

Horizons Impact: A Quantitative Analysis of Reach, Engagement, and Readiness

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April 2026

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Abstract

This report presents a quantitative analysis of the Horizons Career Development Program at the University of Ottawa. Horizons is a bilingual digital career development program managed by Career Development and Experiential Learning (CDEL) and integrated with Career Corner services. The analysis draws on engagement, awards, and Career Readiness Quiz data from launch in January 2024 through April 30, 2026. Three layers of evidence are reported: program reach, including access, active engagement, and engagement depth; multi-year companion engagement, demonstrating that students access Horizons across multiple academic years as the program's design intends; and readiness change, measured through the My Vocational Situation (MVS) instrument among students who took the quiz more than once. The findings show that Horizons has reached 13,680 students cumulatively, with 5,827 actively entering and 3,489 engaging with content beyond the quiz entry point. Year-over-year growth is significant across every layer of the funnel. A clear dose-response is observed: students who engage at greater depth show larger and more consistent readiness gains. Engaged students gained an average of 18.7 percentage points on the MVS, with an incremental gain of 7.8 percentage points attributable to Horizons. The 26 MVS items touch on dimensions across multiple Career Development Learning Outcomes in CDEL's developmental sequence (Knowing Yourself, Career Identity, Career Confidence, Adaptability, and Skills Literacy), reflecting shared theoretical foundations in career development scholarship and providing quantitative evidence of student movement along the developmental arc that builds toward Career Agency. Five recommendations are offered to strengthen Horizons reach, support sustained student engagement, and continue the program's curricular development. This report is part of CDEL's evidence base for Horizons, alongside the conceptual framework for career development practice and the qualitative thematic analysis of student survey responses. The full evidence base supports CDEL's initiative to establish a university-wide career development ecosystem, known at uOttawa as Build Your Future (BYF).

Résumé

Ce rapport présente une analyse quantitative du programme de développement de carrière Horizons de l'Université d'Ottawa. Horizons est un programme numérique bilingue de développement de carrière géré par le service de Développement de carrière et apprentissage par l'expérience (DCAE) et intégré aux services du Coin carrière. L'analyse s'appuie sur les données d'engagement, de récompenses et du Quiz d'évaluation de la préparation à la carrière, de janvier 2024 au 30 avril 2026. Trois ordres de données probantes sont présentés : la portée du programme, dont l'accès, l'engagement actif et la profondeur d'engagement; l'engagement sur plusieurs années, qui démontre que les étudiant.es accèdent à Horizons d'une année à l'autre comme le prévoit la conception du programme; et l'évolution de la préparation, mesurée par My Vocational Situation (MVS) chez les étudiant.es ayant fait le quiz plus d'une fois. Horizons a rejoint 13 680 étudiant.es au total, dont 5 827 sont entré.es activement et 3 489 ont interagi au-delà de l'évaluation d'entrée. La croissance d'une année à l'autre est marquée à chaque étape de l'entonnoir. Une relation dose-effet claire se dégage : les étudiant.es dont l'engagement est plus profond montrent des gains de préparation plus importants et plus constants. Les étudiant.es engagé.es ont gagné en moyenne 18,7 points de pourcentage au MVS, dont un gain marginal de 7,8 points de pourcentage attribuable précisément à Horizons. Les 26 énoncés du MVS touchent à plusieurs résultats d'apprentissage en développement de carrière de la séquence développementale du DCAE (Connaissance de soi, Identité de carrière, Confiance de carrière, Adaptabilité et Littératie des compétences), reflétant des fondements théoriques communs en développement de carrière et fournissant une preuve quantitative du cheminement des étudiant.es le long de l'arc développemental vers l'agentivité de carrière. Cinq recommandations sont formulées pour accroître la portée, soutenir l'engagement et poursuivre son développement curriculaire. Ce rapport fait partie de la base de données probantes du DCAE pour Horizons, aux côtés du cadre conceptuel de la pratique du développement de carrière et de l'analyse thématique qualitative des réponses au sondage étudiant. Cette base de données probantes appuie l'initiative du DCAE visant à créer un écosystème de développement de carrière à l'échelle de l'université, désignée à l'Université d'Ottawa sous le nom de Bâtir son avenir (BSA).

1. Executive Summary

The Horizons Career Development Program is a bilingual digital career development program at the University of Ottawa, developed and managed by the Career Development and Experiential Learning (CDEL) unit and integrated with the in-person services and relational programming offered at Career Corner. Launched in January 2024, Horizons is institutionally accessible to all undergraduate students, graduate students, and alumni. This report presents a quantitative analysis of program reach, engagement, and readiness change drawing on engagement, awards, and quiz data from program launch in January 2024 through April 30, 2026.

