Psychology Program Assessment Report

AY 2013-14

The Psychology Assessment Plan scheduled the written communication (CLO-1) and critical thinking (CLO-6) concentration outcomes for review during AY 2013-14. All full-time Psychology faculty delivering courses with Student Learning Outcomes (SLOs) aligned with CLO-1 or 6 in the Psychology program were instructed to carry out assessments of student learning. Further, faculty were instructed by the Assessment Committee to use the VALUE rubrics developed by the American Association of Colleges and Universities to evaluate student works. The participating Psychology faculty used the VALUE rubrics for written communication and critical thinking in conducting the assessments described here.

Table 1 presents a summary of the Psychology program's assessment efforts during the Fall of 2013. Three of 4 tenure-line Psychology faculty provided assessment reports as directed by the Assessment Committee. The original course-level assessment reports compiled by the participating faculty are provided in Appendix A. Two of the participating Psychology faculty held the rank of Professor while the remaining faculty member was an Assistant Professor. Nine courses were assessed in total and these included 4 lower-division (3 sections of Psy 100) and 5 upper-division sections. Six of the course sections assessed were delivered online and 3 were in-person.

Table 1	Summary	of Psychology	nrogram's	assessment	efforts during AY 2013-14.
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Assessing	Faculty	Course	Sections	Course	Course
Faculty	Rank	Alpha	Assessed	Level	Modality
Dr. Tsuru	Assistant	Psy 100	1	Lower	In-person
Dr. Castillo	Professor	Psy 100	2	Lower	Online
Dr. Castillo	Professor	Psy 250	1	Lower	Online
Dr. Castillo	Professor	Psy 473	1	Upper	Online
Dr. Hanson	Professor	Psy 322	2	Upper	Online
Dr. Hanson	Professor	Psy 325	1	Upper	In-person
Dr. Hanson	Professor	Psy 325	1	Upper	In-person

Procedures

Approximately 20% of the students enrolled in each course section assessed were randomly selected by evaluating the work of every 5th student on the course rosters. In total, the work of 48 students was evaluated in this assessment exercise. All participating faculty applied the written communication and critical thinking VALUE rubrics to two written course assignments in a pre-test/post-test design. After completing the assessments of written communication and critical thinking on their respective courses, the participating Psychology faculty convened during the Spring 2014 UHWO Professional Development Day to discuss their course-level findings. These discussions led to the identification of Psychology program strengths and recommendations for program changes to address identified weaknesses in student learning.

Findings

Written Communication. The written communication VALUE rubric evaluates student writing on five dimensions that include: 1) context and purpose for writing, 2) content development, 3) genre and disciplinary conventions, 4) sources and evidence, and 5) control of syntax and language. The UHWO Assessment Committee modified the original VALUE rubric to score these dimensions on a 3-point scale (0-2) of beginning (0), progressing (1) and advanced (2) performance.

Table 2 shows that across all 9 course sections evaluated, the mean scores for each written communication rubric dimension increased between 0.2 and 0.4 rating points from the first to the second assignment. This increase in writing performance shows that students are learning to write better as they progress through a given psychology course. This increase in writing performance is likely due to receiving instructional feedback from the first written assignment, which in turn, improved writing skills for the second assignment.

Table 2. Mean scores for each written communication VALUE rubric dimension for the first and second written assignments, in-person and online course delivery modalities, and for lower and upper-division course sections.

