

Table 1: Evaluation Outcome Categories and Components

Communication
Uses and understands professional and discipline-specific language.
Expresses ideas in an organized, clear, concise, and accurate manner.
Writes clearly and effectively in discipline-specific formats.
Creativity
Brings new insights to the problem at hand.
Shows ability to approach problems from different perspectives.
Combines information in new ways and/or demonstrates intellectual resourcefulness.
Effectively connects multiple ideas/approaches.
Autonomy
Demonstrates the ability to work independently and identify when input, guidance, and feedback are needed.
Accepts constructive criticism and applies feedback effectively.
Displays high level of confidence in ability to meet challenges.
Uses time well to ensure work gets accomplished and meets deadlines.
Ability To Deal With Obstacles
Learns from and is not discouraged by setbacks and unforeseen events.
Shows flexibility and a willingness to take risks and try again.
Practice And Process Of Inquiry
Demonstrates ability to formulate questions and hypotheses within the discipline.
Demonstrates ability to properly identify and/or generate reliable data.
Shows understanding of how knowledge is generated, validated, and communicated within the discipline.
Nature Of Disciplinary Knowledge
Shows understanding of the way practitioners think within the discipline (e.g., as an earth scientist, sociologist, or artist) and view the world around them.
Shows understanding of the criteria for determining what is valued as a contribution to the discipline.
Shows understanding of important current individuals within the discipline.
Critical Thinking And Problem Solving
Trouble-shoots problems, searches for ways to do things more effectively, and generates, evaluates, and selects between alternatives.
Recognizes discipline-specific problems and challenges established thinking when appropriate.
Recognizes flaws, assumptions, and missing elements in arguments.

Understanding Ethical Conduct
Shows understanding and respect for intellectual property rights.
Predicts, recognizes, and weighs the risks and benefits of the project for others.
Recognizes the severity of creating, modifying, misrepresenting, or misreporting data, including omission or elimination of data/findings or authorship.
Intellectual Development
Demonstrates growth from basic to more complex thinking in the discipline.
Recognizes that problems are often more complicated than they first appear to be and the most economical solution is usually preferred over convoluted explanations.
Approaches problems from a perspective that there can be more than one right explanation or model or even none at all.
Displays accurate insight into the extent of his/her own knowledge and understanding and an appreciation for what isn't known.
Culture Of Scholarship
Is involved in the scholarly community of the discipline and/or professional societies.
Behaves with a high level of collegiality and ethical responsibility.
Content Knowledge Skills/Methodology
Displays detailed and accurate knowledge of key facts and concepts.
Displays a thorough grasp of relevant research methods and is clear about how these methods apply to the research project being undertaken.
Demonstrates an advanced level of requisite skills.

in completing the various instruments. For a more complete description of the evaluation-development process and methodology, see Singer and Weiler (2009).

A full-scale implementation of the evaluation has now been conducted with three groups of student researchers and their faculty mentors. This article reports on evaluation findings for the period 2008 to 2010. Static versions of all instruments referred to in this paper and data tables supporting our findings can be found at: <http://www.buffalostate.edu/undergraduateresearch/x561.xml>.

Implementation of the Evaluation Methodology

Evaluation Stages

Table 2 shows the summer research program and its evaluation divided into three stages: Pre-to-Early Research, Mid-Research, and End-to-Post Research.