



Higher Education  
Quality Council  
of Ontario

An agency of the Government of Ontario

# Assessing Learning Outcomes: Thinking Critically about Critical Thinking and Written Communication Skills Appendix

Vera Beletzan, Melissa Gabler, Paula Gouveia  
Humber College



Published by

## The Higher Education Quality Council of Ontario

1 Yonge Street, Suite 2402  
Toronto, ON Canada, M5E 1E5

Phone: (416) 212-3893  
Fax: (416) 212-3899  
Web: [www.heqco.ca](http://www.heqco.ca)  
E-mail: [info@heqco.ca](mailto:info@heqco.ca)

### Cite this publication in the following format:

Beletzan, V., Gabler, M., Gouveia, P. (2017) *Assessing Learning Outcomes: Thinking Critically about Critical Thinking and Written Communication Skills Appendix*. Toronto: Higher Education Quality Council of Ontario.



The opinions expressed in this research document are those of the authors and do not necessarily represent the views or official policies of the Higher Education Quality Council of Ontario or other agencies or organizations that may have provided support, financial or otherwise, for this project. © Queens Printer for Ontario, 2017

## Appendices

### Appendix A: Essential Employability Skills

| SKILL CATEGORY                                 | DEFINING SKILLS  | LEARNING OUTCOMES  |
|--|--|--|
| <b>Communication</b>                           | Skill areas to be demonstrated by graduates. <ul style="list-style-type: none"> <li>• Reading</li> <li>• Writing</li> <li>• Speaking</li> <li>• Listening</li> <li>• Presenting</li> <li>• Visual literacy</li> </ul>                  | The levels of achievement required by graduates.<br><br>The graduate has reliably demonstrated the ability to: <ul style="list-style-type: none"> <li>• Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience</li> <li>• Respond to written, spoken or visual messages in a manner that ensures effective communication</li> </ul> |
| <b>Numeracy</b>                                | <ul style="list-style-type: none"> <li>• Understanding and applying mathematical concepts and reasoning</li> <li>• Analyzing and using numerical data</li> <li>• Conceptualizing</li> </ul>  | <ul style="list-style-type: none"> <li>• Execute mathematical operations accurately</li> </ul>   |
| <b>Critical Thinking &amp; Problem Solving</b> | <ul style="list-style-type: none"> <li>• Analyzing</li> <li>• Synthesizing</li> <li>• Evaluating</li> <li>• Decision making</li> <li>• Creative and innovative thinking</li> </ul>   | <ul style="list-style-type: none"> <li>• Apply a systematic approach to solve problems</li> <li>• Use a variety of thinking skills to anticipate and solve problems</li> </ul>   |
| <b>Information Management</b>                  | <ul style="list-style-type: none"> <li>• Gathering and managing information</li> <li>• Selecting and using appropriate tools and technology for a task or a project</li> <li>• Computer literacy</li> <li>• Internet skills</li> </ul> | <ul style="list-style-type: none"> <li>• Locate, select, organize and document information using appropriate technology and information systems</li> <li>• Analyze, evaluate and apply relevant information from a variety of sources</li> </ul>   |
| <b>Interpersonal</b>                           | <ul style="list-style-type: none"> <li>• Team work</li> <li>• Relationship management</li> <li>• Conflict resolution</li> <li>• Leadership</li> <li>• Networking</li> </ul>  | <ul style="list-style-type: none"> <li>• Show respect for the diverse opinions, values, belief systems and contributions of others</li> <li>• Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals</li> </ul>   |
| <b>Personal</b>                                | <ul style="list-style-type: none"> <li>• Managing self</li> <li>• Managing change and being flexible and adaptable</li> <li>• Engaging in reflective practices</li> <li>• Demonstrating personal responsibility</li> </ul>             | <ul style="list-style-type: none"> <li>• Manage the use of time and other resources to complete projects</li> <li>• Take responsibility for one's own actions, decisions and consequences</li> </ul>   |

Ministry of Advanced Education and Skills Development, 2009b.

## Appendix B: Original Scorecard

\_\_\_\_\_  
Student Name

\_\_\_\_\_  
Student Number

| Critical Thinking & Written Communication Skills Assessment Tool   |  |   |          |          |               |               |               |              |
|--|--|---|----------|----------|---------------|---------------|---------------|--------------|
| **Critical Thinking – “Working Consensus: Purposeful, <u>reflective judgment</u> which manifests itself in <u>reasoned consideration</u> of evidence, context, methods, standards, and conceptualizations in deciding <u>what to believe or what to do.</u> ” (APA Delphi Report, 1990 in Facione, 2013, p.22) |  |   |          |          |               |               |               |              |
| Variables  | Level of Achievement                                       |   |          |          |               |               |               |              |
|  | 0 - No Evidence  | 1 - Poor  | 2 - Fair | 3 - Good | 4 - Very Good | 5 - Excellent | 6 - Mastered  |              |
| Critical Thinking  | Thinking: Interpretation                                   | Clearly and comprehensively identifies key issues                           |          |          |               |               |               |              |
|  |  | 0 - No Evidence   | 1 - Poor | 2 - Fair | 3 - Good      | 4 - Very Good | 5 - Excellent | 6 - Mastered |
|  | Thinking: Analysis   | Identifies similarities, differences and multiple viewpoints based on logic |          |          |               |               |               |              |
|  |  | 0 - No Evidence   | 1 - Poor | 2 - Fair | 3 - Good      | 4 - Very Good | 5 - Excellent | 6 - Mastered |
|  | Thinking: Evaluation                                       | Assesses relevance of context, statements, reasoning, alternatives          |          |          |               |               |               |              |
|  |  | 0 - No Evidence   | 1 - Poor | 2 - Fair | 3 - Good      | 4 - Very Good | 5 - Excellent | 6 - Mastered |
|  | Thinking: Inference  | Forms reasonable conclusions  |          |          |               |               |               |              |
|  |  | 0 - No Evidence   | 1 - Poor | 2 - Fair | 3 - Good      | 4 - Very Good | 5 - Excellent | 6 - Mastered |
|  | Thinking: Explanation                                      | Coherently presents results of one’s reasoning                              |          |          |               |               |               |              |
|  | 0 - No Evidence  | 1 - Poor  | 2 - Fair | 3 - Good | 4 - Very Good | 5 - Excellent | 6 - Mastered  |              |
| Thinking: Self-regulation  | Separates personal opinions and assumptions from the facts |   |          |          |               |               |               |              |
|  | 0 - No Evidence  | 1 - Poor  | 2 - Fair | 3 - Good | 4 - Very Good | 5 - Excellent | 6 - Mastered  |              |
| Written Communication  | Communication: Structure                                   | Is logically organized  |          |          |               |               |               |              |
|  |  | 0 - No Evidence   | 1 - Poor | 2 - Fair | 3 - Good      | 4 - Very Good | 5 - Excellent | 6 - Mastered |
|  | Communication: Style                                       | Demonstrates appropriate language   |          |          |               |               |               |              |
|  |  | 0 - No Evidence   | 1 - Poor | 2 - Fair | 3 - Good      | 4 - Very Good | 5 - Excellent | 6 - Mastered |
| Communication: Mechanics   | Spelling, punctuation and formatting are error free        |   |          |          |               |               |               |              |

Adapted from Facione, P.A. (2013). Critical thinking: What it is and why it counts. *Insight Assessment*.

\_\_\_\_\_  
Program

\_\_\_\_\_  
Course

\_\_\_\_\_  
Assignment

Comments

\_\_\_\_\_  
Professor/Instructor

## Appendix C: Revised Scorecard

|              |                |
|--------------|----------------|
| Student Name | Student Number |
| Program      | Instructor     |
| Course Code  |                |

| Critical Thinking & Written Communication Skills Assessment Tool   |                 |  |          |          |               |               |
|--|-----------------|--|----------|----------|---------------|---------------|
| **Critical Thinking – “Working Consensus: Purposeful, <u>reflective judgment</u> which manifests itself in <u>reasoned consideration</u> of evidence, context, methods, standards, and conceptualizations in deciding <u>what to believe or what to do.</u> ” (APA Delphi Report, 1990 in Facione, 2013, p.22) |                 |  |          |          |               |               |
|  | Variables       | Level of Achievement   |          |          |               |               |
|  |                 | 1 – Poor   | 2 – Fair | 3 – Good | 4 – Very Good | 5 – Excellent |
| Comprehension  | Interpretation  | Accurately and comprehensively represents the available material’s key issues using the writer’s own words           |          |          |               |               |
|  | Analysis        | Identifies elements such as assumptions, differing or multiple views and evidence                                    |          |          |               |               |
| Integration of Writer’s Ideas  | Evaluation      | Interrogates the elements identified in the analysis to assess effectiveness, including credibility, logic and focus |          |          |               |               |
|  | Inference       | Forms reasonable conclusions and/or recommendations using sufficient and relevant evidence                           |          |          |               |               |
|  | Explanation     | Coherently presents writer’s ideas including using correct grammar, punctuation and spelling                         |          |          |               |               |
|  | Self-regulation | Separates personal opinions and assumptions from the facts   |          |          |               |               |

Adapted from Facione, P.A. (2013). Critical thinking: What it is and why it counts. *Insight Assessment*.

## Appendix D: Faculty Survey

### Essential Skills Project: Faculty Information

Thank you for participating in the essential skills assessment for your students. Here are the scorecards for your class. Please put the student's surname on the scorecard (include a first name only if there are two students in the class with the same surname), but do not fill in the rest of the blanks.

Please complete the information below, and send this top sheet, along with the completed scorecards and class list, to **Humber Research LX 104 North Campus.**

Questions? Please call Tricia Morgan at x 4525.

Course code, including section: \_\_\_\_\_

I found this scorecard easy to use:

|          |                   |         |                |       |
|----------|-------------------|---------|----------------|-------|
| Disagree | Somewhat disagree | Neutral | Somewhat agree | Agree |
|----------|-------------------|---------|----------------|-------|

This scorecard would supply meaningful information to my students:

|          |                   |         |                |       |
|----------|-------------------|---------|----------------|-------|
| Disagree | Somewhat disagree | Neutral | Somewhat agree | Agree |
|----------|-------------------|---------|----------------|-------|

I would be willing to join a focus group to discuss revisions to the scorecard:

|    |     |
|----|-----|
| No | Yes |
|----|-----|

***If you replied "yes", please complete the following:***

Name: \_\_\_\_\_

Extension: \_\_\_\_\_

## Appendix E: Course Curriculum

| Term      | Course Code & Title                             | Descriptions  | Learning Outcomes<br>Upon successful completion of this course, the student will be able to:   |
|-----------|---|---|--|
| Fall 2013 | COMM 200:<br>College Reading and Writing Skills | <p>COMM 200 emphasizes essential elements of the reading and writing process. Students practice reading and writing skills valuable in their college programs and in professional communication.</p> <p>To help students reach these goals, the course covers the following: critical reading and thinking; paraphrasing and summarizing; the writing process; critical response; persuasive writing; revision; grammar and mechanics; and documentation.</p> <p>To be successful, students must produce writing that meets or surpasses the minimum departmental standards as set out in the attached criterion sheets; they must also pass a final proficiency examination.</p> | <p>DEMONSTRATE CRITICAL READING AND THINKING BY</p> <ul style="list-style-type: none"> <li>• Using different methods to read a variety of texts</li> <li>• Analyzing these texts</li> <li>• Identifying claims as well as major and minor supporting ideas</li> <li>• Assessing the validity and quality of these claims and ideas</li> <li>• Evaluating language, tone, and logic</li> <li>• Synthesizing ideas from multiple texts</li> </ul> <p>DEMONSTRATE CRITICAL WRITING BY</p> <ul style="list-style-type: none"> <li>• Practicing pre-writing techniques</li> <li>• Paraphrasing, summarizing and critiquing assigned texts</li> <li>• Developing critiques into essays with central theses/claims and original arguments</li> <li>• Producing essays with coherent body paragraphs and appropriate structure (i.e., introduction, transitions, and conclusion)</li> <li>• Practicing revision as an essential aspect of the writing process</li> <li>• Using precise vocabulary suitable to academic contexts</li> <li>• Using correct grammar, punctuation, and spelling</li> <li>• Employing relevant documentation conventions</li> </ul> |
| Fall 2014 | WRIT 100:<br>College Reading and Writing Skills | <p>WRIT 100 emphasizes essential elements of the reading and writing process. Students practice reading and writing skills valuable in their college programs and in professional communication.</p> <p>To help students reach these goals, the course covers the following: critical reading and thinking; the writing process; paraphrasing and summarizing; critical analysis; critical response; revision; grammar and mechanics; and documentation.</p> <p>To be successful, students must produce writing that meets or surpasses the minimum departmental standards which are outlined in the attached criterion sheets.</p>   | <p>DEMONSTRATE CRITICAL READING AND THINKING BY</p> <ul style="list-style-type: none"> <li>• Using different methods to read a variety of non-fiction prose texts</li> <li>• Analyzing these texts</li> <li>• Identifying claims as well as major and minor supporting ideas</li> <li>• Assessing the validity and quality of these claims and ideas</li> <li>• Evaluating language, tone and logic</li> <li>• Synthesizing ideas from multiple texts</li> </ul> <p>DEMONSTRATE CRITICAL WRITING BY</p> <ul style="list-style-type: none"> <li>• Practicing pre-writing techniques</li> <li>• Paraphrasing, summarizing and analyzing assigned texts</li> <li>• Developing critical response essays with original, persuasive arguments</li> <li>• Producing writing assignments with appropriate structure and coherent body paragraphs</li> </ul>  |

|             |                                    |  |  |
|-------------|------------------------------------|--|--|
|             |                                    |  | <ul style="list-style-type: none"> <li>• Practicing revision as an essential aspect of the writing process</li> <li>• Using precise vocabulary suitable to academic contexts</li> <li>• Using correct grammar, punctuation, and spelling employing relevant documentation conventions</li> </ul>   |
| Winter 2014 | COMM 300: Workplace Writing Skills | <p>Workplace Writing Skills introduces students to the strategies of effective written workplace communication. This course is designed to build on and reinforce the writing skills developed in COMM 200 and requires students to apply these skills to vocationally relevant assignments. Students will learn how to select and organize pertinent information according to purpose and audience and will practice presenting their ideas clearly, precisely and effectively in various written formats. To complete COMM 300 successfully, students must produce writing that meets or surpasses the minimum departmental standards as set out in the course criterion sheet.</p>  | <ol style="list-style-type: none"> <li>1. Discuss the essentials of communication theory.</li> <li>2. Compose documents that demonstrate a sound understanding of communications theory and competent application of the principles of workplace correspondence.</li> <li>3. Compose persuasive communication that reflects an analysis of audience and purpose.</li> <li>4. Apply direct and indirect approaches to structure workplace correspondence.</li> <li>5. Compose informal and/or formal reports.</li> <li>6. Revise and edit their own work to substantially improve style, tone, clarity, grammar and mechanics.</li> </ol>   |
| Winter 2015 | WRIT 200: Workplace Writing Skills | <p>WRIT 200 prepares students to meet the expectations and challenges of communicating in a changing workplace. This course builds on and reinforces the critical reading, thinking and writing skills learned in WRIT 100. Students will broaden their concept of audience and refine their ability to synthesize information from various sources.</p> <p>To help students reach these goals, the course covers the following skills:</p> <ul style="list-style-type: none"> <li>• Writing with different workplace formats</li> <li>• Audience and purpose analysis</li> <li>• Research</li> <li>• Problem solving</li> </ul> <p>To be successful, students must demonstrate competence in completing a variety of workplace documents and a major project.</p> | <ol style="list-style-type: none"> <li>1. Analyze multiple audiences and define purpose to determine appropriate language, tone and format of workplace documents.</li> <li>2. Apply critical thinking and reading skills to identify, evaluate, respond to and propose solutions to workplace problems when composing workplace documents.</li> <li>3. Compose clear, persuasive documents that anticipate readers' needs and objections, including but not limited to e-mail, memos, letters, newsletters, blogs and short reports.</li> <li>4. Apply the principles of document design to a variety of workplace documents.</li> <li>5. Complete a major project that demonstrates critical analysis, revision and teamwork.</li> <li>6. Research, evaluate, synthesize and accurately cite scholarly and popular sources to support persuasive workplace communication.</li> <li>7. Revise and edit to produce clear, concise and grammatically correct documents acceptable to workplace audiences.</li> <li>8. Use a variety of communication tools to compose individually and collaboratively</li> </ol> |
| Fall 2014   | PFP 200: Criminal and Civil Law    | <p>This course focuses on interviewing and investigation skills. Students develop the interviewing skills necessary to retrieve</p>  | <ol style="list-style-type: none"> <li>1. Act in a manner consistent with all relevant law and legislation, and professional, organizational and ethical standards.</li> </ol>   |

|                  |  |   |   |
|------------------|--|---|---|
|                  |  | <p>information from witnesses, victims and suspects. Students will also learn the basic steps of investigation including the practical development of note taking and observation skills. Emphasis will also be placed on effective techniques for detecting deception.</p>   | <ol style="list-style-type: none"> <li>2. Interview individuals and groups to collect evidence, elicit and validate information.</li> <li>3. Prepare court documents that elaborate on the significant elements of a case and adhere to rules of disclosure.</li> <li>4. Comply with provincial, civil and criminal law and use rules of evidence to guide investigation and interactions, and to ensure admissibility of evidence.</li> <li>5. Influence or persuade others using a variety of communication skills in order to extract information.</li> <li>6. Use communication strategies, techniques and language to meet the needs of an individual or group.</li> <li>7. Evaluate the results of communication and adapt subsequent communication strategies.</li> <li>8. Apply Charter provisions and judges' rules when obtaining admissions/confessions in the interviewing process.</li> <li>9. Apply basic communication skills in the area of listening and speaking, and recognize the significance of body language and environment in the interview process.</li> <li>10. Record investigative notes in compliance with legal and ethical standards.</li> <li>11. Identify appropriate sources of information relative to investigative needs.</li> <li>12. Progress through basic sequential steps of an investigation.</li> <li>13. Construct and apply descriptive factors for identification of suspects and other persons.</li> </ol> |
| <p>Fall 2014</p> | <p>PFP 211:<br/>Interviewing &amp;<br/>Investigation</p> | <p>Students will acquire a general and functional knowledge of how the common law system operates in Canada. Student knowledge of our criminal law system will be specific to the role of criminal investigation and enforcement as a patrol officer, with an emphasis on their legal responsibilities outlined in the Charter of Rights and Freedoms. This course will also enable the student to assess and mediate the rights and obligations of citizens involved in private disputes relating to contract, torts, family, property and employment law. Locating, evaluating and applying case law to various situations will enhance research and analytical skills, while alerting the students to the type and complexity of legal issues that are an everyday challenge in the policing profession.</p> | <ol style="list-style-type: none"> <li>1. Define the concepts that characterize the Canadian system of common law and criminal law.</li> <li>2. Describe the role of the Constitution and the courts in determining legal issues.</li> <li>3. Contrast criminal and quasi-criminal offences in terms of jurisdiction and elements of the offence.</li> <li>4. Contrast criminal and civil law processes in terms of standards of proof, procedure and judgment options.</li> <li>5. Contrast arrest, bail, trial and appeal procedures relating to indictable, summary or hybrid offences.</li> <li>6. Contrast the roles of those who may legally be considered parties to a complete or inchoate offence.</li> <li>7. Summarize the onus and procedure of Crown disclosure for criminal prosecutions.</li> <li>8. Apply their understanding of fundamental and legal rights under the Canadian Charter of Rights and Freedoms to various law enforcement related situations.</li> <li>9. Explain the options available to a criminal court to resolve Charter violations stemming from criminal investigation.</li> </ol>   |

