

Assessing Students' Perceptions of the Effectiveness of Instructional Interventions with Post-Pre Surveys

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This collection of materials provides an introduction to the nature, purpose, development, administration of post-pre surveys and the analysis and reporting of the data they provide.

What is a Post-Pre Survey?

A post-pre survey is one of a number of tools that can be used to evaluate the impact of an instructional intervention (a course, program, workshop, etc.). Its purpose is to assess students' perceptions of changes in their knowledge and skills, personal attributes or impact on their future behaviour and aspirations. Students rate themselves twice on each intended outcome, first as they were before beginning the instruction, and second, after completing it. They do so on one form after the learning experience has concluded. The difference between students' retrospective pre- and post-ratings reflects the perceived impact of their learning on each outcome. The primary focus of items on a post-pre survey is on changes that can be linked directly to students' participation in an instructional intervention (Hiebert, Bezanson, Magnusson, O'Reilly, Hopkins & McCaffrey, 2011).

Two sample surveys are provided, one used in a [career development workshop \(Appendix A, Hiebert et al., 2011\)](#) and one used in a [two-year graduate diploma program in Education \(Appendix B\)](#). The first appears as it was presented to clients at the end of their workshop. The second sample is a working draft providing an expanded view of a survey presented to graduate students when they completed their two-year diploma program. The two columns on the left side, "Capacity" and "Type of change," did not appear in the final version students completed. Their purpose is explained when the design process is described later.

Why Post-Pre and not Pre-Post?

Post-pre and pre-post designs both have their strengths and weaknesses. When using self-report surveys to measure changes in students' perceptions of what they know, traditional, separate pre- and post- designs have been found problematic. By the end of the instruction, students' "measuring stick has changed as they developed greater knowledge... Thus the post-test scores end up being lower than the pre-test scores, even though positive change has occurred" (Hiebert, et al., 2011, p. 9). In essence, at the beginning of the instruction, students didn't know what they didn't know, so gave themselves higher ratings than they did by the end of the learning experience, i.e., they rated themselves *lower* after the instruction (Hiebert & Magnusson, 2014).

Post-Pre Assessment addresses this problem by creating a consistent measuring stick for both pre and post assessments. This process is used **ONLY** at the end of a course or program. It asks people to use their current level of knowledge to create a common measuring stick for pre-course and post-course assessments. (Hiebert, et al., 2011, p. 9)

Additional advantages of the post-pre method include the time saved by collecting pre- and post-intervention data in only one session rather than two. This also avoids problems with attrition. Unfortunately, both formats (post-pre and pre-post) are vulnerable to concerns associated with all self-report measures such as self-assessment biases like “social desirability,” i.e., providing a socially appropriate response rather than an accurate one.

Designing a Post-Pre Survey

The process of developing a post-pre survey begins with clearly specifying the intended outcomes of an intervention (e.g., the goals, objectives, capacities). Hiebert and Magnussen (2014) recommend survey items be developed to assess three types of change related to each learning outcome:

- Competence: changes in knowledge (what students know) and skill (what students can do).
- Personal attributes: changes in (a) attitudes, beliefs or dispositions (e.g., attitude toward subject, belief that change is possible); (b) intrapersonal factors (e.g., confidence, motivation, self-esteem; and (c) independence (e.g., self-reliance, initiative, independent use of knowledge and skills provided) (based on Baudoin et al., 2007).
- Future impacts: benefits or changes in students’ lives, behaviour or aspirations in the future (e.g., better career opportunities, greater academic integrity, better collaborative problem solving, better lifestyle choices, etc.); changes that may emerge soon or long after the course concludes although they are being assessed at its end.

See Appendix C for more examples of each.

Items in the **second sample survey** (Appendix B) are labelled in the far left columns with the professional “Capacity” (learning outcome) the program was designed to develop, and also by the type of change described above. Those columns did not appear on the version distributed to students but were included here to provide examples of the language that might be used to assess each type of change.

