The Research Paper Toolbox
Evaluation

For our project, we designed an instructional course, or “toolbox,” on how to write a TCID, IARCH, or Tech Comm graduate-level research paper, including the common practice of converting papers to other mediums and submitting to conferences. Before compiling our comprehensive list of performance objectives, we conducted a thorough needs assessment to determine learner characteristics. Each lesson begins with a clearly stated list of objectives expressing the desired outcomes that students will attain after its completion, essentially a concrete understanding of the concepts addressed. In addition, each lesson introduction gives students an overview of its content. They are also given the opportunity to practice what they’ve learned, both within the lesson (with easy-to-follow procedural steps) and after the lesson (with assessments either in the form of a multiple-choice quiz, a short task, or both, though in some cases the assessment actually appears in the middle of the lesson). Additional opportunities for practice are offered in the accompanying instructor's guide, in the form of guided exercises. Students receive feedback on how well they have applied what they learned through descriptions of successfully completed performance measurements as well as answers to the post-lesson quiz or task. Additional feedback can also be found in the instructor’s guide, which provides supplemental guidance on how to further instruct students for each lesson.

The first lesson in the course is entitled "Finding a Research Topic." The lesson is clear and concise in order for students to understand completely the topics of discussion. It is divided into three main sections in order to emphasize simplicity, and each section can be studied in any order depending on varying experience levels. Scenarios are given throughout the lesson in order to illustrate a realistic situation that students might encounter. Icons accompany each scenario in order to indicate productive versus flawed choices. The brief multiple-choice quiz following the lesson was added to reinforce students' memories on the content and information they just absorbed.

Next, we have "Realistic Research: University, Web-based, and Local Resources." The introduction focuses on skills enhancement rather than demographics. The lesson is accessible to all students in the target audience: jargon was avoided and research-specific terminology defined for the students. The lesson also contains a running example in the form of a case study in technical communication research that progresses as elements of the lesson are introduced. The research strategies presented in the case study are further reinforced by the quiz at the end of the lesson, which contains a research scenario that accurately reflects a real-life tech comm research experience. The quiz questions require students to recall specific research strategies covered in the lesson and case study.

The next lesson, "How to Organize and Analyze Research Data," is designed to help students learn how to process raw data. The lesson is comprehensive, yet not overly complicated, and it spurs students to take action in organizing, manipulating, and utilizing their own datasets. This rationale served as the foundation for several design choices: First, the components of the lesson were broken down into three main sections to emphasize simplicity. Second, students

are prompted to follow along with their own Excel document, as a form of self-assessment. Third, document data comes pre-prepared, minimizing boring data entry. Fourth, screen shots are provided so that students can check whether or not they've correctly completed each step. Fifth, easy-to-follow procedural knowledge is interwoven with declarative knowledge, which builds confidence with easy progress while showing students why the steps are necessary. Finally, a brief multiple-choice post-test is included to refresh memory of content without overburdening learners.

The "Managing References" lesson presents students with a useful tool, Zotero, to help them to manage their references. Before they are shown how to use Zotero, students are informed of its purpose and of the importance of managing references, in order to help them grasp the lesson's relevance. In the lesson's instructional portion, the students are informed of what equipment is necessary to perform the different tasks required. They are told how to install the equipment and are given the accompanying links. Students are given a list of tasks that they can perform within Zotero. Students are then given a brief overview of the tasks and step-by-step procedures on how to perform the them. This is in order to give students clear instructions on specifically how to perform the tasks to ensure that they complete them successfully and easily. At the end of the lesson, students are given a self-assessment to test their knowledge.

Next, "Style Guides" instructs the student on how choose and adhere to a consistent style throughout their paper. The sequencing of the instruction starts with a basic definition of a style guide and a short lesson on how to access style guides online. The lesson includes key introductory information, followed by a step-by-step guide on how to document sources, both in-text and out (bibliography or reference page) for CMS and APA. After the lesson, a final assessment is included, consisting of a short task or exercise on source documentation in CMS and APA in order to test the student on what they have learned about this procedure. Although specific learning objectives were outlined, and although the end of the last section of the lesson consisted of a very strict guided procedure, the lesson is also interspersed with web links that the student can browse at their leisure in order to gain more helpful information about specific topics regarding style guides.

The lesson "Layout and Formatting with Latex" teaches the student how to use a powerful, free tool that will help them develop a polished, professional look for their paper. The main thematic sections contain a self-assessment exercise at the end of the page. The short thematic sub-sections always contain the commands necessary to complete a task, an explanation of what they do and how to use them. The main tutorial sections contain a "hands on" exercise at the end that also serves as a self-assessment. The student is asked to apply the steps described in the section to her own document and is encouraged to play with the options and try variations. A sample solution is available for comparison if the student wants to correct mistakes. The solution is accessible right away, so the student can decide if they want to try and write all the commands on their own or if they simply wants to copy the sample commands and modify them. This way, the student can adapt the exercise to their own learning style. A link to a cheat sheet containing the most important commands is introduced in the beginning of the tutorial section.

The "Modality" lesson explains how to convert the research paper to other formats. First, students are informed of its purpose and given a bulleted list of items on the agenda. In addition, they are informed of tasks that they will accomplish after completion of the lesson. This format was chosen to help clarify the full objective of the lesson. Students are given a thorough overview of modality including what modality is, why modality is important, and the key principles of modality. The purpose of this type of introduction was to give students a foundation that would help to facilitate their understanding of the lesson. In the core of the lesson, students are given key principles in bullet-points for completing various translations. To ensure understanding of the material, the students are offered a self-assessment in the form of an activity.

The final lesson, "Professionalization," is designed to present students with resources, recall past skills from earlier lessons in the course, and provide a stand-alone exercise in taking the first steps toward adapting a paper for submission to an academic conference or scholarly journal. Additionally, the lesson has repetitive elements that encourage students to think about professional ends for their research projects and consider time management factors when taking on professional development activities. The introduction addresses why this topic is being covered and why the student should take the lesson. The conference and journal pages provide resources and introduce concepts, and the final page contains two exercises that test students' ability to incorporate elements from the entire course (when appropriate) and help students take the first step towards engaging in professional development activities.

Overall, this course consists of a strong balance of personal experience and knowledge, outside sources, real-world examples and instructional strategies. It succeeds at being both a self-guided learning experience and a lesson-by-lesson course that can be led by an instructor. Looking at the course critically, it might benefit from instructor materials that are both more usable and more accessible than the current PDF document. These ideally would have been created concurrently with the rest of the course material; however, our group did not begin to conceptualize them until we were well into the project. The course is also lacking in overall cohesiveness of the lessons. This is due in part to our process of having different authors create each lesson separately. In retrospect, the creation of a course style guide as well as the addition of exercises that are designed to build on each other systematically would improve cohesiveness and consistency.