Reach. CDEL has worked to remove the friction of self-discovery for a substantial subset of the uOttawa community: 13,680 students have been group-enrolled in Horizons through Career Corner touchpoints, meaning the program is already in their Brightspace whenever they need it. Of these, 5,827 have actively entered the program by taking the Career Readiness Quiz, 3,489 have engaged with content beyond the quiz, 558 have earned at least one theme badge, and 164 have earned the Horizons Certificate. The broader student and alumni population can self-enroll at any time through Brightspace, meaning these numbers represent active outreach effectiveness rather than the ceiling of program access.

Multi-year companion engagement. Horizons is designed to accompany students throughout their academic journey and beyond. Of the Year 1 active cohort, 678 students (48%) returned in Year 2 to encounter refreshed content, and 1,494 students have been engaged with the program for more than a year. Continued Brightspace access after graduation means Horizons remains available to students as they enter the workforce, where the resume, networking, interview, and transition modules are directly applicable.

Readiness change. Among 910 students with a valid pre-and-post measurement on the Career Readiness Quiz (built on the validated MVS instrument), the mean readiness gain was +12.0 percentage points, and 67% of students improved. The gains scale clearly with program engagement. Students who earned at least one badge between their two attempts gained an average of 18.7 percentage points, 70% more than students who did not engage with badge content. Four out of five engaged students improved their score, with the strongest gains concentrated on the dimensions Horizons is designed to develop: knowledge of career options (Occupational Information) and clarity of career direction (Vocational Identity). Among the 59 students who have completed the program's new Final Assessment, mean gain is 17.4 percentage points and 80% improved. When students engage with the Horizons developmental arc, readiness change is large, consistent, and reliable.

Year-over-year growth. Between Year 1 (May 2024 to April 2025) and Year 2 (May 2025 to April 2026), Welcome page visits doubled, quiz takers grew by 54%, active learners grew by 57%, and certificate completions grew by 46%. Badges issued grew at a more moderate pace (+17%), consistent with the differentiated engagement model: as reach expands, not all engaged students pursue formal credentialing. The overall pattern shows the program gaining traction simultaneously in reach (top of the funnel) and depth (certificate completions).

Five recommendations are offered to strengthen Horizons reach, support sustained student engagement, and continue the program's curricular development: (1) provide automatic access to Horizons for all incoming students; (2) expand and formalize multiple embedding pathways; (3) strengthen onboarding and navigation support; (4) communicate continued access to graduating students and alumni; and (5) sustain investment in Horizons curricular renewal and in the Career Corner relational infrastructure.



This report is part of CDEL's evidence base for Horizons, alongside the conceptual framework for career development practice and the qualitative thematic analysis of student survey responses. The full evidence base supports the Build Your Future (BYF).

2. Program Context

The Horizons Career Development Program is the University of Ottawa's bilingual career development program, hosted on the Brightspace Learning Management System (LMS). Launched in January 2024 by the Career Development and Experiential Learning (CDEL) unit, Horizons is designed as a living career development infrastructure: a multi-year companion that students access throughout their studies, on their own terms, in the formats that work for them. Horizons complements the in-person services and relational programming offered at Career Corner, the human-centred environment in which CDEL's most intensive career development work takes place. Within the program, students can earn theme-level digital badges and a Horizons Certificate as recognition of substantial engagement, but credentialing is one outcome among many, not the program's defining purpose.

During the 2025–2026 academic year, Horizons was integrated into 30 course offerings across 8 faculties, ranging from workshops and applied activities to required modules linked to graded assignments. Two graduate-level examples illustrate the deepest form of this integration.

ELG/GNG 5301 (Professional Skills and Responsibility), in the Faculty of Engineering, requires students to complete hands-on projects and online learning modules building their professional networks and developing their careers as practicing engineers. The Horizons Resume and Cover Letter and LinkedIn modules were assigned as required content, with CDEL staff delivering complementary in-class sessions covering resume development and an in-depth treatment of LinkedIn. Students then completed a graded assignment: using the Horizons guidelines and checklist, they developed a professional resumé and adapted it, with a cover letter, for a realistic post-graduation position.

A parallel embedding in BIO 5950 (Research and Communication in Biology, Faculty of Science) used the same model with graduate students in biology, completing the Horizons Resume and Cover Letter modules as required preparation before a CDEL-delivered in-class session and a comparable graded resume and cover letter assignment targeting post-master's positions.

These embeddings demonstrate that Horizons content can function as foundational graduate-level professional development material, evaluated through faculty grading and integrated into existing course architecture rather than added as an extracurricular layer.

