The WatCV Research Study

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Katherine Lithgow
Joslin Goh
and the WatCV research team

University of Waterloo
29 November 2017
the WatCV research team

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- Simron Singh, School of Environment, Enterprise, and Development
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- Judene Pretti, Centre for the Advancement of Co-operative Education
- Anne Fannon, Professional Development Program
- Angela Rook, GradVentures
- Svitlana Tarabon Gordon, Centre for Teaching Excellence
- Stephanie White, Centre for Teaching Excellence
presentation outline

1 study overview
2 higher education context
3 WatCV intervention
4 study findings
5 sustainability
1.1 WatCV as research study

Research Question

Does integrating the WatCV assignment into existing course activities increase students’ ability to articulate the employability skills (i.e., professional, transferable skills) that they tacitly acquired while completing coursework?
1.2 WatCV as teaching and learning intervention

**Undergraduate student learning outcomes**
identify, articulate, and persuasively demonstrate the implicit, transferable, employability skills that students develop in courses

**Instructor enhanced teaching outcomes**
make explicit the transferable skills that students develop during course activities
assess these skills with the customized and interactive marking rubric
2.1 higher education context

employer demand for transferable skills (Drummond 2015)

“Only 1 in 5 employers - or 20% - believe that new graduates have the skills necessary to fill entry level positions in their companies.”

CareerBuilder.ca, 2015
2.1 higher ed research acknowledges

“Leaving employers to infer skills from content knowledge can lead to claims of a “skills gap” and of employers being unable to find graduates with the necessary skills to fill advertised positions.

Skills, Competencies and Credentials argues that this reflects ‘a failure on the part of universities to talk to students about the skill development inherent in their education.’ ”

Alan Harrison, HEQCO, 5 October 2017
2.3 University of Waterloo response

improve employability of all University of Waterloo students, regardless of discipline
focus on experiential education, including co-operative education (UW Strategic Plan 2013)
2.4 government call

Ontario government mandate to develop skills

Highly Skilled Workforce Report

(MAESD 2016; Chiose 2017)
2.5 student call

“It’s time we cast aside the skills-gap myth and instead address the skills awareness gap.

Until course syllabuses, CCRs, and ePortfolios include academic and extra-curricular learning outcomes and become part of a sector-wide policy that ensures a basic standard of taxonomies, positions, experiences and assessment practices, employers and students will not see value in them.”

Victoria Lewarne and Marc Gurissi, OUSA HEQCO, 24 October 2017
2.6 WatCV stakeholders

**Instructors** help students identify and articulate employability skills outlined in UDLEs.

**Students** need awareness and articulation practice.

**Employers** want to hear candidates articulate employability skills.

Skills Articulation
2.7 skills articulation movement

Internationally
- Deakin University (Australia)
- Griffith University (Australia)

Provincially
- Carleton University
- Guelph University
- McMaster University
## Career development and EMPLOYABILITY curriculum FRAMEWORK

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<thead>
<tr>
<th>Transition In</th>
<th>Transition Through</th>
<th>Transition Out</th>
<th>Transition Up</th>
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</thead>
<tbody>
<tr>
<td>Clarifying sense of aspiration and connection to the field and future pathways.</td>
<td>Learning and assessment items designed to foster a sense of career direction, purpose and aspiration.</td>
<td>Learning and assessment items designed to consolidate a sense of purpose and capability and foster a sense of employability and professional connection.</td>
<td>Active engagement with industry, consolidate preferred industry relationships and apply for graduate roles.</td>
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<tr>
<td>Confirming and commencing to build career direction. Selecting majors if relevant. Understanding employability and how to build it. Creating the career e-portfolio.</td>
<td>Raise awareness of possible career options leading from degree and how to increase employability.</td>
<td>Facilitate workplace based learning through methods such as: authentic assessment items; WIL, mentoring and industry visits.</td>
<td>Commence active job search process.</td>
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<td>Refine career development plan and commence targeting opportunities.</td>
<td>Proactive outreach to professional field and foster growing network.</td>
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<td>Develop professional development plan for after graduation.</td>
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<td>Record in e-portfolio, finalise resume and LinkedIn profile.</td>
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### Additional Resources


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**Tomasson Goodwin, Lithgow, and Goh, 29 November 2017**
Skills You Will Gain from this Degree