One of the major challenges in developing items is to find language that clearly, authentically represents the desired outcome in terms that will be meaningful to respondents and align well with the rating scale you choose. Compare the phrasing of the items on the two sample surveys. They are slightly different as are the meanings of the values on the rating scale. There are many different rating scales available but it is best to use only one in your survey. Klatt and Taylor-Powell (2005) offer more possibilities.

Be prepared to spend significant time on crafting the wording, asking others for feedback on clarity, revising, and field-testing or piloting your form. Expect to develop at least two or three drafts. The clarity of the items is a major determinant of the strength and quality of your data, and therefore your findings.

Prepare clear directions that explain the meaning of each value in your rating scale and how to rate each item. If you administer the form face-to-face, read the directions to students and ask for questions before having students complete the form to ensure everyone understands the format and how to respond.

The final item on both sample surveys is essential. It asks students to indicate the extent to which they feel differences between their pre- and post- ratings are due to the instruction they received or to other influences in their lives. An item like this must be included in your survey. Its data directly addresses the big question regarding the overall effectiveness of the intervention: To what extent do students feel the changes evident in their responses to the previous items are attributable to the intervention? Results from all of the other items should be interpreted within the context of students' responses to this final item.

Reporting Results

Post-pre data can be reported descriptively and analysed statistically. The sophistication, depth and length of your interpretation will vary depending on the questions you posed for your investigation, the size of your group, and the audience for your findings. In [Appendix D](#) you'll find a written report based on data collected from the students in the diploma program in Education using the second sample form. A table summarizing students' responses appears on the final page of the report.. Again these samples are offered as illustrations. Your data may be better represented graphically or in some other format or medium. Select one or two formats that will communicate your findings most clearly.

Post-pre surveys assess only *students perceptions* of their learning. This means interpretations of the differences between pre and post ratings must be limited to what or how much students *think* they learned or changed. Post-pre surveys do not directly measure learning therefore the differences cannot be reported as direct evidence of learning or change. Direct measures of learning include exam scores, course grades or grades earned on assignments. Direct and self-report (indirect) data are complementary. The results of post-pre assessments tell you if students *think* they learned while direct evidence tells you if, what or how much they actually learned. Plan to collect evidence of both.

Post-pre surveys provide a valuable means of capturing students' views regarding their growth but they are not sufficient to support broad claims of success or effectiveness. Multiple sources of evidence will be required to determine what worked and didn't work, and how well. Those sources of evidence will need to be selected to suit the questions driving your project.

Frequently Asked Questions

1. Should there be the same number items for each type of change (competence, personal attributes and future impacts)?

No, that's not necessary and often not appropriate. You may or many not need to assess all three types of change for each of your learning outcomes. That will depend on the questions to be answered by your project. It's most important that the items are clear so they will mean the same thing to all respondents. Some research questions address personal attributes more than competence or only future impacts; others are all about competence. Every project will be different.

2. How many items should be on the survey?

The rule for number of items is: as few as possible but as many as necessary. Include only those that are essential to addressing the learning outcomes impacted by your intervention and the questions included in your project. The longer the survey, the less likely potential respondents

are to complete it or to give significant consideration in to their responses. That said, students tend to enjoy responding to post-pre surveys because the items enable them to see evidence of their growth that they might not have appreciated without completing it.

3. How many respondents are needed?

Any data are better than no data so no matter how small your class, your data can address questions you have about the effects of your instruction and thus be meaningful and helpful to you. The larger the sample, the more likely it is to be representative of future cohorts of students. It's important to think carefully about how to optimize the response rate. Surveys distributed and completed in class have higher response rates than those students are asked to complete outside of class. If you use a paper survey, you will need to manually transfer the data in to a spread sheet. If students complete the survey outside of class, incentives for completion and/or reminders should be considered. A higher response rate is worth the effort. Your sample will be more complete and therefore your findings more accurate.

Additional Resources Available on the ISTLD/TLDG website

Sample surveys. More sample post-pre surveys developed by SFU instructors (in addition to those mentioned above) are provided to offer options for ways you might word your items, different rating scales, ideas for wording for directions, and more.

