# Understanding undergraduate attributes: A survey of student self-reported intellectual openness and love of learning at the start of academic year 2014

## Graduate Profile Outcomes Research Project Technical Report #2

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## I. ABSTRACT

In addition to graduating students with significant disciplinary knowledge and skill, universities often seek to inculcate a range of generic cognitive and communicative skills and valued attitudes and dispositions. In New Zealand and Australia, these ambitions are referred to as graduate attributes.

This study examines student self-reported endorsement of having two attributes drawn from The University of Auckland's Graduate Profile and contrasts mean scores according to degree program and degree progress. Specifically, students in the Faculty of Education were surveyed in the first half of the academic year 2014 as to their self-rated possession of (1) *intellectual openness and curiosity*, and (2) *love and enjoyment of ideas, discovery and learning*.

A 20-item survey was completed by 342 students and factor analyses resulted in a 15-item, two highly-correlated factors, with adequate fit. There were no statistically significant differences between the mean scores of first- and final-year bachelor's degree students, but bachelor's degree students were statistically significantly lower than Graduate Diploma students, who had already completed a bachelor degree in a non-education discipline. Results support the suggestion that having completed a bachelor degree is associated with greater self-perceived intellectual curiosity and love of ideas.

## II. GRADUATE PROFILE ATTRIBUTES

In 2012, a project was funded by the Vice Chancellor Strategic Development Fund to evaluate student outcomes in light of The University of Auckland's Graduate Profile (GP; Appendix A). The GP lists 18 multi-faceted "attributes" distributed across three domains: (1) Specialist knowledge, (2) General intellectual skills and capacities, and (3) Personal qualities.

In late 2013, interviews were conducted with members of the University's Senior Leadership Team for guidance as to which attributes should be the focus of the first study. Three attributes were selected—two of which are the focus of this report. Using the numbering of the UoA GP, these were:

2. General intellectual skills and capacities
    2. ***An intellectual openness and curiosity.***

3. Personal qualities
    1. ***A love and enjoyment of ideas, discovery and learning.***

Attributes 2.2 and 3.1 are similar in that both are related to graduates' willingness and desire to deepen their understandings and expand their intellectual horizons. The psychological concepts underlying these two attributes are difficult to fully disentangle. For instance, one can reasonably expect that a person who loves to learn is also quite curious, and vice versa. Peterson and Park (2004) classify both curiosity and love of learning as "cognitive strengths that entail the acquisition and use of knowledge" and offer the following definitions:

> *Curiosity:* Taking an interest in all ongoing experience; finding all subjects and topics fascinating; exploring and discovering.
>
> *Love of learning:* Mastering new skills, topics, and bodies of knowledge, whether on your own or formally. Obviously related to the strength of curiosity but goes beyond it to describe the tendency to add *systematically* to what you know.

Peterson and Park also note a problem of redundancy in scales that attempt to measure curiosity and love of learning as two distinct qualities, and have suggested that "there is probably no good reason to sustain their distinction." Prior to developing the GP survey, we decided that items measuring attributes 2.2 and 3.1 could be presented simultaneously in a self-report instrument without causing confusion or cognitive difficulty for respondents. We also recognised the potential that both attributes might be adequately measured through a common set of items.

**III. SURVEY DEVELOPMENT**

Any scale adopted to measure GP attributes should provide sufficient psychometric evidence to allow for accurate, useful inferences about students' level of the attributes and how it differs or changes over time. A review of the literature for relevant scales with psychometric analyses yielded four instruments for consideration:

- Academic Intrinsic Motivation Scale (AIMS)
- Curiosity and Exploration Inventory-II (CEI-II)
- Melbourne Curiosity Index (MCI)
- Need for Cognition Scale (NfCS)

The AIMS (French & Oakes, 2003) is a 25-item scale that attempts to measure intrinsic motivation for academic work. One of its four subscales is Curiosity, defined as "the extent to which the student desires to acquire new knowledge, including beliefs or feelings of surprise, intrigue, and incomplete information about a topic." The Curiosity items appear related to both attributes 2.2 and 3.1. Four of the items were modified and included on the GP survey.

