Teaching Strategy Matters: Engagement Impacts Application

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Introduction
Librarians from the Dartmouth Biomedical Libraries teach one-shot instructional sessions to high school students participating in the Health Careers Institute at Dartmouth College. The Institute is held twice each summer and each session spans one week. In each of the two instructional sessions, two different teaching strategies were used to convey content. In order to determine the immediate and long-term effectiveness of the two teaching strategies, the librarian assessed students using the same measurement tools for both groups.

Methods
Instruction
Between the two instructional sessions a maximum of three active learning methods were exercised. In the first session, students were exposed to a 1) Quiz Bowl in addition to a didactic lecture (a passive learning technique) delivered via PowerPoint. In the second session, students were exposed to a 2) Jigsaw Activity, a 3) Brainstorming Activity, a Quiz Bowl, and to a short didactic lecture.

Assessment
Instruction, whether active or passive, was provided for 40 minutes. During the last 20 minutes, students engaged in a Jeopardy-style Quiz Bowl intended to assess their learning and to help reinforce information.

As required by the Institute, students also worked together to write a research paper. Bibliographic data from those papers were scored using the rubric below.

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<tr>
<th>Passive Instruction</th>
<th>Active Learning</th>
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<td>• Didactic Lecture</td>
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<td>• Quiz Bowl</td>
<td>• Brainstorming</td>
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<td>• Jigsaw Activity</td>
<td>• Quiz Bowl</td>
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Learning Objectives
By the end of the sessions, students should have been able to
• Identify and use three consumer health resources to find reliable health information
• Apply appropriate strategies to optimize searches
• Appraise sources for authority and potential bias
• Properly cite sources

Jigsaw Activity
Thirty-one students were broken into six groups of five or six. After the activity, homogenous groups were then mixed to include at least one representative from each previous group.

Results and Conclusions
Quiz Bowl: The first cohort of students correctly answered every question, whereas the second cohort correctly responded to approximately one-half.

Bibliographies: Both groups’ bibliographies were analyzed; Group 2 scored more favorably in 4 of 6 categories.

Didactic instruction is a low-complexity teaching technique that is best assessed using a low-complexity assessment strategy. The Quiz Bowl technique is considered to be of low-complexity.

The Jigsaw activity was a high-complexity strategy that requires evaluation via a high-complexity technique. Creating a bibliography is a high-complexity task, and thus, scoring them was the most appropriate method of assessing learning.

The second group scored higher quality of source citation.

There was no difference between the groups in the use of scholarly medical and scientific literature, or whether or not the students cited Wikipedia as a source.

Thus, the Active Learning Group outperformed the Passive Group in 4 out of 6 areas.

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