

Applied Learning Status Report
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As part of Western's Applied Learning Initiative, last year's goals included the development of a quantitative assessment tool to measure student perceptions of the quality of their applied learning experiences. This tool was developed during Summer 2005 based on qualitative data provided by both chairs and faculty involved in applied learning. It was pilot tested with Summer Research Institute participants in July 2005 and demonstrated adequate reliability; however, the sample size included only 15 respondents. Such a small sample may produce unstable results, and during the Fall 2005 semester the assessment tool was distributed to every student enrolled in credit-bearing applied learning activity. This sample is much larger, and more stable, and will provide a stronger test of the reliability of the instrument.

Method

The Applied Learning Director contacted each department chair to identify the course in which students were involved in credit-bearing applied learning. Please note that some students may have been involved in more than one applied learning experience during the same semester. These students would have been given an assessment tool for *each* experience. Thus, the sample may include more than one questionnaire from a single student. However, the student was asked to rate the specific experience. As it is entirely possible for the quality of the experience to differ from course to course, we felt it was important to allow for this possibility. Because we were committed to the confidentiality of the assessment, we did not ask students to identify themselves, and thus are unable to fully disentangle the number of experiences from the number of students involved.

A total of 1,065 credit-bearing applied learning experiences were identified, and questionnaires were distributed to the students enrolled in them through the supervising faculty member. The supervising faculty member returned completed questionnaires to the Applied Learning Research Assistant. Six hundred twenty-two questionnaires were returned, yielding a total response rate of 58%. The breakdown of enrollment in applied learning and the response rate across each college is summarized in the table below. Clearly, the number of students involved in applied learning during Fall 2005 was significantly higher in the College of Professional Studies than in Liberal Arts and Sciences, although their response rates were similar.

College	Number of Students Enrolled	Number of Questionnaires Returned	Response Rate
Liberal Arts & Sciences	205	127	62%
Professional Studies	860	495	58%

The questionnaire came in four versions, one each for the four types of credit-bearing applied learning (i.e., study away, service-learning, independent research/project, and internship/practicum). The four versions shared common items on Placement Quality (4 items), Reflection (5 items, except for Study Away, which had 4), Diversity (4 items), and Application (4 items). The wording of these common items may have varied slightly from version to version, but the construct being measured was the same. All four versions are attached as appendices (web links) to this report for anyone who wishes to compare wording on common items. In addition to the common items, each version had 5 items unique to that type of experience. Finally, all questionnaires concluded with a question about the amount of faculty contact the student experienced over the course of the semester.

Results

The response rate for different types of applied learning varied. The highest response rate came from those involved in service-learning experiences, and the lowest response rate came from study away experiences. However, the number of questionnaires distributed was clearly highest in internship/practicum experiences.

Applied Learning Type	Distributed	Returned	Response Rate
Internship/Practicum	658	351	53%
Independent Research/ Project	66	33	50%
Service-Learning	298	231	76%
Study Away	22	7	32%

Reliability results. The 17 questions that were common items across the four forms of applied learning showed more than adequate internal consistency reliability as measured by Cronbach’s Alpha ($\alpha = .88$). However, we sought to shorten the scale in hopes that in future assessments we might obtain an even stronger response rate. Our current campus response rate of 58%, although excellent in the context of most survey research, still fails to assess a large portion of applied learning experiences. If the scale was shortened to a one-page measurement, this might well increase the response rate. Our goal was to achieve a more succinct measurement of applied learning experiences, while maintaining internal consistency reliability greater than .85 for the global scale. To determine which items might be omitted without jeopardizing the reliability of the scale, we examined the item-to-total correlation matrix.

Item-to-total correlations take each single item and correlate with the scale-as-a-whole. Items that have lower item-to-total correlations are typically considered good candidates for omission from the scale, as they may measure a slightly different construct than the scale as a whole does. We examined these correlations to identify candidates for omission, and found five items with markedly low levels. Having identified these items, we then determined what the scale alpha would be if each of those was deleted. Removal of each item individually did not lower alpha below the .85 threshold, and so the items were removed from the scale for further analyses. The dropped items were: (1) Item 10, from Placement Quality subscale; (2) Item 14, from Diversity subscale; (3) Item 16, from Application subscale; and (4) Items 5 and 6, from Reflection subscale. A total of 12 items remained, and achieved an alpha of .864. These items were then submitted to factor analysis to establish the subscale structure empirically.

