THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 1

Week Ending: 30-06-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Internet and Social Media	
Content Standard: B8.3.2.1 Demonstrate the use of Social Networking and Electronic Mail	**Indicator:** B8.3.2.1.1 Identify the various types of Social Media sites such as Photo sharing		**Lesson:** 1 of 2
Performance Indicator: Learners can identify the various types of Social Media sites such as Photo sharing		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 34			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** (Instagram, Snapchat, Pinterest) Brainstorm learners for the meaning of Social media. *Social media refers to online platforms and websites that enable users to create, share, and interact with content and connect with others virtually.* Have learners mention some examples of social media sites they know. Guide learners to categorize social media sites into Photo and Video sharing sites. Discuss the use of Photo sharing sites such as Instagram, Snapchat, Pinterest etc. There are several popular social media platforms that focus on photo sharing. Here are some notable examples: 1. Instagram: *Instagram is a widely used platform dedicated to sharing photos and videos. Users can apply filters, edit their photos, and share them with their followers. It also offers features like Stories, IGTV (long-form videos), and the Explore page to discover content from others.* 2. Pinterest: *While Pinterest is primarily known as a visual discovery and bookmarking platform, it is heavily centered on sharing and organizing photos. Users can create themed*	Pictures and videos	Identifying the various types of Social Media sites such as Photo sharing

boards and save or upload images to those boards, making it a popular platform for sharing and discovering visual inspiration. 3. Flickr: *Flickr is a photo-centric platform where users can upload, share, and organize their photos. It offers various features like privacy settings, tagging, and the ability to join groups and engage in discussions around photography*. 4. 500px: *500px is a photography community and marketplace that allows photographers to showcase their work and connect with other enthusiasts. Users can upload and sell their photos, participate in contests, and explore a vast collection of high-quality images*. 5. Unsplash: *While Unsplash is primarily a stock photo platform, it has a strong community aspect. Photographers can upload their photos, and users can download and use them for free, often providing attribution. It serves as a valuable resource for visual content and photography inspiration.* 6. EyeEm: *EyeEm is both a photo-sharing platform and a marketplace for photographers. It offers features for uploading, sharing, and discovering photos, as well as opportunities for photographers to license their work for commercial use*. 7. Snapchat: *A platform known for its disappearing photo and video messages, augmented reality filters, and Stories feature that allows users to share content for 24 hours.* Illustrate the steps involved in attaching a document to an email. Explore the use of the address book as a feature of email. <u>Assessment</u> 1. Which social media platform is primarily dedicated to sharing photos and videos? 2. What is the name of the platform known for its disappearing photo and video messages? 3. Which platform allows users to create themed boards and save or upload images to those boards? 4. Name a photo-centric platform where photographers can showcase their work and connect with other enthusiasts. 5. Which platform is known for offering a vast collection of high-quality, free-to-use photos? ***Reflection** **(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		

Homework/Project Work/Community Engagement Suggestions

- Which social media platform allows users to apply filters and edit their photos before sharing them?
- Name a social media platform where photographers can license their work for commercial use.
- What is the name of the platform where users can upload, share, and organize their photos?
- Which social media platform is often used for visual discovery and bookmarking?
- Name a platform that serves as both a photo-sharing platform and a marketplace for photographers.

Cross-Curriculum Links/Cross-Cutting Issues
None
Potential Misconceptions/Student Learning Difficulties
None

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 2

Week Ending: 07-07-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Internet and Social Media	
Content Standard: B8.3.2.1 Demonstrate the use of Social Networking and Electronic Mail	**Indicator:** B8.3.2.1.1 Identify the various types of Social Media sites such as Video sharing		**Lesson:** 1 of 2
Performance Indicator: Learners can identify the various types of Social Media sites such as video sharing		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 34			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Have learners mention some examples of social media sites they know. Guide learners to categorize social media sites into Photo and Video sharing sites. Discuss the use of Video sharing sites such as YouTube, Facebook Live, Periscope, Vimeo etc. 1. YouTube: *YouTube is one of the largest video-sharing platforms in the world. Users can upload, share, and discover videos on a wide range of topics. It supports various formats, including vlogs, tutorials, music videos, and more.* 2. TikTok: *TikTok is a short-form video platform where users can create and share 15 to 60-second videos. It gained significant popularity for its viral dance challenges, lip-syncing, and creative content. TikTok's algorithm suggests personalized videos based on user preferences.* 3. Instagram: *Although Instagram is primarily a photo-sharing platform, it has a strong emphasis on video content as well. Users can share videos in the feed, on their Stories, or through IGTV (Instagram TV). Instagram Reels, a feature similar to TikTok, allows users to create short videos with music and effects.* 4. Snapchat: *Snapchat is known for its disappearing photo and video messaging, but it has evolved to include features like Snapchat Stories and Discover. Users*	Pictures and videos	Identifying the various types of Social Media sites such as video sharing

can capture and share videos with friends, and the content disappears after a set period. 5. Vimeo: *Vimeo is a platform focused on high-quality video content. It caters more to professionals and creatives, providing tools for video hosting, sharing, and collaboration. Vimeo often showcases artistic, educational, and professional videos*. 6. Dailymotion: *Dailymotion is a video-sharing platform where users can upload and discover videos across various topics. It offers a mix of professional and user-generated content, including movies, TV shows, music videos, and more.* 7. Twitch: *Twitch is a live streaming platform primarily dedicated to gaming but has expanded to include other content categories like music, creative arts, and talk shows. Users can stream their gameplay or watch others' live broadcasts, and interact through chat.* Demonstrate the use of video sharing platforms such as YouTube, Facebook Live, Periscope, Vimeo etc. Assessment 1. What is the largest video-sharing platform in the world? 2. Which platform gained popularity for its short-form videos and viral dance challenges? 3. Which social media platform primarily focuses on photo-sharing but also supports video content? 4. Which platform allows users to share disappearing photo and video messages? ***Reflection*** ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		

Homework/Project Work/Community Engagement Suggestions

- Which video-sharing platform is known for its emphasis on high-quality, professional content?
- Name a video-sharing platform where users can upload and discover videos across various topics.
- Which platform is primarily dedicated to live streaming gaming content but has expanded to other categories as well?