|                                     |                             |   |   |
|-------------------------------------|-----------------------------|---|---|
|                                     |                             |   | <ol style="list-style-type: none"> <li>10. Evaluate the use of excuse and justification defenses available in criminal law.</li> <li>11. Describe the nature and criminal record implications of diversion courts and various criminal sentencing options.</li> <li>12. Evaluate the application of contract, tort, family, property and employment law to various situations.</li> <li>13. Describe how miscarriages of justice have occurred in criminal courts in Canada.</li> <li>14. Interpret and summarize reported case law in case brief format.</li> </ol>  |
| Fall 2015 /Winter 2015/ Winter 2016 | GCRT 100: Critical Thinking | <p>We live in a world awash in data and facts from the internet, television, newspapers and podcasts, to name only a few. It is often said that facts speak for themselves. But any casual analysis will reveal that they rarely speak for themselves and facts and data are usually presented within the context of an argument. It is fair to say that good facts and data will only be as good as the argument that is used to frame them. It is critical therefore to be able to assess not only the raw data and facts but the logic of the arguments that frame the facts.</p> <p>In this course we will consider the structure of arguments. To this end, common fallacies of reason, the different forms of constructing an argument, and the rhetorical devices used to mask a bad argument will all be considered.</p> <p>Using examples from contemporary media this course will improve your ability to evaluate the reliability of the stream of information we encounter every day.</p> | <ol style="list-style-type: none"> <li>1. Describe the structure of arguments.</li> <li>2. Identify premises and conclusions.</li> <li>3. Analyze the relationships between premises and conclusions using diagrams.</li> <li>4. Distinguish between inductive and deductive arguments and patterns.</li> <li>5. Evaluate arguments for validity, soundness, strength and cogency.</li> <li>6. Evaluate survey results using basic statistics.</li> <li>7. Judge the probability of claims of cause and effect.</li> <li>8. Determine the necessary and sufficient conditions to accept conclusions.</li> <li>9. Recognize fallacies of reasoning that weaken arguments.</li> <li>10. Recognize imprecise language and the role of emotional connotation and denotation in slanting the truth.</li> <li>11. Construct arguments that satisfy the criteria of good argumentation.</li> </ol> |

## Appendix F: Course Assignments

### WRIT 100: Final Examination

#### READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE YOU BEGIN TO WRITE.

1. Read the article “**Canada Has a Duty to Act**” by **John Baird**. As you read the article, highlight important passages and make marginal notes to assist you in drafting your essay.
2. Write a clear, cohesive **critical response essay** on the article. The **body** of your essay must contain the following components:
  - Summary of the article’s thesis and main points
  - Critical analysis of the article
  - *Your* argumentative response to the article

You may find it useful to construct an outline.

3. The word count for the essay is approximately **700–1000 words in length**. Your essay should be double-spaced, be written on both sides of the paper, and be written in ink.
4. If you quote the article, include accurate **APA in-text citations** for any paraphrases or quotations: e.g. give a full citation (Baird, 2014, para. 2) when the article is quoted the first time and (para. 2) for subsequent citations of the same article. You do not need to include a “References” page.
5. Be sure to **proofread** for correct grammar, spelling, and word choice.
6. You are permitted to use your own non-electronic dictionary and thesaurus during the exam.

When you are ready to hand in the exam, please insert this cover sheet into the booklet(s) and include all materials from this exam session. Please be sure to distinguish the final draft from any rough drafts or outlines.

Be sure to fill out the required information on both this cover sheet and the exam booklet(s).

Your exam will be graded by another professor who will decide how they rate your critical response using the following grading system:

0/30 = Below minimum standards  
15/30 = Minimum standards  
20/30 = Proficiency  
25/30 = High competency  
30/30 = Exceptional

The grading professor will look at your ability to follow all of the parts of the critical response essay effectively, and they will also be assessing the mechanics of your writing (sentence structure and grammar).

Your turn to vote: Should Canada enter combat in Iraq?

Contributed to *The Globe and Mail*  
Published Friday Oct. 03, 2014

**The Debate:** Should Canada send its military into Iraq to fight the terrorist militia Islamic State, also known as ISIL and ISIS? That question has been the subject of heated exchanges in the House of Commons this week, especially between Conservative Foreign Minister John Baird and NDP Opposition Leader Thomas Mulcair, both of whom we have brought here to debate the question in detail. On Friday, Prime Minister Stephen Harper was to unveil plans to expand Canada’s small advisory mission into a full-scale military action by sending CF-18 fighters and other aircraft to bomb IS targets. Is this another decade-long quagmire like Iraq or Afghanistan, or is it a crucial cause for Canada’s military to assist in ending a genocidal campaign? Read Mr. Baird’s and Mr. Mulcair’s opinions, then comment, and vote.

**The Debaters:**

John Baird, Minister of Foreign Affairs  
Thomas Mulcair NDP leader, Official Leader of the Opposition

**John Baird, “Canada Has a Duty to Act”**

Having returned from Iraq with my colleagues from opposition parties last month, I told a House of Commons committee:

*“I ask that as we consider whether or how we act, we also consider what happens if we don’t act. It might seem convenient to brush options off as leading to mission creep in the future. But the hard reality is that inaction is not an option.”*

For most Canadians, the devastation in Iraq is something only witnessed on nightly newscasts, or in media. Very few will ever feel the pounding heat of Baghdad in the summer or smell the stench of sprawling IDP (internally displaced persons) camps that host tens of thousands of people.

Accordingly, some Canadians believe Canada has no stake in Iraq. Some think we should simply sit on the sidelines, provide only humanitarian assistance, and put our heads in the sand as another conflict rages in the Middle East.

But this is not just another conflict. This struggle is not against a state, or even a foreign dictator. This is a struggle against a group of terrorists that rape, pillage and slaughter anything and anyone that stands in its way. This group has spread like a cancer over our Iraqi friends, and it has no intention of stopping there. Islamic State (IS) talks openly about attacking the West and expanding its so-called caliphate far beyond the Middle East, from Spain to India.

Throughout our history, Canada has done its part defending the ideals and values that have made our country the envy of the world. Canada heeds the call. Canada protects the vulnerable. Canada challenges the aggressor.

Religious minorities are being forced from their homes, or worse, murdered in cold blood. Hundreds of thousands of women and children are fleeing from their homes, or worse, being raped, enslaved or killed. This compels us to act.

Large swaths of land are controlled by this organization. Hundreds of millions of dollars are being funneled into their accounts, and thousands of westerners are traveling to Iraq and Syria to take up their barbaric cause. This compels us to act.

If ISIL is left unchecked, there is no doubt that our interests and allies in the region, and even our own homeland will be attacked. The threats to Canada are real, and they are documented. This compels us to act.

This death cult will not negotiate for territory. They will not hear humanitarian appeals because they have no humanity. They will only be deterred by force. We cannot in good conscience leave this burden entirely to others.

And while a military component is essential in stopping this chaos from spiraling further out of control, it is not the only component. Canada's response so far has demonstrated this multi-pronged approach.

Humanitarian assistance is essential. That's why Canada is leading the way in providing basic necessities to those most in need. Security assistance to Iraqi forces and the Kurdish Peshmerga is also crucial. That's why Canada has lifted more than 1.5 million pounds of equipment to Northern Iraq with Canadian assets.

Stopping the flow of financing to this obscenely well-funded terrorist group is critical. That's why Canada is joining a Bahraini-led working group to empty IS' pockets.

Halting the flow of foreign fighters into Iraq and Syria is also imperative. That's why we passed the Combating Terrorism Act to make this a criminal offence.

Diplomatic support, to help Iraq towards a religiously and ethnically inclusive government is key to helping Iraqi forces secure their borders, and protect their people. Canada has provided this support.

Support for U.S. President Barack Obama's coalition must be robust, and global. Gulf leaders in the Middle East must be around the table, and pulling their weight. I personally met with these leaders in the last week to convey this message. The global response is stronger for their presence

The multi-pronged approach outlined above has been endorsed by leaders from a variety of countries and ideologies. In the U.K., social democrats stood beside Conservatives endorsing military action. In Germany, socialist leaders did the same. This isn't a political issue. It's a moral one.

Canada cannot stand on the sidelines when we see these atrocities. We must do our part to leave IS less powerful, not more. It will be an uphill battle - one that tackles the security challenges in the region, the growing humanitarian need, and the need for a strong united government that speaks for all its citizens and promotes pluralism and prosperity.

Canadians should be under no illusion that the threat of ISIL will be short-lived. The global effort to subdue the threat must be sustained and unwavering. However, this does not mean that Canada's contribution is indefinite. It is not. Canada will constantly re-evaluate our role, and we will tailor our participation to the situation on the ground, the needs of our allies, and the success of our mission.

This is not a test for our government, or one of our allies. This is a test for our generation. Like the fight against tyranny in Passchendaele and the beaches of Normandy, or Communism in Eastern Europe, the struggle against terrorism will define a generation. So we must ask ourselves again: What happens if we don't act?

This Prime Minister rightly believes that is not an option.

## WRIT 200: Assignment

### Assignment:

1. Read the two articles (found in the folder, “Online Lab – January 30, 2014” under the Assessments tab) entitled, “The Downside of Working from Home,” and “Telework or Teamwork? The Evolution of the Office.”
2. Based on your reading, make a list on a blank Word document of the pros and cons of employees working from home (as opposed to in a traditional office space).
3. Then, read the following problem scenario and complete the additional tasks that follow in a separate blank Word document.

### Problem Scenario:

You are Delores Webber, the new CEO of Yippee!, a large social media company. You are facing a major problem, a wicked problem in fact. Nearly 40% of your employees – about 11,000 people – are currently working from home and telecommuting to the office. You have serious concerns, though, about your work-at-home employees’ productivity. You believe collaboration and innovation at a 21<sup>st</sup> century company like Yippee! are more likely to happen when people work together in the same physical space.

Unlike many CEOs of today’s corporations, you have decided to ban working from home, and you must now inform your employees of your decision, which you know will upset them.

### Tasks:

**Write an internal memo** to your employees who work from home telling them that they must now return on a permanent basis to working in the company office. As a new CEO, you want to gain the trust and maintain the goodwill of your employees. Inform them of the problem, the solution and any alternatives, and, if you feel it is appropriate, ask for input about the decision. Create a conversational, approachable tone and emphasize reader benefits. Use what you learned from your reading about the disadvantages of working from home as supportive reasoning in your message. Be sure to include the standard memo headings, TO:, FROM:, DATE:, and SUBJECT:, at the top of the memo.

Refer to the documents, “Writing Negative or Bad News Messages,” and “Template for a Bad News Memo to Employees,” for assistance. They are posted in the same folder as the assignment under the Assessments tab.

**Before you begin writing your memo, write out a PAIBOC analysis of the communication situation.** What is the purpose of your message? Who is your audience and what do you know about the audience? What information must your message include? And so forth.

When your assignment is complete, you should have three things on Word documents:

1. A list of the pros and cons of working from home – all gathered from your reading.
2. A PAIBOC analysis of the communication situation Delores Webber faces as she plans to write to her Yippee! employees.
3. An internal memo written by Delores Webber to her employees telling them of her decision to end the company’s work-from-home policy.

## PFP 200: Assignment – Case Brief

A case brief is a concise summary of a case law decision. The assignment will help students understand the role of case law in our common law system. It will also teach students how to interpret case law decision using examples that are current and significant for policing and the administration of criminal law. The challenge for students is distilling legalese into fundamental points in a condensed and easily understandable format. A sample case brief regarding the case of *R. v. Golden* is posted on the course website. Chapter 3 of your course text also provides information on how to complete this assignment, while Appendix B of your text provides another sample brief.

Students will receive one class of instruction on how to interpret case law and write a case brief. They will then be assigned a Supreme Court of Canada (S.C.C.) constitutional case to read over the following week. Students will then be asked to write their assigned case brief during the next class. Students will be provided with the assignment instructions and a new copy of the case headnote to assist them in writing their brief. No notes are permitted. This assignment is worth 20% of your final grade.

### Requirements:

1. There is no minimum length. Length should not exceed three handwritten pages.
2. A case brief is not a forum for voicing your opinion about the correctness of the decision. It is a summary of the decision made by some of the top legal minds of our country. The accuracy of your analysis of the case is what counts.
3. Most of the material for the case brief is contained in the “headnote”, usually found on the first two pages. Additional reading of the judge’s ruling may be necessary to summarize the reasons for the decision (*ratio*).
4. Your case brief will follow these headings exactly:
  - Style of cause (Title)
  - Procedural history
    - In this section, trace the appeal process from the trial court to the S.C.C.
    - What TRIAL court issued the original decision?
    - What was the decision?
    - Who appealed the case originally?
    - Which court heard the first appeal and what was the decision?
    - Who appealed the case to the S.C.C.?
  - Facts
    - Brief paraphrased summary of the facts.
    - Include the details of the offence.
    - Include the general trial or case facts leading up to the issue(s).
  - Issues
    - These are often clearly stated in the decision and are always phrased as questions that the S.C.C. is being asked to answer.
  - Decision (of the Supreme Court)
    - Indicate whether the appeal was “allowed” or “dismissed”?
    - Interpret what that decision means in regards to the issues? It is not enough to say the appeal was allowed or dismissed, you must explain the meaning to the appellant or respondent.
    - Was it a majority or unanimous decision?

- *Ratio Decidendi* (Reasons for the decision – “*Ratio*” for short).
  - A brief and concise summary of the reasons of the judge who wrote the decision for the S.C.C.
  - Do not give a summary of the dissenting or trial judge’s viewpoint.
  - Do not give your viewpoint.
  - This is the most difficult section and will often take several paragraphs to explain the reasons for the decision of the court.

### PFP 211: Assignment – Essay Topics

The essay should be typed and double-spaced with 1-inch margins on all sides. The essay will be of proper essay format, with an introduction, conclusion and proper paragraphs. This is a research essay and as such, **WILL REQUIRE PROPER APA STYLE FORMATTING**. The essay will be a minimum of 1000 words, no essay under 1000 words will be accepted.

1. Discuss the work of Elizabeth Loftus in regards to memory and its implications for police officers when questioning witnesses.
2. Compare and contrast the different approaches to interviewing suspects available to police officers.
3. Discuss briefly the Kaufman Report and highlight the implications for police officers and investigations.
4. Discuss the various Charter responsibilities that a police officer has when questioning a suspect and attempting to obtain a statement.
5. Discuss NLP (neurolinguistic programming) and its uses in police work.
6. Discuss nonverbal communication and its uses in police work.
7. Describe and discuss the roles and responsibilities of the first officer at the scene of a homicide.
8. Chose a criminal case which interests you. This case can be recent or old depending on your interest and should come from a country where modern police practices are used (Canada, United States, Great Britain etc.). Briefly discuss the case. Discuss in more detail the police investigation of that crime. You may also wish to discuss what the police may have done better to solve the crime more quickly or more efficiently.
9. Discuss the work of criminal profilers.
10. Any topic of your choice **provided** it directly relates to the course and it has been approved by the instructor.

## GCRT 100: Final Examination

### **A. On the separate booklets provided, answer the following questions pertaining to enumerative inductions. Make specific reference to the principles and concepts discussed in the course.**

1. Joe wants to understand how recent high school graduates from Ontario, who have experienced difficulties finding employment, have had to change the way they live as a result of being out of work. So he puts a notice on a job search bulletin board at a career centre in two major cities, Toronto and Ottawa, giving his phone number and asking people who are willing to be interviewed to contact him. Would the conclusions Joe draws from his research be backed by adequate evidence? Explain why or why not. How might his research techniques be improved to yield better results?
2. Can the internet be considered a reliable means of conducting surveys for the purpose of making enumerative inductions? Explain your answer.

### **B. On the separate booklets provided, answer the following questions pertaining to arguments from analogy. Make specific reference to the principles and concepts discussed in the course.**

1. The following is an argument from analogy written by J.M. Fischer whose aim is to criticize Judith Jarvis Thomson's main argument from analogy concerning the violinist. Fischer does not proceed by criticizing the comparisons in Thomson's analogy, but instead offers a new analogy with a conclusion opposite to Thomson's. Explain all the relevant similarities between this analogy and Thomson's, and whether you think it demonstrates a weakness in Thomson's argument. (Note: it is not intended to address any of the other analogies in her article.)

Suppose you have planned for many years to take a trip to the Himalayan Mountains. You have secured a cabin in an extremely remote and inaccessible place. You wish to be alone; you have enough supplies for yourself, and also many extras in case of an emergency. Unfortunately, a very evil man has kidnapped an innocent person and brought him to die in the desolate mountain country near your cabin. The innocent person wanders for hours and finally comes to your cabin.

You have the following problem. You can radio for help, but because of the remoteness and inaccessibility of your cabin and the relatively primitive technology of the country in which it is located, the rescue party will require nine months to reach your cabin. Thus, you are faced with a choice. You can let the innocent stranger into your cabin and provide food and shelter until the rescue party arrives in nine months, or you can forcibly prevent him from entering your cabin (or staying there) and thus cause his death (or perhaps allow him to die). (It is evident that he will die unless you allow him to stay in the cabin.)

It seems to me that it would be morally impermissible for you to prevent the innocent stranger from coming into (or staying in) your cabin. Even though it is your cabin and allowing the stranger in would cause considerable inconvenience, you may not let him die on your doorstep.

2. Explain ONE other analogy besides the one involving the violinist that Thomson uses to further her argument in "A Defense of Abortion." Be sure to include the specific issue that the analogy is supposed to address, and the conclusion that Thomson draws from her use of it.

## Appendix G: Essential Employability Skills Pilot Project: Faculty Information

Humber has a ten-year history in emphasizing essential employability skills as an important part of student learning. Each course outline identifies skills that are taught, reinforced and assessed. Until now, there has not been a consistent way to measure students' progress in essential skills and to communicate that progress to students, term-over-term.

Humber has joined a consortium of colleges and universities interested in developing a reliable method for tracking student attainment of essential employability skills. This project is initiated and funded by HEQCO. In a letter to HEQCO in support of Humber's participation, President Chris Whitaker said, "Student success is a key theme in our current strategic planning process. This project aligns with Humber's concern for measuring, understanding and improving student outcomes." Each institution is tackling the challenge in its own way, and the group meets together periodically to share what we have all learned so far.