The CEI-II (Kashdan et al., 2009) is a 10-item scale that aims to measure (1) motivation to seek out knowledge and new experiences—*stretching*, and (2) willingness to embrace the novel, uncertain, and unpredictable nature of everyday life—*embracing*. Despite its reference to curiosity, the CEI-II items generally did not align with the GP attribute of intellectual curiosity. One item from the stretching scale was modified and included on the GP survey.

The MCI (Naylor, 1981) attempts to measure trait curiosity, or "the capacity to experience curiosity," using 20 items. The MCI trait curiosity items are not specific to an academic context, and they appear to represent, to some extent, both attributes 2.2 and 3.1. The MCI was the source of nine items on the GP survey.

A 34-item and shortened 18-item version of the NfCS (Lord & Putrevu, 2006) both aim to measure "the tendency for an individual to engage in and enjoy thinking." Although need for cognition is potentially linked to concepts like openness, curiosity, and enjoyment of ideas, discovery and learning, the NfCS items did not adequately align with the GP attributes of interest. Hence, none of the items were included on the GP survey.

Five new items were written for the GP survey to address students' enjoyment of learning and breadth of intellectual curiosity. Appendix B shows the 20 items that appeared on the GP survey, their sources, and any modifications made to items from published scales.

University students and graduates because of their enrolment and general commitment to learning are expected to be positively inclined towards the two traits in the survey. Consequently, a 6-point positively packed response scale was used. Research has demonstrated that this type of rating increases variance and precision in statistical analysis and helps reduce the effect of a positive response style (Brown, 2004). The response options and score values were: (1) *Strongly disagree*, (2) *Mostly disagree*, (3) *Slightly agree*, (4) *Moderately agree*, (5) *Mostly agree*, (6) *Strongly agree*.

In addition to the 20 items targeting GP attributes 2.2 and 3.1, the survey also presented 30 items to measure another GP attribute (3.5) which will be reported separately. At the end of the survey, participants were asked to provide their university ID number and background information including gender, ethnicity, date of birth, academic programme/specialisation, and programme year. Academic programme/specialisation and programme year was also obtained for most students from the Education Student Centre. In instances of conflicting information, official data from the Student Centre was substituted for student-provided data whenever possible.

**IV. DATA COLLECTION & PREPARATION**

Ethics approval for the evaluation was obtained from the University of Auckland Human Participants Ethics Committee (#010776). An online survey was designed and hosted through the Faculty of Education's LimeSurvey system beginning in January 2014.

The target population for the GP survey was first- and final-year students in all Faculty of Education bachelor's degree programmes, and students in the one-year Graduate Diploma in Teaching programme. These cohorts were selected to enable comparison of student performance at different stages of progression toward a bachelor's degree—i.e., through cross-sectional comparisons of new students, graduating students, and students who have already obtained a bachelor's degree. To encourage participation, every student who completed the survey was entered into a drawing for a 1-in-50 chance of winning one of several $50 gift cards to Countdown, Event Cinemas, New World, and The Warehouse. Funding for the gift card incentives was obtained through the Performance-Based Research Fund.

A link to the GP survey was posted on the Faculty's Moodle website in late January. Also in late January, the Dean of Education shared the survey link with students in the Graduate Diploma programme. Initially, distribution of the survey link relied heavily on cooperation from programme directors within the Faculty. Of the 93 surveys that were completed between January and April 2014, most were from students in programmes whose directors had offered assistance in distributing the link.

To better reach *all* students in the target population, a survey invitation was sent out via mass email on 2 May to everyone in the target population who had not already completed the survey. An additional 249 students completed the survey between 2 May and 31 May, when the survey closed. A total of 354 online surveys were submitted. Six surveys had duplicate ID numbers with six previous surveys. For each of these cases, the first (earliest) submission was retained, and the second was deleted. Another six surveys were completed by students not enrolled in a Faculty of Education academic programme. These six cases were also deleted, leaving a total of 342. Of the 342 students who completed the survey, 101 (30%) participated on 2 May, the day the email was sent, and another 97 (28%) participated over the next four days. This clearly shows the efficacy of the official UoA communication system in stimulating participant interest and cooperation.

Figure 1 shows when the 342 participants completed the GP survey. Participation in late January/early February can be primarily attributed to the Dean sharing the survey link with GradDip students. Participation in March can be primarily attributed to assistance from five programme directors who shared the link with their students. The large increase in participation in early May is linked to the mass email invitation. Continued participation in mid-May is likely attributable to the small number of programme directors who emailed their students with a reminder about the survey.