Pre-test verses		Wri	itten Rubric Din	nensions			
Post-test Performance	Purpose	Content	Genre	Source	Mechanics		
Paper 1	1.3	0.9	1.1	1.1	1.2		
Paper 2	1.6	1.3	1.4	1.5	1.4		
In-person verses		Written Rubric Dimensions					
Online Performance	Purpose	Content	Genre	Source	Mechanics		
In-person	1.8	1.0	1.3	1.5	1.3		
Online	1.2	1.2	1.3	1.1	1.3		
Lower verses Upper	Written Rubric Dimensions						
Division Performance	Purpose	Content	Genre	Source	Mechanics		
Lower Division	1.1	1.2	1.0	1.0	1.2		
Upper Division	1.6	1.1	1.4	1.4	1.3		

In-person and online student writing performance is compared in the center rows of Table 2. Overall, the writing performance of students in the online sections was lower than for in-person students. In particular, students scored 0.6 and 0.4 rubric points higher in in-person courses for the Purpose and Source rubric dimensions, respectively. Online students were slightly stronger (0.2 points) on the Content dimension with equivalent performance on Genre and Mechanics. Content, however, was the dimension that received the lowest scoring across both modalities.

Table 2 also presents data for the lower and upper-division Psychology course sections assessed. With the exception of the Content dimension, students in upper-division Psychology courses scored between 0.1 and 0.5 rubric points higher than lower-division students. Students in the lower-division sections scored slightly higher on content (0.1 point) than those in upper-division courses. Overall, these data reveal that students are improving in their writing skills as they progress through the Psychology program.

Critical Thinking. The critical thinking VALUE rubric evaluates student reasoning on five dimensions that include: 1) explanation of issues, 2) evidence, 3) influence of context and assumptions, 4) student position, and 5) conclusions and related outcomes. The UHWO Assessment Committee modified the original VALUE rubric to score these dimensions on a 3-point scale (0-2) of beginning (0), progressing (1) and advanced (2) performance.

Table 3 shows that overall the mean scores for each critical thinking rubric dimension increased between 0.2 and 0.4 rating points from the first to the second assignment. This increase in critical thinking performance suggests that students are learning to reason better as they progress through a given psychology course. As with written communication, reasoning performance likely increases through a course because of instructional feedback from the first assignment which helps students improve on the second assignment.

Table 3. Mean scores for each critical thinking VALUE rubric dimension for the first and second written assignments, in-person and online course delivery modalities, and for lower and upper-division course sections.

Pre-test verses		Critical	Thinking Rubric	Dimensions			
Post-test Performance	Explain	Evidence	Assumptions	Position	Conclusions		
Paper 1	1.1	1.1	0.6	0.6	0.6		
Paper 2	1.3	1.3	1.0	1.0	0.9		
In-person verses		Critical Thinking Rubric Dimensions					
Online Performance	Explain	Evidence	Assumptions	Position	Conclusions		
In-person	1.1	1.3	0.6	0.7	0.7		
Online	1.2	1.1	0.9	0.9	0.8		
Lower verses Upper	Critical Thinking Rubric Dimensions						
Division Performance	Explain	Evidence	Assumptions	Position	Conclusions		
Lower Division	1.2	1.1	0.7	0.9	0.7		
Upper Division	1.2	1.3	0.9	0.8	0.7		

In-person and online mean rubric dimension scores were also compared for the critical thinking assessment (Table 2). Overall, the reasoning performance of students in the online sections was slightly higher (0.1 - 0.3 points) on 4 of the 5 rubric dimensions. The in-person students did fair 0.2 points higher on the use of evidence. Given the modest differences on many of the critical thinking dimensions (0.1 - 0.2 points for 4 of the 5 dimensions) these data suggest similar critical thinking performance across the two instructional modalities.

Comparison of lower and upper division sections revealed modest improvement on critical thinking as student's progressed through the Psychology program. Four of the five critical thinking dimensions showed no change to modest critical thinking improvement (0.1-0.2 points) as students matriculated to higher division courses. The Position dimension saw a decrease of 0.1 points among students in the upper-division courses assessed.

Conclusions

Written Communication. In light of the Written Communication assessment findings compiled for the Psychology program it is clear that our students improve substantially in their writing skills as they progress through a given course and the program overall. The writing performance of students in online sections was a little weaker than for in-person courses, and across both modalities, students performed the weakest on the rubric dimension of content development.