The program is structured around five career development themes, each containing two or three modules, for a total of twelve modules. The themes are arranged in a progressive developmental arc, from foundational self-knowledge to professional transition:

- **Knowing Yourself:** self-awareness and career; employability skills
- **Career Exploration:** exploring careers through experience; discovering careers; labour market information
- **Self-Marketing Tools:** resume and cover letter; LinkedIn; interview
- **Job Search and Networking:** job search; networking
- **Transition to Work:** culture and communication in the workplace; thriving in the workplace



While the themes follow an intentional pedagogical sequence, the program is designed for differentiated engagement. Students are not required to follow the arc in order or to complete all themes. They can access whichever modules meet their needs at the moment they need them, whether that is researching career options in their first year, preparing for an internship interview in their third year, or navigating workplace culture as they approach graduation. This is universal design for learning applied to career development: the program meets students where they are.

Universal design extends to how content is delivered. Every module is available simultaneously as video, audio narration, and written downloadable PDF. Activity templates are downloadable. Full narration transcripts are downloadable. Students who prefer offline use, who have limited internet access, who are working in placement settings, or who learn best from text can engage with the same material as students who prefer the Brightspace experience. All content exists in fully developed English and French versions.

Behind this design is sustained curricular and pedagogical work. Three to four modules are renewed each year as part of a continuous improvement cycle, ensuring that returning students encounter updated material. Content development draws on established frameworks in career development theory, experiential learning, positive psychology, and growth mindset research, translated into accessible learning experiences. Foundational authors include Holland, Super, Savickas, Krumboltz, Kolb, and the Social Cognitive Career Theory tradition. The program is structured to support the five Career Development Learning Outcomes articulated by CDEL (Knowing Yourself, Career Identity, Career Confidence, Adaptability, and Skills Literacy), which build progressively toward the program-level objective of developing Career Agency. The Career Readiness Quiz, built on the My Vocational Situation (MVS) instrument, anchors the program's measurement framework: it captures dimensions of vocational identity that align with the early stages of the developmental arc, and informs ongoing curricular decisions through aggregate question-level analysis.

The sections that follow examine how this design operates in practice: who reaches Horizons, how they engage with it, how they return across academic years, and what readiness change the program produces.

3. Reach

Reach matters at three levels for Horizons. First, students need access to the program. Second, students need to enter and engage with it. Third, students who enter need to engage at depth that produce real benefit. All three layers tell part of the story.

3.1 Program Access

Horizons is institutionally accessible to all University of Ottawa undergraduate students, graduate students, and alumni. Any current student or alumnus can self-enroll in the program at any time through the Discover section of Brightspace; there are no restrictions on access. In addition, CDEL has worked to remove the friction of self-discovery for a substantial subset of students. Through their participation in Career Corner workshops, in-class presentations, career fairs, drop-ins, or use of Career Corner services, 13,680 students have been group-enrolled in Horizons through their Brightspace, meaning the program is already present and available whenever they need it without requiring them to seek it out.

This number reflects the integration of Horizons with the broader career services ecosystem. It is not the upper bound of program reach; the full uOttawa student and alumni population have access if they choose to enroll. It is, however, evidence of the active work CDEL has done to bring Horizons within easy reach of students who have engaged with career services at any level.

3.2 Active Engagement

Students access Horizons by clicking into the program in their Brightspace. They land on the Welcome page, which introduces the program and offers the Career Readiness Quiz as the entry point. Completing the quiz unlocks the twelve modules across the five career themes.

The Career Readiness Quiz is itself a meaningful engagement with career content: students answer 26 questions about their readiness across vocational identity, occupational information, and barriers, and receive a score and readiness level that prompts reflection on where they are in their career development.

Table 1. Horizons engagement gradient showing cumulative reach through April 30, 2026 and engagement during the 2025–2026 academic year.

Stage	Cumulative	This year (2025–2026)
Enrolled in Horizons (program available)	13,680	10,105
Visited the Welcome page (saw the program)	9,727	6,232
Took the Career Readiness Quiz (entered the program)	5,827	3,431
Engaged with content beyond the quiz	3,489	2,205
Earned 1+ theme badge	558	285
Earned 3+ theme badges	298	155
Earned all 5 theme badges	223	119
Earned the Horizons Certificate	164	85

3.3 Where Students Engage

Two engagement counts appear in this section, measuring slightly different things. The 3,489 figure from the engagement funnel above counts every student who touched any Horizons content, including FAQ pages, language selectors, and theme landing pages. A narrower count of 3,018 students captures those who engaged with at least one specific module's content. Among these 3,018 students, the five themes drew engagement in the following proportions:

Table 2. Theme engagement among the 3,018 students who engaged with at least one Horizons module's content.