Cross-Curriculum Links/Cross-Cutting Issues

None

Potential Misconceptions/Student Learning Difficulties

None

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 3

Week Ending: 14-07-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Information Security	
Content Standard: B8.3.3.1. Recognize data threats and security protections	**Indicator:** B8.3.3.1.1 Describe the nature of four major data threats (Interruption, Interception, Modification, Fabrication)		**Lesson:** 1 of 2
Performance Indicator: Learners can describe the nature of four major data threats		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 34			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Brainstorm learners to explain the meaning of data threats. *Threats to data security refer to potential risks and vulnerabilities that can compromise the confidentiality, integrity, and availability of data*. Engage learners to watch a video on threats to data security. Discuss the threats that can prevent information from reaching its destination. • *Network Failures: Network failures can occur due to hardware malfunctions, software glitches, or misconfigurations. These failures can disrupt the transmission of data, causing delays or complete loss of connectivity.* • *Connectivity Issues: Connectivity issues, such as internet outages or disruptions in network infrastructure, can prevent information from reaching its destination. This can happen due to factors like severed cables, power outages, or issues with internet service providers.* • *Routing Problems: Routing problems occur when there are errors or misconfigurations in the routing infrastructure of a network. Incorrect routing information can cause data to be sent on incorrect paths or be lost in transit, preventing it from reaching the intended destination.* • *Packet Loss: Packet loss refers to the failure of network packets to reach their destination. It can happen due to network congestion, hardware issues, or errors in*	Pictures and videos	Describing the nature of data threats

transmission. If a significant number of packets are lost, the information may not reach its destination correctly. Discuss the threats that can cause data corruption. • *Hardware Failures: Hardware failures, such as hard drive crashes, memory errors, power surges, or faulty components, can corrupt data stored on the affected devices.* • *Software Glitches and Bugs: Software glitches, bugs, or programming errors can introduce flaws into applications or systems, leading to data corruption. For instance, a programming error in a data storage or retrieval function can result in data being written or read incorrectly, causing corruption.* • *Malware and Viruses: Malicious software, such as viruses, worms, or ransomware, can infect systems and cause data corruption. Some malware is specifically designed to modify or encrypt data, rendering it inaccessible or corrupted. Ransomware attacks.* Assessment 1. What are two common causes of data corruption? 2. How can organizations mitigate the threat of data corruption? 3. How can network failures and connectivity issues affect the transmission of data and prevent it from reaching its intended destination? ***Reflection** **(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
What is the primary goal of a Denial-of-Service (DoS) attack, and how does it impact the delivery of information?		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

Week Ending: 14-07-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Information Security	
Content Standard: B8.3.3.1. Recognize data threats and security protections	**Indicator:** B8.3.3.1.1 Describe the nature of four major data threats (Interruption, Interception, Modification, Fabrication)		**Lesson:** 1 of 2
Performance Indicator: Learners can describe the nature of four major data threats		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 34			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Describe the nature of the four major data threats. 1. Interruption: Interruption refers to the disruption or denial of access to data and systems. It involves the intentional or unintentional actions that result in the unavailability of data or system resources. Examples include: • Distributed Denial of Service (DDoS) attacks: Overwhelming a system or network with a flood of requests, rendering it inaccessible to legitimate users. • Power outages or hardware failures: These events can disrupt access to data and systems until the issues are resolved. • Natural disasters: Events like earthquakes, floods, or fires can physically damage infrastructure and interrupt data access. The goal of interruption is to render data or systems unusable or inaccessible, causing disruption, financial loss, or reputational damage. 2. Interception: Interception involves unauthorized access to data during transmission. It occurs when an attacker intercepts or eavesdrops on communication channels to capture sensitive information. Examples include: • Man-in-the-Middle (MitM) attacks: An attacker positions themselves between the sender and receiver, intercepting and potentially modifying the communication. • Wi-Fi snooping: Unauthorized individuals intercepting data transmitted over unsecured or public Wi-Fi networks. • Packet sniffing: Capturing and analyzing network traffic to obtain sensitive data, such as passwords or financial information.	Pictures and videos	Describing the nature of data threats

Interception threatens the confidentiality of data by allowing unauthorized individuals to access and exploit sensitive information.

3. Modification:
Modification refers to unauthorized alteration or tampering of data. Attackers aim to modify data to manipulate its integrity, accuracy, or trustworthiness. Examples include:

- Data tampering: Unauthorized modification of data to manipulate records, transactions, or information.
- Man-in-the-Middle attacks: Intercepting and modifying data during transmission.
- Unauthorized changes to critical files, databases, or configurations.

Modification can lead to data corruption, false information, financial loss, or reputational damage, compromising the integrity of data.