- *REM 601 Social Science of Resource Management: Theories of Cooperation* developed by J. Welch and S. Jamshidian (2015)
- *BUS 361 Project Management* developed by K. Masri (2015)

Survey template. This Excel file provides a template in which the text of your title, directions, items, and rating scale can be inserted or revised to suit your project.

Spreadsheet for data entry. This Excel worksheet is an empty spreadsheet ready for post-pre data. Each student's response to each item is entered as a value in a cell in the spread sheet. Once entered here, the data should be checked (verified) by another individual. It can be analysed in Excel or imported in to any program for statistical analysis.

Readings. A collection of articles and chapters on post-pre assessments. Some can be downloaded directly from the webpage.

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Klatt, J., & Taylor-Powell, E. (2005). Program Development and Evaluation: *Designing a retrospective post-then-pre question, Quick Tips #28*. University of Wisconsin—Extension, Madison, WI. Retrieved from <https://fyi.uwex.edu/programdevelopment/files/2016/04/Tipsheet28.pdf>

Very Friendly, Basic, How-to Resources

Klatt, J., & Taylor-Powell, E. (2005). Program Development and Evaluation: *Using the retrospective post-then-pre design, Quick Tips#27*. University of Wisconsin—Extension, Madison, WI. Retrieved from <https://fyi.uwex.edu/programdevelopment/files/2016/04/Tipsheet27.pdf>

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Lamb, T. (2005). The retrospective pretest: An imperfect but useful tool. *The Evaluation Exchange*, 11(2).

Schaaf, J., Klatt, J., Boyd, H., & Taylor-Powell, E. (2005). Program Development and Evaluation: *Analysis of retrospective post-then-pre data, Quick Tips #30*. University of Wisconsin—Extension, Madison, WI. Retrieved from <https://fyi.uwex.edu/programdevelopment/files/2016/04/Tipsheet30.pdf>

Recommended Readings

Aiken, L. S., & West, S. G. (1990). Invalidity of true experiments: Self-report pretest biases. *Evaluation Review*, 14(4), 374-390.

Allen, J. M., & Nimon, K. (2007). Retrospective pretest: A practical technique for professional development evaluation. *Journal of Industrial Teacher Education*, 44(3), 27-42.

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- Taylor, P. J., Russ-Eft, D. F., & Taylor, H. (2009). Gilding the outcome by tarnishing the past. *American Journal of Evaluation*, 30(1), 31-43.

Sample Post-Pre Survey from Workshop on Career Decision-Making

Date: _____

Knowing what you know now about using labour market information for career decision making or job search, rate yourself before the research project and rate yourself now

I had/have

	Before					After				
8. Effective strategies for keeping myself motivated to achieve my career/employment goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Optimism about what lies ahead in terms of meeting my career goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. A realistic action plan (or schedule) summarizing the main career/employment-related activities I want to pursue and the processes I am engaging in	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Confidence in your ability to manage future career transitions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The ability to access career resources that can help me implement my career vision.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Confidence in my ability to research career, employment, and training options that are available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Optimism that I will obtain career-related work or training within the next 3-6 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. To what extent would you say that any changes in the ratings on the previous pages are the result of your participation in this research project, and to what extent were they a function of other factors in your life?

mostly other factors	somewhat other factors	uncertain	somewhat this project	mostly this project
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix B

Sample post-pre survey from Graduate Diploma in Education with professional capacities (learning outcomes) and types of change (competence, personal attribute and future impacts)

Knowing What You Know Now...

You've grown and changed in many ways over the past two years. We've designed this survey to be given at the end of the program take full advantage of your reflective capacity at the conclusion of our time together. The items will ask you to compare where you believe you were before beginning this program to where you believe you are now. So, knowing what you know now, please rate yourself twice on each item below, once for the way you were before beginning this program (in the pink area) and once for the way you are now (in the yellow area).

Directions:

First, reflect on where you were when you began the program in August 2012. Then decide whether you felt where you were was "OK" or not. If not OK, use a rating of 0 or 1 as defined below. If OK, use 2 through 4. Indicate your rating by putting a check in the appropriate column in the blue area.

