**Lesson Plan**

Computer Languages, Applications, and Emerging Technologies

MODULE 14

This **lesson plan** was written for the Florida Public School System DIGITAL INFORMATION TECHNOLOGY (8207310) course. Funded by the Cyber/IT Pathways Program, Cyber Florida, and the Florida Department of Education.

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**Digital Information Technology (8207310)**

This Lesson Plan is designed to aid high-quality instruction through the identification of components that support learning and teaching. Each section of this Lesson Plan is modeled after 2022-2023 CTE Standards and Benchmarks for Digital Information Technology (8207310) as published by the Florida Department of Education Student Performance Standards.

Computer Languages, Applications, and Emerging Technologies

# Module Overview

This module will help students understand the development of computer languages and how that impacts the world around them. Students will discover how new applications and emerging technologies will not only benefit the business industry but also their personal lives.

## DIT Textbook Chapter Overview

The *Computer Languages, Applications, and Emerging Technologies* chapter in the accompanying DIT textbook supports the conceptual understanding of the content covered in this module*.*

## CTE Standard and Benchmark

**Standard 12.0:** Develop awareness of computer languages, web-based and software applications, and emerging technologies. The student will be able to:

* **12.****01** Compare and contrast the appropriate use of various software applications. (e.g., word processing, desktop publishing, graphic design, web browser, e-mail, presentation, database, scheduling, financial management, Java applet, music)
* **12.02** Explain and describe the need for web-based applications (e.g., sharing photos and video clips, messaging, chatting, and collaborating.
* **12.03** Express an understanding of basic terminology used in programming (e.g., algorithm, binary, code, block-based, objects, functions)
* **12.04** Compare and contrast emerging technologies and describe how they impact business in the global marketplace (e.g., wireless network, tablets, cell phones, satellite technology, nanotechnology, smart devices, home networks).

# Continuity

Students will have read all content included in the *Computer Languages, Applications, and Emerging Technologies* chapterto prepare for the lessons included in this module.

Table 1 Continuity

| **Standard** | **Recommended Previous Lesson/Knowledge** | **This Lesson** | **Recommended Upcoming Lessons** |
| --- | --- | --- | --- |
| 12.01 | Students should read the *Computer Languages, Applications, and Emerging Technologies* chapter.  Students should be familiar with various types of research. | Students will use their research skills to exam different types of software applications.  Students will explain the main use of the program and then compare/contrast against other applications. | Students will use the knowledge from this lesson to learn future DIT modules. |
| 12.02 | Students should read the *Computer Languages, Applications, and Emerging Technologies* chapter.  Students should understand different types of applications and their uses. Students should also make a connection on how the world of communication has evolved into what it is today because of the web-based applications. | Students will open and explore applications in a business-related or personal setting.  Students will discover why web-based applications could be better suited for different functions. | Students will use the knowledge from this lesson to learn future DIT modules. |
| 12.03 | Students should read the *Computer Languages, Applications, and Emerging Technologies* chapter.  Students should have exposure to various programs. | Students will apply and understand the basic terminology of programing. Students will also apply the terms to a simple computer program. | Students will use the knowledge from this lesson to learn future DIT modules. |
| 12.04 | Students should read the *Computer Languages, Applications, and Emerging Technologies* chapter.  Students will need to understand the history of technology and how it has evolved to create a vision of what technology might bring. | Students will gain an understanding of how certain changes in technology in the global market could impact their personal lives. | Students will use the knowledge from this lesson to learn future DIT modules. |

# Student Learning Outcomes

**Standard 12.01**

Students will determine which computer application would be used for different activities.

**Standard 12.02**

Students will use web-based applications to understand how communication with the outside world has changed.

**Standard 12.03**

Students will use basic programing terminology to explain how a simple application or simple program works.

**Standard 12.04**

Students will demonstrate how the ever changing and emerging technologies in the global market will continue to shape their everyday lives.

# Materials Needed

**Standard 12.01, 12.02, 12.03, and 12.04**

All activities require a computing device for each student with Internet access and database applications software. A computing device can include a personal computer, laptop, smart phone, or tablet.