Critical Thinking. Results from the assessment of critical thinking in Psychology found that the reasoning skills of our students consistently improve as they progress through a course, but show more modest improvement as they work through the program. In contrast to the writing assessment results, students in online sections displayed modestly stronger critical thinking skills. Overall, the Psychology students assessed were weakest on taking a position and developing conclusions.

Recommendations

After discussing these finding the Psychology faculty have made the following recommendation to address the weaknesses found in our student's learning:

- 1. Provide Psychology students with more focused instruction, writing exercises, and/or feedback on content development when assigning and grading their written works.
- 2. Increase writing instruction, writing exercises and writing feedback for online Psychology course sections.
- 3. Increase instruction on critical thinking related to developing a position and using evidence to draw conclusions.

Appendix A

Psychology Program Course-level Assessment Reports

Course Level Academic Assessment Reporting Form

Semester/year: Fall 2013 Course alpha(s): Psy 100 (2 sections), Psy 250, Psy 473

Course title(s): Survey of Psychology (100 online), Social Psychology (250 online), and Psychology of

Healing (473 online)

Course instructor: Richard Castillo Instructor rank: Professor

Modality of the course (underline one or more): In-person Online Hybrid

Academic Division: Social Sciences **Academic Concentration:** Psychology

Student Learning Outcome(s) assessed (provide complete SLO language):

CLO-1. Demonstrate clear and effective writing about Psychology in APA style

CLO-6. Think critically about psychological literature, theory, methods or applications

Student learning outcome alignment (identify the CLO, DLO, GELO and/or ILO aligned with the SLO being assessed):

All three courses (two sections of PSY 100) assessed had symmetrical student learning outcomes learning outcomes that addressed writing and critical thinking.

Psy 100 SLO-3,4, Psy 250, SLO-3,4, Psy 473 SLO-3,4:

SLO3. Demonstrate critical thinking about the methods, knowledge and theories associated with psychology. (ILO3, DLO5, CLO6)

SLO4. Learn how to find, review and cite psychological literature (CLO-1, DLO-1, ILO-1).

These SLOs align with the Psychology CLO-1 on writing, the Social Sciences DLO-1 on writing and ILO-1 on effective communication

These SLOs also align with Psychology CLO-6 on critical thinking, the Social Sciences DLO-5 on critical thinking and ILO-3 on critical thinking

Assessment procedures (provide a description of the methods used to conduct the assessment):

The psychology faculty scheduled the assessment of their program CLOs on written communication (Psy CLO-1) and critical thinking (Psy CLO-6) for AY 2013-14 in the Psychology Assessment Plan. In accordance with the UHWO Assessment Guidelines, all of my courses with SLOs aligned with the Psychology CLOs on writing and critical thinking were assessed. Five students were randomly sampled (every 5th student on the roster was selected up to 5 students per course) from each course section for a total of 20 students across all courses. These courses required students to post on the discussion board critical reviews on course related discussion topics. The UHWO Written Communication and Critical Thinking rubrics were applied to the first

and last papers submitted by the sampled students in a pre test/post-test assessment design. The mean rubric scores for each course from the first round of papers were compared to those from the second round of papers to document formative development of writing skills. The online and in-person sections were also compared to evaluate any differences in learning among the different instructional modalities.

Assessment findings (provide a description of the assessment results found with a table that summarizes the rubric scores assigned to student works):

The written communication assessment found the mean scores presented in Table 1 for the first and second paper assignment. Students showed writing improvement on all five dimensions of purpose, content development, genre, use of sources and mechanics. As expected, students in PSY 100 showed slightly lower mean scores across all dimensions as compared to PSY 250 and PSY 473. For instance, the mean scores in the Purpose dimension were lower for Paper 1 and Paper 2 in PSY 100 than PSY 250.