The Critical Thinking & Written Communication Skills Assessment Tool has been designed by a pilot project group of faculty members, working with a steering committee at Humber, to develop a reliable way to assess and track students' accomplishments in these two important essential employability skills. This fall, three programs in three different schools are participating in a pilot to use and assess this instrument. Both program faculty and faculty from the English Department will be participating. In this phase of the research process, we are asking two crucial questions:

1. Is this instrument easy for faculty to use?
2. Does this instrument enable faculty to give students meaningful information about their current level in the important areas of critical thinking and clear communication?

Each school participating in the pilot has representation on the pilot committee.

This fall, all students at the Lakeshore Campus in these three programs will be assessed by faculty piloting the instrument. Members of the English faculty are working with professors in the selected programs to assess student outcomes in the early semesters, when students are working to master basics in communication and argumentation. In semester 1, students will be assessed at the beginning and at the end of COMM 200. In semester 2, students will be assessed in COMM 300. In upper semesters, students will be assessed by professors in the programs, in one course, designated by the pilot committee in consultation with program coordinators and Associate Deans.

The instrument is different from the typical 'rubric' used at Humber in several important ways:

1. The span from *No Evidence* to *Mastered* represents a complete continuum from postsecondary entrance to senior professional level. Because the objective of this assessment is to tell students their level of accomplishment as a potential employee, rather than as a Humber student, there are levels in this instrument that they are unlikely to attain by graduation.

We anticipate that most students' first assessments will have many areas assessed as "no evidence" or "poor." This simply means that there is much room for students to grow and to learn — a good

message for a student beginning a program of study. Few students will attain the levels “excellent” or “mastered” although some mature students, with years of experience in professional fields, may reach these levels.

It is important that students are clear that this assessment of their employability skills has no direct impact on their grades.

2. The purpose of this assessment is to tell students about their progress in developing a set of skills, rather than about mastering a technique or a body of knowledge. We believe it can also be a useful way for professors to show students that there is a “small arc” to their learning (mastering the course materials and doing well on the tests, assignments and exams), a “medium arc” (mastering their program of study and graduating from college with a diploma, degree or certificate), and a “lifelong arc” (continuing to improve their essential skill set, including critical thinking and critical communication). Often as educators it is difficult for us to explain to students that getting a good grade in a course or a program is not enough to ensure ongoing career success. This new assessment is one way to demonstrate to students that they will continue to develop essential skills, as well as leverage their program knowledge and skills, in order to progress in their chosen career path.
3. Students' accomplishments are assessed as a complete package (a gestalt). There are no 'part marks.' There are no 'right answers.'
4. This rubric is a work in progress. It will need to be reviewed and likely revised more than once as it is used in different schools. Although the criteria and levels will not change, we will need to develop a more complete description of the meaning of each phase of each criterion. In the early stages of the project, users will collaborate to improve the instrument and information that accompanies it. Eventually we will have an instrument that can be used throughout the college to give a consistent message about both the value of, and students' attainment of, essential skills during their time at Humber.

The instrument will be used once per term, in a pre-determined course that has a significant reading and writing component. The assignment to be assessed will be one that is already graded as part of course work. The assignment will have important characteristics:

1. Students will prepare for the assignment by reading one or more sources that provide complex information that students will need to engage with critically in order to complete the assignment. In the upper semesters, the source material may be typical of the kind of information students will use in their professional lives.
2. The assignment will be written in class. It may be a test or an exam or it may be a series of shorter answers or an essay assignment.
3. The assignment will require students to use the material they have read to construct their own argument or to defend their own decision about a question posed by the instructor.

Students will receive a copy of the assessment instrument along with their graded work. In addition, the research team will collect the instruments and create a database of all students' levels. Over time, students will be able to access their own record on the database and track their own progress. While students in the

upper semesters at the beginning of this project will not have the same amount of data, term-over-term, they will receive useful information about their readiness for the world of work.

## FAQ

*What are faculty responsibilities in this process?*

Faculty members who are participating in the pilot project are asked to:

- Review the instrument and the descriptors for each category
- Review with students the purpose of the assessment and explain how the instrument will be used to assess one graded in-class assignment
- Assess the pre-identified assignment, for the essential skills level exhibited, after it is graded for course credit
- Send a copy of the instruments to the research assistant (to be identified) through inter-campus mail
- Return the original instrument to the student

Participating faculty will also be invited to give feedback about the instrument to the research team.

*How will the generic skills assessment be reflected in students' grades?*

There will be no effect. The generic skills assessments are formative and designed to give students information about their progress in improving these employability skills.

*Will this assessment require students to do another in-class assignment?*

No. The generic skills rubric will be an assessment tool used to give additional feedback for an existing, graded course assignment.

*Will faculty be expected to change the way they teach their courses or to change course outlines?*

No. Generic/employability skills are already a part of every course outline at Humber. This project will assess skills that are already part of the learning outcomes for every student in every course.

## **CRITICAL READING AND WRITING**

***The focus is on the argument's strength and logical flow.***

### **Thinking: Interpretation**

**Clearly and comprehensively identifies key issues.** The writer identifies the author's point of view or brings together multiple points of view in well-defined categories that create a logical structure for ideas and makes clear how ideas are related to one another.

### **NO EVIDENCE**

There is no evidence that the writer has read the material. There are no references to any of the information the material provides.

### **POOR**

The writer has copied ideas from the material, but the information selected is disconnected, or reported without organization or sense of relationship.

**FAIR**

The writer has reported ideas from the material, often using his/her own words; the information is incomplete, but most important information is reported; an attempt has been made to comment or to show relationships.

**GOOD**

The writer has identified the key issues or information always in his/her own words. The information is organized in a logical way and relationships between ideas are clear.

**VERY GOOD**

The writer reports all the key ideas or issues in his/her own words, and has created a coherent frame for all the information and organizes it logically and shows relationships clearly.

**EXCELLENT**

All key issues are identified and the writer provides a sophisticated structure to organize the ideas that explains or defines the material by pointing out surprising relationships or unexpected significances.

**MASTERED**

The writer's presentation of the key issues or information is unique, engaging and challenging to the reader. This writing belongs in a peer-reviewed journal.

**Thinking: Analysis**

**Identifies similarities, differences, multiple points of view based on logic.**

Within the constructed categories, the writer organizes the author's material in order to consider the author's logic. The writer examines the strength of the author's ideas and the logical relationships between ideas.

**NO EVIDENCE**

The writer demonstrates no understanding of the ideas in the source material. The writer's work may be on the same topic as the source, but there is no engagement with the original author's ideas.

**POOR**

The writer attempts to discuss the source material by repeating and passing judgment without offering any explanation of the author's ideas or the author's errors. The writer's argument is overly simplified and/or illogical.

**FAIR**

The writer repeats ideas and arguments in the original and then offers an opinion that is either unsubstantiated or is weakly supported. The writer understands the ideas he/she has read but not the author's logic.

**GOOD**

The writer identifies the key issues and ideas and explains how they fit together to make the author's position clear. The writer can identify places where the author's logic is flawed, or where information is insufficient.

**VERY GOOD**

The writer uses the author's argument to construct an independent argument that may agree, disagree or partially agree or disagree with the original. It is always clear to the reader whose point of view is being offered (author or writer) and how the two are related to one another.

**EXCELLENT**

The writer offers a sophisticated analysis of the original material that blends the author's ideas with the writer's compelling, unique point of view. The reader is confident that he/she completely understands the original author's point of view as well as the writer's substantiated opinion.

**MASTERED**

The writer presents a genuine contribution to understanding beyond the author's ideas.

**Thinking: Evaluation**

**Assesses relevance of contexts, statements, reasoning and alternatives.**

The writer considers the credibility of the author's point of view by evaluating the way the author organized his/her ideas (structure) and shows logical relationships, either expressed or implied, between ideas.

**NO EVIDENCE**

The writer does not indicate awareness of the author's context for his/her ideas or the relationships between ideas. The student is writing only about his/her own ideas.

**POOR**

The writer refers to the author's beliefs and support for those beliefs without considering the logic of the author's context. The references may offer the writer's opinion about the author's beliefs but do not offer any logical support for this opinion.

**FAIR**

The writer offers his/her overall assessment of the author's beliefs and support for those beliefs. The writer offers a weak critique of the logical strength of the author's support for his/her beliefs.

**GOOD**

The writer offers a logically organized assessment of the author's beliefs and support for those beliefs. The writer critiques the logical organization and strength of the author's argument and the author's inferred conclusions.

**VERY GOOD**

The writer engages in a dialogue with the author's ideas, assessing both the quality and strength of the author's argument. The writer considers the logical flow of the author's ideas and comments on both the stated and implied connections between the author's ideas.

**EXCELLENT**

The writer offers a lively, engaged dialogic assessment of the author's argument. There is a sophisticated understanding of the author's ideas and their logical relationship to one another, and the writer offers a fresh and surprising critique of the author's ideas and support for those ideas.

**MASTERED**

The writer's assessment helps the reader to think beyond the author's ideas.

**Thinking: Inference**

**Forms reasonable conclusions.** The writer draws from both the author's ideas and the writer's own ideas to come to a new, personal hypothesis and conclusion.

**NO EVIDENCE**

The writer does not reach a reasonable conclusion. The writing may have a summative conclusion (this is a review of the information) but no conclusive opinion (and this is the reasoned conclusion I draw from this information.) The writer may offer a conclusive opinion that has no relevance to the author's ideas.

**POOR**

The writer reaches unsupported conclusions or conclusions based largely on his/her own ideas with little reference to the author's ideas. There is little sense of a hypothesis that leads to logical, deductive reasoning.

**FAIR**

The writer articulates a hypothesis or theory and connects information from the author as well as the writer's own ideas to reach a conclusion regarding the hypothesis. The hypothesis may be weak or the logical connections between hypothesis, reasoning and conclusion may be insecure or missing.

**GOOD**

The writer logically moves from a secure hypothesis to a reasonable conclusion. The author's ideas are used as starting points to provide support for the writer's own conclusions. The writer considers more than one possible alternative and demonstrates the strength of his/her final conclusion in contrast to alternatives.

**VERY GOOD**

The writer creates a strong, deductive argument that engages the reader by presenting alternative, logical hypotheses, considering each by identifying the elements of support from both the author and the writer's own knowledge and reasoning, questioning these elements, and drawing a conclusion that is both logical and strongly supported.

**EXCELLENT**

The writer creates a strong, persuasive deductive argument that discusses alternative, logical hypotheses, examines each using seamlessly connected ideas from both the author's and the writer's points of view. It is always clear to the reader whose ideas are being considered.

**MASTERED**

The writer's conclusion moves beyond the author's ideas to offer a unique insight.

## **Thinking: Explanation**

### **Coherently presents results of one's own reasoning.**

The writer's reasoning is presented in a logically structured, consistent argument. The connections between the writer's ideas are always clear.

#### **NO EVIDENCE**

The reader has no idea what the student's conclusion is, or the reader cannot understand how the writer arrived at the conclusion s/he offers. The writer has not revealed his or her reasoning process.

#### **POOR**

The writer does not provide a context for the argument (the big picture). The reader can sometimes follow the writer's reasoning, but the reader is required to fill in connecting steps between ideas or is unable to see how the information the writer presents is relevant to his/her hypothesis.

#### **FAIR**

The writer provides a confusing or incomplete overview of his/her thinking (a blurred big picture) and explains his/her reasons in a disconnected or confusing way. All the ideas seem to be relevant to the argument, but not always logically connected to one another. It is difficult for the reader to see how the writer arrived at the conclusion.

#### **GOOD**

The writer provides a clear context and overview for his/her argument as well as a logically connected series of ideas that help the reader to understand why as well as how the writer has reached his/her conclusion. The reader understands the writer's reasoning process and could apply the process in a new context.

#### **VERY GOOD**

The writer moves between overview and detail to present a convincing description of his/her reasoning process. The reader is never confused by the information presented or by the logical flow of the argument.

#### **EXCELLENT**

The writer's thought process is clear and sophisticated.

#### **MASTERED**

The reader can go beyond reading to engage in a critical appraisal of both the writer's ideas and the writer's process.

## **Thinking: Self-Regulation**

Separates personal opinions and assumptions from the facts. The writer monitors his/her own thinking process, considers multiple points of view and uses these to question his/her own judgments.

#### NO EVIDENCE

The writer's writing is a series of ideas, assumptions and assertions. There is no sense that the writer has considered alternative points of view or questioned his/her own opinions in any way. The writer is unaware of his/her own bias.

#### POOR

The writer usually separates facts from opinions and indicates which opinions are hers/his and which come from the author. The writer may support opinions with other ideas, but does not question the validity of her/his own opinions.

#### FAIR

The writer consistently identifies opinions and is occasionally aware that s/he has inferred information or ideas based on other information from the author and/or her/his own knowledge. There is some attempt to consider the validity of inferences and opinions, but the analysis is either a simple statement of 'truth' or a collection of related facts.

#### GOOD

The writer is consistently aware of assumptions and inferences made on the basis of learning, experience, culture or other influences, and is able to consider the validity of these assumptions and inferences. The writer moves outside the frame of his/her own understanding and expectations.

#### VERY GOOD

The writer questions her/his own beliefs and assumptions and compares them to those of the author. The writer goes further to examine the strengths and weaknesses in each point of view. The writer questions both the components of the argument's support and his or her own conclusions.

#### EXCELLENT

The writer offers a thorough analysis of the strengths and weaknesses of all beliefs and assumptions. S/he demonstrates an ability to tolerate ambiguity by presenting points of view that are apparently in opposition and then demonstrating points of agreement within the argument as well as points of difference.

#### MASTERED

The writer is able to reconsider even deeply held beliefs in a convincing and sophisticated argument.

#### **COMMUNICATION**

***The focus is on the skill of presentation rather than the strength of the argument.***

#### Communication Structure

Writing is logically organized. The thesis or main idea, and the writer's conclusion or opinion, are both easy to locate. Supporting information is logically connected. The structure of the writing makes the writer's reasoning easy to follow and convincing.

#### NO EVIDENCE

The reader is unable to discern what the focus of the writing is and is frequently frustrated by a sense of discontinuity.

**POOR**

The writing has a basic outline. The connection between the reasons is linear (first, second, third) with little indication why the writer has chosen a particular order. Some ideas seem to be irrelevant to the argument.

**FAIR**

Writing is easily discernible, logically organized and there is a weak logical relationship between the writer's reasons (strongest to weakest, for example). The reader may be occasionally confused by the order of ideas, but can make reasonably confident inferences.

**GOOD**

Writing is logically organized. The reader is almost never confused about the relationship between ideas or points in the argument.

**VERY GOOD**

The overall structure presents the argument in a clear, complete context.

**EXCELLENT**

Writing has a sophisticated internal structure that engages the reader.

**MASTERED**

The writing is an exemplar of a logical, sophisticated argument structure.

**Communication: Style**

The reader is able to discern from the writing the target audience; the tone and the vocabulary are appropriate for this target audience. If 'jargon' is used, it is appropriate for target audience and purpose. *Unless the student is asked to write creatively, it is assumed that the level of language should reflect good professional style.*

**NO EVIDENCE**

The level of language is inconsistent or is conversational. The writer 'writes as s/he speaks'. Contractions and/or slang are used frequently and create confusion. The reader cannot guess at the target audience.

**POOR**

The writer shows some awareness of the target audience, but is not able to control the tone or the word choice for that audience. The tone is overly authoritative or overly familiar.

**FAIR**

The writer shows some control over the tone and language choices, but s/he is not consistently successful. The tone is inconsistent. Jargon may be unexplained or poorly explained for the intended reader.

**GOOD**

The tone and language are largely consistent for the intended audience. There are lapses or errors, but they do not disrupt the reader's experience.

**VERY GOOD**

Tone is consistent and appropriate for the intended audience. Even if the current reader is not a member of the intended audience, it is clear to the reader who is being addressed, and that the language is appropriate for the target reader.

**EXCELLENT**

Tone and language have a wide appeal and enable both intended and unanticipated readers to engage. The writer shows control of context-specific language.

**MASTERED**

The reader is unaware of the 'tone' of the writing because it accurately reflects the intended audience while still enabling an unanticipated reader to engage with the text.

**Communication: Mechanics**

Grammar, spelling and punctuation are correct. The way ideas are grammatically expressed makes them easy to understand.

**NO EVIDENCE**

Writing is incoherent.

**POOR**

Although the reader can understand the writer's general ideas, the reader is frequently confused by errors. Errors make it impossible for a reader to guess at meaning.

**FAIR**

Errors create confusion but a reader can make reasonably confident guesses about intended meaning.

**GOOD**

Errors are evident but do not create confusion. The reader is generally not distracted.

**VERY GOOD**

The work is mechanically error free and the grammar and diction draw the reader into a lively engagement with the work.

**EXCELLENT**

The grammar is sophisticated and the writer demonstrates an ability to select the most appropriate language structures for making his/her point.

**MASTERED**

The grammar is sophisticated and creates a transparent interface between author and reader. The reader feels as though the writer is speaking directly to the reader in a way that is engaging and meaningful. The reader trusts the writer's authority and reliability.