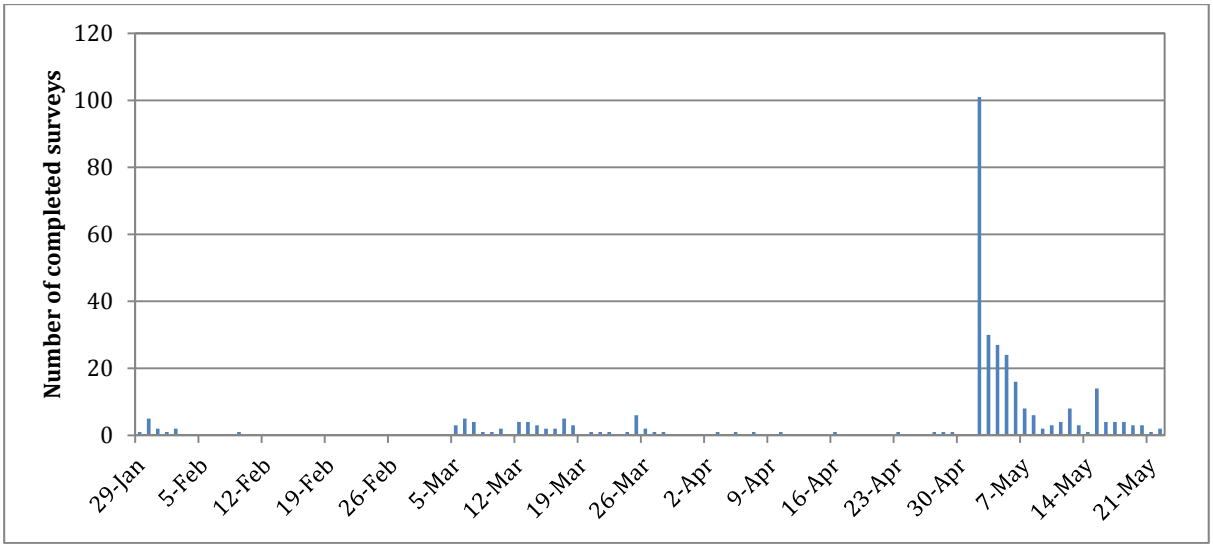


***Figure 1.*** Survey completion between 29 January and 22 May, *n*=342.

We estimated that participants would require 10-15 minutes to complete the entire 50-item survey, taking into account the time needed to read the Participant Information Sheet and Consent Form, and to complete the background questions. The median completion time was 6 minutes, 14 seconds. Fifty percent of participants completed the survey in 4-7 minutes. Seventy-five percent completed the survey in 3-9 minutes. The longest completion time was more than 4 days, and the shortest was 2 minutes, 35 seconds. Through multiple timed trials, we determined that it should take approximately 2 minutes alone to simply read through all 50 survey items. Because additional time is needed to think about and select a response to each item, and also to complete the background questionnaire, 3 minutes was set as the minimum acceptable completion time. Three cases with recorded completions of less than 3 minutes were excluded from the dataset, leaving 339 cases. There was no missing item data as the survey was designed in a way that required a response to every survey item in order to proceed. Note this minimum time completion standard presumes that participants did not read the PIS or CF and simply completed the survey.

**V. PARTICIPANTS**

Background characteristics of the survey participants are shown in Table 1. Most participants were enrolled in bachelor degrees (71%) and were female (80%). Undergraduate students were equally split between 1st and 3rd (i.e., final year) and roughly equal to students in graduate diploma program.

**Table 1.** *Characteristics of the Bachelor's Degree and Graduate Diploma Samples,* n=*339*

| | | **Bachelor's degree *n*=241** | | **Graduate diploma *n*=98** | |
|---|---|---|---|---|---|
| | | *n* | % | *n* | % |
| Gender | Female | 196 | 81.3 | 75 | 76.5 |
| | Male | 37 | 15.4 | 16 | 16.3 |
| | No response | 8 | 3.3 | 7 | 7.1 |
| Ethnicity | Asian | 35 | 14.5 | 13 | 13.3 |
| | European | 98 | 40.7 | 56 | 57.1 |
| | Maori | 23 | 9.5 | 1 | 1.0 |
| | Middle Eastern/Latin American/African | 4 | 1.7 | 2 | 2.0 |
| | Pacific | 37 | 15.4 | 7 | 7.1 |
| | Other | 7 | 2.9 | 4 | 4.1 |
| | More than 1 ethnicity | 34 | 14.1 | 15 | 15.3 |
| | Unknown | 3 | 1.2 | 0 | 0.0 |
| Programme year | First | 119 | 49.4 | | |
| | Final | 107 | 44.4 | | |
| | Other/unknown[a] | 15 | 6.2 | | |

