

# INQUIRY PROCESS: SEARCH STRINGS

## Lesson Plan

**Purpose:** This lesson is designed to teach students how to use the Boolean operators “AND” and “OR” in online searching to either narrow or expand their results. These Boolean operators establish a relationship between the keywords/concepts in a search, thus have a significant impact on the relevancy of their search results.

### Trivia

Boolean operators are named after George Boole, an Englishman, who invented them as part of a system of logic in the mid-1800’s.

## OUTCOMES

LESSON GOALS	QEP COMPETENCIES
<p>Students will be able to...</p> <ul style="list-style-type: none"> <li>Establish logical relationships between keywords and related words.</li> </ul>	<p><i>Arts Education: Visual Arts</i> 2 – To produce media works in the visual arts</p> <p><i>Languages: English Language Arts</i> 3 – To represent her/his literacy in different media 4 – To use language to communicate and learn</p> <p><i>Cross Curricular</i> 1 – To use information 3 – To exercise critical judgment 6 – To use information and communication technologies 8 – To cooperate with others 9 – To communicate appropriately</p>

## Materials:

- Computers and Internet access.
- Interactive white board e.g., SmartBoard.
- Whiteboard/markers.
- Optional: Venn Diagrams Worksheet (see the teacher resources page for the worksheet).*
- Optional: Worksheets of the Boolean operators exercise (see the teacher resources page for the worksheet).*

## BOOLEAN OPERATOR STAND/SIT ACTIVITY

- Introduce* the concept of Boolean operators. Explain that you can use the terms “AND” and “OR” to either narrow or expand the results in online searching.

*Optional: You can also introduce “NOT”.*

Boolean Operator	Allows the searcher to find results:
AND	With all of the words (narrows results)
OR	With any of the words (expands results)
NOT	Without the words



- 2) *Tell* students that they will help demonstrate how the Boolean operators work. The following activity will help them understand the function of “AND” and “OR”.
- 3) *Ask* all the students who are wearing jeans to stand up.  
Count the number of students standing.
- 4) *Ask* all the students who are wearing jeans AND blue shirts to remain standing.  
All others should sit down. Count the number of students still standing.
- 5) *Explain* that using the Boolean operator “AND” has narrowed the results.
- 6) *Ask* the students wearing jeans OR blue shirts to stand.  
All the students wearing jeans, all of the students wearing blue shirts, and all students wearing both jeans and blue shirts should stand. Count the number of students standing. This should be a larger number than before.
- 7) *Explain* that using the Boolean operator “OR” has expanded the results.
- 8) **Optional:** *Ask* the students wearing jeans but NOT sneakers to stand.  
The NOT operator has excluded all students wearing sneakers. It has, therefore, limited the results.

**Teacher Tip**

Other examples you can use for this activity:

If students have a

- Cat AND dog
- Cat OR dog
- Cat NOT male cats
  
- Sister AND brother
- Sister OR brother
- Sister NOT older sibling

**Teacher Tip**

The following keywords can be used as an example: dolphins AND whales, dolphins OR whales, dolphins NOT Miami.

This example shows how the NOT operator can help you find results specific to your content. By putting NOT Miami, results about the American football team will be eliminated.

**CREATING SEARCH STRINGS**

- 1) *Have* students log into IS-21.  
Students should navigate to the IS-21 task that they created. They should be on the **SEARCH STRINGS** step.
- 2) *Instruct* students to carefully consider their Little Questions.  
They should consider the relation between each of the keywords & synonyms and what information they need to find to answer the Little Question.
- 3) *Have* students select a Boolean operator between their keyword and synonym.  
Start with having students focus on which Boolean operator would be appropriate to place in between a keyword and its synonym. As they select them in IS-21 the



software will display a Venn diagram that illustrate what that Boolean operator does to the search terms.

### *Optional Modifications to the Lesson*

If you do not have access to the computer lab for this lesson, you can use the Venn diagram worksheet entitled Venn Diagrams. Have students write their keywords and shade in the area that represents the chosen Boolean operator.

- 4) *Direct* students to also consider which Boolean operator to use between each of the keywords.  
Have students place the appropriate Boolean operator between each set of keywords. Ask them to recall what they saw in the IS-21 online interactive activity for the **COMBINE KEYWORDS** step.
- 5) *Ask* students: why is it important to narrow a topic?  
Possible answers include:
  - a) So they won't be overwhelmed by information.
  - b) So that they can focus on specific aspects of the topic.
  - c) So that they can more easily evaluate the results.
  - d) So they can save time.
- 6) *Call* for volunteers to read out one of their search strings.
- 7) *Use* the **Report** feature of IS-21 to review the students' work.

### **ePEARL Users**

Remember the Report may also be viewed in a student artifact. Think about viewing it there and providing feedback through the Teacher Feedback feature.

### *Optional Modifications to the Lesson*

If you do not have access to the computer lab for this lesson, you can use the worksheet entitled Boolean Operators. They will follow a similar process as detailed above however they will not have the automatically generated Venn diagrams to refer to as they would in the IS-21 software.

### **REFLECTION**

For students that have completed the step quickly, suggest they use the extra class time to begin reflecting. Direct them to the reflections window in IS-21 and suggest they use the prompts as needed. There are additional prompts listed on the teacher resource page if you would like to have them broken down by each step.

This is an individual task. Students should not be completing this portion with their group member(s). Even if reflection is not a big part of your classroom, we recommend that you have students reflect at least once.



### ePEARL Users

There are two locations that students can reflect- either within their IS-21 task or within the ePEARL artifact that is automatically created whenever a new IS-21 task is started. The reflection ends up in the same place though!

This lesson is an adaptation of a lesson from *AT&T/UCLA's Initiative for the 21<sup>st</sup> Century Literacies'* teacher resources. It was modified with permission.

