Date: Oct 2019
			Version: 1



- Leased internet connection can be found in many forms the popular two are:-
  - ✓ ADSL
  - ✓ Cable

### ✓ **ADSL connection**

ADSL (Asymmetric Digital Subscriber Line or DSL for short) is a high-speed Internet access service that utilizes existing copper telephones lines to send and receive data at speeds that far exceed conventional dial-up modems. The fastest dial-up modems are rated at 57 kilobits per second (Kbps), and usually operate at about 53 Kbps under good conditions. By comparison, ADSL allows data stream speeds from 1.5 to 8 megabits per second (Mbps), depending on the grade of ADSL service purchased.

ADSL uses standard telephone lines to transmit upstream and downstream data on a digital frequency, which sets these data streams apart from the analog signals telephones and fax machines use. Because the ADSL signal is operating on a different frequency, the telephone can be used normally, even when surfing the Web with ADSL service. The only requirement will probably be inexpensive DSL filters on each phone or fax line, to remove any "white noise" on the line that might be generated from ADSL service.

The "asymmetric" in ADSL refers to the fact that the downstream data rate, or the data coming to your computer from the Internet, is traveling faster than upstream data, or the data traveling from your computer to the Internet. Upstream data rates are slower because Web page requests are fairly miniscule data strings that do not require much bandwidth to handle efficiently. Some businesses, however, may require matching upstream rates for uploading large files. SDSL, or Symmetric Digital Subscriber Line is an option. "Symmetric" indicates that both data streams are operating at the same speed of 1.5 to 7 Mbps, depending on the grade purchased. SDSL service requires a dedicated telephone line because, unlike ADSL, telephone and fax services cannot share a line with SDSL service. ADSL service requires an Internet service provider (ISP), and ADSL modem. The modem is often provided free of charge, and most ISPs that offer ADSL service require subscriber contracts of one year. ADSL is also more expensive than economical dial-up service, which can cost less than US\$10 per month.

ADSL is an "always on" service, meaning that as long as your computer is powered on, it will automatically stay connected to the Internet unless you manually disconnect via software or hardware. ADSL is especially suited for gamers, CAD use, streaming

Page 4   20	<b>Author:</b> Federal TVET Agency(FTA)	IT Support Service Level 1	Date: Oct 2019
			Version: 1



multimedia and downloading large files. Family members can share ADSL accounts, with a basic monthly fee covering several mailboxes. Unlike dial-up service, which stipulates only one session be instigated at a time, multiple members can be using ADSL service simultaneously on various computers in the house without violating policy. ADSL is not available to everyone. DSL providers, or even your local phone company, can tell you if service is available in your locale. Speeds will vary depending upon your physical distance from local hubs. Some customers with close proximity may be able to take advantage of newer varieties of ADSL, called ADSL2 and ADSL2+, which have even greater throughput rates, from 12 to 24 Mbps downstream and 1 to 3.5 Mbps upstream.

- **Digital Subscriber Line (DSL)**

An "always-on" technology; there is no need to dial up each time to connect to the Internet. Uses the existing copper telephone lines to provide high-speed data communication between end users and telephone companies.

Asymmetric DSL (ADSL) is currently the most commonly used DSL technology.

- ✓ Has a fast downstream speed, typically 1.5 Mbps.
- ✓ Upload rate of ADSL is slower.
- ✓ Not the best solution for hosting a web server or FTP server.

### DSL Types

No.	Type	Description
1	ADSL	Asymmetric DSL is most common. Downstream speed from 384 Kbps to 6 Mbps. Upstream speeds lower than downstream speeds
2	HDSL	High Data Rate DSL provides equal bandwidth in both directions.
3	SDSL	Symmetric DSL provides the same speed, up to 3 Mbps, for uploads and downloads
4	VDSL	Very High Data Rate DSL is capable of bandwidths between 13 and 52 Mbps downstream, and 16 Mbps upstream
5	IDSL	ISDN DSL is DSL over ISDN lines. Uses ordinary phone lines. Requires ISDN adapters

- **To generalize ADSL**

- ✓ It stands for Asymmetric Digital Subscriber Line
- ✓ Uses phone line
- ✓ The connections work by splitting your phone line into two separate channels, one for data (internet) and one for voice (phone calls), which means you can talk on the phone and be connected to the internet at the same time.