4. Fabrication:
Fabrication involves the creation or insertion of false or counterfeit data into a system or network. It refers to the unauthorized addition of data that appears legitimate, but is, in fact, fraudulent. Examples include:

- Falsified records: Creating or adding false information to deceive users or manipulate systems.
- Counterfeit digital certificates: Generating fake digital certificates to impersonate trusted entities.
- Spoofed email addresses or websites: Creating fake email accounts or websites to deceive users and collect sensitive information.

Fabrication can lead to misinformation, identity theft, financial fraud, and compromised trust in systems and data.

Assessment
1. What is the difference between interception and modification as data threats?
2. How does interruption pose a risk to data availability?
3. Provide an example of a real-world scenario where fabrication of data can lead to significant consequences.

Reflection (10mins)

Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.

Take feedback from learners and summarize the lesson.

Homework/Project Work/Community Engagement Suggestions

Provide an example of a real-world scenario where fabrication of data can lead to significant consequences

Cross-Curriculum Links/Cross-Cutting Issues

None

Potential Misconceptions/Student Learning Difficulties

None

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 4

Week Ending: 21-07-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Information Security	
Content Standard: B8.3.3.1. Recognize data threats and security protections	**Indicator:** B8.3.3.1.2 Map the protection methods to each of the four identified data threats (Authorisation, Authentications, Encryption and Decryption)		**Lesson:** 1 of 2
Performance Indicator: Learners can map the protection methods to each of the four identified data threats		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 34			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Ask learners if they have ever heard of or encountered situations where data or personal information was compromised. Explain that information security is a crucial aspect of computing and is essential for protecting data from unauthorized access or misuse. ***Main (35mins)*** Introduce the four main threats in information security: authorization, authentication, encryption, and decryption. Define each threat briefly and explain their significance in safeguarding data. Focus on authorization as the first threat and explain its role in controlling access to data and resources. Discuss various methods of authorization, such as user accounts, permissions, access controls, and role-based access control (RBAC). Engage learners in a discussion about real-life scenarios where authorization is important, such as accessing bank accounts, social media profiles, or school records. Move on to the second threat, authentication, which involves verifying the identity of users or systems. Explain the concept of usernames, passwords, biometrics (e.g., fingerprints, facial recognition), and two-factor authentication (2FA). Discuss the importance of strong passwords and the risks associated with weak or shared passwords.	Pictures and videos	Mapping the protection methods to each of the four identified data threats

Introduce encryption as a method of protecting data by converting it into a secure and unreadable format. Explain the difference between encryption and decryption, where encryption converts plain text into ciphertext, and decryption converts ciphertext back to plain text. Discuss commonly used encryption techniques, such as symmetric key encryption (e.g., AES) and asymmetric key encryption (e.g., RSA). Provide examples of situations where encryption is used, such as online banking, secure messaging apps, and e-commerce transactions. Divide learners into small groups and provide them with handouts or worksheets related to information security. Learners in their groups discuss and identify examples of authorization, authentication, encryption, and decryption in everyday computing scenarios. Encourage group discussions and collaboration to reinforce their understanding of the concepts. <u>Assessment</u> 1. What are the four main threats in information security? 2. Explain what authorization means in the context of information security. 3. Give an example of a situation where authorization is important. 4. What is authentication and why is it important in protecting data? 5. Name two methods of authentication mentioned in the lesson. 6. What is the purpose of encryption in information security? 7. Explain the difference between encryption and decryption. ***Reflection** (10mins)* Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
• Provide an example of a situation where encryption is commonly used. • Describe symmetric key encryption and asymmetric key encryption. • How does two-factor authentication enhance security?		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

Week Ending: 21-07-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Information Security	
Content Standard: B8.3.3.1. Recognize data threats and security protections	**Indicator:** B8.3.3.1.2 Map the protection methods to each of the four identified data threats (Authorisation, Authentications, Encryption and Decryption)		**Lesson:** 1 of 2
Performance Indicator: Learners can map the protection methods to each of the four identified data threats		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 34			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Ask learners if they have ever heard of or encountered situations where data or personal information was compromised. Explain that information security is a crucial aspect of computing and is essential for protecting data from unauthorized access or misuse. ***Main (35mins)*** Introduce the concept of threats to data security and explain that these are potential risks or vulnerabilities that can lead to data breaches. Discuss common threats, such as unauthorized access, malware, social engineering, and physical theft or loss of devices. Focus on unauthorized access as a threat and explain its impact on data security. Move on to malware as a threat and explain its potential dangers, including viruses, worms, trojans, and ransomware. Discuss methods of preventing malware infections, such as • installing and regularly updating antivirus software, • avoiding suspicious downloads or email attachments, and • Practicing safe browsing habits. Introduce social engineering as a threat and explain how it involves manipulating individuals to gain unauthorized access to sensitive information. *Social engineering refers to the manipulation and exploitation of human behavior to deceive individuals into divulging sensitive information or performing actions that may compromise the security of computer systems, networks, or data.* Discuss common social engineering techniques, such as phishing emails, impersonation, and pretexting.	Pictures and videos	Mapping the protection methods to each of the four identified data threats

Teach learners to be cautious of unsolicited requests for personal information and to verify the authenticity of requests before sharing any sensitive data. Discuss physical theft or loss of devices as a threat to data security. Explain the importance of securing devices through physical measures, such as locking them, encrypting data, and using remote wipe or tracking features. Encourage learners to report any lost or stolen devices immediately to minimize the risk of data compromise. Divide learners into small groups and provide them with handouts or worksheets related to data security. Have groups discuss and identify examples of each threat and brainstorm preventive measures for each one. <u>Assessment</u> 1. What is data security, and why is it important? 2. Name two common threats to data security. 3. Explain what unauthorized access means and how it can be prevented. 4. What is malware, and how can its impact be minimized? 5. Describe one method of preventing malware infections. ***Reflection** (10mins)* Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		