Theme	Students	% of engaged
Knowing Yourself	1,809	59.9%
Self-Marketing Tools	1,409	46.7%
Job Search and Networking	1,131	37.5%
Career Exploration	926	30.7%
Transition to Work	370	12.3%

Knowing Yourself dominates as the entry point, consistent with its position as the foundational theme in the developmental arc. Transition to Work has the smallest reach, consistent with its design intent for

graduating and near-graduating students. This positioning also represents an embedding opportunity: capstone courses, internship preparation programs, and graduate professional development seminars are natural settings for this content, where it can reach students at the moment they are preparing to enter the workforce. Such embeddings could include in-class sessions on labour market data for specific fields, complementing the module content with localized insights on job availability, compensation, and skills in demand.

3.4 Differentiated Engagement

Horizons is designed to support students who engage at different depths according to their needs. The data shows students using it that way.

Among students who engaged with module content:

- **57% engaged with one theme only**, often a single module within that theme. These are targeted users who came to Horizons with a specific need such as resume help, interview preparation, or networking guidance, found what they needed, and moved on.
- **34% engaged with two to four themes**, exploring across the developmental arc without necessarily completing it.
- **9% engaged with all five themes**, working through the full arc as designed.

The same pattern appears at the module level. Half of engaged students touch a single module; another 9% touch all 11 or 12. Engagement is bimodal: targeted users on one end, comprehensive completers on the other, with a middle band of moderate engagement in between.

This is intentional. The program's downloadable, multi-modal, asynchronous design means students can find specific support when they need it without committing to the full program. A first-year student exploring career options, a third-year student preparing for an internship interview, and a graduating student navigating workplace culture all use Horizons differently, and the program is built to serve all of them.

It is also worth noting that all of these figures reflect Brightspace-mediated engagement only. Horizons content is fully downloadable as PDFs, activity templates, and narration transcripts. Students who download materials and use them offline, share them with peers, or apply them in practice are not visible in the platform data. The reach figures should be read as a conservative measure of actual program use.

4. Multi-Year Companion Evidence

Horizons is designed as a multi-year companion. Students engage with the program at multiple points across their academic journey, accessing different content as their needs evolve, returning to refreshed material as the program is updated, and using the program in ways that span more than a single term or year. The data shows this design working as intended.

4.1 Engagement Span

Among students who have actively engaged with Horizons, the time between first and last recorded engagement reveals the multi-year pattern. The median engagement span is 59 days, but the distribution extends much further. Among students who have logged in, 1,494 (11%) have been engaged with Horizons for more than a year, and 63 have been engaged for more than two years. These are students whose



relationship with the program is not a single-term encounter but a sustained companion through their studies.

4.2 Returning Across Academic Years

A more direct test of the multi-year companion model is whether students return across academic years. The data shows they do.

Table 3. Active learner cohorts in Year 1 and Year 2, with the overlap of students active in both years.

Period	Active learners
Year 1 (May 2024 to April 2025)	1,404
Year 2 (May 2025 to April 2026)	2,205
Active in both Year 1 and Year 2	678

Of the Year 1 active cohort, 678 students returned to Horizons in Year 2. That is 48% of the Year 1 active learner cohort. Nearly half of students who engaged with Horizons in its first full operational year came back in its second.

This is meaningful because it directly tests the program's design intent. Returning students are not encountering identical content. The continuous renewal cycle, with three to four modules updated per year, means that a student who engaged with the resume module in Year 1 may return in Year 2 to find updated activities, refreshed examples, or expanded resources. The program is built to grow alongside students, not to be completed once and left behind.

The 48% return rate should be read in context: some of the Year 1 cohort will have graduated by Year 2, and others will be at a stage in their studies where Horizons content is less immediately relevant. The figure represents the share of the Year 1 cohort who chose to return within the following year, which is a strong signal of continued program relevance.

4.3 What the Data Cannot Show

The engagement metrics in this report capture only the visits recorded in Brightspace. The full multi-year companion experience extends beyond what the platform can track. Students who downloaded resume templates in their first year and used them throughout their job search, who consulted the labour market module before a career fair, or who returned to specific transcripts before an interview are using Horizons as the multi-year companion it is designed to be, even when those uses leave no digital trace in Brightspace. The 678 returning users figure is a conservative measure of how many students are still engaging with Horizons in the way the program is built to be used.

5. Readiness Change

The Horizons Career Development Program is evaluated through multiple forms of evidence. Engagement metrics from Brightspace document program reach and depth (Sections 3 and 4). Badge and certificate awards document substantial engagement and formal completion. The qualitative thematic analysis of student survey responses, presented in a companion report, documents the developmental shifts students

articulate in their own words. This section adds a fourth form of evidence: quantitative readiness change measured through the Career Readiness Quiz.