Subscale structure. Although the 12-item scale purports to have four distinct subscales, their uniqueness has not been established empirically. Factor analysis provides a statistical tool to determine if the subscales are empirically distinguishable from each other. Because we would expect the four subscales—Placement Quality, Application, Reflection, and Diversity—to be correlated, we chose a factor analytic method that would allow this relationship. We used an oblique rotation method—Promax in SPSS. Specifying a four-factor solution, we were able to account for 64% of the variability in the data. Factor loadings are shown in the table below.

Subscale	Factor			
	Placement Quality	Application	Reflection	Diversity
<i>Placement Quality</i>				
2. Involved in multiple steps	.99			
3. Did not have opportunity to function independently (R)	.34	.40		
21. Spent majority of time doing low-level tasks (R)	.37	.47		
<i>Application</i>				
1. Could have has same experience without coursework at Western (R)		.59		
17. Assignment did not connect (R)		.75		
19. My research/project relates to major coursework		.68		
<i>Reflection</i>				
11. I problem solved			.81	
12. I participated in action planning			.84	
15. My supervising professor and I discussed significance of research/project		.54	.47	
<i>Diversity</i>				
4. This increased my exposure to different types of people				.49
13. I did not see a variety of viewpoints (R)		.53		.42
20. This increased my exposure to viewpoints different than my own				1.00

NOTE: (R) indicates a reverse-score item.

As the above table reveals, the factor structure was largely confirmed with a few exceptions. Two criteria were used in evaluating the factor structure: (1) items should load on the same factor as items in the same subscale and (2) loading on this factor should be at least .40 (Gorsuch’s (1983) minimum). Clearly, the Application subscale fared best, with all items loading at least .40 and all on the same factor. The Reflection and Diversity subscales also performed reasonably well, with

all items loading over .40, and only one item on each subscale sharing a loading on a second factor. None of the loading on factors other than the subscale factor were much larger than the loading on the subscale factor, however. The Placement Quality subscale, however, performed quite poorly, with items clearly loading on two distinct factors, and what should have been the common factor did not even achieve loadings of .40 for two of the items. Inspection of item content reveals that the Placement Quality items are more conceptually disparate than items within each of the other three subscales. Placement Quality items may not “hang together” conceptually as well as the other three subscales. During Spring 2006 we will modify the item content slightly to try to improve the subscale performance, or determine if perhaps Placement Quality should not function as a subscale. Subscale alphas and correlations are summarized in the table below.

	Placement Quality	Application	Reflection	Diversity	Total
Placement Quality	(.60)	--	--	--	--
Application	.30	(.69)	--	--	--
Reflection	.57	.34	(.74)	--	--
Diversity	.49	.31	.53	(.63)	--
Total	.79	.42	.82	.79	(.86)

Note: Figures in parentheses give internal consistency reliability as measured by Cronbach’s alpha. Non-parenthetical numbers represent correlations amongst subscales, and between subscale and total scores. All correlations are significant at the .05 level.

Quality results. The major purpose of establishing a reliable and valid assessment tool was to determine the quality of various aspects of Western’s Applied Learning programs. The mean score for each form of applied learning on each subscale is provided in the table below. All items were rated on 5-point Likert scales, and before forming subscale means, reverse scored items were inverted so that for all items, a rating of 5 indicated high quality and a rating of 1 indicated low quality.