Homework/Project Work/Community Engagement Suggestions
• What is social engineering, and why is it a threat to data security? • Give an example of a social engineering technique. • How can individuals protect themselves from social engineering attacks? • Why is physical theft or loss of devices a threat to data security? • Name two measures that can be taken to secure devices from physical theft or loss.
Cross-Curriculum Links/Cross-Cutting Issues
None
Potential Misconceptions/Student Learning Difficulties
None

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 5

Week Ending: 28-07-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Web Technologies	
Content Standard: B8.3.4.1. Demonstrate the use of a web browser (Search engine)	**Indicator:** B8.3.4.1.1 Demonstrate how to effectively search from a web browser.		**Lesson:** 1 of 2
Performance Indicator: Learners can demonstrate how to effectively search from a web browser		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 36			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Explain the concept of search techniques and their significance in obtaining precise search results. Discuss the following effective search techniques: *1. Keyword Search: This is the most basic and widely used search technique. It involves entering relevant keywords or phrases into a search engine to find web pages or documents containing those keywords. Keyword search allows users to quickly locate information on specific topics, but it may generate a large number of irrelevant results.* *2. Boolean Operators: Boolean operators (AND, OR, NOT) are used to refine search queries and specify the relationships between keywords. By combining keywords with these operators, users can create more complex search queries and narrow down or broaden their search results. Boolean operators enable users to specify precise search criteria and retrieve more relevant information.* *3. Phrase Search: By enclosing search terms within quotation marks, users can perform a phrase search. This technique ensures that the search results contain the exact phrase as entered, rather than individual words scattered across the text. It is particularly useful when searching for specific quotes, titles, or unique phrases.* *4. Advanced Search Filters: Many search engines offer advanced search options and filters to refine search results further. These filters allow users to specify criteria such as file type, date range, language, location, and more. By utilizing these filters, users can narrow down their search results to obtain more precise and targeted information.*	Pictures and videos	Demonstrating how to effectively search from a web browser

5. Truncation and Wildcard Characters: Truncation involves using a symbol (usually an asterisk "") to search for variations of a word. For example, entering "run*" will retrieve results containing "run," "running," "runner," etc. Wildcard characters are similar but represent a single character within a word. These techniques are helpful when searching for terms with multiple forms or when unsure about the exact spelling.* *6. Search Operators: Many search engines support specific operators that allow users to refine their search results further. For instance, the site operator limits the search to a specific website or domain, while the filetype operator restricts the results to a particular file type (e.g., PDF, DOCX). These operators enable users to target their search within specific contexts or types of content.* *7. Filtering and Sorting: Once search results are obtained, filtering and sorting options help users organize and prioritize the information. Common filtering options include relevance, date, popularity, and source credibility. These features allow users to quickly identify the most relevant and up-to-date information based on their specific needs.* Provide examples and demonstrations of each technique to help students understand their practical application. Divide the students into pairs or small groups. Distribute worksheets with different search scenarios or topics. Ask each group to choose a scenario and brainstorm search queries using one or more of the effective search techniques discussed. Allow the groups to access computers with internet access and demonstrate their search techniques to find relevant information. Encourage the use of different search engines to compare results and emphasize the importance of critically evaluating the information found. Bring the students back together as a whole class. Ask each group to share their search scenario, search queries, and the results they obtained. Facilitate a discussion on the effectiveness of the search techniques used and how they influenced the quality and relevance of the search results. Encourage students to share their experiences, challenges, and successes while applying the different search techniques. Summarize the key takeaways from the discussion, highlighting the importance of selecting appropriate search techniques based on the search goals. <u>Assessment</u> 1. What are some effective search techniques discussed in the lesson for improving web searches? 2. How can using search phrases with exact spelling or enclosing them in quotation marks help refine search results? 3. What are Boolean operators and how can they be used to refine search queries?		

Reflection ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
• Explain how wildcard characters (*) or truncation marks ($) can broaden search results. • How can site-specific searches be helpful in narrowing down search results?		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

Week Ending: 28-07-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Web Technologies	
Content Standard: B8.3.4.1. Demonstrate the use of a web browser (Search engine)	**Indicator:** B8.3.4.1.1 Demonstrate how to effectively search from a web browser.		**Lesson:** 2 of 2
Performance Indicator: Learners can demonstrate how to effectively search from a web browser		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 36			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Divide the students into pairs or small groups. Distribute worksheets with different search scenarios or topics. Ask each group to choose a scenario and brainstorm search queries using one or more of the effective search techniques discussed. Allow the groups to access computers with internet access and demonstrate their search techniques to find relevant information. Encourage the use of different search engines to compare results and emphasize the importance of critically evaluating the information found. Bring the students back together as a whole class. Ask each group to share their search scenario, search queries, and the results they obtained. Facilitate a discussion on the effectiveness of the search techniques used and how they influenced the quality and relevance of the search results. Encourage students to share their experiences, challenges, and successes while applying the different search techniques. Summarize the key takeaways from the discussion, highlighting the importance of selecting appropriate search techniques based on the search goals. <u>Assessment</u> 1. What are some examples of advanced search options or filters available on search engines?	Pictures and videos	Demonstrating how to effectively search from a web browser

2. Describe a scenario where you would use the AND operator in a search query. 3. How can critically evaluating the information found during web searches contribute to effective research? ***Reflection*** ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
• Why is it important to choose appropriate search techniques based on your search goals? • Can you share an example of a search scenario where you used one or more of the effective search techniques discussed in the lesson?		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 6