0 = not adequate

1 = not really adequate, but almost OK

2 = adequate, but just barely (still OK otherwise it would be 0 or 1),

3 = somewhere between minimally OK and excellent

4 = excellent

Repeat this process for where you feel you are now and put a check in the appropriate column in the yellow area.

Capacity	Type of change		Before Beginning the Program					Now				
			Not OK		OK			Not OK		OK		
			0	1	2	3	4	0	1	2	3	4
Reflective practitioner: develop a disposition of inquiry and critical reflection to understand and develop your practice	Competence	1. I had/have a clear understanding of the nature and role of inquiry in my practice.										
	Competence	2. I had/have a clear understanding of nature and role of critical reflection in my practice.										
	Personal attribute	3. I was/am committed to reflecting on and thinking critically about my practice.										
	Personal attribute	4. I questioned/question and tried/try to determine the effectiveness of my practice.										
	Future impact	5. I aligned/align my practice with my values.										
	Future impact	6. I took/take time to consider why I am doing what I am doing with my students.										
Strategic and adaptive teacher: explore, develop, and implement teaching and assessment practices to support the learning of diverse students	Personal attribute	7. I believed/believe it was/is important for me to find ways to support and inspire all of the students in my class(es).										
	Future impact	8. I explored/explore unfamiliar teaching and assessment practices that support the learning of diverse students.										
	Future impact	9. I developed/develop teaching and assessment practices that support the learning of diverse students.										
	Future impact	10. I implemented/implement teaching and assessment practices that support the learning of diverse students.										
	Personal attribute	11. I was/am confident in my ability to <u>develop</u> teaching and assessment practices that support the learning of diverse students.										
	Personal attribute	12. I was/am confident in my ability to <u>implement</u> teaching and assessment practices that support the learning of diverse students.										
	Competence	13. I had/have a clear understanding of educational frameworks that support diverse learners.										
	Competence	14. I had/have a clear understanding of assessment practices that support diverse learners.										

[illegible]

In conclusion, please circle your response to these final items.

Overall Program Impact	23.	In this program, we have used technology to help accomplish our educational goals -- we've used it to build relationships, to create spaces for thinking and reflecting, and to showcase the work and ideas of the cohort. In light of this, to what extent have your efforts to use these technologies in your practice been inspired by your experiences in this program and to what extent were they inspired by other factors in your life?
Overall Program Impact	24.	To what extent would you say that any changes in the ratings you gave yourself above for before the program and for now are the result of your experiences in this Graduate Diploma, and to what extent were they a function of other factors in your life?

Appendix C

Types of Change

Based on Hiebert, B. & Magnusson, K. (2014), p. 529-530

Changes in Competence (changes in what students know and can do)

- understand the relationships between/among concepts, theories, etc.
- ability to locate and effectively use professional and scholarly literature (from Haché, Redekopp & Jarvis, 2000, Blueprint for Life/Work Designs")
- critically consider popular "best practices"
- examine theoretical foundations
- understand the changing nature of
- ability to choreograph....
- write an essay or lab report or....
- ability to lead a discussion
- ability to communicate clearly and effectively with colleagues
- ability to solve problems collaboratively
- ability to manage a project

Changes in Personal Attributes

1. Attitudes or dispositions

- attitude toward subject
- belief that change is possible
- have an internal locus of control
- commitment to social justice

2. Intrapersonal factors

- confidence
- motivation
- self-esteem
- commitment to a position on an issue

3. Independence

- Self reliance and initiative
- Independent use knowledge and information provided in course

Changes in Future Impacts (aspirations and behaviours in the future)

- Willingness/desire/intent to participate in related activities in the future
- Willingness/desire/intent to lead initiatives
- Willingness/desire/intent to mentor colleagues
- Pursuit of opportunities to
- Pursuit of societal impacts (e.g., change the world; achieve social justice goals)
- Relational impacts (e.g., improve or increase positive relationships with colleagues)
- Economic impacts (e.g., seek or locate funding for a project; improve personal financial standing)

Appendix D
Students' Perceptions of Their Growth in the "Teaching and Learning in Today's Classrooms" Pilot Program Offered in a Blended Format
June 2016

The Program

For more than 20 years, Simon Fraser University's Field Programs offered by the Faculty of Education have supported the professional growth of educators through innovative learning experiences for teachers. More than 3700 teachers have completed its popular two-year Graduate Diplomas in Education (GDE) since they were first offered in 2000 in a face-to-face format.