## Appendix H: Results: Data Presentation and Interpretation

### List of Tables

|   |    |
|---|----|
| Table 1: The Convergent Validity Investigation Correlations between total CTWC skills scores and final exam grades/final course grades.....   | 32 |
| Table 2: The Inter-rater Reliability Investigation Intra-class correlations for level of agreement on ratings of level of CTWC skills achievement and 95% confidence intervals for ICC..... | 34 |
| Table 3: Cronbach’s Alpha Coefficients for the Reliability (Internal Consistency) Investigation (Total Scale) .....   | 35 |
| Table 4: Cronbach’s Alpha Coefficients for the Reliability (Internal Consistency) Investigation (Sub-Scales) .....  | 35 |
| Table 5: Item-total Correlations (Sub-scores on Individual Items to Total Scale Scores) for the Reliability Investigation .....   | 36 |
| Table 6: Descriptive Statistics and Paired-Samples Correlations and T-Tests for the CTWC Skills Scores by Time .....  | 38 |
| Table 7: Percentages of Student Work Scored According to Levels of Achievement on the CTWC Skills Scorecard by Time (2014–2015).....  | 40 |
| Table 8: Differences in CTWC Skills Scores by Course (2014–2016) .....  | 42 |
| Table 9: Differences in Total Scores on CTWC Skills by Course (2013–2014 and 2014–2016).....  | 48 |
| Table 10: Reading and Writing and Critical Thinking Course Comparisons .....  | 49 |
| Table 11: Police Foundations Course Comparisons .....   | 50 |

## List of Figures

|  |    |
|--|----|
| Figure 1: Panel Group: Total CTWC Skills Scores for WRIT 100 (Fall 2014) .....   | 37 |
| Figure 2: Panel Group: Total CTWC Skills Scores for WRIT 200 (Winter 2015).....  | 37 |
| Figure 3: CTWC Skills Scores by Time (2014–2015) .....   | 39 |
| Figure 4: Total Scores on CTWC Skills by Time (2014–2015) .....  | 41 |
| Figure 5: Differences in Total CTWC Skills Scores by Course (Means) (2014–2016) .....  | 43 |
| Figure 6: CTWC Skills Scores by Course (2014–2016) .....   | 43 |
| Figure 7: Differences in Total CTWC Skills Scores by Course (Medians) (2014–2016) .....  | 44 |
| Figure 8: Total CTWC Skills Scores for WRIT 100 (Fall 2014) .....  | 44 |
| Figure 9: Total CTWC Skills Scores for WRIT 200 (Winter 2015).....   | 45 |
| Figure 10: Total CTWC Skills Scores for PFP 200 (Fall 2014) .....  | 46 |
| Figure 11: Total CTWC Skills Scores for PFP 211 (Fall 2014) .....  | 46 |
| Figure 12: Total CTWC Skills Scores for GCRT 100 (2015–2016).....  | 47 |
| Figure 13: Course Comparisons of Total Scores on CTWC Skills (2014–2016) .....   | 51 |
| Figure 14: Faculty Perceptions of the Usability of the CTWC Skills Scorecard (2013–2016).....                                  | 53 |
| Figure 15: Faculty Perceptions of the Meaningfulness of the CTWC Skills Scorecard (2013–2016) .....                            | 54 |
| Figure 16: Faculty Perceptions of the Usability and Meaningfulness of the CTWC Skills Scorecard<br>by School (2013–2016) ..... | 55 |

## Results: Data Presentation and Interpretation

### Validity<sup>1</sup>

Does the CTWC skills scorecard measure what it is intended to measure? Do the individual indicators of the skills scorecard devised to measure CTWC really measure those concepts (construct validity)? Do experts agree that the individual indicators and overall measure reflect the concepts? Do faculty in the field agree (content and face validity)?

The Delphi research method that APA experts used to arrive at the consensus definition of the CTWC constructs that serve as the foundation of this study provide the skills scorecard with a substantial degree of content validity (Facione, 2013; Saxton et al., 2012). Indeed, when multidisciplinary and multinational experts are relied on to verify that a measure or a scale "...covers the full range of the concept's meaning" a high degree of content validity can be established (Chambliss & Schutt, 2003, p. 69 as cited in Finley, 2011, p.1). The CTWC skills scorecard development process at Humber itself, involving the steering and pilot committees and faculty close to student learning and outcomes assessment across campuses, schools and programs, further establishes a credible extent of face validity (Finley, 2011, p.1). In particular, after the 2013–2014 pilot phase, campus consultations resulted in a revised, simplified scorecard with increased consensus that the remaining six items belonged best in the scale, and the overall measure better reflected the Delphi definition and the CTWC constructs concerned. Thus, we suggest the development, testing and re-design processes detailed in earlier sections provide the CTWC skills scorecard with substantial amounts of content and face validity.

How well do students' CTWC skills scores compare with other established measures (criterion validity)? Do students' CTWC skills scores correlate with their scores on an established CT skills measure such as the Test of Everyday Reasoning (TER) (concurrent validity)?

The pilot phase of the study also analyzed concurrent validity by performing a gold standard assessment of generic learning in a randomly selected subset of 54 students enrolled in college writing (COMM 200, 300), business (BMGT 300, 500) and police foundations (PFP 301) courses. These scores were compared to the results of the original CTWC skills scorecard applied to course assignments (Humber College, 2013–2014). The TER, a member of the CCTST family of CT skills tests, is known to provide objective and reliable data on the CT skills of high school and college students, and was chosen as the established measure. It consists of a series of multiple-choice questions that provides each student with an overall reasoning score related to reflective decision making as well as five separate scale scores (on analysis, inference, evaluation, induction and deduction). A paired samples correlation for the data revealed a significant relationship between students' scores on the CT component of the original skills assessment tool and their corresponding CT scores on the TER,  $r = 0.464$ ,  $n = 54$ ,  $p < 0.01$ , two tails (Humber College, 2013–2014, p. 20). Correlation coefficients discussed in this study indicate the strength and the direction of the relationship between two variables, ranging from -1.0 (perfect negative correlation) to 0.0 (no correlation) to 1.0 (perfect positive

---

1 All data in the second phase of the study were anonymized and then analyzed using IBM SPSS Statistics 23. We primarily relied on correlational statistical procedures to establish the validity and reliability of the revised CTWC skills scorecard: Pearson's  $r$  and Spearman's rho correlation coefficients (convergent validity), the two-way, mixed, consistency intra-class correlation coefficient (ICC) (inter-rater reliability (IRR)), and Cronbach's alpha and item-total correlations (internal consistency).

correlation). In particular, Cohen (1988) suggests the following guidelines for interpretation of Pearson's  $r$  correlation coefficient:

- 0.10 to 0.29 (small),
- 0.30 to 0.49 (medium)
- 0.50 to 1.0 (large).
- 

Accordingly, the initial concurrent validity investigation uncovered a significant, positive and moderate correlation between students' total scores on the CTWC skills scorecard and their overall TER scores, providing preliminary evidence for criterion validity (Humber College, 2013–2014, p.20). However, since validity should not be established in studies with a singular measure, we felt it would be wise to perform additional convergent assessments of an alternative form of validity — construct validity — in the second phase (Finley, 2011, p. 1).

### *Convergent Validity*

Do students' CTWC skills scores correlate with other theoretically similar constructs such as grades on assessed work and final course grades (convergent validity)?

In the second phase (2014–2016) of the study, students' total CTWC skills scores in the reading and writing and CT courses (WRIT 100 and GCRT 100 respectively) were also assessed using the appropriate correlation coefficients with final grades on the associated exams.<sup>2</sup> We reasoned that large correlations between scores on the revised CTWC skills scorecard and scores on exams explicitly designed to assess those same learning outcomes would provide evidence of convergent validity. Specifically, convergent validity is adequate when a scale shows Pearson's  $r$  (or Spearman's  $\rho$ ) values of at least 0.50 in correlations with measures of a similar construct (Velyvis et al., 2016). The summary of the convergent validity investigation is illustrated in Table 1. Data analysis found that total CTWC skills scores were positively and largely correlated with final exam grades in WRIT 100,  $p = 0.670$ ,  $n=102$ ,  $p<0.01$ , two tails (Table 1). Further, skills scores and final exam scores were positively and largely correlated in GCRT 100,  $r=0.721$ ,  $n=137$ ,  $p<0.01$ , two tails (Table 1). We argue that such convergent validity provides support for the construct validity of the scorecard.

Furthermore, students' total scores on the CTWC skills scorecard were correlated with their final course grades, as shown in Table 1.<sup>3</sup> We rationalized that total CTWC skills scores should parallel overall performance in reading and writing courses that explicitly promise the same skills will be built upon completion of the semester and the required evaluation components. Positive and large correlations were indeed found between students' total CTWC skills scores and their final course grades in WRIT 100 ( $r=0.597$ ,  $n=102$ ,  $p<0.01$ ) and WRIT 200 ( $r=0.640$ ,  $n=120$ ,  $p<0.01$ ) (Table 1). Moreover, there were lower, but still positive, large and moderate correlations between total CTWC skills scores and overall performance in the courses GCRT 100 ( $r=0.508$ ,  $n=137$ ,  $p<0.01$ ), PFP 200 ( $r=0.583$ ,  $n=256$ ,  $p<0.01$ ), and PFP 211 ( $r=0.462$ ,  $n=53$ ,

<sup>2</sup> In WRIT 100, 102 exam grades were assessed (out of the total 157). In GCRT 100, exam grades were evaluated for the total sample (137). All exam grades were either original or recoded numeric scores out of 100. The one exception was the final exam in WRIT 100 (recoded into an ordinal measure with five grade categories, 0.00, 50.00, 66.67, 83.33 and 100.00).

<sup>3</sup> All course grades were either original or recoded numeric scores out of 100.

$p < 0.01$ ) respectively in which the CT learning outcomes related to skill development are more implicitly embedded (Table 1). Again, the construct validity of the scorecard is supported by the convergent validity. Taken together, we believe the assessments of multiple forms of validity above authenticate to a substantial degree the CTWC skills scorecard as valid.

**Table 1: The Convergent Validity Investigation**  
Correlations between total CTWC skills scores and final exam grades/final course grades

| Course   | Variable           | Correlation with Total Scores | N   | Total CTWC Skills Score |      | Grades         |                 |
|----------|--------------------|-------------------------------|-----|-------------------------|------|----------------|-----------------|
|          |                    |                               |     | M                       | SD   | M              | SD              |
| WRIT 100 | Final Exam Grade   | .670**<br>(Spearman's rho)    | 102 | 16.28                   | 5.75 | 66.67<br>(Mdn) | NA<br>(Ordinal) |
|          | Final Course Grade | .597**                        | 102 | 16.28                   | 5.75 | 64.50          | 18.06           |
| WRIT 200 | Final Course Grade | .640**                        | 120 | 18.89                   | 5.12 | 71.39          | 13.00           |
| GCRT 100 | Final Exam Grade   | .721**                        | 137 | 13.26                   | 4.63 | 56.70          | 18.72           |
|          | Final Course Grade | .508**                        | 137 | 13.26                   | 4.63 | 63.12          | 15.77           |
| PFP 200  | Final Course Grade | .583**                        | 256 | 15.39                   | 6.90 | 69.63          | 12.00           |
| PFP 211  | Final Course Grade | .462**                        | 53  | 17.72                   | 6.23 | 71.41          | 9.43            |

Notes: 1) All correlations reported are Pearson's  $r$  correlation coefficients unless otherwise indicated. Two asterisks (\*\*) indicate correlation is significant at the 0.01 level (two-tailed). 2) Total CTWC skills scores range from 1–6 (poor), 7–12 (fair), 13–18 (good), 19–24 (very good) to 25–30 (excellent).

### Reliability

What is the consistency of the CTWC skills scorecard when it is repeated? Is the scoring among faculty consistent (inter-rater reliability)?

Inter-rater reliability was assessed using a two-way mixed, consistency ICC to determine the degree that three faculty members provided consistent ratings of the CTWC skills scorecard items and totals across a subset of randomly selected students' exams in the reading and writing course, WRIT 100 (Landers, 2015). Specifically, during the spring of 2016, a subsample of students' exams ( $N=24$ ), originally scored by rater A in the fall of 2014, was re-scored by raters B and C. The ICC was calculated for each score on the individual items of the scorecard as well as for the sums of total scores for comprehension, integration of writer's ideas, and overall CTWC skills. Since there were six items and three sums of total scores, nine two-way models were produced and are presented in Table 2.

Essentially, the ICC represents the proportion of the variation in the CTWC skills ratings that is due to actual student achievement, rather than factors such as how the instructors interpret the scorecard (McGraw & Wong, 1996; Graham et al., 2012). ICC scores range from 0.0 to 1.0, where a 1.0 indicates perfect agreement, and a 0.0 indicates no agreement. Subtracting the ICC from 1.0 gives the proportion of variation between instructors that occurs due to rater disagreement (Graham et al., 2012, p. 7). Thus, the ICC is a measure of IRR examining the relative consistency of the instructors' judgements about the relative levels of skill achievement. Ratings closer to 1.0 indicate less variation among the three faculty members in evaluating the students' skill performances in the student artifacts. Guidelines for interpreting ICC are:

- Less than 0.40 (poor)
- Between 0.40 and 0.59 (fair)
- Between 0.60 and 0.74 (good)
- Between 0.75 and 1.00 (excellent) (Cicchetti, 1994).

Moreover, although there is disagreement on what constitutes a sufficient ICC score in the literature, many experts suggest a minimal benchmark of 0.70 (Hays & Revicki, 2005).

Data analysis found that the ICC for total scores on the CTWC skills scorecard was in the excellent range, ICC = 0.75 (Cicchetti, 1994) (Table 2). Similarly, the ICC for total scores on comprehension and integration of writer's ideas were excellent, ICC = 0.81 and ICC = 0.78 respectively (Cicchetti, 1994) (Table 2). Excellent to good levels of IRR were also found in four of the six scorecard categories (Table 2). Overall, this indicates that the instructors typically had an acceptable level of agreement, and suggests that total and individual item CTWC skills scores were rated rather similarly across instructors. Put simply, students' levels of skill achievement were generally assessed accurately by the instructors when the scorecards were used (i.e., the variation in ratings can be attributable to actual student achievement rather than instructor error) (Graham et al., 2012). At the same time, the fair agreement in the scorecard category of inference (ICC = 0.57), as well as the poor consistency for explanation (ICC = 0.32), suggests some need for further training of faculty (Saxton et al., 2012). Here, prior studies suggest that scoring of individual items can achieve higher consistency if the raters are similarly trained as experts in the area in question (Graham et al., 2012; Hansson et al., 2014). Accordingly, we argue that the CTWC skills scorecard can be used by faculty to score student work in a consistent manner, if proper training is provided before assessment. Additional training will be needed to increase inter-rater reliability to acceptable levels in all scorecard items and sums of total scores, and future reliability analysis should be conducted (Saxton et al, 2012).

**Table 2: The Inter-rater Reliability Investigation**

Intra-class correlations for level of agreement on ratings of level of CTWC skills achievement and 95% confidence intervals for ICC

| Scorecard Item  | Level of Achievement |      |             |      |         |      | Level of Agreement |                   |
|---|----------------------|------|-------------|------|---------|------|--------------------|-------------------|
|   | Fall 2014            |      | Spring 2016 |      |         |      |                    |                   |
|   | Rater A              |      | Rater B     |      | Rater C |      | ICC                | 95% CI            |
| M   | SD                   | M    | SD          | M    | SD      |      |                    |                   |
| <b>Comprehension</b>  |                      |      |             |      |         |      |                    |                   |
| Interpretation  | 3.26                 | 0.92 | 2.35        | 0.93 | 2.78    | 1.04 | 0.78               | 0.55 to 0.90**    |
| Analysis  | 3.17                 | 0.70 | 1.96        | 1.00 | 3.25    | 0.94 | 0.60               | 0.22 to 0.82**    |
| <b>Integration of Writer's Ideas</b>                                |                      |      |             |      |         |      |                    |                   |
| Evaluation  | 3.04                 | 0.69 | 1.79        | 1.02 | 2.96    | 0.95 | 0.66               | 0.33 to 0.84**    |
| Inference   | 3.08                 | 0.83 | 1.83        | 1.01 | 3.04    | 1.04 | 0.57               | 0.14 to 0.80**    |
| Explanation   | 3.00                 | 0.88 | 2.75        | 0.74 | 3.04    | 0.81 | 0.32               | -0.33 to 0.69 n.s |
| Self-Regulation   | 3.42                 | 0.83 | 1.92        | 1.02 | 2.71    | 0.91 | 0.60               | 0.20 to 0.81**    |
| <b>Total Comprehension</b><br>(Scale range 1 to 10)                 | 6.44                 | 1.47 | 4.35        | 1.82 | 6.09    | 1.53 | 0.81               | 0.62 to 0.91**    |
| <b>Total Integration of Writer's Ideas</b><br>(Scale range 1 to 20) | 4.35                 | 1.82 | 8.39        | 3.53 | 11.87   | 3.08 | 0.78               | 0.57 to 0.90**    |
| <b>Total Score on CTWC Skills</b><br>(Scale range 1 to 30)          | 19.04                | 3.72 | 12.74       | 5.26 | 17.96   | 4.41 | 0.75               | 0.50 to 0.89**    |

Note: 1) N =24. 2) Two asterisks (\*\*) indicate 95% Confidence Interval (CI) is significant at the 0.01 level. 3) The abbreviation "n.s." indicates not significant. 4) Individual skill scores range from 1 (poor), 2 (fair), 3 (good), 4 (very good) to 5 (excellent). Total CTWC skills scores range from 1–6 (poor), 7–12 (fair), 13–18 (good), 19–24 (very good) to 25–30 (excellent). Total comprehension scores range from 1–2 (poor), 3–4 (fair), 5–6 (good), 7–8 (very good) to 9–10 (excellent). Total integration of writer's ideas scores range from 1–4 (poor), 5–8 (fair), 9–12 (good), 13–16 (very good) to 17–20 (excellent).

Do the individual items that make up the skills scorecard consistently measure the same underlying construct (internal consistency)?

The reliability of the scorecard was further assessed for its internal consistency using Cronbach's alpha coefficient. It can generally be thought of as measuring the degree to which the various items of the scorecard are correlated with each other and normally varies between 0.0 and 1.0 (Ciudad-Gómez & Berrocoso, 2014, p. 302). The closer Cronbach's alpha coefficient is to 1.0, the greater the internal consistency of the items in the scale. George and Mallery (2003, p. 231) provide the following rules for interpretation:

- $\alpha > 0.9$  (excellent)
- $\alpha > 0.8$  (good)
- $\alpha > 0.7$  (acceptable)
- $\alpha > 0.6$  (questionable)
- $\alpha > 0.5$  (poor)
- $\alpha < 0.5$  (unacceptable)

A Cronbach's alpha of 0.70 is typically regarded as the minimum acceptable value (DeVellis, 2012; Pallant, 2013). Results of the internal consistency investigation are shown in Tables 3 and 4.

In the second phase (2014–2016) of the study, Cronbach's alphas for the six CTWC skills items (total scales) in all courses were excellent, varying between 0.928 and 0.976 (Table 3). The subscales for comprehension and integration of writer's ideas consisted of two and four items respectively, and were all good to excellent ( $\alpha > 0.80$ ) (Table 4). Therefore, we offer that the CTWC skills scorecard is highly reliable across all student samples as it makes stable and consistent measurements. These findings correspond with earlier high assessments of scale reliability (all  $\alpha > 0.80$ ) in the 2013–2014 pilot phase (albeit assessments were of the original skills scorecard with the six CT items and the three WC items) (Humber College, 2013–2014, pp. 6, 18).

**Table 3: Cronbach's Alpha Coefficients for the Reliability (Internal Consistency) Investigation (Total Scale)**

| Course   | Cronbach's Alpha<br>TOTAL CTWC | N   |
|----------|--------------------------------|-----|
| WRIT 100 | 0.931                          | 156 |
| WRIT 200 | 0.928                          | 120 |
| GCRT 100 | 0.972                          | 137 |
| PFP 200  | 0.967                          | 256 |
| PFP 211  | 0.976                          | 53  |

**Table 4: Cronbach's Alpha Coefficients for the Reliability (Internal Consistency) Investigation (Sub-Scales)**

| Course   | Cronbach's Alpha |       | N    |       |
|----------|------------------|-------|------|-------|
|          | COMP             | IDEAS | COMP | IDEAS |
| WRIT 100 | 0.813            | 0.900 | 157  | 156   |
| WRIT 200 | 0.904            | 0.878 | 123  | 120   |
| GCRT 100 | 0.964            | 0.946 | 137  | 137   |
| PFP 200  | 0.962            | 0.939 | 256  | 257   |
| PFP 211  | 0.933            | 0.964 | 53   | 54    |

Note: COMP (comprehension); IDEAS (integration of writer's ideas)

The reliability of the CTWC skills scorecard in the second phase was also assessed through item-total correlations between sub-scores on individual items and overall summated scores on the scale (Kaupp, Frank & Chen, 2014, p. 36). Summary results of the item-total correlations (sub-scores on individual items to total scale scores) are presented in Table 5. Each item of the scorecard had very strong, significant correlations with the total score ( $r > 0.7$ ,  $p < 0.01$ ).