The Career Readiness Quiz is built on the My Vocational Situation (MVS), a validated psychometric instrument developed by Holland, Daiger, and Power (1980) to measure career readiness across three dimensions: Vocational Identity, Occupational Information, and Barriers. These dimensions touch on multiple Career Development Learning Outcomes in CDEL's developmental sequence (the specific mapping is detailed in Section 5.2). Movement on the MVS therefore provides quantitative evidence of progress along the developmental arc that builds toward Career Agency.

This section reports pre-and-post MVS scores for students who took the Career Readiness Quiz more than once. Cleaning rules and the full analytical methodology are documented in Section 9.

5.1 The Readiness Baseline

Before examining change over time, the baseline data itself tells a meaningful story. Across the 5,827 students who have taken the Career Readiness Quiz at least once, the average baseline score is 48.3% (median 46.2%). More than half of students (51%) enter the program with a baseline score below 50%.

Table 4. Distribution of baseline Career Readiness Quiz scores among the 5,827 students who have taken the quiz at least once.

Baseline readiness level	Students	%
Very Low (0 to 20%)	630	10.8%
Low (20 to 40%)	1,551	26.6%
Moderate (40 to 60%)	1,838	31.5%
High (60 to 80%)	1,324	22.7%
Very High (80 to 100%)	484	8.3%

This distribution describes the readiness state of uOttawa students at the moment they enter Horizons. The majority are not career-ready when they arrive. More than a third score in the Low or Very Low ranges, indicating substantial uncertainty about vocational identity, occupational direction, or perceived barriers. This baseline picture is itself evidence for the institutional value of a structured career development program: students arrive needing the support that Horizons is designed to provide.

5.2 The Analytical Cohort

Of the 5,827 students who have taken the Career Readiness Quiz, 974 have taken it more than once and are therefore eligible for pre-and-post analysis. After applying the cleaning rules, 910 students have a valid pre/post pair in the analytical dataset. This represents 16% of all quiz takers. The remaining 84% took the quiz only once and are not represented in this analysis.

This is a meaningful pattern in itself rather than only a methodological constraint. Although every module includes a message encouraging students to retake the Career Readiness Quiz, the majority of students do not. This is consistent with how students actually use Horizons: practically and according to their own needs. Students appear to value the content and the badges, but many do not feel a need to retake the readiness assessment to confirm what they already sense about their development. They engage with what is useful to them and move on. The MVS pre/post analysis therefore reflects students who chose to retake



the quiz, a self-selected cohort whose engagement with the program included revisiting their readiness measurement.

The MVS pre/post analysis is one form of evidence among several presented in this report. The broader engagement, badge, and certificate data presented in earlier sections cover a substantially larger population and capture forms of program impact that the MVS does not measure.

Beginning in 2026, certificate completion requires a dedicated Final Assessment that uses the same MVS instrument. This methodological change ensures that all future program completers will have a clean post-completion measurement, producing a more representative dataset for impact analysis going forward. The Final Assessment cohort findings reported in Section 5.5 reflect early evidence of what this design will produce at scale.

The MVS instrument and CDEL's CDLO framework share theoretical foundations in established career development scholarship, including Holland's foundational work on vocational identity. The 26 MVS items collectively touch on dimensions across all five Career Development Learning Outcomes. Items measuring clarity of occupational direction, decisiveness, and certainty about chosen fields map onto Career Identity. Items about self-knowledge, awareness of one's strengths and values, and stability of self-perception map onto Knowing Yourself. Items measuring confidence in decision-making and self-efficacy map onto Career Confidence. Items about openness to change and capacity to handle uncertainty map onto Adaptability. Items about knowledge of occupational tasks, training paths, and abilities map onto Skills Literacy. The MVS therefore provides quantitative evidence of student movement across the developmental sequence the program is designed to support.

5.3 Full Cohort Findings

Across the 910 students with valid pre/post pairs:

- **Mean baseline score:** 45.2%
- **Mean post score:** 57.2%
- **Mean gain:** +12.0 percentage points
- **Median gain:** +7.7 percentage points
- **67.3% of students improved** their score
- **23.6% declined**
- **9.1% scored the same**
- **Median time between baseline and post:** 52 days

The typical student in this cohort gained 7.7 percentage points; the average gain was higher at 12.0 percentage points, reflecting some students with very large gains. Both measures are reported because they answer different questions: the median describes the middle student, the mean captures the cohort-wide average.

These numbers represent the gross readiness change across the full pre/post cohort. They combine two components: the program effect produced by Horizons engagement, and other sources of score change that occur between two MVS administrations regardless of engagement (familiarity with the items, time passing, calibration as students reflect on their own readiness). Section 5.4 isolates the program-attributable component using a time-resolved analysis that distinguishes students who genuinely engaged with Horizons content between their two attempts from those who did not.