[a] Survey data from participants with other/unknown programme year were used in the factor analyses but are not included in the reported survey results (Table 4).

Figure 2 shows the sample composition by academic programme and year. (Note that bachelor's degree students with other/unknown year are not included in Figure 2, so *n*=324). Most participants were enrolled in the Bachelor of Education (150, or 47%) and Graduate Diploma-Teaching (90, or 28%) programmes. Unfortunately, overall response rates and response rate by programme could not be precisely calculated as the listing of students in the target population received from the Student Centre was incomplete.

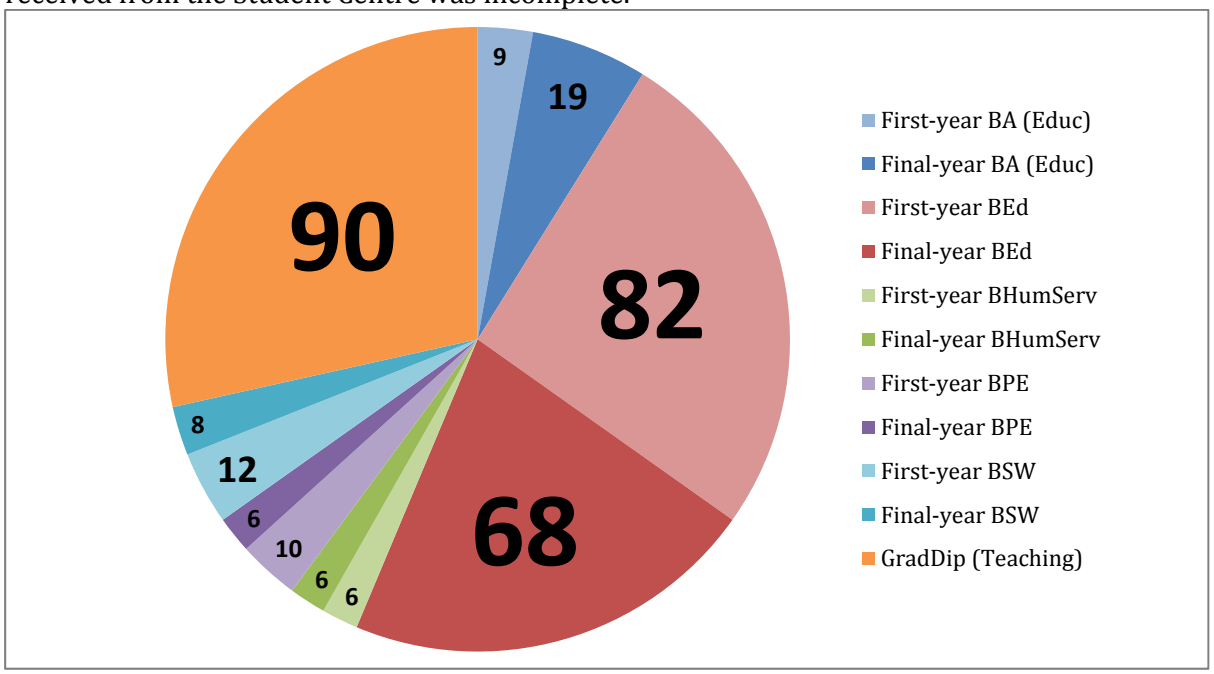


***Figure 2.*** Overall sample composition by academic programme and year, *n*=324.

## VI. DATA ANALYSIS

Exploratory and confirmatory factor analysis were performed using the GP survey data to determine the number of constructs the data, how the constructs related to one another (if more than one), how each survey item related to the construct(s), and which items should be dropped to produce a better fitting model. As discussed in Section II, attributes 2.2 and 3.1 are closely related both conceptually and empirically. Given this, we were unsure whether two factors would emerge from the 20 survey items. If there is only one underlying factor—i.e., if the survey is unidimensional—then the survey item responses can be summed to produce a total scale score. If there is more than one factor (multidimensional), then it may be possible to produce subscale scores for the different factors. It is worth noting that while factor analysis clarifies the relationship among underlying constructs and the items used to measure them, it does not automatically indicate *what* those constructs are. Judgement processes concerning the content of items retained within factors are used to ascertain the meaning of a factor (Kline, 1994).