**Table 5: Item-total Correlations (Sub-scores on Individual Items to Total Scale Scores) for the Reliability Investigation**

| Course   | N   | Interpretation | Analysis | Evaluation | Inference | Explanation | Self-Regulation |
|----------|-----|----------------|----------|------------|-----------|-------------|-----------------|
| WRIT 100 | 156 | .820**         | .916**   | .895**     | .886**    | .817**      | .849**          |
| WRIT 200 | 120 | .902**         | .902**   | .880**     | .881**    | .782**      | .797**          |
| GCRT 100 | 137 | .953**         | .974**   | .974**     | .964**    | .867**      | .884**          |
| PFP 200  | 256 | .959**         | .952**   | .950**     | .943**    | .875**      | .879**          |
| PFP 211  | 53  | .970**         | .913**   | .962**     | .959**    | .898**      | .978**          |
|          |     |                |          |            |           |             |                 |

Note: \*\*Correlation is significant at the 0.01 level (two-tailed).

Taken together, these indicators demonstrate how well each item sub-score correlates to the overall CTWC skills total score (item-total correlations) and how closely related and reliable each item's sub-score is on the overall CTWC skills scorecard scale as well as on the comprehension and integration of writer's ideas subscales (Cronbach's alpha coefficients) (Kaupp, Frank & Chen, 2014, p. 36). Overall, we argue that the reliability of the scorecard is supported by its strong internal consistency and sufficient inter-rater reliability, further contributing to its substantial validity.

#### *Panel Study Results<sup>4</sup>*

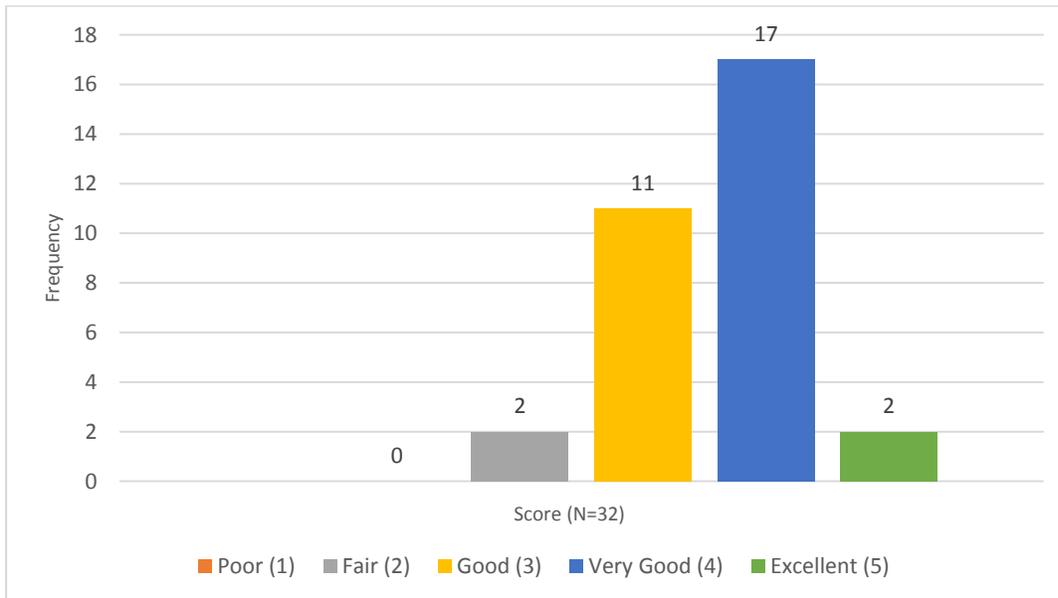
In the cross-college reading and writing courses, what is the impact of the CTWC skills-building curriculum on students' levels of achievement over time? Does the early, deliberate teaching of the essential skills result in gains in learning the outcomes (the longitudinal research design)?

The CTWC scorecard was used to assess the panel group's final exams from WRIT 100 and WRIT 200 in the fall 2014 and winter 2015 semesters, with students' average skill attainment in each course represented as scores on the six items of the assessment tool as well as sums of total scores for comprehension, integration of writer's ideas and overall CTWC.

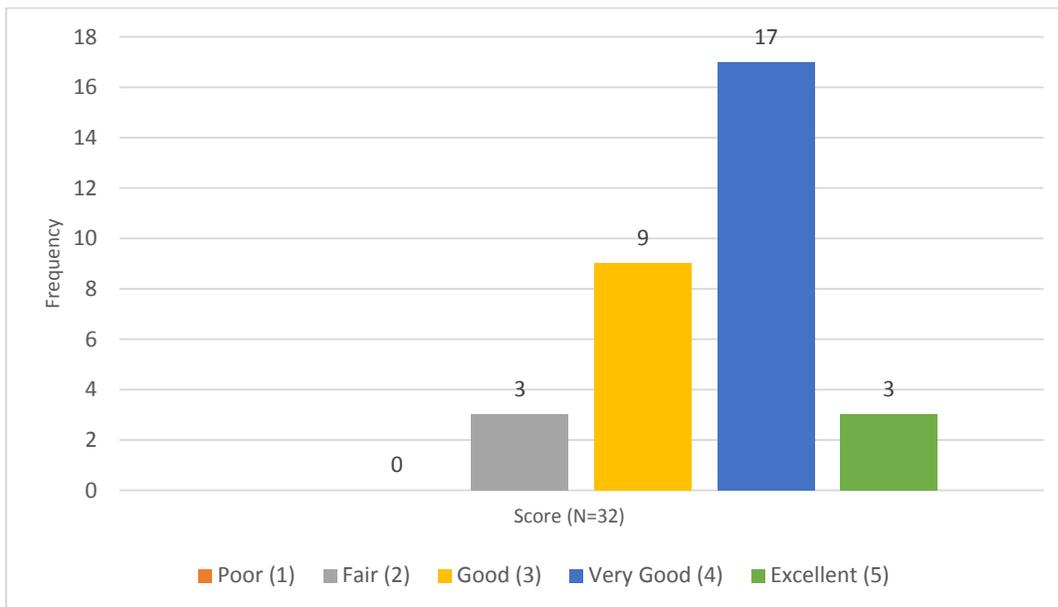
---

<sup>4</sup> We examined descriptive statistics and percentages of student work scored at the various milestone levels of achievement or above to explore differences in CTWC skills by curricula and course. We also conducted tests of statistical significance (paired sample t-tests) to compare the average skill attainment scores for the panel group in the two reading and writing courses (WRIT 100 and WRIT 200) over the two semesters. Normally, with random sampling, if the difference between skills scores for the two time periods was statistically significant, we could confidently conclude (at some level of probability) that scores in the second period are distinct (hopefully greater) than the first (indicating gains in learning) and not merely attributable to sampling error. Further, if the difference was not statistically significant, we could not conclude with confidence that gains in learning occurred nor draw inferences from the panel group to the larger student groups or populations. However, given that our panel group was not randomly selected, we are mindful that we cannot use the tests of statistical significance to draw any inferences about the larger student populations, but only to initially confirm the direction of the data (or learning) in our convenience sample (Mora, 2016). Further, as additional evidence of learning, we considered whether there were any changes in the percentages of student work scored at the milestone levels of achievement or above.

**Figure 1: Panel Group: Total CTWC Skills Scores for WRIT 100 (Fall 2014)**



**Figure 2: Panel Group: Total CTWC Skills Scores for WRIT 200 (Winter 2015)**



Aggregate gains in student learning over the two time periods, and after faculty explicitly taught the skills in the reading and writing courses, would therefore be considered increases in the arithmetic averages of the numerical values assigned to the levels of skill achievement for the individual scorecard items and the total scores. On average, students’ levels of achievement on the CTWC skills over the two semesters were good on all individual items of the skills scorecard and good to very good on the total scores and summated scores for comprehension and integration of writer’s ideas (Table 6, Figure 1 and Figure 2). Scores were also fairly consistent across all individual dimensions of the scorecard across the two time periods. Analysis of the

descriptive statistics shows students are typically learning the outcomes at higher levels and rather consistently.

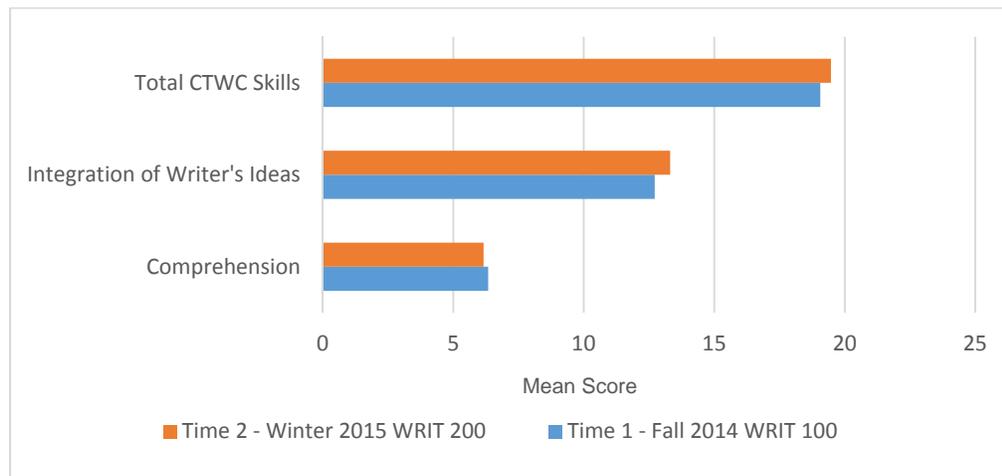
Paired sample t-tests were also conducted to compare the average skill attainment scores for the panel group in the two reading and writing courses over the two semesters. Although students' total skill attainment scores were higher for WRIT 200 (M = 19.47, SD = 5.19) than WRIT 100 (M = 19.06, SD = 4.52), there was no significant mean difference to initially confirm the direction of the data towards positive gains in learning,  $t(31) = -0.379$ ,  $p > 0.05$  (Table 6 and Figure 3). An increase in students' skill attainment on integration of writer's ideas was also discovered across the WRIT 200 (M = 13.31, SD = 3.35) and WRIT 100 (M = 12.72, SD = 3.03) courses, although again, the difference was not statistically significant,  $t(31) = -0.817$ ,  $p > 0.05$  (Table 6).

**Table 6: Descriptive Statistics and Paired-Samples Correlations and T-Tests for the CTWC Skills Scores by Time (2014–2015)**

| Scorecard Item  | Time 1<br>Fall 2014<br>WRIT 100 |      | Time 2<br>Winter 2015<br>WRIT 200 |      | Change in Mean<br>(Time 2 – Time 1) | r     | t     |
|---|---------------------------------|------|-----------------------------------|------|-------------------------------------|-------|-------|
|   | M                               | SD   | M                                 | SD   |                                     |       |       |
| <b>Comprehension</b>  |                                 |      |                                   |      |                                     |       |       |
| Interpretation  | 3.22                            | 1.21 | 3.13                              | 0.98 | -0.09                               | 0.14  | 0.37  |
| Analysis  | 3.13                            | 0.87 | 3.03                              | 1.15 | -0.10                               | 0.19  | 0.41  |
| <b>Integration of Writer's Ideas</b>                                |                                 |      |                                   |      |                                     |       |       |
| Evaluation  | 3.13                            | 0.91 | 3.19                              | 1.03 | +0.06                               | 0.42* | -0.34 |
| Inference   | 3.16                            | 0.99 | 3.44                              | 0.98 | +0.28                               | -0.11 | -1.09 |
| Explanation   | 3.06                            | 0.88 | 3.38                              | 0.94 | +0.32                               | 0.01  | -1.38 |
| Self-Regulation   | 3.38                            | 0.94 | 3.31                              | 0.82 | -0.07                               | 0.05  | 0.30  |
| <b>Total Comprehension</b><br>(Scale range 1 to 10)                 | 6.34                            | 1.82 | 6.16                              | 2.00 | -0.18                               | 0.22  | 0.44  |
| <b>Total Integration of Writer's Ideas</b><br>(Scale range 1 to 20) | 12.72                           | 3.03 | 13.31                             | 3.35 | +0.59                               | 0.17  | -0.82 |
| <b>Total Score on CTWC Skills</b><br>(Scale range 1 to 30)          | 19.06                           | 4.52 | 19.47                             | 5.19 | +0.41                               | 0.23  | -0.38 |
|   |                                 |      |                                   |      |                                     |       |       |

Notes: 1) N = Sample Size. df = degrees of freedom. 2) N = 32 (df = 31). 3) One asterisk (\*) indicates correlation (r) or t-test (t) is significant at the 0.05 level. Otherwise, results are not significant. 4) Individual skill scores range from 1 (poor), 2 (fair), 3 (good), 4 (very good) to 5 (excellent). Total CTWC skills scores range from 1–6 (poor), 7–12 (fair), 13–18 (good), 19–24 (very good) to 25–30 (excellent). Total comprehension scores range from 1–2 (poor), 3–4 (fair), 5–6 (good), 7–8 (very good) to 9–10 (excellent). Total integration of writer's ideas scores range from 1–4 (poor), 5–8 (fair), 9–12 (good), 13–16 (very good) to 17–20 (excellent).

Further, statistically significant mean differences for students' skill attainment scores for comprehension and all other individual items of the assessment tool in the two courses over time were not attained (Table 6 and Figure 3).

**Figure 3: CTWC Skills Scores by Time (2014–2015)**

Note: Total CTWC skills scores range from 1–6 (poor), 7–12 (fair), 13–18 (good), 19–24 (very good) to 25–30 (excellent). Total comprehension scores range from 1–2 (poor), 3–4 (fair), 5–6 (good), 7–8 (very good) to 9–10 (excellent). Total integration of writer's ideas scores range from 1–4 (poor), 5–8 (fair), 9–12 (good), 13–16 (very good) to 17–20 (excellent).

However, representing student learning assessment as changes in arithmetic averages of numerical values assigned to levels of skill may not be the best option to track student growth (Greenhoot & Bernstein, 2011, p. 6). As faculty using the AACU VALUE rubrics to evaluate student learning have argued, means and changes in means can "...mask much valuable information about the actual level[s] of skills that students are exhibiting..." across the years of their education (Greenhoot & Bernstein, 2011, p. 6). Instead, many scholars recommend additionally representing student learning assessment as distributions of performance across categories, i.e. percentages of student work scored at the various milestone levels of achievement or above. Accordingly, gains in learning over the two time periods would be considered changes in the percentages of performance at or above the appropriate skill levels and are depicted for the panel group students in Table 7 and Figure 4.

For overall CTWC, comprehension and integration of writer's ideas skills scores, 97–100% of students in the panel group scored at or above an achievement level of 2 (fair) when the scorecard was used to evaluate their final exams from the two reading and writing courses. Panel group scores in the two courses were also consistently fair across all the individual skill items of the scorecard, with 88% to 100% of students achieving a level of 2 or above. Here, all panel group students learned fair total CTWC skills upon the completion of WRIT 100 in semester one compatible with the learning outcome expectations detailed earlier in the methodology section.

With regard to the percentage of final exams scoring at total CTWC skill achievement levels of 3 (good) or above in the two reading and writing courses, over 90% of students in the panel group fall into this category. Similarly, over 90% of students are learning the skills at good or higher levels associated with integrating writer's ideas into their work and over 80% are learning good or superior skills related to comprehension. Indeed, the results show that by the end of WRIT 200 in semester two, the vast majority of students in the panel group have learned good or better total CTWC skills aligned with learning outcome expectations, although scores vary across the individual dimensions of the scorecard (from 72–91%). In fact, 63% of students achieved very good (4) to excellent (5) total CTWC scores in their WRIT 200 final exams, surpassing the suggested learning goals for semester two.

This said, the percentage of students in the panel group who exhibited higher total CTWC skills scores in their final exams in WRIT 200 compared to WRIT 100 was small (+3.1% (a single student)) (Table 7 and Figure 4). Further, some gains in learning over the two courses were made with regard to the summated skills scores for integration of writer's ideas (+9.4%), yet not for comprehension (-3.1%) (Table 7). Indeed, gains in learning seem to be happening more prominently with regard to the individual skills categories related to integrating writer's ideas (especially inference and explanation) rather than comprehension (interpretation and analysis).