Table 1. The mean scores for each UHWO Written Communication rubric dimension measured on the first and second paper assignments (n=20, 4 online course sections)

Assignments		Written Rubric Dimensions					
Assessed for PSY 100	Purpose	Content	Genre	Source	Mechanics		
(n=10, 2 sections)		dev.					
Paper 1	0.3	1.0	0.8	0.7	0.8		
Paper 2	0.9	1.2	1.2	1.2	1.3		
Assignments		Wri	tten Rubric Din	nensions			
Assessed for PSY 250	Purpose	Content	Genre	Source	Mechanics		
(n=5)		dev.					
Paper 1	1.2	1.0	1.0	1.0	1.2		
Paper 2	1.4	1.4	1.6	1.2	1.8		
Assignments		Written Rubric Dimensions					
Assessed for PSY 473	Purpose	Content	Genre	Source	Mechanics		
(n=5)		dev.					
Paper 1	0.6	1.2	0.8	0.4	0.8		
Paper 2	1.2	1.4	1.2	1.0	1.2		

The critical thinking assessment found improvement across all rubric dimensions from the first to the second assignment with the Conclusion dimension showing the greatest gain for the PSY 100 course, and Evidence showing the greatest gain in PSY 473 (Table 2).

Table 2. The mean scores for each UHWO Critical Thinking rubric dimension measured on the first and second paper assignments (n=20, 4 course sections)

Assignments		Criti	cal Thinking Din	nensions	
Assessed for PSY 100	Explanation	Evidence	Assumption	Position	Conclusion
(n=10, 2 sections)					
Paper 1	1.0	0.7	0.3	0.8	0.4
Paper 2	1.2	1.2	1.0	1.0	1.1
Assignments		Criti	cal Thinking Din	nensions	
Assessed for PSY 250	Explanation	Evidence	Assumption	Position	Conclusion
(n=5)					
Paper 1	1.0	1.0	1.2	0.8	0.4
Paper 2	1.4	1.2	1.4	1.2	1.0
Assignments		Criti	cal Thinking Din	nensions	
Assessed for PSY 473	Explanation	Evidence	Assumption	Position	Conclusion
(n=5)					
Paper 1	1.2	0.4	0.6	0.8	0.8
Paper 2	1.4	1.0	1.2	1.2	1.2

Assessment conclusions (provide an interpretation of the assessment results found in terms of student learning strengths and weaknesses):

The courses assessed showed robust learning on both writing skills and critical thinking across the two writing assignments. Purpose appeared to be a relative weakness in the students writing skills and effort will be directed at using student peer feedback to enhance content development writing skills in future sections of these courses.

As with written communication, psychology students showed improvement in the development of critical thinking skills from the first to the second paper assignment. Overall, students appeared weakest on their critical evaluation of evidence and assumptions. Future sections of these courses will incorporate a rubric on how to critically challenge assumption made by students and the authors of literature they review.

Course Level Academic Assessment Reporting Form

Semester/year: Fall 2013 Course alpha: Psy 100 (1 section)

Course title: Survey of Psychology

Course instructor: Garyn K. Tsuru Instructor rank: Assistant Professor

Modality of the course (underline one): <u>In-person</u> Online Hybrid

Academic Division: Social Sciences Academic Concentration: Psychology

Student Learning Outcome assessed (provide complete SLO language):

DLO-1/CLO-1. Demonstrate clear and effective writing about a specified social science concentration (Psychology).

*Ask whether it is ok to utilize DLO since APA not stressed in this GE entry level class.

CLO-6. Think critically about psychological literature, theory, methods or applications.

Student learning outcome alignment (identify the CLO, DLO, GELO and/or ILO aligned with the SLO being assessed):

The Psychology 100 course had student learning outcomes aligned to division and concentration outcomes that addressed writing and critical thinking. They were:

SLO-1. An ability to write clearly and effectively (using American Psychological Association (APA) format when appropriate) (ILO-1; DLO-1; CLO-1).

SLO-3. Critical thinking skills by tracing the influence and impact of various psychological concepts on biological processes and behavior (ILO-3 & 4; DLO-5, CLO-2, 5 &6).