## VII. RESULTS

### *EXPLORATORY FACTOR ANALYSIS (EFA)*

EFA was conducted in SPSS using data from a sample of 339 students. Cases were identified as multivariate outliers by Mahalanobis distances greater than 37.57 ($p$<.01); 29 multivariate outlier cases (8.6% of the sample) were removed from the dataset. EFA was then carried out on the remaining 310 cases using maximum likelihood estimation with an oblique rotation, allowing for multiple factors to be correlated. Various methods were used to determine the number of factors underlying the 20 items. Methods suggested a maximum of either one factor (i.e., Scree plot; Pearson) or two factors (i.e., Velicer's Minimum Average Partial; Kaiser criterion).

### *CONFIRMATORY FACTOR ANALYSIS (CFA)*

CFA was conducted in MPlus using the same dataset as was used in EFA ($n$=310). Maximum likelihood estimation was used because the response scale had >5 options; a variety of unidimensional and correlated two-factor models were tested. Acceptable fit was imputed if the ratio of $\chi^2$ to *df* was statistically not significant, gamma hat >.90, and SRMR <.06 (Fan & Sivo, 2007; Marsh, Hau, & Wen, 2004); less reliance was put on the comparative fit index and root mean square error of approximation since both are sensitive to model complexity. After trimming items to improve fit, the best fitting unidimensional model contained 16 items ($\chi^2$/df =3.69, RMSEA=.09, CFI=.93, SRMR=.04). The best fitting two-factor model contained 15 items ($\chi^2$/df =3.38, RMSEA=.09, CFI=.94, SRMR=.04). Because the best fitting unidimensional and two-factor models were not nested, their fit was compared via AIC (9543.47 unidimensional vs. 9247.20 two-factor), with the two-factor model having a much better fit. Hence, a two-factor solution is reported.

Figure 3 shows the standardised pattern coefficients for the 15-item, correlated two-factor model. The latent correlation between the two factors is $r$=.92 ($r$=.83 observed). This inter-correlation is sufficiently high to question the validity of two separate constructs; nonetheless, for the purposes of interpretation it was decided to retain the two scales.