The 23.6% decline rate warrants direct interpretation rather than dismissal. Six factors contribute:

First, regression toward the mean. Students who declined had a higher mean baseline score (51%) than students who improved (43%). Higher starting scores leave less room for measurable upward movement on a 26-question instrument and create more statistical opportunity for downward variation.

Second, calibration through learning. The MVS measures self-perceived readiness, and self-perception becomes more accurate as students develop. Students with limited prior exposure to career development may initially overestimate their readiness with confidence that reflects unfamiliarity rather than insight. As they engage with the program and develop a more sophisticated understanding of career identity, occupational realities, and the work of career navigation, their self-assessment can become more cautious and more accurate, which appears as a decline in score. This is developmental progress, not regression. Identity exploration is itself a process that can produce more uncertainty before it produces more clarity, and the MVS captures both directions of that movement.

Third, the MVS captures bidirectional movement, including increased awareness of complexity. The Barriers Scale specifically measures perceived obstacles. A student whose engagement with the program produces deeper awareness of the labour market, the obstacles they face, or the work of building a career may legitimately report more barriers in their post-attempt. The instrument is designed to register this kind of developmental honesty, not to penalize it.

Fourth, the broader labour market and global context. Students are completing the MVS during a period of significant uncertainty in the labour market. Entry-level hiring has tightened across many sectors, AI is reshaping the skill profiles employers seek, and global instability and economic pressures are well documented in student-facing media. The MVS Barriers Scale reflects perceived obstacles, and the honest answer to those questions in 2024–2026 captures a more challenging environment than the same questions would have captured in earlier years. A student whose engagement with the program produces a more realistic understanding of current career conditions may legitimately report greater perceived barriers, even as their actual readiness to navigate those conditions has improved.

Fifth, student wellbeing and mental health context. Post-pandemic mental health trends among university students are well documented. Career anxiety, future uncertainty, and overall psychological strain affect how students self-report on readiness questions. A student completing the MVS during a period of personal stress will report differently than a student in a more settled state.

Sixth, measurement noise from incentive-driven retaking. A program-wide promotion offering a gift card for retaking the Career Readiness Quiz produces some attempts that are completed quickly with score variability that does not reflect actual readiness change. Communication has been adjusted to discourage rapid multi-retake behaviour, but some noise of this kind remains in the dataset.

The dose-response gradient described in Section 5.4 is the strongest evidence that the aggregate findings reflect real engagement effects rather than measurement artifact: as engagement deepens, the rate of decline drops sharply, exactly the pattern that would be expected if program engagement is producing genuine readiness change. It is also worth noting that the engagement metrics reported here capture only Brightspace-mediated activity. Students engaging with downloadable content offline may appear as decliners in this analysis while their actual learning is substantial.

5.4 The Dose-Response Pattern

Career development theory predicts that students who engage more deeply with a program will show larger developmental gains. To test this in Horizons, the analysis identified what each student had actually completed between their two MVS attempts and measured the readiness change that followed.

Students who engaged with Horizons content between their two MVS attempts saw substantial gains in measured career readiness. Their average score moved from 47% at baseline to 66% at retest, a gain of 18.7 percentage points. Four out of five engaged students improved their score, and the typical student gained 19 percentage points. The top quarter gained at least 31 percentage points, and one in ten gained more than 42. By standard psychometric conventions, the magnitude of this change is a large effect: comparable to or stronger than the average effect sizes reported in meta-analyses of structured career development interventions (Whiston et al., 2017).

The gains were not limited to higher averages. Engaged students were also more likely to reach a high readiness threshold, more likely to improve, and less likely to decline. Figure 1 shows the four-way comparison.