SLO-7.Be able to research, synthesize, write and disseminate information related to the field of Psychology (ILO-1 to 4; DLO-1, 2, 4, & 5; CLO-1-6).

Assessment procedures (provide a description of the methods used to conduct the assessment):

The psychology faculty scheduled the assessment of their program CLOs on written communication (Psy CLO-1) and critical thinking (Psy CLO-6) for AY 2013-14 in the Psychology Assessment Plan. For this assessment cycle, the General Education classified Psychology 100 (Survey of Psychology) class with SLOs aligned to both the DLO and Psychology CLOs was assessed. 20% of students from each class were randomly sampled (every 5th student on the roster was selected up to 8 students per course) from each course section for a total of 8 students. Each student enrolled in the Psychology 100 class was required to write two 1 to 2-page reaction papers to a topic pertaining to a psychological phenomenon. The UHWO Written Communication and Critical Thinking rubrics were applied to the first and second papers submitted by the sampled students in pseudo pre test/post-test assessment design. It is important to

note that although the two writing assignments differed, the actual mechanics behind writing the paper (i.e., observe, synthesize observations with class material, and complete a write-up) were very similar. Instructions for both of the reaction papers can be found below. The mean rubric scores from the first round of papers were compared to those from the second round of papers to document formative development of writing skills.

Reaction Paper 1:

For our first Reaction Paper, we will be watching The Learning Channel's *Born a Boy, Brought Up a Girl*, the story of David Reimer, better known as John/Joan. Please write a 1 to 2-page (max), double-spaced reaction paper to the video. Please use the Pages app to complete this paper on your iPad and email it to garynt@hawaii.edu

In this paper, I would like to get your general reactions to the video. Also, which side do you believe has more of an impact on the development of human sexuality, *Nature* or *Nurture*? In addition to this, would Dr. Money's (the health professional who "treated" David Reimer) "treatment" meet the American Psychological Association's *Ethical* Guidelines for Research with Human Subjects (information about this can be found in the attached handout, as well as on page 30-31 of your King text)? Please support the points you believe he violated with examples from the video.

Reaction Paper 2:

This reaction paper will be based off of an experiential exercise we will be conducting at Chuck E' Cheeses. In this reaction paper, I would like you to write about the following:

1) Have you ever been to Chuck E' Cheeses as a child?; 2) How did it feel to go to Chuck E' Cheeses as a child (e.g., exciting, scary, no reaction at all); 3) How does it feel to return to Chuck E' Cheeses as an adult?; 4) Why might your feelings as an adult returning to Chuck E' Cheese be different from your childhood experiences? Even if you have never been to Chuck E' Cheeses before, please tell me how you might have reacted if you went to Chuck E' Cheeses as a child.

For Part II of the paper, I would like you to observe (very DISCRETELY!) the interactions between a parent - child customer. I would then like you to identify the child's temperament (e.g., Easy Child, Difficult Child, or Slow-to-Warm-Up Child) as well as the parent's parenting style (e.g., Authoritarian Parenting, Authoritative Parenting, Neglectful Parenting, or Permissive Parenting). Please provide a couple of examples to support your claim. Conclude the paper with some thoughts about how such an interaction between the child's temperament and the parent's parenting style may affect the child's development.

Assessment findings (provide a description of the assessment results found with a table that summarizes the rubric scores assigned to student works):

Table 1. The mean scores for each UHWO Written Communication rubric dimension measured on the first and second reaction paper assignments (n=8).