- ✓ Have incredible performance compared to dial up
- ✓ Have a flat monthly fee
- ✓ Come in different speeds specification
  - 256Kbps/128Kbps
  - 512Kbps/128Kbps
  - 1Mbps/256Kbps
  - 2Mbps/512Kbps
  - 8Mbps/1024Kbps

The first number shows the download speed and the second the upload speed

- **Advantage of ADSL**

- ✓ Always on
- ✓ Transfer data and voice at the same time
- ✓ Fast

- **Disadvantages of ADSL**

- ✓ Does not available everywhere
- ✓ Additional hardware cost, since it needs a special modem called ADSL modem

- **Cable Connection**

In telecommunications, cable Internet access, often called simply cable Internet, is a form of broadband Internet access that uses the cable television infrastructure. Like digital subscriber line, cable Internet access provides network edge connectivity (last mile access) from the Internet service provider to an end user. It is integrated into the cable television infrastructure analogously to DSL which uses the existing telephone network. Cable TV networks and telecommunications networks are the two predominant forms of residential Internet access. Recently, both have seen increased competition from fiber deployments, wireless, and mobile networks.

Cable connection has the following characteristics

- ✓ It uses a separate cable than phone line to transfer data
- ✓ Very fast and reliable
- ✓ Fixed monthly fee

- **Advantage of cable connection**

- ✓ Very fast
- ✓ Always on
- ✓ Doesn't affect to make/receive a phone call, since it uses a separate cable

Page 6   20	Author: Federal TVET Agency(FTA)	IT Support Service Level 1	Date: Oct 2019
			Version: 1



- **Disadvantages of cable connection**

- ✓ Doesn't available everywhere
- ✓ It needs a special modem called cable modem

#### **4.1.3 Wireless connection (Wi-Fi network Connection)**

Wireless connection (Wi-Fi) is non connection based /unbounded network connection/ that used to access information.



<b>Self-Check 1</b>	<b>Written Test</b>
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Name:- \_\_\_\_\_ Date:- \_\_\_\_\_

**Instruction:** Answer all the questions listed below, if you have some clarifications- feel free to ask your teacher.

1. What are the three types of internet connections? (3 points)
2. What facilities does, the dial-up connection is used to establish a dialled connection to an (ISP) for users/clients? (1 point)
3. What does ISP stands for? (1 point)
4. Give at least 2 advantages of using a dial-up connection? (2 points)
5. Give the 2 disadvantages of using a dial-up connection? (2 points)
6. Give at least 2 advantages of using a leased/ADSL connection? (2 points)
7. Give the 2 disadvantages of using a leased/ADSL connection? (2 points)
8. What type of connection made use of a dedicated line to connect to the internet? (1 point)
9. What does ADSL stands for? (1 point)
10. Give at least 2 advantages of using a cable connection? (2 points)
11. Give the 2 disadvantages of using a cable connection? (2 points)
12. In telecommunications explain cable Internet access and Wi-Fi internet connection? (1point)

### Answer Sheet

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Short Answer Questions

**Note: Satisfactory rating - 20 points**

**Unsatisfactory - below 10 points**

You can ask your teacher for the copy of the correct answers.

Page 8   20	<b>Author:</b> Federal TVET Agency(FTA)	IT Support Service Level 1	Date: Oct 2019
			Version: 1





<b>Information Sheet 2</b>	<b>Launching Internet Browser Software to Access the Internet</b>
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#### **4.2. Installing internet browser software to access information on the internet**

Now a time there are so many different types of internet browsers that used to access different information on the internet. From time to time all users to access information from the internet, any client install and updating the internet browsers that to be uses. But all users/clients make sure that the modem is switched on and connected to a live internet line connection.

