**Respiration Board game** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objective:** to show the process of internal and external respiration by moving the appropriate chemicals through the body.

**Materials:**

* Game board: Outline of circulatory system between the lungs and body tissues
* The pieces:
	+ 1 oxygen – O2
	+ 2 carbon dioxides – CO2
	+ 1 bicarbonate – HCO3
	+ 1 Carbonic acid H2CO3
	+ 1 Hydrogen ion – H+
	+ 2 Hemoglobins - Hb
	+ 1 water – H2O

**Procedure:**

1. Take the pieces and demonstrate on the game board – the steps of external and internal respiration.
2. Start with oxygen entering from the alveolus and finish the carbon dioxide exiting through the alveolus.
3. Once you practice several times and all group members can explain the process fully. Figure out who will say what and then call the teacher over so that she can assess.

**Respiration Board game** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objective:** to show the process of internal and external respiration by moving the appropriate chemicals through the body.

**Materials:**

* Game board: Outline of circulatory system between the lungs and body tissues
* The pieces:
	+ 1 oxygen – O2
	+ 2 carbon dioxides – CO2
	+ 1 bicarbonate – HCO3
	+ 1 Carbonic acid H2CO3
	+ 1 Hydrogen ion – H+
	+ 2 Hemoglobins - Hb
	+ 1 water – H2O

**Procedure:**

1. Take the pieces and demonstrate on the game board – the steps of external and internal respiration.
2. Start with oxygen entering from the alveolus and finish the carbon dioxide exiting through the alveolus.
3. Once you practice several times and all group members can explain the process fully. Figure out who will say what and then call the teacher over so that she can assess.

**Respiration Board Game Assessment:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Beginning** | **Developing** | **Accomplished** | **Exemplary** |
| **Content – Structure** | Many of the components are missing or incorrectly used | The majority of structural components are correctly used, while some components are missing or incorrect | Almost all structural components are correctly used, with some minor errors. | All structural components are correctly used |
| Purpose, location of internal respiration and external respiration, alveolus, lungs, capillaries, chambers of the heart (right and left atria and right and left ventricles), blood vessels (arteries, arterioles, capillaries, venules and veins), tissue cells, oxygen, hemoglobin, carbon dioxide, hydrogen ion, bicarbonate, water, deoxyhemoglobin, oxyhemoglobin, carbaminohemoglobin, reduced hemoglobin, carbonic anhydrase |
| **Content – Process** | Many processes are incorrect or not included. | The majority of processes are correct and accurate, with some processes missing or incorrect | Almost all processes are correct and accurate, with some minor errors. | Entire process is correct and accurate |
| Diffusion, reactions between hemoglobin and oxygen, carbon dioxide and hydrogen ions, reaction between water and carbon dioxide, reaction between hydrogen ions and bicarbonate, function of the enzyme carbonic anhydrase, reaction of cellular respiration. |
| **Clarity** | Although an attempt is made, it is difficult to understand most of the presentation.  | Most of the presentation is well organized with clear oral communication, but some is not. | Entire presentation is well organized with clear communication.  | Entire presentation is effectively organized and clearly communicated. Presentation could be used as a teaching tool for all ages. |

**Respiration Board Game Assessment:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Beginning** | **Developing** | **Accomplished** | **Exemplary** |
| **Content – Structure** | Many of the components are missing or incorrectly used | The majority of structural components are correctly used, while some components are missing or incorrect | Almost all structural components are correctly used, with some minor errors. | All structural components are correctly used |
| Purpose, location of internal respiration and external respiration, alveolus, lungs, capillaries, chambers of the heart (right and left atria and right and left ventricles), blood vessels (arteries, arterioles, capillaries, venules and veins), tissue cells, oxygen, hemoglobin, carbon dioxide, hydrogen ion, bicarbonate, water, deoxyhemoglobin, oxyhemoglobin, carbaminohemoglobin, reduced hemoglobin, carbonic anhydrase |
| **Content – Process** | Many processes are incorrect or not included. | The majority of processes are correct and accurate, with some processes missing or incorrect | Almost all processes are correct and accurate, with some minor errors. | Entire process is correct and accurate |
| Diffusion, reactions between hemoglobin and oxygen, carbon dioxide and hydrogen ions, reaction between water and carbon dioxide, reaction between hydrogen ions and bicarbonate, function of the enzyme carbonic anhydrase, reaction of cellular respiration. |
| **Clarity** | Although an attempt is made, it is difficult to understand most of the presentation.  | Most of the presentation is well organized with clear oral communication, but some is not. | Entire presentation is well organized with clear communication.  | Entire presentation is effectively organized and clearly communicated. Presentation could be used as a teaching tool for all ages. |