

Using Virtual Vee Maps to Assess Laboratory Instruction

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Introduction

In the fast-paced and high-expectation level of teaching agriculture in America today, there is a need to stress rigor, relevance, and technology. Frequently, prominence of rigor and relevance in the high school classroom leads to more evaluation of everyday instruction. While teachers are faced with No-Child-Left-Behind (NCLB) issues and school administrations asking for the use of technology in the classroom; many teachers struggle to utilize technology and state science standards in the same instructional period (Smith, Leonard, 2005). Introduction of new evaluation tools are a key to help develop skills sought by many. Agriculture is known for its connections to science, and incorporation of the scientific method is vital to build upon skills used in the laboratory setting. The virtual Vee Map encompasses those concepts of rigor and relevance while establishing essential use of technology in the classroom.

Showing a well-built connection to rigor and relevance in the laboratory setting has become increasingly important as school districts look to cut costs nation wide. Across the country teachers are being asked to continue their education, leaving less time to prepare for classroom lessons and leading to less graded material. Virtual Vee Maps allow for laboratory preparation and lessen the grading time while allowing students to construct lab reports via a computer based template.

Increasing student ability levels within technology, instructors need to capture knowledge and have students apply their understanding of technology to higher-level thinking. Promotion of higher-level thinking skills no longer necessitate completion of lengthy lab reports, which take the instructor hours to grade. Virtual Vee Maps supply the students with a template and lead them in the direction of the scientific method.

Vee Maps guide reflection after the lab experiment for students. Students no longer will feel as if they are conducting lab experiments to answer questions on a lab report. Students feel as though they can experiment and form their own conclusions, not try and accomplish the experiment to receive the same answers as their peers or what they read from the book. Through Vee Maps students are allowed to formulate their own decisions and create their own graphic organizer which fits their learning style. Vee Maps allow teachers more time with students in actual lab instruction and are not faced with students whom are just after the correct answer on the lab report. While providing teachers with more freedom during lab instruction, Vee Maps also allow for less preparation of lab questions, and lessen the grading time for each lab to 10-15 minutes per map compared to traditional lab reports which may take 30-50 minutes (Coffman, Riggs, 2006).

How it Works

The virtual Vee Map is an interactive tool that promotes higher-level thinking skills for the student, greater freedom for the instructor to interact with the students, and less evaluation time for the instructor. The Vee Map is designed to replace the traditional lab report (Roehrig, Luft, Edwards, 2001) when appropriate. This computer based Microsoft Word document provides seven sections that encourage the progression to higher levels of Bloom's taxonomy. The virtual Vee Map is designed in a "V" which the student follows throughout the template. The map provides text boxes which cannot be altered by the student, forcing them to employ reading strategies in the selection of words to describe their findings.

The virtual Vee Map begins with the identification of the problem. Students are asked to type their inquiry as a question. Following completion of the question, students will develop a list of key words significant to the lab. The third portion of the map is vital to visual and innovative learners as they are allowed to develop their own concept map or graphic organizer. Within the first three steps not only are students reflecting on the lab in which they participated, but are developing cross curricular skills in reading strategies and developing higher order thinking skills in a scientific context.

The subsequent steps involve development of a hypothesis and completion of the steps to complete the lab activity. The sixth step allows them to arrange their collected data in the form of a chart, table, or graph. This data step allows for the use of applied technology and empowers students to formulate their data in a graphic form that is not predetermined. Lastly, the students are asked to form a conclusion of the lab activity.

Implications

The Vee Map is designed to increase higher level thinking skills for students, increase technology use, and develop reading strategies. The Vee Map will also allow the instructor to direct the lab for experimental research and spend quality time with students in lab directed research, as well as supply a one page document that can be easily graded.

Future Plans

Current research utilizing experimental design to determine the impact of Vee Maps on content knowledge and student attitude toward science is being conducted with teachers in the state of Florida. Future plans also include development of an electronic grading rubric to be utilized by educators.

Costs/Resources Needed

The virtual Vee Map is a Microsoft Word template document that can be obtained by contacting the authors. It is also available from the web-site at:
http://aec.ifas.ufl.edu/downloads/vee_map.doc

References

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- Smith, R., Leonard, P., (2005) Collaboration for Inclusion: Practitioner Perspectives. *Equality and Excellence in Education*, 38 (4), 269-279.