Make sure your connection software is configured properly. If necessary, refer to the original setup instructions, or call your provider's customer service number. While, adequate for voice communications, these extenders usually do not provide a connection that is clean enough (noise-free) for digital transmissions. The problem might not be on your end, but might lie with the service provider. Often, if too many users are logged on to a provider's system, the provider will not permit additional connections. Also, the provider might be performing system maintenance (though most providers try to do such work during "off" hours to minimize disruption).

Some access providers maintain their own archives (caches) of web sites in order to speed up internet access. Sometimes, this archiving process will inadvertently disable certain web functions, making some pages difficult or impossible to access properly. Also, this archiving process can prevent you from loading the most current version of a page.

Your access provider may maintain firewalls that prevent you from accessing certain Internet resources for security reasons and contact your service provider if you believe this to be the case. Your access software may contain a monitoring application that blocks access to Internet resources considered inappropriate for users. Disable this application if necessary; if you need help, ask your service provider. If the server containing the site is overloaded or "down," you will not be able to access the site.

Page 9   20	<b>Author:</b> Federal TVET Agency(FTA)	IT Support Service Level 1	Date: Oct 2019
			Version: 1



<b>Self-Check 2</b>	<b>Written Test</b>
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Name: - \_\_\_\_\_ Date: - \_\_\_\_\_

**Instruction:** Answer all the questions listed below, if you have some clarifications- feel free to ask your teacher.

1. Explain the advantages of ISP? (3 points)
2. Explain the function of internet browsers? (3 points)
3. Write at least five internet browsers that used to access information on the internet? (3 points)



## Operation Sheet 1

## Connecting Computer to the Internet to Access Information

### 1. How to use internet connection for information sharing

To use Internet Connection Sharing to share your Internet connection, the host computer must have one network adapter that is configured to connect to the internal network and one network adapter or modem that is configured to connect to the Internet. On the host computer, follow these steps to share the internet connection:-

1. Log on to the host computer as Administrator or as Owner.
2. Click **Start**, and then click **Control Panel**.
3. Click **Network and Internet Connections**.
4. Click **Network Connections**.
5. Right-click the connection that you use to connect to the Internet. For example, if you connect to the Internet by using a modem, right-click the connection that you want under **Dial-up**.
6. Click **Properties**.
7. Click the **Advanced** tab.
8. Under **Internet Connection Sharing**, select the **Allow other network users to connect through this computer's Internet connection** check box.
9. If you are sharing a dial-up Internet connection, select the **Establish a dial-up connection whenever a computer on my network attempts to access the Internet** check box if you want to permit your computer to automatically connect to the Internet.
10. Click **OK**. You receive the following message:

When Internet Connection Sharing is enabled, your LAN adapter will be set to use IP address 192.168.0.1. Your computer may lose connectivity with other computers on your network. If these other computers have static IP addresses, it is a good idea to set them to obtain their IP addresses automatically. Are you sure you want to enable Internet Connection Sharing?

11. Click **Yes**.

The connection to the Internet is shared to other computers on the local area network (LAN). The network adapter that is connected to the LAN is configured with a static IP address of 192.168.0.1 and a subnet mask of 255.255.255.0 on the client computer, to connect to the Internet by using the shared connection, you must confirm the LAN adapter IP configuration, and then configure the client computer. To confirm the LAN adapter IP configuration, follow these steps:-

Page 11   20	Author: Federal TVET Agency(FTA)	IT Support Service Level 1	Date: Oct 2019
			Version: 1



1. Log on to the client computer as Administrator or as Owner.
2. Click **Start**, and then click **Control Panel**.
3. Click **Network and Internet Connections**.
4. Click **Network Connections**.
5. Right-click **Local Area Connection**, and then click **Properties**.
6. Click the **General** tab, click **Internet Protocol (TCP/IP)** in this **connection uses the following items** list, and then click **Properties**.
7. In the **Internet Protocol (TCP/IP) Properties** dialog box, click **Obtain an IP address automatically** (if it is not already selected), and then click **OK**.

**Note:-** You can also assign a unique static IP address in the range of 192.168.0.2 to 192.168.0.254. For example, you can assign the following static IP address, subnet mask, and default gateway:

8. IP Address 192.168.0.2
9. Subnet mask 255.255.255.0
10. Default gateway 192.168.0.1
11. In the **Local Area Connection Properties** dialog box, click **OK**.
12. Quit Control Panel.