General/Transferable Skills:

- Academic writing and presentation skills
- Critical thinking and analytical skills
- Abstract reasoning
- Communication and interpersonal skills
- Leadership and teamwork skills
- Organization/time management skills
- Goal setting and prioritizing
- Knowledge of and experience with basic techniques of statistical analysis
- General research skills including database searching, conducting literature reviews, synthesizing and interpreting vast amounts of information, designing and conducting new research, data analysis, and interpreting and understanding both your own and other’s research results
2.10 University of Guelph

WHAT CAN I DO WITH MY Bachelor of Applied Arts in Media Studies Degree and Diploma in Media Communications?

Program Specific Skills

- Advocacy
- Analytical Reading
- Application of Communications Technologies
- Articulation of Ideas
- Audience Evaluation

Transferable Skills

- Adaptability
- Flexibility, Determination, and Enthusiasm
- Ability to Cope Under Pressure
- Thoroughness and Problem Solving Skills
- Ability to Think Strategically
- Written Communication

- Conceptualization
- Contextualization of Social Events
- Computer Proficiency
- Critical Evaluation
- Generation of Original Ideas
- Integration of Knowledge

- Presentation and Persuasion Skills
- Creativity and Imagination
- Excellent Time-management Skills and the ability to Multitask Projects
- Observation and Interpretation
- Confidence

Career Options (Some may require further education):

- Account Executive
- Advertising Photographer
- Advertising Sales Consultant
- Aerial Photographer
- Art Director
- Assistant Editor
- Associate Producer
- Associate Web Editor

- Event Photographer
- External Communications Officer
- Fashion Photographer
- Film or Television Writer/Producer/ Director
- Film and Video Editor
- Fine Arts Photographer
- Food Photographer
2.11 employers want

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<th>Personal Attributes</th>
<th>Presentational and Relational Skills</th>
<th>Metacognitive Skills</th>
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<td>Initiative</td>
<td>Interpersonal skills</td>
<td>Critical thinking</td>
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<td>Work ethic</td>
<td>Teamwork</td>
<td>Decision making</td>
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<tr>
<td>Leadership</td>
<td>Oral and written communication</td>
<td>Problem solving</td>
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</table>
2.12 institutions promise

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Tomasson Goodwin, Lithgow, and Goh, 29 November 2017
3.1 WatCV as teaching and learning intervention

6 faculties  
22 courses

3398 student participants

(1716 non-WatCV control + 1682 WatCV experimental)

2 experimental terms (Fall 2016 + Winter 2017)

standardized assignment instructions + in-class activities

standardized interactive rubric

marker workshops

marker post-mortem focus groups

marker post-survey
3.2 as learning intervention

standardized ePortfolio assignment

SKILLS SPOTLIGHT

INITIATIVE - ASSIGNMENT 1

Initiative is the ability to initiate and act on tasks and projects independently. I employed this skill while on my final co-op term at TRIUMF, when I conceptualized, designed and produced new promotional materials for the lab.

WRITTEN COMMUNICATION - ASSIGNMENT 2

Written Communication is the ability to write clear, grammatically correct, and compelling copy. I demonstrated this skill while acting as head of publicity for Eurydice when I wrote the press release for the production.

CRITICAL REFLECTION - ASSIGNMENT 3

Critical thinking is the ability to reflect on tasks and understand the ways in which key ideas are connected to one another. I demonstrated this skill when I worked as a dramaturg to design the Eurydice gallery space.

template highlights employability skills

used with permission
http://crodrigo3.wixsite.com/ca5rodri

Tomasson Goodwin and Lithgow, University of Waterloo, 29 November 2017
3.3 as eportfolio

competency reflection

750-word reflection on course-based skill format expected in behaviour-based interview (BBI) contexts (“STAR” - situation/task, action, result)

visual evidence of actions selected by student

3 iterations over 1 term

Assignment 1 Reflection

Task
As a communications assistant at TRUIMP, Canada’s national laboratory for office and nuclear physics, I created content and promotional materials to share the lab’s research with the community. During my first term at TRUIMP, I demonstrated my initiative when I spearheaded the design of new outreach materials, in preparation for their distribution at a national conference. I took initiative by going beyond requirements, and produced a final promotional product that doubled as a teaching tool.