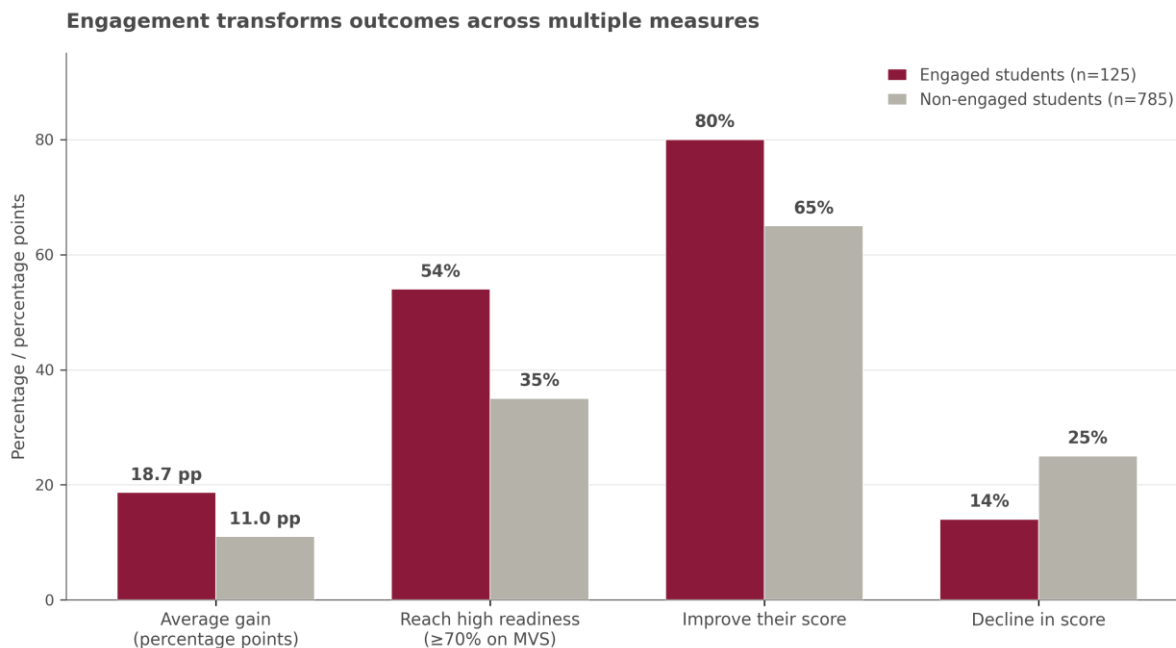


Figure 1. Engaged students (those who earned at least one badge between MVS attempts) outperform non-engaged students across four readiness outcomes ($N = 910$ matched pre/post pairs).

To isolate the program-attributable component of these gains, engaged students were compared with the 785 students (86% of the matched pairs) who retook the quiz without earning any badges in between. This second group gained an average of 11.0 percentage points, with 65% improving. This is the change that occurs in the absence of program engagement, reflecting familiarity with the items, the passage of time, and how students recalibrate their own sense of readiness when they encounter the same questions again.

The difference between the two groups, 7.8 percentage points, is the average gain attributable to Horizons engagement ($p < 0.0001$). Within engaged students specifically, the effect is large enough to indicate genuine developmental change rather than measurement noise.

Table 5. Readiness change by engagement completed between MVS attempts (*N* = 910).

Engagement between attempts	n	Mean baseline	Mean post	Mean total gain	% improved
No badges	785	44.9%	55.9%	+11.0 pp	65%
1–2 badges	56	41.0%	57.1%	+16.1 pp	75%
3–4 badges	16	48.3%	69.7%	+21.4 pp	88%
5 badges, no certificate	23	56.4%	78.1%	+21.7 pp	83%
Certificate earned in window	30	51.4%	71.4%	+20.0 pp	83%

The pattern grows stronger as engagement deepens. Students who earned 1 to 2 badges gained 16.1 percentage points. Students who earned 3 or 4 badges gained 21.4. Students who completed all five themes or earned the certificate within the window gained roughly 20 to 22. The rate of improvement rises along the same gradient, from 75% to 88%.

This dose-response gradient is also visible at the subscale level. The strongest gains concentrate on Occupational Information and Vocational Identity, which are the dimensions Horizons is designed to develop. The Barriers subscale shows minimal movement, which is expected: perceived obstacles like money or family approval are not the kind of thing an asynchronous program can shift in a few months.

The subscale pattern matters because it tells us what the analysis is measuring. If the observed gains were just retest noise, they would distribute evenly across the three subscales. Instead, they appear precisely on the dimensions the program targets. This is evidence that the gains reflect real program effect, not measurement artifact.

One small group stands out. Thirty students earned the Horizons Certificate between their two MVS attempts. They gained 20 percentage points on the total MVS, 22 on Vocational Identity, and 30 on Occupational Information. These are the cleanest gains in the dataset: students who completed the full program and were then measured immediately afterward. On Occupational Information, the certificate cohort nearly tripled their score, moving from a baseline where most students reported needing more information to a post-test where most reported they had it.

5.5 Final Assessment Cohort: An Emerging Evidence Base

Sixty students have completed the Final Assessment since it was introduced in April 2026. Of these, 59 have a baseline MVS attempt that allows pre/post comparison.

These students differ from the broader pre/post sample in a meaningful way. Under the policy that introduced the Final Assessment, students cannot retake the quiz until they have earned five badges. Every student who completes the Final Assessment has therefore completed the full thematic arc of the program. The Final Assessment is, by design, a post-test administered after demonstrable engagement.