To configure the client computer to use the shared Internet connection, follow these steps:

1. Click Start, and then click Control Panel.
2. Click **Network and Internet Connections**.
3. Click Internet Options.
4. In the Internet Properties dialog box, click the Connections tab.
5. Click the Setup button. The New Connection Wizard starts.
6. On the **Welcome to the New Connection Wizard** page, click Next.
7. Click **Connect to the Internet**, and then click Next.
8. Click **Set up my connection manually**, and then click Next.
9. Click **Connect using a broadband connection that is always on**, and then click Next.
10. On the **Completing the New Connection Wizard** page, click Finish.
11. Quit Control Panel.



When you now start Microsoft Internet Explorer, the client computer will try to connect to the Internet by using the host computer's shared Internet connection.

## 2. Troubleshooting Internet Connection Problems

When you turn on Internet Connection Sharing on the host computer, the host computer's LAN adapter is automatically assigned the IP address of 192.168.0.1. Therefore, one of the following situations may occur:-

- **IP address conflict:** - Each computer on the LAN must have a unique IP address. If more than one computer has the same IP address, an IP conflict occurs, and one of the network adapters turns off until the conflict is resolved. To resolve this conflict, configure the client computer to automatically obtain an IP address, or assign it a unique IP address.
- **Loss of network connectivity:** - If your network is configured with a different IP address range than Internet Connection Sharing uses, you will lose network connectivity with the host computer. To resolve this issue, configure the client computers to automatically obtain an IP address, or assign each client computer a unique IP address in the range of 192.168.0.2 to 192.168.0.254.

### ✚ Connecting to the internet using DSL in Windows 7



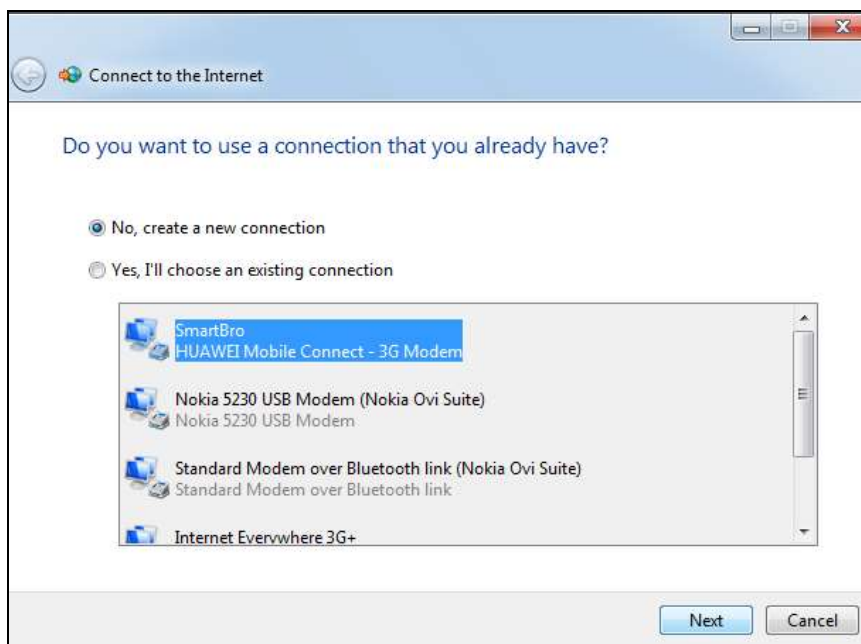
- From the **Start** menu, choose **Control Panel**.