Means for Subscales by Type of Applied Learning for Common Items

Subscales	Independent Research/Project Means (σ)	Internship/Practicum Means (σ)	Service-Learning Means (σ)	Study Away Means (σ)	Overall Campus Means (σ)
<i>Placement Quality</i>	4.43 (.52)	3.97 (.82)	3.69 (.78)	3.76 (.54)	3.89 (.81)
<i>Application</i>	3.65 (.61)	3.53 (.48)	3.34 (.59)	3.43 (.42)	3.46 (.54)
<i>Reflection</i>	4.10 (.76)	4.01 (.82)	3.80 (.82)	3.64 (.85)	4.01 (.76)
<i>Diversity</i>	3.88 (.88)	4.19 (.69)	3.81 (.81)	4.29 (.76)	3.93 (.82)

Overall, Reflection seems to be the highest rated element of quality, while communication of the applications we expect of students (the Application subscale) is currently the lowest rated element of quality. On three of four of the subscales, independent research/project experiences were the highest rated—only on the Diversity subscale did these experiences not fare as well. On the Diversity subscale, not surprisingly, the study away experiences were the highest rated. During the past year, the Conference on Applied Learning in Higher Education brought speakers with expertise on reflection; however, these results suggest that next year we should recruit speakers able to articulate mechanisms involved in application over reflection.

In addition to the common elements of quality as measured by the four subscales, faculty involved in the development of this assessment tool articulated elements of quality unique to each form of applied learning. As with items above, these items were rated on a 5- point Likert scale, such that a rating of 5 indicates high quality and 1 indicates low quality. The student responses to these items are summarized in the table below.

Type of Applied Learning	1 st Unique Item		2 nd Unique Item		3 rd Unique Item		4 th Unique Item		5 th Unique Item	
	Item Text	MEAN	Item Text	MEAN	Item Text	MEAN	Item Text	MEAN	Item Text	MEAN
<i>Study Away</i>	Communicated Effectively with Natives	4.00	Gained Unique Knowledge	3.91	Questioned Point of View	4.15	Interacted Outside My Western Group	4.11	Confident to Travel on Own in Future	3.74
<i>Service-Learning</i>	Project Relates to Community Need	4.02	Site Valued My Work	3.77	Discuss Project with Classmates	3.73	Interacted in Professional Environment	4.05	Frequent contact with Site Supervisor	3.62
<i>Indp. Research/Project</i>	Contributes Something New to Field	4.38	Project Relates to Community Need	3.50	Analyzed Data or Sources	4.48	Drew Conclusions Based on Data/Sources	4.42	Communicated Results in Professional Setting	4.19
<i>Internship/Practicum</i>	Site Supervisor Valued My Work	4.23	Was Aware of Ethical Issues on Site	4.02	Interacted with Professnls. at Work	4.40	Intern/Prac. Related to Need in Workplace	4.14	Was Part of Decision-Making	3.77

All items had mean ratings above the scale midpoints. For Study Away, the strongest rated item indicated the experience caused students to question their own points of view, while the weakest rated item revealed lower than ideal confidence to travel in a similar fashion on their own in the future. For Service-Learning, students rated highly the opportunity to interact in a professional environment, but indicated infrequency in contact with their on-site supervisors. For Independent Research, students rated highly the opportunities the experience provided in analysis of data or sources, while they rated less favorably the connection between research experiences on campus and actual community needs. Finally, for Internship/Practica, students indicated high quality opportunities to interact with professionals at work. However, these same students rated more negatively the opportunities their experience provided in terms of making decisions.

Contact Hours. Students also rated how often they met with their faculty supervisors over the course of the semester. Those involved in an internship/practicum experience were also asked to rate how often they met with their site supervisor, as this person is often a different person than their faculty supervisor. Both faculty and site supervisor contact hours could be rated on a scale ranging from 5 (weekly or more frequent contact) to 1 (less than monthly). As one can see in the table, most faculty met at least weekly with their students, according to their students' responses. Students do report more faculty contact with service-learning and study away experiences, which is not surprising given the nature of these structurally in Western's curriculum. Service-learning is typically part of a larger class experience, and contact with that faculty could reasonably be expected to be at least 3 hours per week. Study away experiences at Western are typically shorter trips (not semesters abroad), but intense with daily faculty contact and assignments. Contrast these to independent research and internship/practica courses which stand alone (no additional course content to drive extra contact hours, and no intense periods for contact as with study away). Western should be pleased however, as most students report weekly or better contact with faculty, which meets with the literature's best practices guidelines.