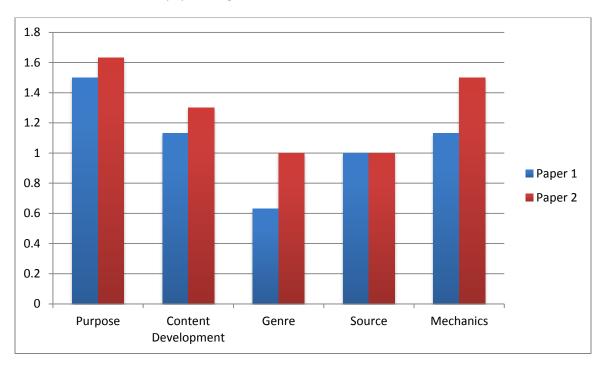
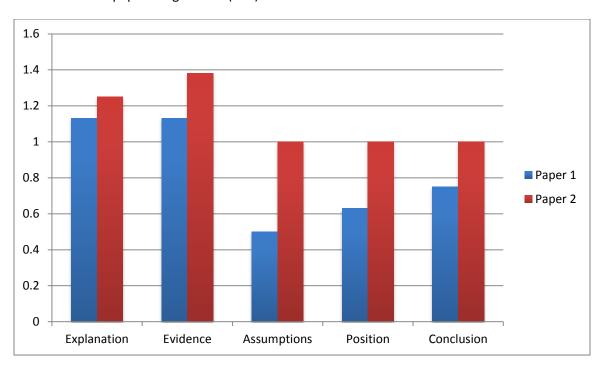


Table 2. The mean scores for each UHWO Critical Thinking rubric dimension measured on the first and second reaction paper assignments (n=8).



In regards to Written Communication, improvement was shown across the Purpose, Content Development, Genre and Mechanic dimensions. The Source dimension remained stable. General improvement was found across all the Critical Thinking dimensions.

Assessment conclusions (provide an interpretation of the assessment results found in terms of student learning strengths and weaknesses):

In general, students indicated an increase in both writing and critical thinking skills across the two writing assignments. Steps may need to be taken to ensure students cite and utilize source materials both accurately and effectively in their writing assignments. Also, a little more emphasis may be needed on teaching students the basics of APA style.

In regards to critical thinking, more emphasis needs to be placed on assumptions, positions, and conclusions to papers.

Course Level Academic Assessment Reporting Form

Semester/year: Fall 2013 Course alpha(s): Psy 322 (2 sections), Psy 325, Psy 340

Course title(s): Learning, Motivation and Behavior Modification (322 on-line), Cognitive Psychology (325

in-person), and Childhood and Adolescent Development (340 in-person)

Course instructor: Mark Hanson Instructor rank: Professor

Modality of the course (underline one or more): In-person Online Hybrid

Academic Division: Social Sciences **Academic Concentration:** Psychology

Student Learning Outcome(s) assessed (provide complete SLO language):

CLO-1. Demonstrate clear and effective writing about Psychology in APA style

CLO-6. Think critically about psychological literature, theory, methods or applications

Student learning outcome alignment (identify the CLO, DLO, GELO and/or ILO aligned with the SLO being assessed):

All three courses assessed had symmetrical student learning outcomes learning outcomes that addressed writing and critical thinking.

Psy 322 SLO-7, Psy 325 SLO-6, Psy 340 SLO-7: Learn how to find, critically write about and cite peer reviewed literature on topics related to Learning, Motivation and Behavior Modification/Cognitive Psychology/Childhood and Adolescent Development

These SLOs align with the Psychology CLO-1 on writing, the Social Sciences DLO-1 on writing and ILO-1 on effective communication

These SLOs also align with Psychology CLO-6 on critical thinking, the Social Sciences DLO-5 on critical thinking and ILO-3 on critical thinking

Assessment procedures (provide a description of the methods used to conduct the assessment):

The psychology faculty scheduled the assessment of their program CLOs on written communication (Psy CLO-1) and critical thinking (Psy CLO-6) for AY 2013-14 in the Psychology Assessment Plan. In accordance with the UHWO Assessment Guidelines, all of my courses with SLOs aligned with the Psychology CLOs on writing and critical thinking were assessed. Five students were randomly sampled (every 5th student on the roster was selected up to 5 students per course) from each course section for a total of 20 students across all courses. These courses required students to write two 2-3 page critical reviews on course related peer reviewed research articles of their own choosing. The UHWO Written Communication and Critical Thinking rubrics were applied to the first and second papers submitted by the sampled students in a pre test/post-test assessment design. The mean rubric scores from the first round of papers

were compared to those from the second round of papers to document formative development of writing skills. The online and in-person sections were also compared to evaluate any differences in learning among the different instructional modalities.