A key to the success of those programs has been the development of rich, collaborative learning communities among the students. These communities support the growth of members' professional capacities. In 2011, a Blended Program Development Committee was established to determine whether experiences could be created that would enable the pedagogy and community characteristic of face-to-face programs to be established and thrive if the program was offered via a combination of online and face-to-face experiences -- and achieve the same outcomes or better. Our hope was to make GDE programs accessible and attractive to teachers who lived in remote areas by requiring them to come to campus once a year for Summer Institutes; the remainder of the program was offered online using synchronous (e.g., videoconferencing) and asynchronous (e.g., blogs, discussion forums). The program design team involved instructors in the face-to-face programs, the Coordinator (program manager), faculty members, and technology support staff.

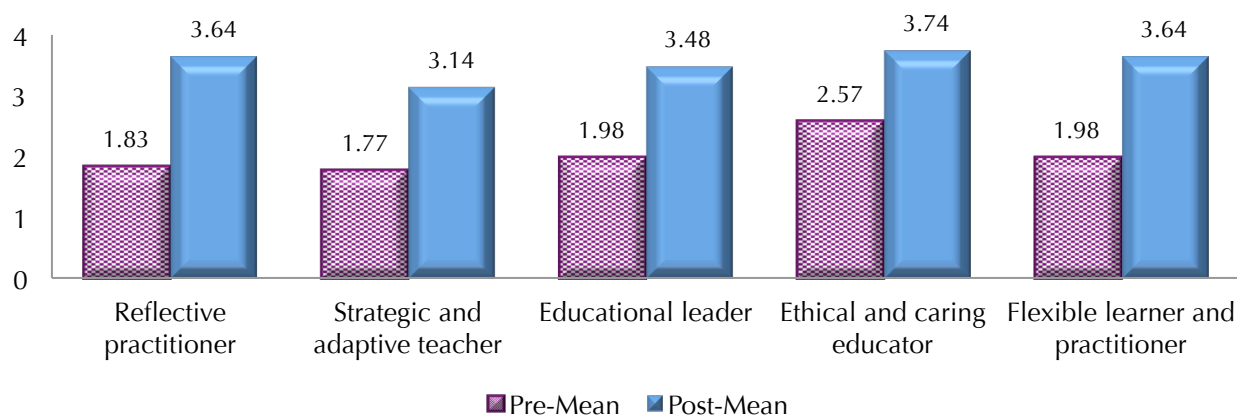
The Pilot Program

In August 2012, 15 educators enrolled in a Pilot program in which one of SFU's two-year GDE programs (Teaching and Learning in Today's Classrooms) was offered in a blended format. This meant that from August 2012 through August 2014, the members of the cohort met face-to-face for a week or two each August and interacted and completed assignments synchronously and asynchronously online from September through July.

The program was designed to enhance five of participants' capacities as professional educators: as reflective practitioners, strategic and adaptive teachers, educational leaders, ethical and caring educators, and as flexible learners and practitioners.

Students' Perceptions of the Program's Effectiveness

Upon completing this Pilot, participants completed a 24 item post-pre survey in which they rated their status on the professional capacities the program was designed to develop before beginning and at the end. Items were rated on a 5-point scale, from 0 to 4, with ratings of 0 or 1 less than adequate ("Not OK"), and 2 to 4 adequate to excellent ("OK"). The differences in their pre- and post- ratings indicated all 11 respondents felt they had grown in all five capacities and that this growth was due to their experiences in the program, not other factors in their lives (e.g., professional development activities or supportive colleagues in their school districts). The extent of the growth in each capacity is represented in the bar graph below.