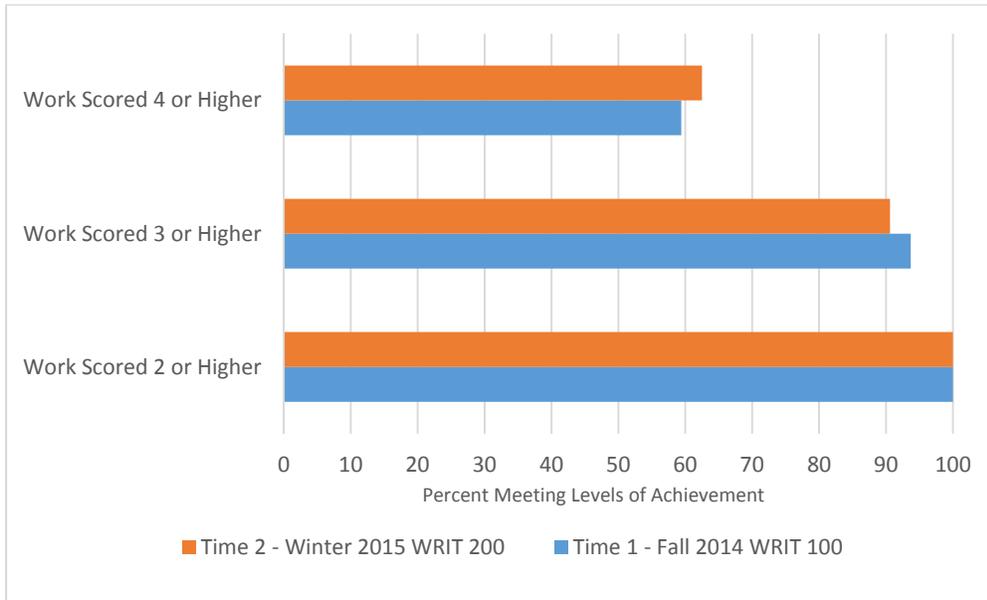
**Table 7: Percentages of Student Work Scored According to Levels of Achievement on the CTWC Skills Scorecard by Time (2014–2015)**

| Scorecard Item   | Time 1<br>Fall 2014<br>WRIT 100    |                                    |                                    | Time 2<br>Winter 2015<br>WRIT 200  |                                    |                                    | Gains in Learning                           |   |
|--|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|---|---|
|  | Percent of Work Scored 2 or Higher | Percent of Work Scored 3 or Higher | Percent of Work Scored 4 or Higher | Percent of Work Scored 2 or Higher | Percent of Work Scored 3 or Higher | Percent of Work Scored 4 or Higher | Change in Percent (Work Scored 3 or Higher) | Change in Percent (Work Scored 4 or Higher) |
| <b>Comprehension</b>   |                                    |                                    |                                    |                                    |                                    |                                    |   |   |
| Interpretation   | 93.7%                              | 65.7%                              | 46.9%                              | 96.9%                              | 75.1%                              | 31.3%                              | +9.4%                                       | -15.6%                                      |
| Analysis<br>(Original scale range 1 to 5)                                  | 96.9%                              | 78.2%                              | 34.4%                              | 87.5%                              | 71.9%                              | 34.4%                              | -6.3%                                       | 0.0%  |
| <b>Integration of Writer's Ideas</b>                                       |                                    |                                    |                                    |                                    |                                    |                                    |   |   |
| Evaluation   | 96.9%                              | 75.0%                              | 37.5%                              | 96.9%                              | 72.0%                              | 40.7%                              | -3.0%                                       | +3.2%                                       |
| Inference  | 93.7%                              | 78.2%                              | 37.6%                              | 100.0%                             | 78.1%                              | 53.1%                              | -0.1%                                       | +15.5%                                      |
| Explanation  | 100.0%                             | 68.8%                              | 34.4%                              | 93.7%                              | 84.3%                              | 56.2%                              | +15.5%                                      | +21.8%                                      |
| Self-Regulation<br>(Original scale range 1 to 5)                           | 96.9%                              | 87.5%                              | 40.6%                              | 96.9%                              | 90.7%                              | 37.6%                              | +3.2%                                       | -3.0%                                       |
| <b>Total Comprehension</b><br>(Recoded scale range 1 to 5)                 | 100.0%                             | 81.2%                              | 43.8%                              | 96.9%                              | 81.3%                              | 40.7%                              | +0.1%                                       | -3.1%                                       |
| <b>Total Integration of Writer's Ideas</b><br>(Recoded scale range 1 to 5) | 100.0%                             | 93.7%                              | 56.3%                              | 100.0%                             | 90.6%                              | 65.7%                              | -3.1%                                       | +9.4%                                       |
| <b>Total Score on CTWC Skills</b><br>(Recoded scale range 1 to 5)          | 100.0%                             | 93.7%                              | 59.4%                              | 100.0%                             | 90.6%                              | 62.5%                              | -3.1%                                       | +3.1  |

Note: 1) N = 32. 2) All skills scores range from 1 (poor), 2 (fair), 3 (good), 4 (very good) to 5 (excellent).

In sum, we contend that descriptive statistics results from the panel study suggest that students are generally learning the skills successfully at higher levels through the two reading and writing courses and related curriculum, especially with regard to integrating writer’s ideas (inference and explanation) into their work.

Figure 4: **Total Scores on CTWC Skills by Time (2014–2015)**



Note: Total CTWC skills scores range from: 1 (poor), 2 (fair), 3 (good), 4 (very good) to 5 (excellent)

Results also indicate that curriculum improvements might focus on comprehension (interpretation and analysis), evaluation and self-regulation, reinforcing student learning in this area. Indeed, clear and systematic gains in learning in these specific skill areas as students in the panel group moved from completion of one course to the end of the other were not uncovered. In contrast, some gains in learning were discovered in the total CTWC and summated integration of writer’s ideas skills scores. Importantly, however, we stress that the initial inferential statistics results in the panel sample did not reveal any significant mean differences or gains in learning between students’ skills scores over the two semesters.

### Course/Program Comparisons

Across different student groups in different cross-college and program-specific courses, do diverse learning experiences in curricula related to CT and WC result in different levels of skill achievement (the cross-sectional research design)?

Table 8 and Figures 6 and 7 present differences in CTWC skills scores by course and related learning experiences as variations in the arithmetic averages of the numerical values assigned to the levels of skill achievement for the student groups’ scores on the individual scorecard items and totals.

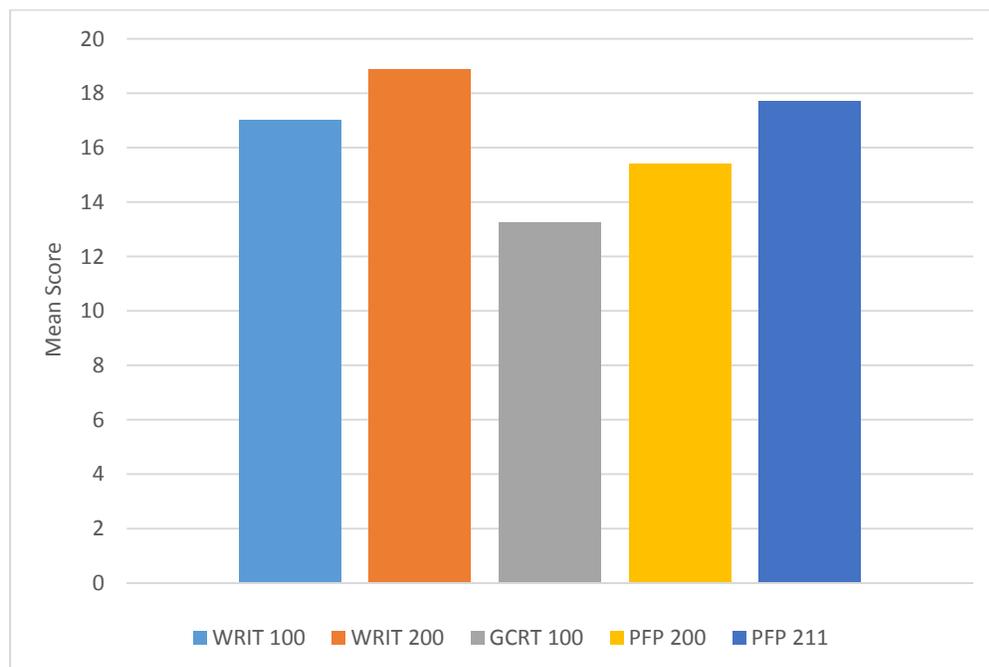
**Table 8: Differences in CTWC Skills Scores by Course (2014–2016)**

| Scorecard Item                             | WRIT 100 |      |     | WRIT 200 |      |     | GCRT 100 |      |     | PFP 200 |      |     | PFP 211 |      |    |
|--|----------|------|-----|----------|------|-----|----------|------|-----|---------|------|-----|---------|------|----|
|  | M        | SD   | N   | M        | SD   | N   | M        | SD   | N   | M       | SD   | N   | M       | SD   | N  |
| <b>Comprehension</b>                       |          |      |     |          |      |     |          |      |     |         |      |     |         |      |    |
| Interpretation                             | 2.89     | 1.17 | 157 | 3.17     | 1.06 | 123 | 2.24     | 0.84 | 137 | 2.57    | 1.26 | 256 | 2.98    | 1.07 | 53 |
| Analysis                                   | 2.76     | 1.07 | 157 | 2.94     | 1.11 | 123 | 2.16     | 0.89 | 137 | 2.47    | 1.24 | 257 | 2.92    | 1.07 | 53 |
| <b>Integration of Writer's Ideas</b>       |          |      |     |          |      |     |          |      |     |         |      |     |         |      |    |
| Evaluation                                 | 2.73     | 1.04 | 156 | 3.02     | 1.00 | 123 | 2.16     | 0.89 | 137 | 2.37    | 1.27 | 257 | 3.01    | 1.09 | 54 |
| Inference                                  | 2.76     | 1.04 | 157 | 3.34     | 0.95 | 121 | 2.10     | 0.88 | 137 | 2.45    | 1.26 | 257 | 3.02    | 1.09 | 54 |
| Explanation                                | 2.73     | 1.02 | 157 | 3.13     | 0.94 | 122 | 2.31     | 0.69 | 137 | 2.58    | 1.18 | 257 | 2.76    | 1.16 | 54 |
| Self-Regulation                            | 3.08     | 1.02 | 157 | 3.32     | 0.86 | 123 | 2.28     | 0.73 | 137 | 2.99    | 1.25 | 257 | 3.06    | 1.09 | 54 |
| <b>Total Comprehension</b>                 |          |      |     |          |      |     |          |      |     |         |      |     |         |      |    |
| Original scale range 1 to 10               | 5.67     | 2.04 | 156 | 6.09     | 2.09 | 120 | 4.40     | 1.71 | 137 | 5.04    | 2.45 | 256 | 5.91    | 2.07 | 53 |
| Recoded scale range 1 to 5                 | 3.03     | 1.06 | 156 | 3.21     | 1.05 | 120 | 2.26     | 0.83 | 137 | 2.64    | 1.24 | 256 | 3.06    | 1.10 | 53 |
| <b>Total Integration of Writer's Ideas</b> |          |      |     |          |      |     |          |      |     |         |      |     |         |      |    |
| Original scale range 1 to 20               | 11.32    | 3.61 | 156 | 12.8     | 3.22 | 120 | 8.85     | 2.98 | 137 | 10.36   | 4.55 | 256 | 11.81   | 4.24 | 53 |
| Recoded scale range 1 to 5                 | 3.15     | 0.90 | 156 | 3.56     | 0.85 | 120 | 2.45     | 0.66 | 137 | 2.91    | 1.10 | 256 | 3.06    | 1.12 | 53 |
| <b>Total Score on CTWC Skills</b>          |          |      |     |          |      |     |          |      |     |         |      |     |         |      |    |
| Original scale range: 1 to 30              | 17.00    | 5.47 | 156 | 18.89    | 5.12 | 120 | 13.26    | 4.63 | 137 | 15.39   | 6.90 | 256 | 17.71   | 6.23 | 53 |
| Recoded scale range: 1 to 5                | 3.21     | 0.93 | 156 | 3.55     | 0.88 | 120 | 2.46     | 0.65 | 137 | 2.92    | 1.10 | 256 | 3.15    | 1.15 | 53 |

Note: Individual skill scores range from 1 (poor), 2 (fair), 3 (good), 4 (very good) to 5 (excellent). Total CTWC skills scores range from 1–6 (poor), 7–12 (fair), 13–18 (good), 19–24 (very good) to 25–30 (excellent). Total comprehension scores range from 1–2 (poor), 3–4 (fair), 5–6 (good), 7–8 (very good) to 9–10 (excellent). Total integration of writer's ideas scores range from 1–4 (poor), 5–8 (fair), 9–12 (good), 13–16 (very good) to 17–20 (excellent).

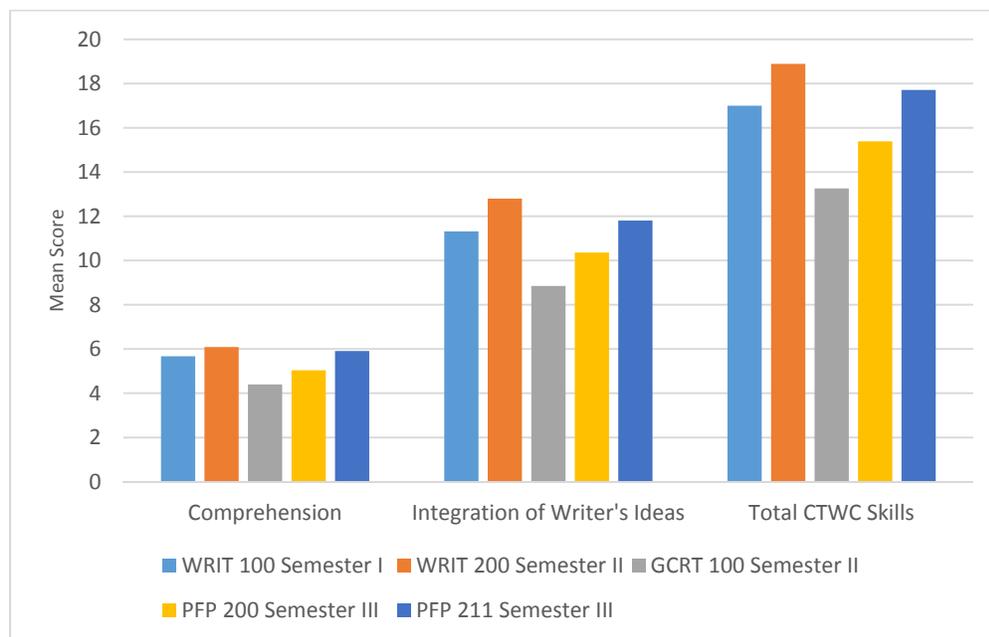
Importantly, some of the course or student group distributions for the individual scorecard items and sums of total scores are skewed positively or negatively toward lower or higher skills scores respectively. As such, the means presented in Table 8 and illustrated in Figures 5 and 6 are often not the best measure of central tendency to highlight as they are too heavily influenced by the extreme scores in either direction.

**Figure 5: Differences in Total CTWC Skills Scores by Course (Means) (2014–2016)**



Note: Total CTWC skills scores range from 1–6 (poor), 7–12 (fair), 13–18 (good), 19–24 (very good) to 25–30 (excellent). WRIT100 – Semester 1 course; WRIT200 and GCRT100 – Semester 2 course; and PFP200 and 211 - Semester 3 courses.

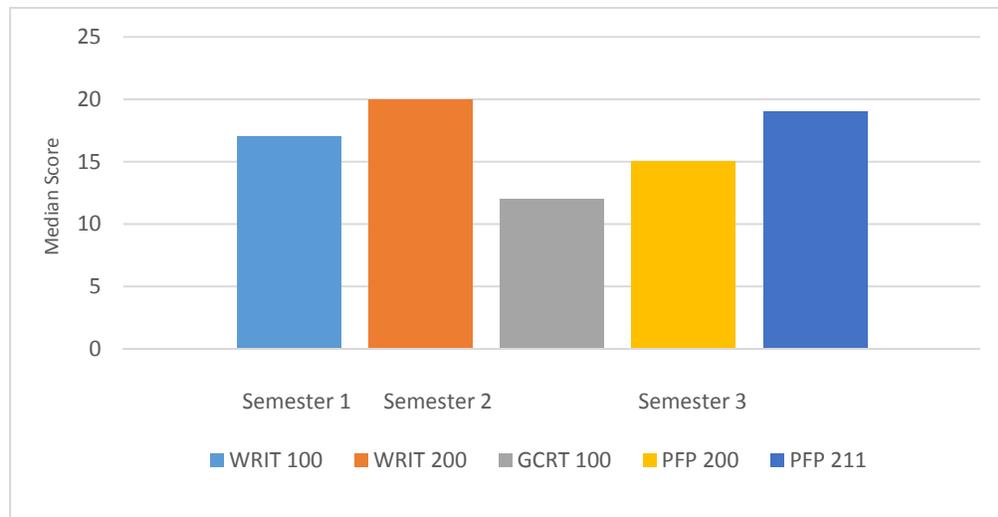
**Figure 6: CTWC Skills Scores by Course (2014–2016)**



Note: Total CTWC skills scores range from 1–6 (poor), 7–12 (fair), 13–18 (good), 19–24 (very good) to 25–30 (excellent). Total comprehension scores range from 1–2 (poor), 3–4 (fair), 5–6 (good), 7–8 (very good) to 9–10 (excellent). Total integration of writer's ideas scores range from 1–4 (poor), 5–8 (fair), 9–12 (good), 13–16 (very good) to 17–20 (excellent).

Medians, the most desirable measure of central tendency for describing skewed distributions of scores, are accordingly featured in Figure 7 and when appropriate in the discussion of results to follow (Levin et al.,

**Figure 7: Differences in Total CTWC Skills Scores by Course (Medians) (2014–2016)**



Note: Total CTWC skills scores range from 1–6 (poor), 7–12 (fair), 13–18 (good), 19–24 (very good) to 25–30 (excellent).

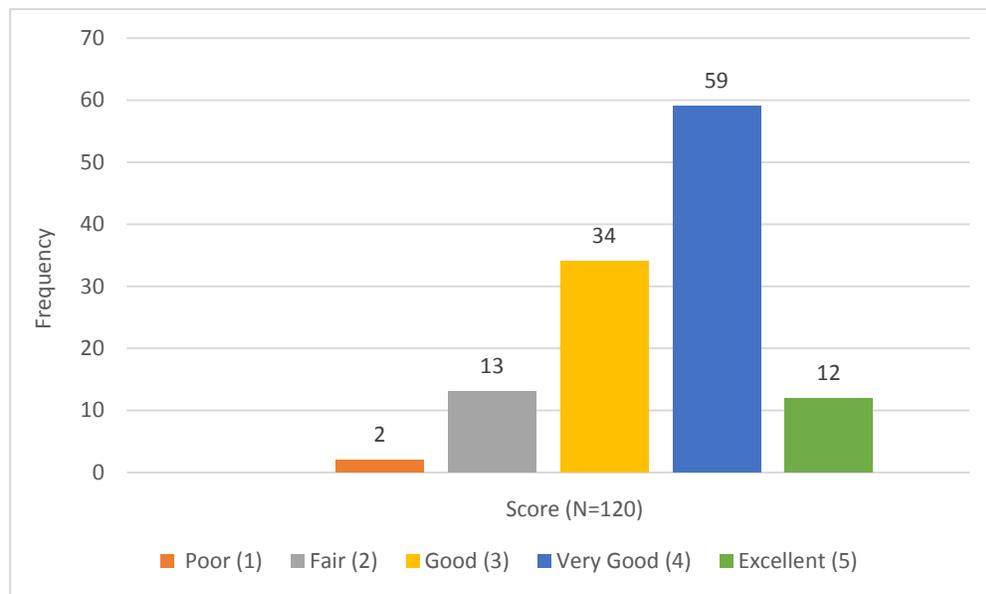
The early, explicit skills-building curriculum in the diploma and advanced diploma cross-college reading and writing courses appears to make some difference to students, as evidenced by the higher on average aggregate scores on the overall CTWC learning outcomes (Tables 8 and Figures 5 through 7). In fall 2014, faculty assessment of students’ final exams using the scorecard found that total skills scores in WRIT 100 were typically good by the end of the course (M = 17.00, Mdn = 17.00, SD = 5.47, N= 156) (Table 8 and Figure 8).