My Actions
The creation of these outreach materials began when I quickly recognized that TRUIMP lacked outreach materials that would be accessible to the general public, since much of the lab’s print materials consisted of technical jargon and challenging scientific jargon. I decided that a dynamic new outreach piece was necessary to engage with the public and encourage them to learn more about science. I pitched the idea of a “Pandora Family” sticker set. These stickers would each represent a fundamental particle and would be accompanied with a description of the particle’s qualities, but without more like a “pedestrian profile”, and less like a textbook. Once I received approval from the communications team, I researched the standard model of particle physics in order to determine the qualities I needed to represent in the design. Since I was unfamiliar with the finer details of the standard model, I scheduled and conducted interviews with researchers at the lab, and, by taking this extra step, I ensured that my designs of these stickers would reflect their actual scientific properties, making them an effective teaching tool. Following my initial research and several interviews, I trained myself inAdobe Illustrator, a program used by professional graphic designers. To do this, I completed several online tutorials on my own time, thus maximizing my design time in the office. I repurposed the information here in my research to craft the particle descriptions, paying close attention to word choice in order to keep the information accessible. Once the designs were complete, I reviewed the product with the researchers. I critically reflected on my design choices with these researchers to identify the areas where the science behind the stickers was not being communicated. I took their feedback and I adjusted my designs and copy until we arrived at the final product. I discussed the changes with these researchers and, upon receiving their approval, I sent the stickers and descriptions to print. Finally, rather than simply mailing these stickers and their descriptions to the conference organizers, I transformed the stickers and copy into packages and placed them into custom designed, hand-stamped envelopes before shipping.

Results
After I produced these materials, many conference attendees praised TRUIMP’s new stickers as an exceptional piece of science communication. These materials have also been incorporated into the TRUIMP tour to help guests visualize the satellites that phi-phys studies. I believe this initiative demonstrates my initiative by showing how I go beyond requirements in order to succeed. Since transitioning back to school, I have worked to maintain this initiative in my coursework.

student example used with permission
http://crodrigo3.wixsite.com/ca5rodri

Tomasson Goodwin and Lithgow, University of Waterloo, 29 November 2017
3.4 student learning finding

student success increased significantly from WatCV1 to WatCV3

consensus:
if students follow the WatCV assignment instructions and rubric carefully, they achieve B-level grades
3.5 student response

https://vimeo.com/239876599/cb9af7fba0
3.6 as teaching intervention

employability skills made explicit and graded
outlined in syllabus
tied to three course projects/activities
graded as course assignment via eportfolio (6-30% of final grade)
### 3.7 as teaching and learning intervention

<table>
<thead>
<tr>
<th>Design Teaching</th>
<th>Iterative Learning</th>
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<tbody>
<tr>
<td>Instructor provides assignment, rationale, rubric</td>
<td>Student completes WatCV 1</td>
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<tr>
<td>Instructor provides feedback 1</td>
<td>Student incorporates feedback and completes draft WatCV 2</td>
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<tr>
<td>Peers provide feedback 2</td>
<td>Student incorporates peer feedback and completes Final WatCV 2</td>
</tr>
<tr>
<td>Instructor provides feedback 3</td>
<td>Students completes WatCV 3</td>
</tr>
<tr>
<td>Instructor provides feedback 4</td>
<td>Student uses WatCV to prepare for interviews</td>
</tr>
</tbody>
</table>
4.1 WatCV as research survey

6-month post course survey monkey

2 control (non-WatCV) groups (F2015 W2016)
2 experimental (WatCV) groups (F2016 W2017)

census-style (all students in eligible courses)
4.2 survey participation

Sent to 3998 students (1716 non-WatCV; 1682 WatCV)
31% accessed survey (1048)
77% completed close-ended questions (803)
43% completed open-ended questions (347)
4.3 coding method

Statistical data for close-ended questions:
demographic and self-report statistics

Hand-coding, then statistical data for open-ended questions:
1881 hand-coded answers (627x3)
Coding guidelines from WatCV rubric
4.4 open-ended survey question coding

Open-ended questions: Behaviour-based interview question answered in the STAR (Situation or Task/Actions/Result) format