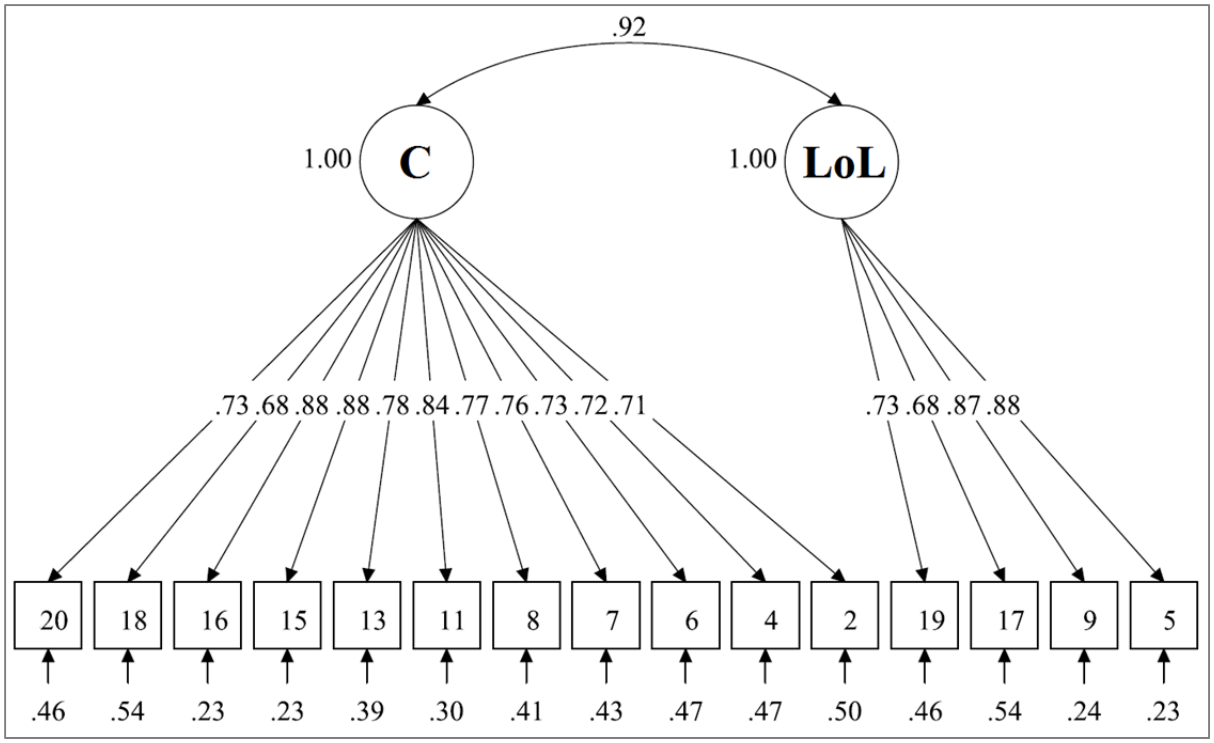


***Figure 3.*** Standardised pattern coefficients and error variances of the 15-item, 2-factor model.

The items and their respective scales are shown in Table 3. We tentatively refer to Factors 1 and 2 as Curiosity and Love of learning, respectively. The 11 items of the Curiosity subscale largely concern information-/answer-seeking and breadth of interests. The 4 items of the Love of learning subscale concern enjoyment of learning and study. Some items from the Curiosity subscale have content very similar to the Love of learning items—e.g., I look forward to learning new things (item 11), The prospect of learning new things excites me (item 15). It is not clear why these items are more strongly associated with the factor we are calling Curiosity.

**Table 3.** *Items and Standardised Pattern Coefficients by Factor/Subscale*

| Item | Curiosity | Love of learning |
|---|---|---|
| I am intrigued by many different topics.[2] | .71 | |
| There is a lot that I wish to know more about.[4] | .72 | |
| I am curious about things.[6] | .73 | |
| I enjoy searching for answers.[7] | .76 | |
| Many things interest me.[8] | .77 | |
| I look forward to learning new things.[11] | .84 | |
| I enjoy thinking about things.[13] | .78 | |
| The prospect of learning new things excites me.[15] | .88 | |
| I want to know more about things.[16] | .88 | |
| I like to speculate about things.[18] | .68 | |
| I actively seek as much new information as I can.[20] | .73 | |
| I find learning to be interesting and exciting.[5] | | .88 |
| I love to learn.[9] | | .87 |
| I get pleasure from studying.[17] | | .68 |
| Learning more in my field of study pleases me.[19] | | .73 |

*Note.* Superscript indicates item's original position on the 20-item survey.

Because a 1-6 item response scale was used, total scores on the Curiosity subscale can range from 11-66, and total scores on the Love of learning subscale can range from 4-24. Reliability is α=.94 for the Curiosity subscale and α=.86 for the Love of learning subscale. The high latent correlation and conceptual similarity between Curiosity and Love of learning also support computing a total scale score from all 15 items. The total scale has scores that can range from 15-90 and reliability of α=.95. Nonetheless, mean scores for each scale were computed to allow interpretation in relation to the anchor values of the rating scale.

***FACTOR MEAN SCORE ANALYSIS***

Table 4 presents survey results for the 324 participants by academic programme and year. The mean scores for both factors were nearly identical for the two undergraduate groups and somewhat lower than the post-degree Graduate Diploma group. Overall, the undergraduate students had a mean below 5.0 indicating that they did not quite "mostly agree" with the two factors. In contrast, the Graduate Diploma students had mean scores just above "mostly agree".