Pre- and post- means for each item are provided in Table 1 (the summary table on the next page). They provide further evidence of the impact of the program on these students including the following:

- The percentage of “Excellent” ratings rose from 8.8% at the start of the program to 66.5% after, and “Not OK” ratings dropped from 23.3% to 0.4%.
- All but 0.4% of the 33.3% of ratings that were “Not OK” at the beginning of the program improved to OK by the end.
- The percentage of “OK” ratings rose from 66.6% before the program, to 99.6% by the end.

Paired sample *t*-tests were run to determine whether the differences between the mean rating for each item before beginning the program differed from the mean at the end of the program to a statistically significant degree. This was found to be true for 21 of the 22 items indicating the students felt they had grown in all of these areas. The only exception was the item addressing students’ understanding of the “ethic of care” (item 19), which did not achieve statistical significance. This is likely due to a ceiling effect as five students’ ratings were initially high and did not change and three rose only from 3 to 4, the highest rating. In other words, a majority of the students entered the program with some knowledge of the ethic of care so their high pre-ratings left little room for growth in their post- ratings.

The same effect explains the small difference between the pre- and post- means for the item that assessed their belief that it was important to support and inspire all of their students (item 7). Although the difference between those means did achieve statistical significance, it was the smallest gain because, once again, students’ ratings were high at the beginning of the program. This tells us that although there was some growth, most of the students felt they entered and left the program committed to supporting and inspiring all of their students.

The effect sizes for the items provided in Table 1 are also substantial ranging from a low, but strong 0.83 on item 19 to a high of 3.54 on item 2. They provide further evidence of the growth students felt they had experienced. The greatest growth was evident in the clarity of students’ understanding of the nature and role of reflective inquiry in their practice (item 1). The average rating for this item rose from 0.82 before beginning the program to 3.55 at the end, an increase of 2.73 points on the rating scale. In fact, differences in the pre- and post- means for this item and the others related to the “Reflective Practitioner” capacity were consistently greater than those for the other four capacities (see bar graph), indicating the students felt this was where they grew most.

These findings indicate the students believed their “blended” learning experiences in this program significantly enhanced their professional capacities as a reflective practitioner, strategic and adaptive teacher, educational leader, ethical and caring educator and as a flexible learner and practitioner. Analyses of additional complementary data sources (e.g., instructors’ evaluations of student work and course evaluations) are underway. We will have a more comprehensive assessment of the Pilot’s impact when the results of those analyses are integrated with these findings.

Table 1. Item frequencies, means, t-test results and effect sizes for post-pre survey completed by students in the Graduate Diploma Program.