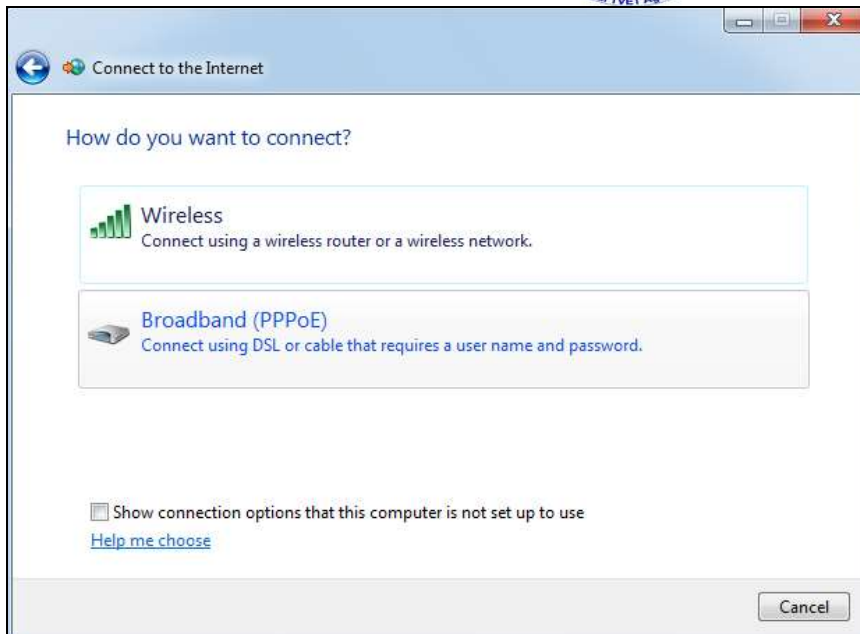
- On the **Control Panel**, click on **Connect to the Internet** on the Network and Internet.



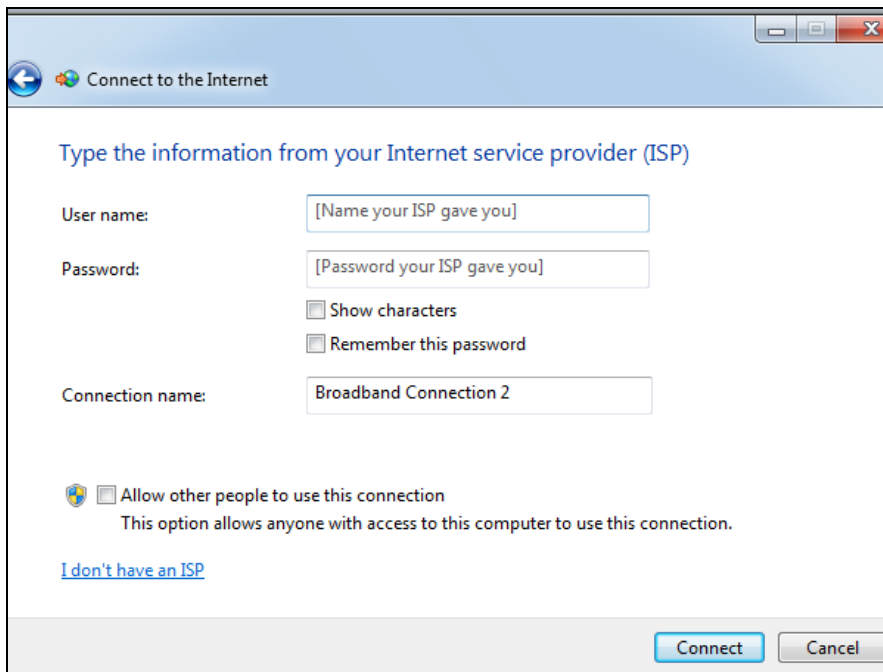
- A dialog box will appear asking if “Do you want to use a connection that you already have?”
- Choose **No, create a new connection**.



- Then click **next button**.
- It will again prompt you on **How do you want to connect?**



- Click on **Broadband (PPPoE)**  
Connect using DSL or cable that require a user name and password.
- Type the **username** and **password** that your internet provider gave you
- Then type what **broadband connection name** you want for your DSL connection