**Figure 8: Total CTWC Skills Scores for WRIT 100 (Fall 2014)**



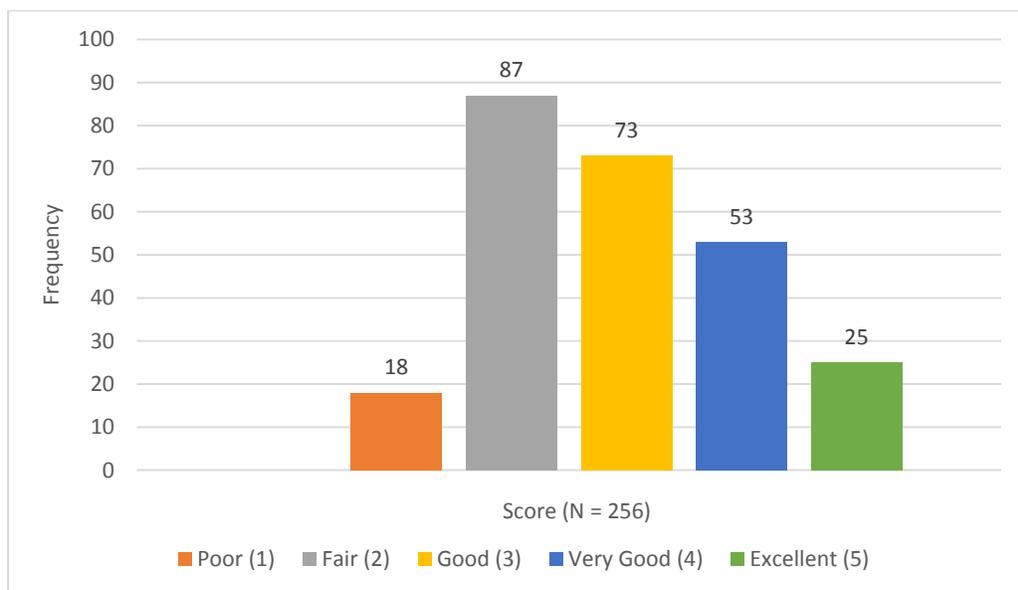
In winter 2015, students' average total skills scores on their assignments in WRIT 200 were very good and skewed toward higher levels of achievement ( $M = 18.89$ ,  $Mdn = 20.00$ ,  $SD = 5.12$ ,  $N = 120$ ) (Table 8 and Figure 9). Notably, over 50% of students were scoring at or above very good skill levels after having taken the courses and thus typically exceeding the learning outcome expectations detailed in the methodology section (which are, on average, good levels of achievement for semester two).

**Figure 9: Total CTWC Skills Scores for WRIT 200 (Winter 2015)**

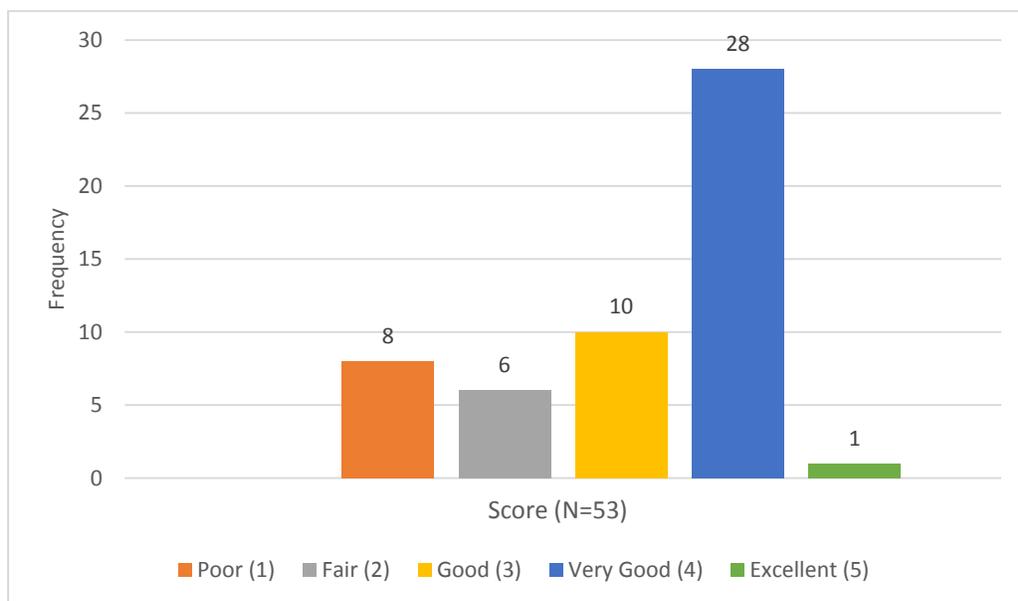


In contrast, total CTWC skills scores achieved by students in the senior diploma PFP courses offering no overt teaching of the essential skills were lower on average and more variable, yet still generally in good to very good ranges of learning outcome achievement (Table 8 and Figures 5 through 7). In fall 2014, faculty scoring of students' assignments with the scorecard discovered average total skills scores were good in PFP 200 ( $M = 15.39$ ,  $Mdn = 15.00$ ,  $SD = 6.90$ ,  $N = 256$ ) and very good in PFP 211 ( $M = 17.71$ ,  $Mdn = 19.00$ ,  $SD = 6.23$ ,  $N = 53$ ) (Figures 10 and 11). The lower and more variable average overall essential skills ratings in these third semester PFP courses compared to the higher average overall skills scores in the first and second semester reading and writing courses suggests there is a benefit to the explicit strategy of building the skills versus the implicit, program-specific approach to embedding the conceptual content. This seems especially evident when comparing total levels of essential skill achievement for student groups in the first semester, cross-college course WRIT 100 ( $M = 17.00$ ,  $Mdn = 17.00$ ,  $SD = 5.47$ ) (Figure 8) with the third semester, police foundations course PFP 200 ( $M = 15.39$ ,  $Mdn = 15.00$ ,  $SD = 6.90$ ) (Figure 10). Here, the learning outcome expectation for diploma program students would typically be very good levels of skill achievement by semester three, which for the PFP 200 group with skill ratings skewed toward lower scores was not the case (Figure 10). The other third semester PFP 211 student group performed better on average than PFP 200 with very good overall results and skill ratings skewed toward higher scores ( $M = 17.71$ ,  $Mdn = 19.00$ ,  $SD = 6.23$ ) (Figure 11), but still not quite as well as the second semester cross-college WRIT 200 students ( $M = 18.89$ ,  $Mdn = 20.00$ ,  $SD = 5.12$ ) (Figure 9).

**Figure 10: Total CTWC Skills Scores for PFP 200 (Fall 2014)**



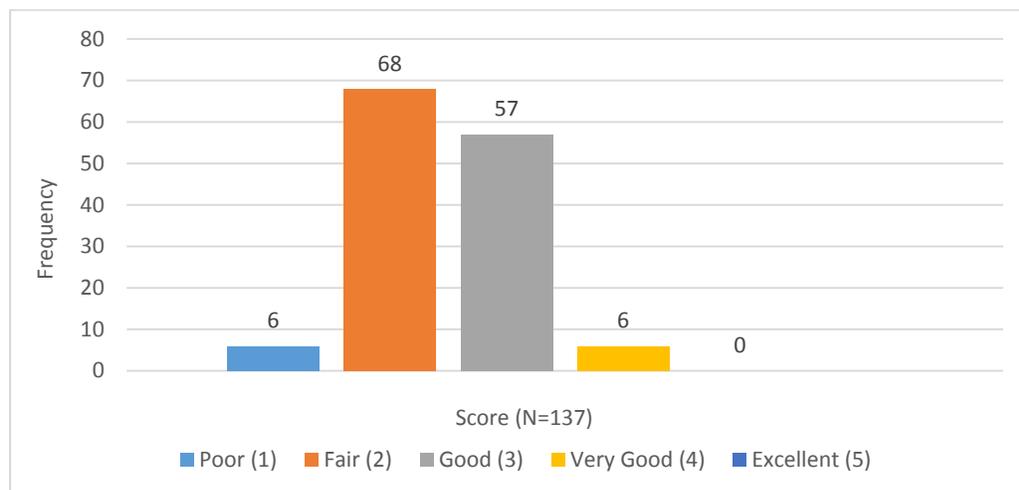
**Figure 11: Total CTWC Skills Scores for PFP 211 (Fall 2014)**



Early student learning experiences that emphasize building the essential CTWC skills rather than covering conceptual and theoretical knowledge related to CT also appear to matter more. In other words, the way in which the CT skills are taught seems to make some difference with regard to the levels of student success in learning the outcomes. The GAS student group taking the content heavy CT course, GCRT 100, in their second semester as part of their certificate program in fall 2015, winter 2015 or winter 2016 had on average

the lowest total skills scores on their final exams of all the groups ( $M = 13.26$ ,  $Mdn = 12.00$ ,  $SD = 4.63$ ,  $N = 137$ ) (Table 8 and Figures 5 through 7). Typically, GCRT 100 students' overall skills scores were fair and skewed toward lower levels of achievement (Figure 12). Perhaps surprisingly, over 50% of GAS students scored at or below fair levels in their second semester after taking the CT course. Here, the learning outcome expectation for certificate program students would typically be good levels of skill achievement by the final exam in semester two, which many of these GAS graduates did not meet. Comparatively, diploma and advanced diploma program students that took the new WRIT 100 essential skills-building learning experience in their first semester outperformed on overall CTWC skills ( $M = 17.00$ ,  $Mdn = 17.00$ ,  $SD = 5.47$ ) (Figure 8) the second semester certificate program students who took the GCRT 100 knowledge intensive CT course ( $M = 13.26$ ,  $Mdn = 12.00$ ,  $SD = 4.63$ ) (Figure 12). Thus, even though the GAS group are the only students in the college to take a special conceptual and theoretical CT course, this does not seem to automatically translate into better essential CTWC skills upon completion. What matters more appears to be the explicit approach in which the skills are taught, with students in the cross-college reading and writing courses learning the outcomes at higher levels, likely benefiting from the essential skills-building curriculum.

**Figure 12: Total CTWC Skills Scores for GCRT 100 (2015–2016)**



Although care must be taken when comparing data from the first (2013–2014) and second (2014–2016) phases of the study, some further evidence of the potential positive impact of the early, explicit skills-building curriculum is that total CTWC skills scores for the reading and writing courses (WRIT 100 and 200) are higher than the total CT and WC scores in the prior comparable courses (COMM 200 and 300) after the full implementation of the new curriculum in fall 2014. The summary of the CTWC skills scores for courses and student groups for the two phases of the study are shown in Table 9. For example, total average levels of CT and WC skill achievement for students in COMM 200 in fall 2013 were fair before the full implementation of the curriculum change ( $M = 2.41$ ,  $SD = 0.89$ ,  $N = 134$ ) and good for students afterward in WRIT 100 in fall 2014 ( $M = 3.21$ ,  $SD = 0.93$ ,  $N = 156$ ). Total CTWC skills scores were also typically lower in COMM 300 before the course change ( $M = 3.15$ ,  $SD = 1.03$ ,  $N = 141$ ) than in WRIT 200 afterward ( $M = 3.55$ ,  $SD = 0.88$ ,  $N = 120$ ) (albeit both were in the good range). Most notably, the first year WRIT 100 and WRIT 200 student groups in 2014–2015, following the full implementation of the new curriculum, on average outperformed students' CT scores from all other intermediate and senior COMM and PFP courses in the first (2013–2014) and second (2014–2016) phases of the study (Table 9).

**Table 9: Differences in Total Scores on CTWC Skills by Course (2013–2014 and 2014–2016)**

| Course             | Critical Thinking |      | Written Communication |      | N   |
|--------------------|-------------------|------|-----------------------|------|-----|
|                    | M                 | SD   | M                     | SD   |     |
| <b>Fall 2013</b>   |                   |      |                       |      |     |
| COMM 200           | 2.41              | 0.89 | 1.95                  | 0.81 | 134 |
| PFP 301            | 2.78              | 0.98 | 2.88                  | 0.95 | 171 |
| <b>Winter 2014</b> |                   |      |                       |      |     |
| COMM 200           | 2.87              | 0.90 | 2.73                  | 0.88 | 154 |
| COMM 300           | 3.15              | 1.03 | 3.26                  | 1.00 | 141 |
| PFP 403            | 2.65              | 0.74 | 2.63                  | 0.84 | 205 |
| Course             | CTWC              |      |                       |      | N   |
|                    | M                 | SD   |                       |      |     |
| <b>Fall 2014</b>   |                   |      |                       |      |     |
| WRIT 100           | 3.21              | 0.93 |                       |      | 156 |
| PFP 200            | 2.92              | 1.10 |                       |      | 256 |
| PFP 211            | 3.15              | 1.15 |                       |      | 53  |
| <b>Winter 2015</b> |                   |      |                       |      |     |
| WRIT 200           | 3.55              | 0.88 |                       |      | 120 |

Note: Total CT and WC skills scores range from 0 (no evidence), 1 (poor), 2 (fair), 3 (good), 4 (very good), 5 (excellent) to 6 (mastered). Total CTWC skills scores range from 1 (poor), 2 (fair), 3 (good), 4 (very good) to 5 (excellent).

Source: Humber College, 2013–2014.

To further uncover trends in the data, it is important not to represent the results of the assessment of the different student groups' success on learning the outcomes solely as arithmetic averages of numerical values assigned to levels of skill, but rather as the percentages of students in the course with scored work meeting the various milestone levels of achievement (Greenhoot & Bernstein, 2011, p. 6; Siefert, 2011). Findings in Tables 10 and 11 and Figure 13 illustrate that total CTWC skills scores across courses and student groups in the second phase (2014–2016) of the study are rather consistent with respect to the percentage of work products scored at or above level 2 (fair). For example, in the reading and writing and CT courses, over 96% of students consistently achieved fair or superior overall skill levels (Table 10).

**Table 10 Reading and Writing and Critical Thinking Course Comparisons****Percentages of student work scored according to levels of achievement on the CTWC skills scorecard (2014–2016)**

| Scorecard Item  | Semester 1                                  |   |   | Semester 2                                  |   |   |   |   |  |
|---|---|---|---|---|---|---|---|---|--|
|   | WRIT 100<br>Fall 2014                       |   |   | WRIT 200<br>Winter 2015                     |   |   | GCRT 100<br>Fall 2015, Winter 2015 or 2016  |   |  |
|   | Percent of<br>Work<br>Scored 2 or<br>Higher | Percent of<br>Work<br>Scored 3<br>or Higher | Percent of<br>Work<br>Scored 4 or<br>Higher | Percent of<br>Work<br>Scored 2<br>or Higher | Percent of<br>Work<br>Scored 3<br>or Higher | Percent of<br>Work<br>Scored 4<br>or Higher | Percent of<br>Work<br>Scored 2<br>or Higher | Percent of<br>Work<br>Scored 3<br>or Higher | Percent<br>of<br>Work<br>Scored 4<br>or Higher |
| <b>Comprehension</b>  |   |   |   |   |   |   |   |   |  |
| Interpretation  | 85.4%                                       | 62.5%                                       | 33.8%                                       | 91.9%                                       | 76.5%                                       | 39.8%                                       | 78.1%                                       | 41.6%                                       | 4.4%   |
| Analysis<br>(Original scale<br>range 1 to 5)                                      | 85.4%                                       | 61.8%                                       | 25.5%                                       | 87.8%                                       | 67.5%                                       | 30.9%                                       | 71.5%                                       | 40.1%                                       | 4.4%   |
| <b>Integration of<br/>Writer's Ideas</b>  |   |   |   |   |   |   |   |   |  |
| Evaluation  | 86.5%                                       | 59.6%                                       | 23.0%                                       | 95.9%                                       | 67.4%                                       | 30.9%                                       | 71.5%                                       | 40.1%                                       | 4.4%   |
| Inference   | 87.3%                                       | 60.5%                                       | 24.2%                                       | 98.3%                                       | 79.3%                                       | 47.1%                                       | 69.3%                                       | 37.9%                                       | 2.9%   |
| Explanation   | 87.3%                                       | 59.3%                                       | 24.2%                                       | 82.5%                                       | 44.8%                                       | 21.4%                                       | 89.1%                                       | 39.5%                                       | 2.2%   |
| Self-Regulation<br>(Original scale<br>range 1 to 5)                               | 90.4%                                       | 78.3%                                       | 32.5%                                       | 84.4%                                       | 65.7%                                       | 35.8%                                       | 86.9%                                       | 38.7%                                       | 2.9%   |
| <b>Total<br/>Comprehension</b><br>(Recoded scale<br>range 1 to 5)                 | 91.0%                                       | 71.1%                                       | 34.0%                                       | 92.5%                                       | 78.3%                                       | 41.7%                                       | 79.6%                                       | 41.6%                                       | 4.4%   |
| <b>Total Integration<br/>of Writer's Ideas</b><br>(Recoded scale<br>range 1 to 5) | 95.5%                                       | 79.5%                                       | 35.3%                                       | 98.3%                                       | 89.1%                                       | 60.9%                                       | 94.9%                                       | 46.0%                                       | 4.4%   |
| <b>Total Score on<br/>CTWC Skills</b><br>(Recoded scale<br>range 1 to 5)          | 96.2%                                       | 79.5%                                       | 39.1%                                       | 98.3%                                       | 87.5%                                       | 59.2%                                       | 95.6%                                       | 46.0%                                       | 4.4%   |
| <b>N</b>  | 156   |   |   | 120   |   |   | 137   |   |  |

Note: All skills scores range from 1 (poor), 2 (fair), 3 (good), 4 (very good) to 5 (excellent).

In the police foundations courses, the same numbers for fair (2) or better overall skills scores were a little lower at 93% (PFP 200) and 85% (PFP 211) (Table 11). Importantly, 96% of students in the cross-college reading and writing course (WRIT 100) were successfully meeting the learning outcome expectations for skill development in their first semester, achieving total scores at fair (2) or higher levels.