**Table 4.** *Survey Results by Group*

| | | Curiosity | | Love of Learning | |
|---|---|---|---|---|---|
| Group | *N* | *M* | *SD* | *M* | *SD* |
| Undergraduate 1st year | 119 | 4.82 | .80 | 4.70 | .90 |
| Undergraduate 3rd Year | 107 | 4.76 | .89 | 4.66 | .98 |
| Total Undergraduate | 226 | 4.79 | .84 | 4.68 | .94 |
| Graduate Diploma (post-degree) | 98 | 5.11 | .59 | 5.09 | .62 |

None of the first-to-final year cohort comparisons at the bachelor's degree level were statistically significant. A 3-group ANOVA (Soper, 2014) found statistically significant differences for Curiosity ($F_{(2,319)}$=5.924, $p$=.003) and Love of learning ($F_{(2,319)}$=7.87, $p$<.001) with small to moderate effect sizes in favour of the Graduate Diploma students (Curiosity $d$=.39; Love of learning $d$=.44).

**VIII. DISCUSSION**

Generally, high self-ratings were given by students in this study. The statistically significant higher mean scores for the post-degree Graduate Diploma students are in alignment with the notion that acquiring an undergraduate degree is associated with the development of intellectual curiosity and love of learning, both highly valued outcomes for the university. It is important to note the small sample sizes in many of the programmes surveyed mean that comparisons across programmes cannot be undertaken. Nonetheless, student self-reported attitudes and dispositions, such as reported here, are a potentially useful adjunct to the conventional armoury of institutional self-evaluation (e.g., student evaluation of teaching).

Naturally, these differences are as yet uncorroborated with independent evidence such as performance on problem-solving or testimony of peers or employers/supervisors. Further, there are no insights in this study as to how the graduate diploma students came to have higher levels of curiosity and love of learning—it may be that this result is a consequence of pre-degree enrolment competences or a function of non-university life experiences. Indeed, the Graduate Diploma students, not only have a bachelor degree, but have a degree from outside the discipline of education which leads to the possibility, untestable in this design, that the higher scores are a function of choosing a discipline other than education, rather than a consequence of having completed a bachelor degree. This option would need to be tested in a multi-faculty design.

Feedback should be sought from individuals familiar with the GP as to whether the retained survey items adequately represent attributes 2.2 and 3.1. It is important that the survey items

and results match the expectations of University officials and support the intended uses of the data. The current survey items reflect a somewhat simple version of intellectual curiosity and love of learning. It would be possible to develop a more complex, multi-faceted set of items for these constructs, but this may have limited or no practical utility to the University.

Given the high factor inter-correlation, there may doubt about the legitimacy of reporting the two constructs separately, especially in light of the similarity of a few items between scales. However, it is clear that these two constructs are conceptually distinct and it may prove worthwhile to maintain the current distinction, though a shorter combined scale may be sufficient for most administrative and evaluative purposes.

If the results are sustained in the repeated, end-of-year data collection currently underway (and to be reported later) that will be partial validation of the beneficial effect of the university degree experience. Longitudinal, tracked-data over the course of degree completion will be necessary to more convincingly argue that a university actually develops the outcomes that it claims.

**IX. ADVICE FOR FUTURE RESEARCH**

This study also has reinforced issues reported in Project Advisory Report #1 concerning difficulties in conducting surveys within the faculty. Low response rates not only limit the inferences that can be made about results due to lack of representation within programmes, but also limit the ability to perform some types of "large sample" analyses (e.g., multi-group comparisons and measurement invariance). The following tips on increasing response rates are offered:

- Web-based surveys are very efficient in terms of the human and material resources needed for administration. It is best to create a situation where students are just one-click-away from the survey, such as sending the link via email or posting on a frequently accessed website.
- An announcement or invitation from a recognised authority figure increases students' perceived legitimacy of the survey. Increased involvement from the Dean and programme directors had a positive impact on response rates. Likewise alerting students through the official UoA communication system. These channels should be maintained.
- Incentivising student participation is also beneficial to response rates. In the first round of data collection we offered survey completers a 1-in-50 chance of winning a $50 prize. In the end-of-year, follow-up data collection, we are offering 1-in-10 and 1-in-20 chances of winning a $25 prize. Of course, a shorter survey will require less incentivisation to attract participants, so there is also a monetary benefit to creating a short survey. Additional funding may be necessary to continue administering the survey with acceptable response rates.
- If possible, online surveys should be delivered through a software (e.g., QualTrics) that can record time spent on each page of the survey to screen out rapid, and thus invalid, responders. The speed at which some participants completed entire survey is worrisome. Even the 3-minute cutoff we selected would not have allowed students enough time to completely read through the opening screens containing the Participant Information Sheet and Consent Form. To help ensure the quality of survey results, it is important to verify that participants have spent adequate time reading, considering, and selecting responses to the items.
- While the repeated measure design will allow determination of change, it should be noted that for many students the "pre" data were collected *after* the mid-point of the first semester. Ideally, the "pre" measure should occur much earlier in the first semester, preferably even during Orientation before classes begin.