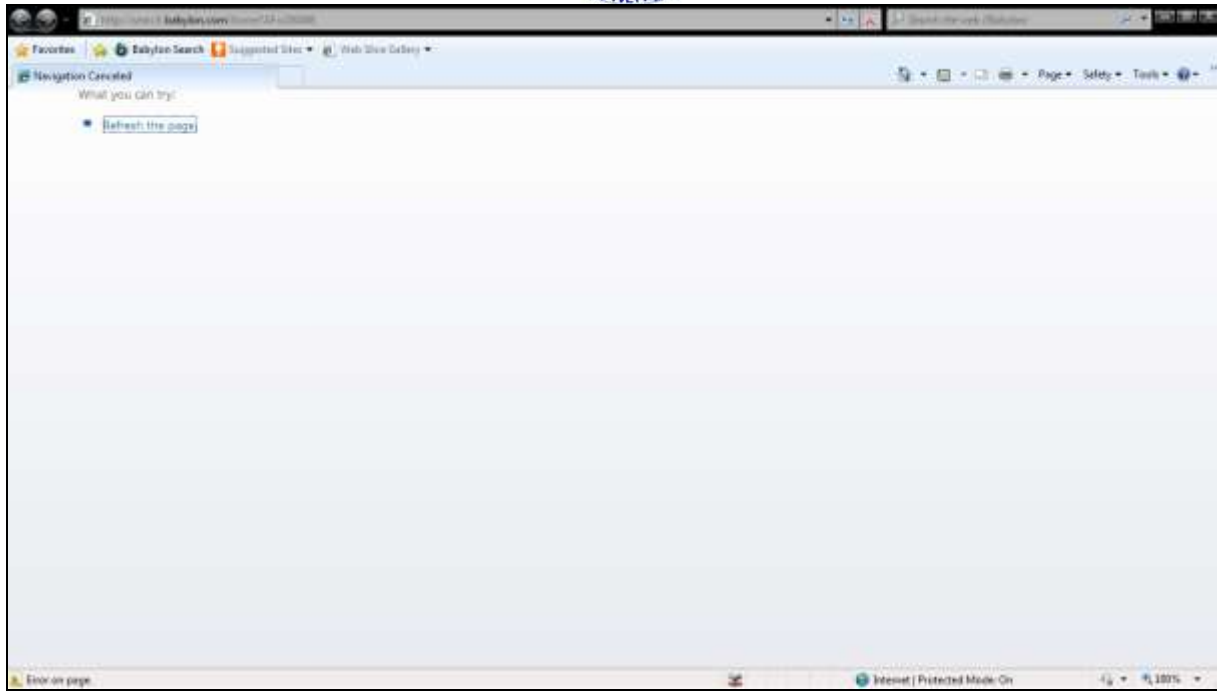


- Then click **Connect**.
- You have just set-up a DSL connection. You can now start browsing the web using any of the internet browsers. You may any of the common browser like Internet Explorer or Mozilla Firefox.
- To launch it, click on the **start menu** then click **Internet explorer**



- You are now ready to browse the web







<b>LAP Test</b>	<b>Practical Demonstration</b>
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Name: - \_\_\_\_\_ Date: - \_\_\_\_\_

Time started: \_\_\_\_\_ Time finished: - \_\_\_\_\_

1. You are required to create a new connection and needs to be able to connect to the internet and access any types of resources on the Internet? (3% points)
  
2. Create dialup connection? (3% points)
  
3. Create broadband connection and assign IP Address, configure it manually and automatically? (3% points)
  
4. Configure and connect to the Wi-Fi Internet connection that installed within your organization? (3% points)

**Note: Satisfactory rating - 9 points**

**5 Unsatisfactory - below 5 points**

You can ask your teacher for the copy of the correct answers.

Page 18   20	<b>Author:</b> Federal TVET Agency(FTA)	IT Support Service Level 1	Date: Oct 2019
			Version: 1



## List of Reference Materials

- **Winn L Rosch.** The Winn L. Rosch Hardware Bible (6th Edition).
- **Christopher A. Crayton Joel Z. Rosenthal Kevin J. Irwin.** The A+ Certification & PC Repair Handbook (Networking Series).
- **Richard Palmer.** Maintenance Planning and Scheduling Handbook, 2nd Edition (McGraw-Hill Handbooks).
- The A+ e-books and IT Essential Presentation and different URLs resources on the Internet.



## Experts

The development of this Learning Guide for the TVET Program Information technology support service Level I.

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