Week Ending: 04-08-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Web Technologies	
Content Standard: B8.3.4.1. Demonstrate the use of a web browse	**Indicator:** B8.3.4.1.2 Explore the use of more than one search engine		**Lesson:** 1 of 2
Performance Indicator: Learners can explore the use of more than one search engine		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum P.g. 31			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Discuss how search engines index and rank web pages based on relevance to search queries. Highlight that different search engines may have different algorithms and databases, resulting in varying search results. Share performance indicators and introduce the lesson. ***Main (35mins)*** Display a list of popular search engines on the whiteboard. Briefly introduce each search engine, discussing its popularity, unique features, and any notable differences compared to others. Explain that learners will be exploring and comparing these search engines to understand their strengths and weaknesses. Divide the learners into small groups. Ask each group to choose a different search engine from the list provided. Explain that each group will conduct a search using their chosen search engine and explore the search results. Learners to consider the search engine's user interface, features, sponsored results, and other factors while exploring. Ask each group to share their experiences and observations about their chosen search engine. <u>Assessment</u>	Pictures and videos	Exploring the use of more than one search engine

1. Name three popular search engines. 2. Why might different search engines yield different search results? 3. What are some factors to consider when exploring and comparing search engines? 4. How can using multiple search engines enhance your web search experience? ***Reflection*** ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
What are some factors to consider when exploring and comparing search engines?		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

Week Ending: 04-08-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Communication Networks	
Class: B8	**Class Size:**	**Sub Strand:** Web Technologies	
Content Standard: B8.3.4.1. Demonstrate the use of a web browse	**Indicator:** B8.3.4.1.2 Explore the use of more than one search engine		**Lesson:** 2 of 2
Performance Indicator: Learners can explore the use of more than one search engine		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum P.g. 31			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Highlight that different search engines may have different algorithms and databases, resulting in varying search results. Share performance indicators and introduce the lesson. ***Main (35mins)*** Discuss the similarities and differences between the search engines, considering factors such as search accuracy, speed, and user-friendliness. Facilitate a class discussion to compare the functionalities and discuss the advantages and disadvantages of each search engine. Instruct the learners to perform the same search query on two or three different search engines individually. Encourage them to compare the search results and analyze the differences in relevance, order, and types of results displayed. Ask learners to note any patterns or trends they observe across the search engines. Guide a class discussion to share and discuss the findings, focusing on the factors that may have influenced the differences in search results. <u>Assessment</u> 1. What are some possible advantages and disadvantages of using different search engines? 2. Explain the term "search accuracy" in the context of search engines. 3. Why is it important to analyze and evaluate search results from different search engines? 4. How can understanding the strengths and weaknesses of different search engines improve your search skills? ***Reflection (10mins)***	Pictures and videos	Exploring the use of more than one search engine

Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
Give an example of a situation where using multiple search engines would be beneficial.		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 7

Week Ending: 11-08-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Introduction to Programming	
Content Standard: B8.4.1.1. Show an understanding of the concept of programming	**Indicator:** B8.4.1.1.1 Describe the basic concepts in programming		**Lesson:** 1 of 2
Performance Indicator: Learners can describe the basic concepts in programming		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 36			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Introduce the concept of programming and its importance in the world of technology. Explain that programming involves giving instructions to a computer to perform specific tasks. Discuss key concepts such as algorithms, variables, and control structures. Provide a simple problem or task to solve (e.g., making a peanut butter and jelly sandwich). In groups, ask learners to design a step-by-step algorithm to complete the task. Introduce the concepts of variables and control structures (e.g., loops, conditionals). Demonstrate how variables can store and manipulate data, and how control structures help control the flow of a program. Provide examples and encourage learners to identify variables and control structures in familiar scenarios. Task learners to design a simple algorithm for a problem of their choice.	Pictures and videos	Describing the basic concepts in programming

Allow learners to share their algorithms and discuss their thinking process with the class if time permits <u>Assessment</u> 1. What is programming, and why is it important in the world of technology? 2. What are some key concepts in programming? Explain algorithms, variables, and control structures. 3. In groups, design an algorithm for a simple task of your choice. Share your algorithm with the class. 4. How do variables help in programming, and why are they important? 5. What are control structures, and how do they control the flow of a program? ***Reflection (10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
Task learners to design a simple algorithm for a problem of their choice		
Potential Misconceptions/Student Learning Difficulties		
None		

Week Ending: 11-08-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Introduction to Programming	
Content Standard: B8.4.1.1. Show an understanding of the concept of programming	**Indicator:** B8.4.1.1.1 Describe the basic concepts in programming		**Lesson:** 2 of 2
Performance Indicator: Learners can create a table to compare how the same arithmetic notations are represented in coding and in classroom mathematics		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 36			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Explain the importance of arithmetic operations in programming for performing calculations and manipulating data. Discuss common arithmetic operations such as addition, subtraction, multiplication, and division. Provide learners with a table template with columns for arithmetic notation, mathematical representation, and coding representation.	Pictures and videos	Describing the basic concepts in programming

Arithmetic Notation	Coding Representation	Classroom Mathematics
Addition	+	+
Subtraction	-	-
Multiplication	*	×
Division	/	÷
Exponentiation	** or ^	^ or Exponentiation
Parentheses	( )	( )
Square Root	sqrt() or **0.5	√
Absolute Value	abs()	| | or
Floor Division	//	÷ (with quotient)
Modulo	%	% (Remainder)
Order of Operations	Follows PEMDAS/BODMAS	Follows PEMDAS/BODMAS