	Internship/Practicum Means (σ)	Independent Research/Project Mean (σ)	Service-Learning Mean (σ)	Study Away Mean (σ)
Faculty Contact Hours	4.04 (1.3)	4.03 (1.29)	4.24 (.96)	4.43 (.79)
Site supervisor Contact Hours	4.18 (1.3)	--	--	--

Conclusions and Recommendations

Overall, Western's students report fairly high quality applied learning experiences as measured by this assessment. Every mean subscale score—regardless of the form of applied learning being measured—was above the scale midpoint. Many ratings approached the scale maximums, most notably those ratings of independent research experiences on Placement Quality. Reflection, which some scholars argue is the heart of linking theory to practice in applied learning (Eyler & Giles, 1999), was the strongest element of quality measured here. Again, Western faculty can take pride in that one of the most important practices for high quality applied learning was rated very favorably by their students.

Clearly, the weakest element of quality in Western's overall applied learning initiative as measured in this assessment was the Application subscale. The Application subscale measures the extent to which students were aware of the connections between academic content and practice that they were expected to make. It also measured how these expectations were communicated (e.g., through a syllabus, discussion, or assignment). Although not rated poorly, this subscale revealed consistently lower ratings than all the other subscales achieved, suggesting this as a potential area for improvement. Just as at the most recent Conference on Applied Learning in Higher Education at least one keynote speaker focused on Reflection practices, I recommend that next year's conference be certain to include a keynote speaker with expertise in the area of Application. Further, I will aim to have that speaker provide not just a keynote address, but also smaller workshops to Western faculty either preceding or following the conference.

The unique items provide more targeted feedback to specific forms of applied learning. Those faculty involved in service learning may wish to work more closely with on-site supervisors to insure that students have more contact with those individuals about the service they are providing. Faculty involved in independent research have an opportunity to work more closely with the Western Institute, or other organizations, to develop research projects with students that address a need in the community. Internship or Practicum coordinators may wish to develop sites that will provide students with greater opportunities to make decisions, or at least be involved in those processes. I am reticent to make specific recommendations based on the Study Away responses, as the sample size was extremely small ($n = 7$). Thus, I will wait until the Spring applied learning assessment is complete to do so, as more study away experiences should occur during the spring term than the fall.

Finally, one of the most noticeable findings in this report was the enormous gap between applied learning enrollment in Liberal Arts and Sciences ($n = 205$) and Professional Studies ($n = 860$). Certainly this was largely driven by high enrollments in Internship/Practicum experiences which are heavily required in certain PS departments. However, I believe it is also influenced by the operational definitions we use for determining the number of students involved in independent research/project. Prior to 2005, a relatively narrow definition of "independent research/project" was developed—enrollments in the 450 course number "counted" as independent research/project and other research experiences (e.g., labs, research embedded in a different course number) did not. We know from previous assessments that LAS faculty are heavily involved in independent research activity, not all of which is credit-bearing and not all of which is located in the 450 course enrollment. Many faculty remain dissatisfied with the narrow definition Western currently uses to identify independent research/project experiences. I recommend that the campus re-open this discussion of what should "count" as applied learning undergraduate research. A growing literature argues for integrating research into the curriculum rather than isolating it into a single course (i.e., Otto, 2006), and expanding the definition might more accurately reflect the role of LAS in Western's Applied Learning Initiative.

Reference

- Eyler, J. & Giles, D. E. (1999). *Where's the learning in service-learning*. San Francisco, CA: Jossey-Bass, Inc.
- Otto, C. (Ed.). (2006). Integrating research into the curriculum. [Special Issue]. *CUR Quarterly*, 26(3).

[Appendix A: Independent Research/Project Version](#)

[Appendix B: Internship/Practicum Version](#)

[Appendix C: Service-Learning Version](#)

[Appendix D: Study Away Version](#)