Background and Justification
English 102: College English II is the second of two required freshman composition courses at Wichita State University. Since 2012, these classes have been required to come to Ablah Library for a 75 minute instruction session with faculty librarians which coincides with the first major research project in the course, the Analytical Comparison Essay.

During the session librarians focus on the skills necessary for effective database searching: selecting keywords for their topic, building an advanced search query, evaluating results, and importantly, modifying search terms based on their evaluation. Students use their own research topics to practice, allowing them to build a skill set directly required to fulfill the research component of English 102.

The student learning outcomes (below) are based on national standards and feature skills that are highly transferable to other classes and situations.

Student Learning Outcomes
As a result of library instruction students will be able to:
• Construct advanced searches using Boolean operators and search filters
• Evaluate search results for relevance
• Modify search terms appropriately for improved results

Instrument and Methods
Each instructional session is assessed using a ten point active learning assignment known as the Search Strategy Worksheet. Students complete the Search Strategy Worksheet in phases throughout the instruction session; each skill is first demonstrated by the librarian then practiced individually using the worksheet and finally discussed as a group. In this way the skills required in the search process are scaffolded through guided practice.

The Search Strategy Worksheet assesses student learning through an authentic search task – for each of the three searches conducted in class students document their keywords and then reflect on their effectiveness based on the relevance of records in the results. This captures both the search queries and thought processes of students as they work their way through a database search in real time. This data enables librarians to observe the process of student learning as their understanding of the search process evolves throughout the class session.

A major advantage is that the worksheet facilitates both formative and summative assessment. In class, this activity enables instruction librarians to monitor students’ progress and offer timely interventions. After class, data can be viewed on individual and aggregate levels to identify weak spots in student learning and modify instruction to address these issues in future sessions. The worksheet is housed in Qualtrics in order to collect and analyze student responses.
**Pilot Test**
The Search Strategy Worksheet was first developed and pilot tested in Fall 2015 and fine-tuned into its current form in Spring 2016. 543 students submitted the pilot worksheet and analysis of their responses yielded several insights that were incorporated into the current version of the assignment. One notable limitation of the pilot worksheet was a lack of space for students to experiment and revise their queries. While students were asked to run two sets of search terms and compare the results, they had no opportunity to try again using the insights they gained from these initial searches. Accordingly, a third guided search was added to the worksheet to allow students to immediately apply their learning and test the outcomes.

**Analysis of Outcomes**
In Spring 2016 a rubric was designed based on results from the pilot worksheet to further investigate the assessment tool’s effectiveness. During that semester the Search Strategy Worksheet was completed by 442 students in 22 course sections. A random sample of 190 students (43% of total responses) was analyzed. From this sample 33% of students scored the full 10 points on the assignment, 37% received 8 and 9 total points, and the average score was 7 points.

Students scored the highest average (1.4 out of 2 points) in the criteria for “keyword concept map creation" and “evaluate search results for relevance”. This is an encouraging finding because keyword and synonym generation are foundational skills which the rest of the assignment builds upon. The evaluation section demonstrates students’ ability to critically reflect on their results in order to continuously improve their search skills.

Students scored the lowest average (1.2 out of 2 points) on the “conduct searches with advanced techniques” criteria that asks students to construct a search query using proper Boolean logic. The relatively low scores in this area led librarians to spend more time demonstrating these skills and working with students one-on-one during individual practice periods.

From Fall 2016-Spring 2018 librarians taught 96 library instruction sessions to a total of 1,892 students who completed the Search Strategy Worksheet. Due to issues of workload, the decision was made to award students a full ten points for worksheet completion rather than grading individual worksheets. This completion credit contributes to students’ motivation to thoroughly and thoughtfully complete the worksheet and librarians still retain the opportunity to perform assessment analysis on the completed worksheets. In future semesters, there are plans to assess a sample of worksheets from previous semesters using qualitative methods for a more complete understanding of results.

The Search Strategy Worksheet is viewed as a valid device for assessing the learning outcomes because it guides students through step-by-step practice and encourages self-evaluation of their effectiveness. The collected data shows students’ overall improved grasp of synonyms and Boolean operators as well as an increased mental flexibility and critical thought process used in revising searches. Feedback on the assignment from the ENGL 102 coordinator and classroom instructors has been positive as well. Based on this analysis, the Search Strategy Worksheet is considered a success as both an in-class activity and an assessment tool for capturing rich data about student search skills and for identifying opportunities to enhance how librarians teach the English 102 library instruction session in the future.