Guide learners to fill in the table by comparing arithmetic notations commonly used in mathematics and their equivalent representations in coding languages (e.g., "+" for addition, "-" for subtraction). Review the completed comparison table as a class, discussing any differences or similarities between the two representations. Provide additional examples and ask learners to identify the corresponding coding representation for given arithmetic expressions. <u>Assessment</u> 1. What are some common arithmetic operations used in programming? 2. Create a comparison table with arithmetic notations, mathematical representation, and coding representation. 3. Give an example of an arithmetic expression in mathematics, and identify its coding representation. 4. How does the coding representation of arithmetic notations differ from the mathematical representation? 5. Why is it important for programmers to understand and translate mathematical concepts into coding representations? ***Reflection (10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
Task learners to design a simple algorithm for a problem of their choice		
Potential Misconceptions/Student Learning Difficulties		
None		

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 8

Week Ending: 18-08-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Algorithm	
Content Standard: B8.4.2.1.Analyse the correct step-by-step procedure in solving any real-world problem	**Indicator:** B8.4.2.1.1 Apply variables, expressions, assignment statements and operator precedence order (BODMAS rule) to process and store numbers and text in a programme		**Lesson:** 1 of 2
Performance Indicator: Learners can apply variables, expressions, assignment statements and operator precedence order (BODMAS rule) to process and store numbers and text in a programme		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 32			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Review the concept of variables and their role in storing and manipulating data in a program. Ask learners to provide examples of situations where variables could be used. Share performance indicators and introduce the lesson. ***Main (35mins)*** Explain the concept of expressions in programming and their role in performing calculations and manipulating data. Discuss the operator precedence order (BODMAS rule) and how it determines the order of operations in an expression. Introduce the concept of assignment statements and how they are used to store the result of an expression in a variable. Provide learners with a set of arithmetic expressions that involve variables, numbers, and basic operators. In pairs or individually, ask learners to compute the expressions following the operator precedence order (BODMAS) and assign the results to variables.	Pictures and videos	Applying variables, expressions, assignment statements and operator precedence order (BODMAS rule) to process and store numbers and text in a programme

Instruct learners to write a program in a programming language of their choice that utilizes variables and assignment statements to store and print the results of the expressions computed in Activity 1. Encourage creativity in formatting the output and adding appropriate text to enhance readability. <u>Assessment</u> 1. What is the role of variables in programming, and why are they important? 2. Explain the concept of expressions and how they are used in programming. 3. What is the operator precedence order, also known as the BODMAS rule, and why is it important to follow? 4. Given the expression "3 + 2 * 4," what is the result following the BODMAS rule? 5. How are assignment statements used in programming, and what is their purpose? ***Reflection*** ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
Let learners in groups create complex formulas		
Potential Misconceptions/Student Learning Difficulties		
None		

Week Ending: 18-08-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Algorithm	
Content Standard: B8.4.2.1.Analyse the correct step-by-step procedure in solving any real-world problem	**Indicator:** B8.4.2.1.1 Apply variables, expressions, assignment statements and operator precedence order (BODMAS rule) to process and store numbers and text in a programme		**Lesson:** 2 of 2
Performance Indicator: Learners can compute an expression following the operator precedence order (BODMAS) to exemplify how computers process input data to print out an answer		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 32			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Reinforce the concept of operator precedence and how it determines the order of operations in an arithmetic expression. Discuss each component of the BODMAS rule: Brackets, Orders (exponents and roots), Division and Multiplication (from left to right), and Addition and Subtraction (from left to right). Explain the importance of following the correct order of operations to obtain accurate results. Provide learners with a set of arithmetic expressions that involve brackets, exponents, division, multiplication, addition, and subtraction. Demonstrate how computers process input data to print out an answer following the operator precedence order (BODMAS) *When a computer processes input data to print out an answer, it follows a series of steps to evaluate expressions and compute the result. Here's a high-level overview of how a computer would process the expression (4 + 6 * 2 - 8) / 3 and print out the answer:* *1. Tokenization: The input expression is broken down into individual tokens or symbols, such as numbers, operators, and parentheses. In this case, the tokens are: (, 4, +, 6, *, 2, -, 8,), /, and 3.* *2. Parsing: The tokens are organized into a meaningful structure, typically using a parse tree or an abstract syntax tree (AST). The parse tree represents the hierarchical relationship between the tokens and their respective operators. For our expression, the parse tree would reflect the order of operations according to the operator precedence.*	Pictures and videos	Applying variables, expressions, assignment statements and operator precedence order (BODMAS rule) to process and store numbers and text in a programme

*3. Evaluation: Starting from the root of the parse tree, the computer traverses the tree and evaluates each node based on the corresponding operator. The evaluation follows the operator precedence order (BODMAS) to ensure the correct computation. In our example, the computer would evaluate the multiplication first (6 * 2 = 12), then the addition (4 + 12 = 16), followed by the subtraction (16 - 8 = 8), and finally the division (8 / 3 = 2.6666...).* *4. Printing the result: Once the evaluation is complete, the computer obtains the final result (2.6666...) and converts it into a human-readable format, such as a string. The result can then be printed on the screen or stored in a variable for further use.* In pairs or individually, ask learners to compute the expressions following the operator precedence order (BODMAS) and write down their answers. Facilitate a class discussion on the solutions obtained by learners for the arithmetic expressions. Ask learners to explain their approaches and clarify any areas of confusion. Analyze any common errors made and provide guidance on how to correct them. <u>Assessment</u> 1. What does the acronym BODMAS stand for, and what does it represent in arithmetic computations? 2. Provide an example of an arithmetic expression that involves brackets, exponents, division, multiplication, addition, and subtraction. Compute the expression using the BODMAS rule. 3. Why is it important to follow the correct order of operations when computing arithmetic expressions? 4. What happens when the BODMAS rule is not followed in computing an expression? Provide an example. 5. Explain the concept of error analysis when computing expressions using the BODMAS rule. ***Reflection** **(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
Let learners in groups create complex formulas		
Potential Misconceptions/Student Learning Difficulties		
None		