**Table 11: Police Foundations Course Comparisons**

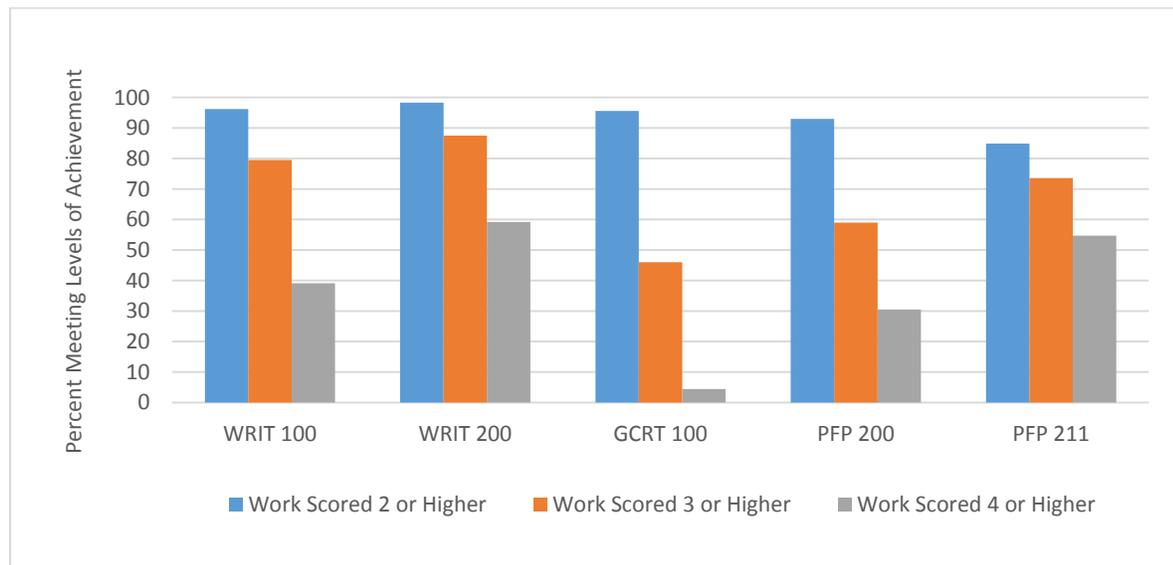
Percentages of student work scored according to levels of achievement on the CTWC skills scorecard (Fall 2014)

| Scorecard Item  | Semester 3 — Fall 2014             |                                    |                                    |                                    |                                    |                                    |
|---|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
|   | PFP 200                            |                                    |                                    | PFP 211                            |                                    |                                    |
|   | Percent of Work Scored 2 or Higher | Percent of Work Scored 3 or Higher | Percent of Work Scored 4 or Higher | Percent of Work Scored 2 or Higher | Percent of Work Scored 3 or Higher | Percent of Work Scored 4 or Higher |
| <b>Comprehension</b>  |                                    |                                    |                                    |                                    |                                    |                                    |
| Interpretation  |                                    |                                    |                                    |                                    |                                    |                                    |
| Analysis (Original scale range 1 to 5)                                  | 73.8%<br>71.2%                     | 50.0%<br>48.2%                     | 25.0%<br>20.6%                     | 84.9%<br>84.9%                     | 73.6%<br>69.8%                     | 39.6%<br>37.7%                     |
| <b>Integration of Writer's Ideas</b>                                    |                                    |                                    |                                    |                                    |                                    |                                    |
| Evaluation  |                                    |                                    |                                    |                                    |                                    |                                    |
| Inference   | 66.1%                              | 43.1%                              | 20.6%                              | 85.2%                              | 72.2%                              | 44.4%                              |
| Explanation   | 69.6%                              | 46.6%                              | 21.0%                              | 85.2%                              | 72.2%                              | 44.4%                              |
| Self-Regulation (Original scale range 1 to 5)                           | 82.5%<br>84.4%                     | 44.8%<br>65.7%                     | 21.4%<br>35.8%                     | 83.3%<br>85.2%                     | 53.7%<br>74.1%                     | 37.1%<br>46.3%                     |
| <b>Total Comprehension</b> (Recoded scale range 1 to 5)                 | 76.6%                              | 53.2%                              | 26.2%                              | 84.9%                              | 73.6%                              | 47.2%                              |
| <b>Total Integration of Writer's Ideas</b> (Recoded scale range 1 to 5) | 92.6%                              | 59.4%                              | 29.3%                              | 84.9%                              | 73.6%                              | 47.2%                              |
| <b>Total Score on CTWC Skills</b> (Recoded scale range 1 to 5)          | 93.0%                              | 59.0%                              | 30.5%                              | 84.9%                              | 73.6%                              | 54.7%                              |
| <b>N</b>  | 256                                |                                    |                                    | 53                                 |                                    |                                    |

Note: All skills scores range from 1 (poor), 2 (fair), 3 (good), 4 (very good) to 5 (excellent).

Relative advantages and disadvantages of the differential CTWC learning experiences in the courses and among the student groups show up more clearly for the work scored at or above the milestone levels 3 (good) and 4 (very good) (Tables 10 and 11 and Figure 13).

**Figure 13: Course Comparisons of Total Scores on CTWC Skills (2014–2016)**



Note: Total CTWC skills scores range from 1 (poor), 2 (fair), 3 (good), 4 (very good) to 5 (excellent). WRIT100 – Semester 1 course; WRIT200 and GCRT100 – Semester 2 course; and PFP200 and 211 - Semester 3 courses.

The benefits of the beginner skill-building learning experience in WRIT 100 seem apparent with 80% of students surpassing the first semester learning outcomes, achieving total skill score levels of good (3) or above, and almost 40% achieving very good (4) to excellent (5) levels. The gains continue in the second semester course (WRIT 200) with 88% of students scoring total skill levels of good or higher and meeting the associated second semester learning outcome expectations. Further, almost 60% of students in WRIT 200 had very good to excellent total skills scores upon completion of the course achieving the learning outcomes expected for semester three or even graduating students, ahead of schedule in their programs.

Comparatively, lower percentages of students in the third semester police foundations courses where the skills were not overtly taught met the suggested CTWC learning outcome expectations. Only 60% and 74% of students in PFP 200 and PFP 211 respectively had work products scored at or above the total CTWC skill achievement level of 3 (good), the learning outcome expectation for students' second semester. For work scored at or above the total skill level 4 (very good), merely 31% and 55% of students in PFP 200 and PFP 211 correspondingly achieved this expected semester three milestone. Especially compelling evidence supporting the explicit, CT skills-building learning experience over a more implicit approach that entrenches CT concepts in a program-specific course of study, is that the first semester WRIT 100 students outperformed the PFP 200 and PFP 211 student groups with regard to total skills scores across all three milestone levels of achievement except in the case of level 4, where the PFP211 students outperformed the WRIT100 students. .

Further, and perhaps surprisingly, results from student work scored on CTWC skills in the second semester, GAS CT course (GCRT 100), are the lowest across all course total scores. At level 3, the capstone expectation for certificate graduates, less than half (46%) of students in the course had work products with total skills scores of good or above. And notably, the first semester cross-college WRIT 100 students outdid the second semester, GAS GCRT 100 students on total skills scores pertaining to all three milestone levels of achievement. This lends support to the idea that the early, deliberate building of the essential skills in

college-wide reading and writing courses has a more positive effect on students learning the outcomes than a special course solely devoted to teaching the CT conceptual and theoretical content.

Finally, despite these differences, a common trend across the courses and almost all milestones (with the exception of PFP 211) in Tables 10 and 11 are higher percentages of students achieving total skills related to integrating writer's ideas into their work compared to the total comprehension learning outcomes. These results are compatible with the findings of the panel study discussed above. Accordingly, any future curriculum changes should focus on improving gains in CTWC skills related to comprehension. Put simply, upon the completion of all courses, more students are able to integrate writer's ideas into their work at higher levels of achievement than they can comprehend (interpret and analyze) written work.

In general, however, the descriptive statistics results from the course comparisons in the second phase of the study (2014–2016) have demonstrated that most students in the cross-college reading and writing courses — experiencing the early, explicit skills-building curriculum — are coming out of those courses with CTWC skills at good or superior levels. Moreover, measures of central tendency showed average total skills scores of good for students in WRIT 100 and very good for students in WRIT 200, exceeding the semester one (fair) and two (good) learning outcome expectations. Additional evidence of the success of the explicit curriculum in facilitating learning of the CTWC skills is that either the WRIT 100 or 200 students typically had higher total skills scores than student groups from all other diploma PFP and certificate GAS courses, which do not overtly teach the essential skills. On average, both WRIT 100 and 200 students also outperformed the comparable student groups from reading and writing and police foundations courses in the pilot study (2013–2014) on overall CT skills scores.

Overall, we suggest this preliminary comparative evidence could mean that the early, explicit skills-building curriculum of the cross-college reading and writing courses makes a difference with regard to success in learning the outcomes. Further, when contrasted with the GAS group, whose theoretical, content-heavy learning experience produced the lowest levels of student achievement, we argue that the positive impact of the explicit skills-building journey on student skill attainment seems even more probable. This said, we certainly recognize the threats to internal and external validity inherent in the cross-sectional design of the study that prevent us from making any firm causal conclusions or generalizing the results to the larger Humber community. We further acknowledge the longitudinal results above that did not find significant gains in learning the skills after the cross-college reading and writing panel group's student work was assessed over two initial time periods.

### *Usability and Scalability Results*

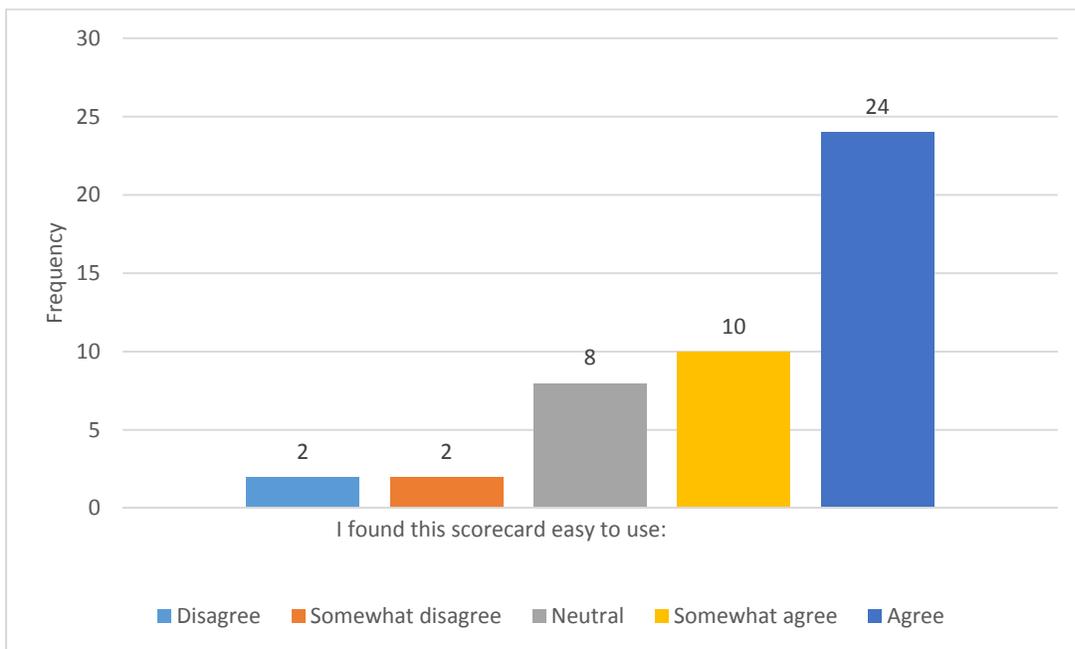
Do faculty find the scorecard easy to use? Do faculty believe the rubric will supply meaningful information to their students about their level(s) of achievement in the CTWC areas? Can the CTWC skills scorecard be implemented optimally within the institution and scaled successfully?

In order for the CTWC skills scorecard to be implemented optimally across the institution and scaled successfully it is important that faculty find it both easy to use and meaningful in the sense that they believe it supplies important information to students about their current attainment of the skills and any improvement required. For example, it is essential that the scorecard be simple enough for faculty to be able to apply it consistently and reliably, and that faculty feel the assessment tool and overall scoring process are not overly complex and cumbersome. It is also imperative that faculty perceive the scorecard to

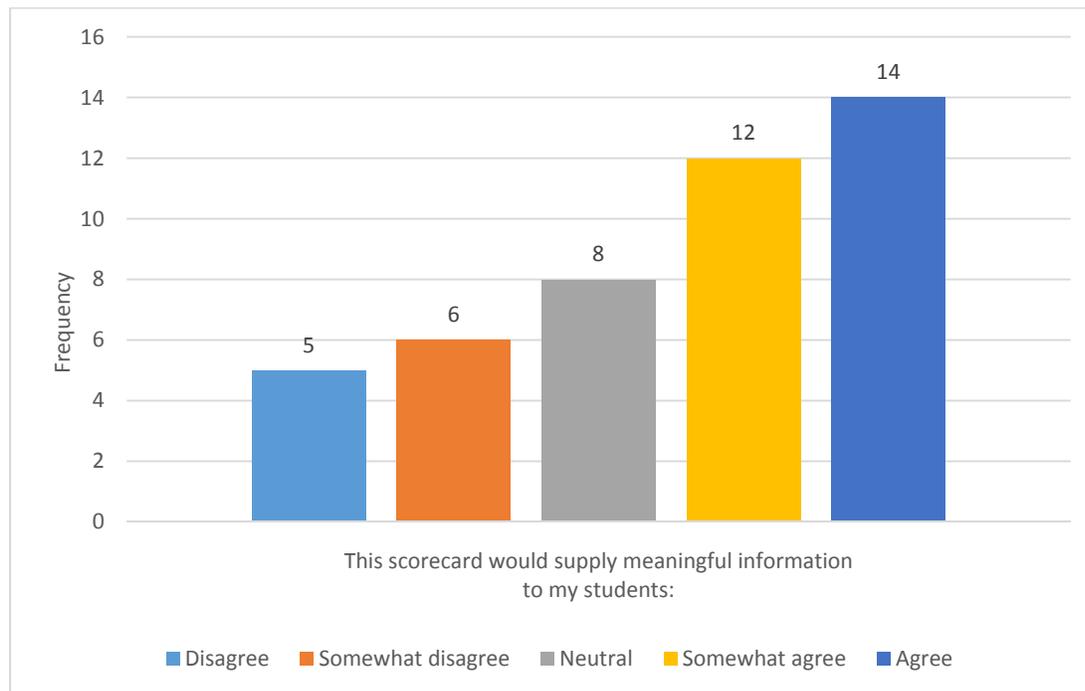
be valid and able to supply students with significant signals about the skills learned so that they see the benefit of the assessment and are invested in the project from the outset. Thus, the scorecard must be easy to use as well as fully embraced as meaningful by faculty to be implemented optimally across the institution and scaled successfully.

Almost three quarters (74%, 34 out of 46) of the faculty surveyed from the first (2013–2014) and second (2014–2016) phases of the study agreed that the scorecard was easy to use (Figure 14). Another 17% (8) were neutral and only 9% (4) disagreed.

**Figure 14: Faculty Perceptions of the Usability of the CTWC Skills Scorecard (2013–2016)**



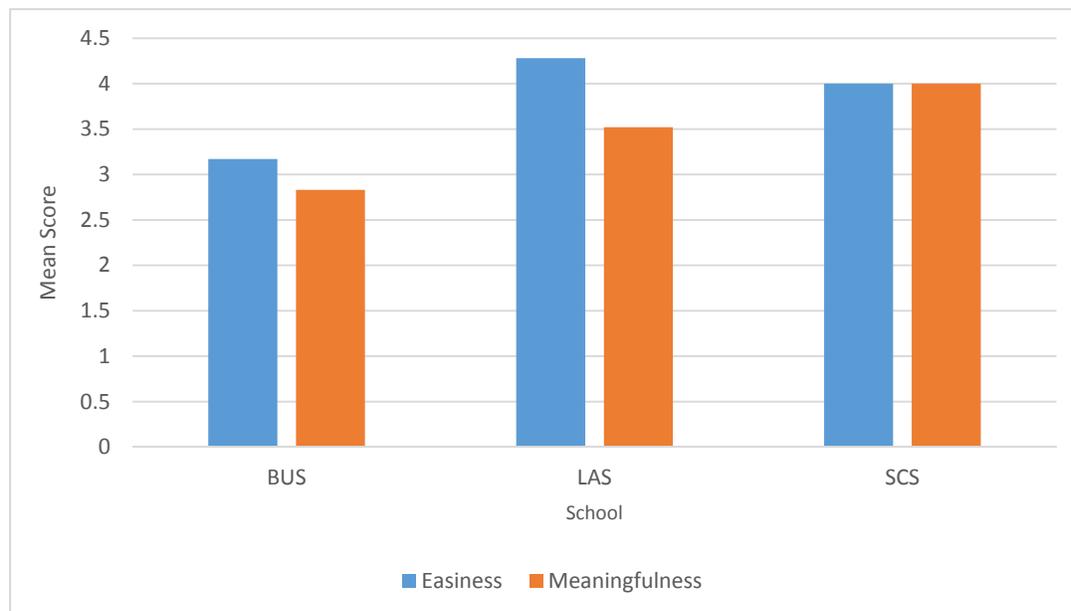
Further, 58% (26) of faculty agreed the scorecard would supply meaningful information to students about the skills learned, while 18% (8) were neutral and 24% disagreed (11) (Figure 15).

**Figure 15: Faculty Perceptions of the Meaningfulness of the CTWC Skills Scorecard (2013–2016)**

Put differently, when asked if the scorecard was user-friendly, faculty had very positive perceptions ( $M = 4.13$ ,  $Mdn = 5.00$ ,  $SD = 1.13$ ). Faculty were further asked about the meaningfulness of the scorecard using the same scale. Perceptions of the significance of the skills scorecard were similarly favourable although slightly less so and more variable ( $M = 3.53$ ,  $Mdn = 4.0$ ,  $SD = 1.36$ ). Overall, faculty agreed the scorecard was straightforward and somewhat significant.

Differences in faculty perceptions of the usability of the scorecard among schools were also found (Figure 16). Faculty from LAS ( $M = 4.28$ ,  $Mdn = 5.00$ ,  $SD = 0.92$ ) and SCS ( $M = 4.0$ ,  $Mdn = 5.0$ ,  $SD = 2.0$ ) had higher agreement that the assessment tool was user-friendly than those from BUS ( $M = 3.17$ ,  $Mdn = 3.5$ ,  $SD = 1.48$ ). SCS faculty were also more supportive of the scorecard as meaningful ( $M = 4.0$ ,  $Mdn = 5.0$ ,  $SD = 2.0$ ) than those from LAS ( $M = 3.52$ ,  $Mdn = 4.0$ ,  $SD = 1.34$ ) and BUS ( $M = 2.83$ ,  $Mdn = 3.0$ ,  $SD = 1.33$ ).

**Figure 16: Faculty Perceptions of the Usability and Meaningfulness of the CTWC Skills Scorecard by School (2013–2016)**



Note: Faculty perceptions of the usability and meaningfulness of the skills scorecard were measured on a numeric scale: 1 (disagree), 2 (somewhat disagree), 3 (neutral), 4 (somewhat agree) to 5 (agree).

Moreover, if faculty had found the CTWC skill fields of the scorecard difficult to use, there would have arguably been a lot of incomplete or missing data pertaining to the specific items on the completed scorecards. However, faculty had difficulty using the scorecard to assess individual items in the 2014–2016 study in only four students’ work products in the reading and writing courses (WRIT 100 and 200) and only two assignments in the police foundations courses (PFP 200 and 211). There were no missing data for the CT course (GCRT 100), although it must be noted that in this case the scorecard was administered by a third party assessor familiar with its use. In other words, faculty successfully used the scorecard to assess 99% (722) of the 728 total student artifacts. This very small amount of missing data further supports the common faculty perception that the scorecard is easy to use.

In sum, from the data analysis, it appears that faculty generally and quite consistently agree that the skills scorecard is user-friendly, yet there is less agreement on average and slightly more variable opinion about whether the tool will actually allow students to track attainment of the skills in a meaningful manner. Still, a majority of faculty surveyed embraced the skills scorecard as meaningful, almost 75% found it easy to use, and incomplete items in scorecards occurred in less than 1% of students’ work products assessed. We believe these findings speak rather positively to the scorecard’s prospects for implementation across the institution and for successful scaling.



Higher Education  
Quality Council  
of Ontario

An agency of the Government of Ontario