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**APPENDIX A**
**The University of Auckland Graduate Profile**

The Graduate Profile is a description of the personal qualities, skills and attributes a student is expected to obtain by the end of an undergraduate degree programme at the University.

A student who has completed an undergraduate degree at The University of Auckland will have acquired an education at an advanced level, including both specialist knowledge and general intellectual and life skills that equip them for employment and citizenship and lay the foundations for a lifetime of continuous learning and personal development.

The University of Auckland expects its graduates to have the following attributes:

**I Specialist knowledge**

1. A mastery of a body of knowledge, including an understanding of broad conceptual and theoretical elements, in the major fields of study.
2. An understanding and appreciation of current issues and debates in the major fields of knowledge studied.
3. An understanding and appreciation of the philosophical bases, methodologies and characteristics of scholarship, research and creative work.

**II General intellectual skills and capacities**

1. A capacity for critical, conceptual and reflective thinking.
2. An intellectual openness and curiosity.
3. A capacity for creativity and originality.
4. Intellectual integrity, respect for truth and for the ethics of research and scholarly activity.
5. An ability to recognise when information is needed and a capacity to locate, evaluate and use this information effectively.
6. An awareness of international and global dimensions of intellectual, political and economic activities, and distinctive qualities of Āotearoa/New Zealand.
7. An ability to access, identify, organise and communicate knowledge effectively in both written and spoken English and/or Māori.
8. An ability to undertake numerical calculations and understand quantitative information.
9. An ability to make appropriate use of advanced information and communication technologies.

**III Personal qualities**

1. A love and enjoyment of ideas, discovery and learning.
2. An ability to work independently and in collaboration with others.
3. Self-discipline and an ability to plan and achieve personal and professional goals.
4. An ability to lead in the community, and a willingness to engage in constructive public discourse and to accept social and civic responsibilities.
5. Respect for the values of other individuals and groups, and an appreciation of human and cultural diversity.
6. Personal and professional integrity and an awareness of the requirements of ethical behaviour.

**APPENDIX B**
**Survey items, sources and modifications**

| Survey item | Source | Original item (if modified) |
|---|---|---|
| 1. I like to enquire about things I do not understand. | MCI | I like to enquire about things I don't understand. |
| 2. I am intrigued by many different topics. | AIMS | I am intrigued by the different topics introduced in my courses. |
| 3. I like trying to solve problems that puzzle me. | MCI | I like to try to solve problems that puzzle me. |
| 4. There is a lot that I wish to know more about. | *new* | |
| 5. I find learning to be interesting and exciting. | MCI | I think learning "about things" is interesting and exciting. |
| 6. I am curious about things. | MCI | |
| 7. I enjoy searching for answers. | MCI | I feel like searching for answers. |
| 8. Many things interest me. | *new* | |
| 9. I love to learn. | *new* | |
| 10. I like asking questions about what is happening. | MCI | I feel like asking questions about what is happening. |
| 11. I look forward to learning new things. | AIMS | I look forward to going to class. |
| 12. I am inquisitive. | MCI | I feel inquisitive. |
| 13. I enjoy thinking about things. | *new* | |
| 14. I like finding answers to questions. | AIMS | I like to find answers to questions about material I am learning. |
| 15. The prospect of learning new things excites me. | MCI | |
| 16. I want to know more about things. | *new* | |
| 17. I get pleasure from studying. | AIMS | I enjoy studying. |
| 18. I like to speculate about things. | MCI | I like speculating about things. |
| 19. Learning more in my field of study pleases me. | AIMS | I enjoy learning more within my field of study. |
| 20. I actively seek as much new information as I can. | CEI-II | I actively seek as much information as I can in new situations. |

*Note.* AIMS=Academic Intrinsic Motivation Scale; CEI-II=Curiosity and Exploration Inventory-II; MCI=Melbourne Curiosity Index.