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 9

Week Ending: 25-08-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Algorithm	
Content Standard: B8.4.2.1.Analyse the correct step-by-step procedure in solving any real-world problem	**Indicator:** B8.4.2.1.2 Describe and use sequence, selection and iteration statements in a program.		**Lesson:** 1 of 2
Performance Indicator: Learners can describe and use sequence, selection and iteration statements in a program.		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 37			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Introduce the concepts of sequence, selection, and iteration in programming. Discuss how these concepts control the flow of a program. Explain sequence in programming and provide simple examples. *Sequence: It refers to the order in which instructions are performed in a program. The sequence can involve any number of actions, but no actions can be skipped in the sequence. An example would be a simple program that prints "Hello" then "World". The instructions are executed in sequence: first "Hello" is printed, then "World".* Discuss selection in programming, demonstrating if-else statements as examples. Describe iteration and show examples of for and while loops. Guide the class through the creation of a simple program that incorporates sequence, selection, and iteration. Work on a program together as a class where learners can contribute. Display the code on the smart board, pointing out and explaining each part.	Pictures and videos	Describing and use sequence, selection and iteration statements in a program.

Assign a task where learners have to modify the program created in class. They should change the condition in the selection statement and the limit in the iteration statement. Allow learners to work individually and circulate in the class to provide help where needed. <u>Assessment</u> What does a sequence in programming refer to? How does the selection mechanism work in programming? Write a simple program that demonstrates the use of a selection statement. ***Reflection*** ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
• Can you describe what an iteration is in programming? • Can you write a simple program using a 'for' loop that prints numbers from 1 to 5?		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

Week Ending: 25-08-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Algorithm	
Content Standard: B8.4.2.1.Analyse the correct step-by-step procedure in solving any real-world problem	**Indicator:** B8.4.2.1.2 Describe and use sequence, selection and iteration statements in a program.		**Lesson:** 1 of 2
Performance Indicator: Learners can describe the difference between variables and constants		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 37			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Explain the concepts of variables and constants in programming. Discuss how variables and constants store data but are different in terms of whether their values can be changed. Explain what variables are, how they can be assigned values, and how their values can change throughout the program. Discuss what constants are, how they differ from variables, and when it's beneficial to use them. Discuss the importance of naming conventions. Discuss conventions in the chosen programming language, such as camel case, underscores, starting with lower case for variables, and upper case for constants. Guide the learners through an example program where they define variables and constants, adhering to appropriate naming conventions. Display the code on the smart board, pointing out and explaining each part. Learners create their own programs, where they define variables and constants, adhering to proper naming conventions. Allow learners to work individually and circulate in the class to provide help where needed.	Pictures and videos	Describing and use sequence, selection and iteration statements in a program.

Assessment What is the difference between a variable and a constant in programming? When would you use a constant instead of a variable in your program? What is a naming convention? Why is it important? ***Reflection** (10mins)* Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
• Write a simple program where you define a variable and a constant, using an appropriate naming convention. • What are some examples of good and bad variable names you might use in your programs? Why are they good or bad?		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 10

Week Ending: 01-09-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Robotics	
Content Standard: B8.4.3.1. Discuss Robot Intelligence Concepts	**Indicator:** B8.4.3.1.1 Describe the principles underlying the operation of the components of a robot (Controller Mechanical, Sensors		**Lesson:** 1 of 2
Performance Indicator: Learners can explain the controller's function in a robot and demonstrate understanding of the mechanical parts that enable robot movements.		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 38			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Start with a question: "What makes a robot function?" Briefly discuss the importance of robotic components. Share performance indicators and introduce the lesson. ***Main (35mins)*** Explain the concept of the controller as the "brain" of the robot. Discuss its role in interpreting and executing commands. Use diagrams or the actual robot/robotic kit to demonstrate. Describe the different mechanical parts: motors, pistons, grippers, wheels, and gears. Explain how they help the robot move, grab, turn around, or lift objects. Demonstrate, using the robot/robotic kit, the function of each component. Play video clips or show pictures illustrating various parts of a robot in action. Encourage learners to identify each component and its function as they watch. Divide learners into small groups. Provide each group with pictures or diagrams of various robotic components.	Diagrams of robotic components	Describing the Internet, world wide web (www) and Internet Protocol (IP) addresses

Ask groups to identify and explain the function of each component. <u>Assessment</u> 1. What is the primary function of the controller in a robot? 2. Briefly explain the difference between a gripper and a wheel in terms of their functions on a robot. 3. True or False: All robots need pistons to operate. ***Reflection*** ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
• Which component is most likely responsible for a robot turning around? • Describe how a motor contributes to a robot's movement.		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