The Lego® Language activity for Standard 12.03 requires interlocking bricks such as Lego.

# Use of Space

Activities associated with standards will require a classroom space that includes computing devices. If the space does not have computing devices, the teacher can consider the use of student personal devices (ex. smart phones, tablets, laptops). If the student does not have a computing device, the teacher can consider using a device for class demonstration purposes. For instance, the teacher could use their own school-supplied or personal computing device to demonstrate to all students. Consideration should also be given to where furniture and students are placed within the classroom to accommodate diverse needs.

The Lego® Language activity requires the chairs to be placed back-to-back.

# Prepare for the Lesson

Table 2 shows how the teacher and students should prepare for this lesson.

Table 2 Preparations

| **Teacher** | **Student** | **Assessment/Assignment** |
| --- | --- | --- |
| The teacher should read the *Computer Languages, Applications, and Emerging Technologies* chapter*.*  The teacher should be familiar with the websites required for certain activities, including [Khan Academy](https://www.khanacademy.org/computing/computer-programming), [Scratch](https://scratch.mit.edu/educators/), and [W3 Schools](https://www.w3schools.com/python/default.asp).  The teacher will need to gather interlocking bricks (such as Lego).  The teacher should consider if a computing device should be used for instruction if computer devices are not available for all students.  The teacher should read the chapter case and consider how to receive feedback from the students. | The student should read the *Computer Languages, Applications, and Emerging Technologies* chapter and study all terms.  Additionally, the student should read the case at the end of the chapter. | Students will complete training using Khan Academy and W3 Schools.  Worksheets will assess the student’s ability to perform the activities in class.  The teacher will review the chapter case in class. The teacher will conduct a verbal discussion to solicit student responses and participation. Students will be assessed on the chapter case based on their written responses to the chapter case questions and in-class discussion.  An answer key and/or rubric is provided for all student activities. |

# Activities

Table 3 shows the student workload effort for each activity in this module.

Table 3 Student Activities and Workload

| **Activity** | **Description** | **Estimated Student Completion Time** | **DIT Standard Alignment** |
| --- | --- | --- | --- |
| Web-based Applications | Student uses the Internet to research why some applications are better to use directly from the internet instead of downloading. | 45 minutes in-class activity x 2-3 classes | 12.01, 12.02 |
| Lego® Language | Student uses Lego® or other interlocking bricks to demonstrate precise directions that are needed for a computer to understand what it needs to complete. | 45 minutes in-class activity x 1-2 classes | 12.03 |
| Basic Block Programming | Student uses Scratch.edu to prepare a basic program using the drag and drop method. | 45 minutes in-class activity x 2-3 classes | 12.03 |
| Khan Academy: Computer Programming Tutorial | Student completes Unit 1: Introduction to JS: Drawing & Animation to learn how to create code using JavaScript. | 45 minutes in-class activity for each lesson | 12.03 |
| W3 Schools: Python Tutorial | Student completes assigned lessons in the Python Tutorial. | 45 minutes in-class activity for each lesson | 12.03 |
| Chapter Case: Vivian’s Raspberry Pi | Student reviews the case from the *Computer Languages, Applications, and Emerging Technologies* chapter and answers critical thinking questions. | 45 minutes in-class activity | 12.01, 12.02, 12.03, 12.04 |

# Assessments

The teacher will evaluate the student’s performance in identifying computer applications and their proper use. Teachers will evaluate students on their understanding of how technology has evolved from the past and will continue to evolve through the future.

The teacher will score assignments on a scale of 1-4 measuring the level of understanding the student is able to communicate about the subject.

# Accommodations

Please adhere to the [Florida Department of Education (2018) Accommodations Assisting Students with Disability Guidelines](https://www.fldoe.org/core/fileparse.php/7690/urlt/0070069-accomm-educator.pdf).

To reduce anxiety while completing activities, provide students with support while completing their assignments and sufficient time to complete their assignments in class.

Students can be encouraged to work with a peer to identify appropriate responses for the chapter cases.