Achievement-level coding:
Sharpen: can student identify (situation, skill, actions, results, new situation)
Deepen: can student provide details (about situation, skill, actions, results, new situation)
Transfer: can student connect details (about situation, skill, actions, results) to bridge to new/future situations
4.5 most significant findings

1. Writing WatCV reflections helps **all students** to articulate better (sharpen, deepen, and transfer).
2. **Co-op students** articulate better overall (WatCV and non-WatCV groups).
3. **All students** struggle to articulate how to transfer skills.
4. WatCV group **co-op students** articulate their ability to transfer skills better than non WatCV co-op students.
5. More **non-WatCV group students** answered with incorrect skill than WatCV group students.
4.6 completion of open-ended questions

Control Group (non-WatCV)
- None: 67%
- 1 question: 18%
- 2 questions: 15%

Experimental Group (WatCV)
- None: 66%
- 1 question: 3%
- 2 questions: 31%

“This looks less like a survey and more like a test of my STAR skills. I am not quite prepared for this. I apologize.”
4.7 completion of open-ended questions

Co-op Students
- None: 58%
- 1 question: 14%
- 2 questions: 27%

Non co-op Students
- None: 60%
- 1 question: 14%
- 2 questions: 26%
4.8 can students sharpen?

Sharpen: can the student identify (situation, skill, actions, results, new situation)

<table>
<thead>
<tr>
<th>Control Group</th>
<th>Experimental Group</th>
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<tbody>
<tr>
<td>71%</td>
<td>84%</td>
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</table>
4.9 can they deepen?

Deepen: can the student provide details (about situation, skill, actions, results, new situation)

Control Group
54%

Experimental Group
70%
4.10 can they transfer?

Transfer: can the student connect details (about situation, skill, actions, results) to bridge to new/ future situations

Control Group: 50%
Experimental Group: 66%
4.11 how many co-op students answered these questions?

Control Group: 86%
Experimental Group: 68%
In the last 6 months, describe a situation where you successfully communicated, verbally, your opinion to others.

Describe the situation you were in.

Describe the action(s) you took to successfully communicate your opinion.

Describe the outcome of your action(s). How did the situation end? What did you accomplish? What did you learn?
4.13 oral communication: sharpen

Control Group 69%  Experimental Group 88%

In the last 6 months, describe a situation where you successfully communicated, verbally, your opinion to others.
4.14 oral communication: deepen

Control Group 52%  
Experimental Group 81%
4.15 oral communication: transfer

Control Group | 47%
Experimental Group | 74%
Research Question

Does integrating the WatCV assignment into existing course activities increase students’ ability to articulate the employability skills (i.e. professional, transferable skills) that they tacitly acquired while completing coursework?
4.17 student response

https://vimeo.com/213877768
5.1 sustainability

CTE WatCV workshops
CTE Website
Campus network: Co-op, EDGE, SSO
5.2 potential applications

Program-level integration
Campus-level integration
Work term reflections
references


For discussion: WatCV as assessment innovation

<table>
<thead>
<tr>
<th>ePORTFOLIO FORMATTING AND DESIGN</th>
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<th>C</th>
<th>B</th>
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WatCV rubric structure

- Vertical points in a column add up to highest numerical value in that grade range (at Waterloo, max D+ is 59%)

- Grade ranges are associated with qualitative outcomes in the application setting (in our case, employer BBI context)

- Horizontal points in a row add up to highest numerical value for that criterion
communicating achievements

at-a-glance macro- and micro-level feedback

Roberts-Smith, Lithgow, Tomasson Goodwin et al. IUPUI Indianapolis 23 October 2017.
digital marking interface
centralized, interactive form

Click-able buttons

Validation of manually-entered student and course information

Built-in grade calculator

Export for electronic delivery to students

Roberts-Smith, Lithgow, Tomasson Goodwin et al. IUPUI Indianapolis 23 October 2017.
WatCV marking rubric interrater reliability finding

markers across disciplines agreed on grades for about 80% of the indicators in the rubric

marker workshop process
leaders review rubric design
participants grade sample assignment
participants compare grades
all discuss points of difference
WatCV marker efficiency finding

how many assignments did you mark before you felt comfortable with marking WatCV?

you (instructors - 10 respondents) your teaching assistants (6 respondents)

[Bar charts showing the distribution of assignments marked before feeling comfortable]