Week Ending: 01-09-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Robotics	
Content Standard: B8.4.3.1. Discuss Robot Intelligence Concepts	**Indicator:** B8.4.3.1.1 Describe the principles underlying the operation of the components of a robot (Controller Mechanical, Sensors		**Lesson:** 1 of 2
Performance Indicator: Learners can describe a range of sensors used in computing and explain their real-life applications.		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 38			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Begin with a question: "How do devices 'sense' changes in their environment?" Briefly explain the concept and importance of sensors in computing. Share performance indicators and introduce the lesson. ***Main (35mins)*** Describe different sensors: light, temperature, magnetic field, gas, pressure, moisture, humidity, pH, and motion. Explain how they function to detect specific changes. Show actual sensors or images for better visualization. Discuss how sensors are used in real-life scenarios: • Street lights (light sensors) • Security devices (motion sensors) • Pollution control (gas sensors) • Games (motion sensors) • Household and industrial applications (temperature, pressure, etc.) Use video clips or pictures to illustrate these applications. Divide learners into small groups. Provide each group with a list of everyday devices. Ask them to identify which sensor might be used in each device and explain its function.	Diagrams of robotic components	Describing the Internet, world wide web (www) and Internet Protocol (IP) addresses

Assessment 1. Which sensor is most likely used to detect changes in light conditions? 2. True or False: Motion sensors are commonly used in video games to detect player movements. 3. Explain how a temperature sensor might be used in a household application. ***Reflection*** ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
• Which sensor would most likely be used in an app that checks for potential rain based on atmospheric moisture? • Describe a scenario in which a gas sensor might be crucial for safety.		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

THIRD TERM
WEEKLY LESSON NOTES – B8
WEEK 11

Week Ending: 08-09-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Artificial Intelligence	
Content Standard: B8.4.4.1 Discuss Artificial Intelligence Concepts	**Indicator:** B8.4.4.1.1 Discuss Artificial Neural Networks (ANN) and compare intelligence in humans, animals and machines		**Lesson:** 1 of 2
Performance Indicator: Learners can understand and compare intelligence in humans, animals, and machines, highlighting similarities and differences.		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 39			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Brainstorm learners to discuss on what intelligence is and its significance in various contexts. Ask learners to share their thoughts on how intelligence might differ between humans, animals, and machines. Divide the learners into small groups and assign each group one of the three categories: humans, animals, or machines. In their groups, learners research and list down the characteristics of intelligence exhibited by their assigned category. After research, each group presents their findings to the class, highlighting similarities and differences in intelligence across the three categories. Discuss as a class the limitations and capabilities of each intelligence type in processing information. Guide the discussion by asking questions such as: What are the strengths of human intelligence? What are the limitations of machine intelligence? How do animals process information differently from machines and humans?	Pictures and Charts	Discussing Artificial Neural Networks (ANN) and compare intelligence in humans, animals and machines

Assessment 1. What is intelligence? 2. How can we define intelligence in humans? 3. List one major similarity and one major difference between human and machine intelligence. 4. How does animal intelligence differ from human intelligence in terms of problem-solving? 5. Can machines ever truly possess emotions, or will they always mimic them? Explain your answer. ***Reflection*** ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
• What is a limitation of human intelligence when compared to machine intelligence? • In what scenario might an animal have a processing advantage over a machine or human? • How might understanding the intelligence of animals help in designing better AI systems?		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		

Week Ending: 08-09-2023	**DAY:**	**Subject:** Computing	
Duration: 60mins		**Strand:** Computational Thinking	
Class: B8	**Class Size:**	**Sub Strand:** Artificial Intelligence	
Content Standard: B8.4.4.1 Discuss Artificial Intelligence Concepts	**Indicator:** B8.4.4.1.1 Discuss Artificial Neural Networks (ANN) and compare intelligence in humans, animals and machines		**Lesson:** 1 of 2
Performance Indicator: Learners can talk about strong and weak AI, and understand the basics of hologram science and its application in creating a 3D mixed reality intelligence.		**Core Competencies:** CC8.2: CP6.1	
Reference: Computing Curriculum Pg. 39			

Activities For Learning & Assessment	**Resources**	**Progression**
Starter (5mins) Revise with learners to review their understanding in the previous lesson. Share performance indicators and introduce the lesson. ***Main (35mins)*** Introduce the terms "strong AI" and "weak AI" and ask if anyone knows the difference. Explain the difference between strong AI (AGI) and weak AI (ANI). Strong AI possesses human-like general intelligence, while weak AI performs specific tasks without consciousness or understanding. Engage learners in a class debate: "Will we ever achieve strong AI?" Divide the class into two groups: one arguing for the possibility and one arguing against. Introduce the concept of holograms and their basic principles. Explain how mixed reality (MR) combines physical and digital elements to create immersive experiences. Discuss the potential application of holograms in creating 3D mixed reality intelligence, such as virtual assistants or interactive educational tools. Divide learners into small groups and provide them with a specific scenario (e.g., designing a holographic interactive learning tool). In their groups, learners brainstorm and discuss potential benefits and challenges of using holograms to enhance intelligence and learning. <u>Assessment</u>	Pictures and Charts	Discussing Artificial Neural Networks (ANN) and compare intelligence in humans, animals and machines

1. Define strong AI. 2. What is weak AI? 3. List a primary difference between strong AI and weak AI. 4. Why might some experts argue that strong AI is a distant or unreachable goal? 5. Do you believe that machines with strong AI would have rights similar to humans? Why or why not? ***Reflection*** ***(10mins)*** Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.		
Homework/Project Work/Community Engagement Suggestions		
• How does a hologram differ from a regular photograph? • In what way does mixed reality combine physical and digital elements? • How could holograms be used to enhance a classroom learning experience?		
Cross-Curriculum Links/Cross-Cutting Issues		
None		
Potential Misconceptions/Student Learning Difficulties		
None		