Assessment findings (provide a description of the assessment results found with a table that summarizes the rubric scores assigned to student works):

The written communication assessment found the mean scores presented in Table 1 for the first and second paper assignment. Students showed writing improvement on the dimensions of purpose, content development, and use of sources. Performance was stable on the dimensions of Genre and writing mechanics. The data in Table 2 were split by the in-person and online sections assessed, and found little difference in the writing performance of students enrolled in the different course modalities. Students in both modalities showed improvement across the two assignments with the differences equivocal.

Table 1. The mean scores for each UHWO Written Communication rubric dimension measured on the first and second paper assignments (n=20, 4 course sections)

Assignments	Written Rubric Dimensions						
Assessed	Purpose	Content dev.	Genre	Source	Mechanics		
Paper 1	1.8	0.7	1.6	1.5	1.5		
Paper 2	2.0	1.4	1.6	1.9	1.5		

Table 2. The mean scores for each UHWO Written Communication rubric dimension measured on the first and second paper assignments for the in-person (IP) and online (OL) course sections assessed (n=20, 2 in-person sections, 2 online sections)

Assignments	Written Rubric Dimensions					
Assessed	Purpose	Content dev.	Genre	Source	Mechanics	
Paper 1 (IP)	1.9	0.6	1.7	1.5	1.4	
Paper 1 (OL)	1.7	0.8	1.4	1.3	1.8	
Paper 2 (IP)	2.0	1.3	1.4	2.0	1.3	
Paper 2 (OL)	2.0	1.5	1.9	1.9	1.6	

The critical thinking assessment found improvement across all rubric dimensions from the first to the second assignment with the dimensions of assumption and position showing the greatest gains (Table 3). Splitting the critical thinking data by in-person and online modality found no substantive differences between students in the different modalities (Table 4).

Table 3. The mean scores for each UHWO Critical Thinking rubric dimension measured on the first and second paper assignments (n=20, 4 course sections)

Assignments	Critical Thinking Rubric Dimensions					
Assessed	Explanation	Evidence	Assumptions	Position	Conclusion	
Paper 1	1.1	1.5	0.4	0.5	0.6	
Paper 2	1.2	1.6	0.9	0.9	0.6	

Table 4. The mean scores for each UHWO Critical Thinking rubric dimension measured on the first and second paper assignments for the in-person (IP) and online (OL) course sections assessed (n=20, 2 in-person sections, 2 online sections)

Assignments	Critical Thinking Rubric Dimensions				
Assessed	Explanation	Evidence	Assumptions	Position	Conclusion
Paper 1 (IP)	1.0	1.5	0.4	0.5	0.6
Paper 1 (OL)	1.1	1.6	0.6	0.4	0.6
Paper 2 (IP)	1.1	1.6	0.8	0.9	0.8
Paper 2 (OL)	1.2	1.6	1.0	0.9	0.5

Assessment conclusions (provide an interpretation of the assessment results found in terms of student learning strengths and weaknesses):

The courses assessed showed robust learning on both writing skills and critical thinking across the two writing assignments. Content development appeared to be a relative weakness in the students writing skills and effort will be directed at using student peer feedback to enhance content development writing skills in future sections of these courses.

As with written communication, psychology students showed excellent development of critical thinking skills from the first to the second paper assignment. Overall, students appeared weakest on their critical evaluation of assumptions. Future sections of these courses will incorporate a special tutorial on how to critically challenge assumption made by students and the authors of literature they review.