		Before Beginning the Program						At the End of the Program						Difference between the means	t	p	Effect size	
		Not OK		OK		Mean	Not OK		OK		Mean							
		0 = Not adequate	1 = Not really adequate, but almost OK	2 = Adequate, but just barely	3 = Somewhere between minimally OK and excellent		4 = Excellent	0 = Not adequate	1 = Not really adequate, but almost OK	2 = Adequate, but just barely		3 = Somewhere between minimally OK and excellent	4 = Excellent					
1.	I had/have a clear understanding of the nature and role of inquiry in my practice.	5	3	3	0	0	0.82	0	0	0	5	6	3.55	2.73	10.00	0.000	3.12	
2.	I had/have a clear understanding of nature and role of critical reflection in my practice.	0	2	8	1	0	1.91	0	0	0	2	9	3.82	1.91	11.74	0.000	3.54	
3.	I was/am committed to reflecting on and thinking critically about my practice.	2	2	4	2	1	1.82	0	0	0	1	10	3.91	2.09	5.68	0.000	1.67	
4.	I questioned/question and tried/try to determine the effectiveness of my practice.	1	3	2	5	0	2.00	0	0	0	3	8	3.73	1.73	5.68	0.000	1.58	
5.	I aligned/align my practice with my values.	1	3	2	4	0	1.90	0	0	0	4	6	3.60	1.70	5.08	0.001	1.54	
6.	I took/take time to consider why I am doing what I am doing with my students.	1	2	7	1	0	1.77	0	0	0	3	8	3.73	1.95	8.22	0.000	2.39	
7.	I believed/believe it was/is important for me to find ways to support and inspire all of the students in my class(es).	0	1	2	4	4	3.00	0	0	0	2	9	3.82	0.82	3.61	0.005	0.82	
8.	I explored/explore unfamiliar teaching and assessment practices that support the learning of diverse students.	2	1	5	3	0	1.86	0	0	0	2	9	3.82	1.95	6.41	0.000	1.78	
9.	I developed/develop teaching and assessment practices that support the learning of diverse students.	2	2	4	3	0	1.77	0	0	1	4	6	3.50	1.73	7.01	0.000	1.53	
10.	I implemented/implement teaching and assessment practices that support the learning of diverse students.	2	1	4	4	0	1.96	0	0	1	5	5	3.36	1.41	5.10	0.000	1.23	
11.	I was/am confident in my ability to <u>develop</u> teaching and assessment practices that support the learning of diverse students.	1	4	5	1	0	1.59	0	0	0	7	4	3.36	1.77	5.98	0.000	2.06	
12.	I was/am confident in my ability to <u>implement</u> teaching and assessment practices that support the learning of diverse students.	2	3	5	1	0	1.50	0	0	1	4	6	3.46	1.96	5.86	0.000	2.01	
13.	I had/have a clear understanding of educational frameworks that support diverse learners.	1	4	5	1	0	1.59	0	0	0	1	10	2.91	1.32	4.14	0.002	1.53	
14.	I had/have a clear understanding of assessment practices that support diverse learners.	0	1	5	1	1	1.96	0	0	1	5	5	3.36	1.41	3.19	0.010	1.47	
15.	I had/have a clear understanding of theories of leadership and the characteristics of leaders.	1	3	3	3	1	2.00	0	0	0	2	9	3.82	1.82	4.82	0.001	1.54	
16.	I had/have confidence in my ability to take on leadership roles in educational settings.	3	1	3	1	3	2.00	0	0	1	4	6	3.46	1.46	3.53	0.005	0.9	
17.	I saw/see myself as a leader in educational settings (my classroom or my school, or beyond).	3	1	3	1	4	2.00	0	0	2	2	7	3.46	1.46	3.35	0.007	0.9	
18.	I sought/will seek and embrace leadership opportunities in my school, district or beyond.	3	1	3	2	2	1.91	0	1	2	2	6	3.18	1.27	2.97	0.014	0.84	
19.	I had/have a clear understanding of the ethic of care.	1	1	1	4	2	2.56	0	0	1	1	7	3.67	1.11	2.29	0.051	0.83	
20.	An ethic of care guided/guides my practice.	1	1	2	5	2	2.59	0	0	0	2	9	3.82	1.23	3.06	0.012	1.02	
21.	I was/am able to initiate and manage my professional learning and growth—learning and growth related to my practice.	1	3	2	5	0	2.00	0	0	0	4	7	3.64	1.64	4.50	0.001	1.49	
22.	I thrived/thrive amidst the opportunities and challenges brought about by new tools and ways of thinking in a changing educational context.	1	2	6	1	1	1.96	0	0	0	4	7	3.64	1.68	5.06	0.000	1.59	
Total		33	43	78	52	20	1.93	0	1	10	65	152	3.57	1.64				
% of total pre- or post-		14.3	19.0	35.4	22.4	8.8		0.0	0.4	4.2	28.9	66.5						
		237 Pre ratings						239 Post ratings										

		Uncertain	Other factors	Somewhat program, somewhat other factors	Mostly program	Mean
23.	In this program, we have used technology to help accomplish our educational goals – we've used it to build relationships, to create spaces for thinking and reflecting, and to showcase the work and ideas of the cohort. In light of this, to what extent have your efforts to use these technologies in your practice been inspired by your experiences in this program and to what extent were they inspired by other factors in your life?	0	0	4	6	3.6
24.	To what extent would you say that any changes in the ratings you gave yourself above for before the program and for now are the result of your experiences in this Graduate Diploma, and to what extent were they a function of other factors in your life?	0	0	0	10	4.0