Among the 59 students in the Final Assessment cohort with valid pre/post pairs:

- **Mean baseline score:** 53.7%
- **Mean post score:** 71.1%
- **Mean gain:** +17.4 percentage points
- **Median gain:** +19.2 percentage points

- **Improvement rate:** 80% of students improved their score
- **Decline rate:** 15%
- **Median time between baseline and post:** 228 days
- **Subscale gains:** +18.7 pp on Vocational Identity, +23.7 pp on Occupational Information, +5.1 pp on Barriers

These numbers are consistent with what the time-resolved analysis in Section 5.4 predicts: when students fully engage with the Horizons developmental arc, the readiness gain is large, the rate of improvement is high, and decline is uncommon. The 59-student Final Assessment cohort is still too small to draw firm conclusions, but the convergence between this cohort and the certificate-in-window cohort in 5.4 (which produced gains of +20.0 pp on the total MVS with comparable subscale concentration) increases confidence that these findings reflect a real program effect rather than a methodological artifact.

The Final Assessment cohort will be a primary focus of next year's impact analysis. As more students complete the program under the post-April policy, the cohort will grow into a stable evidence base for what Horizons produces in students who fully engage with it.

5.6 Question-Level Analysis as a Diagnostic Tool

Beyond aggregate readiness gains, the MVS provides item-level data that informs curricular decisions on an ongoing basis. Patterns in how students respond to specific questions reveal which dimensions of career readiness need the most support at the University of Ottawa, and shape module updates, activity design, and classroom programming priorities.

At intake, the dominant signal is information seeking. Across the 5,827 students with a baseline MVS attempt, 86% scored low on the Occupational Information subscale, indicating they need more information about careers, employment opportunities, training paths, or what different occupations actually involve. The single most prevalent concern in the entire dataset is the question about needing more information on employment opportunities: only 6% of students arrive feeling settled on this point. Figure 2 shows the most uncertain and most settled items side by side.

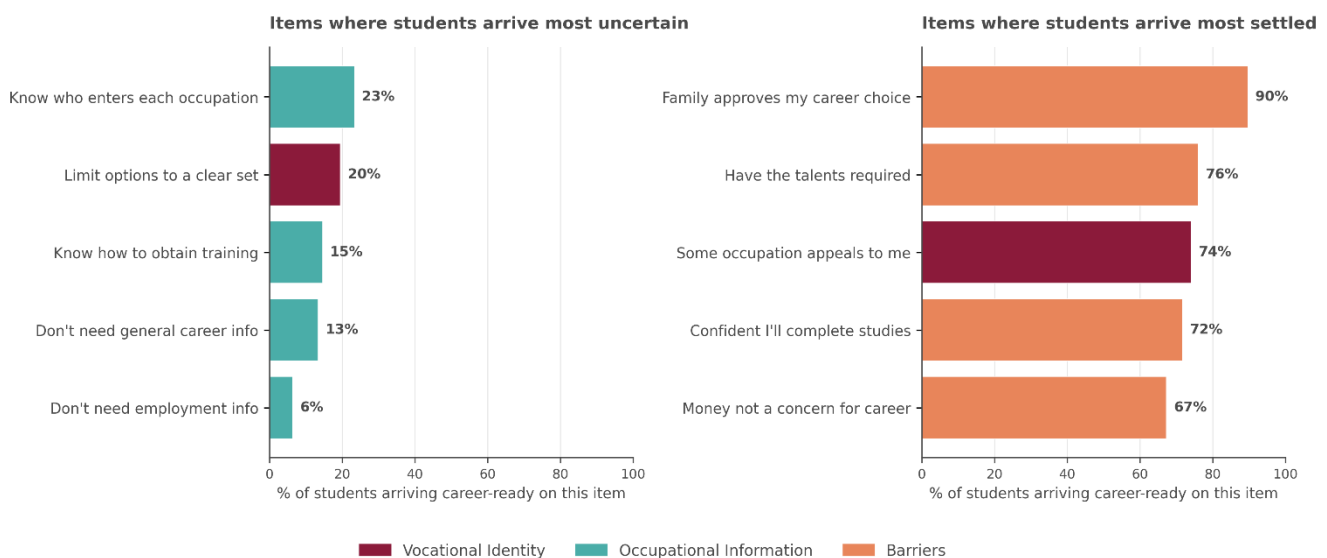


Figure 2. The ten MVS items where students are most uncertain (left) and most settled (right) at intake (N = 5,827). Occupational Information items concentrate on the uncertain side; Barriers items concentrate on the settled side.

This pattern is what places Career Exploration and Labour Market Information at the centre of the Horizons curriculum. The data confirms that this emphasis is responding to a real and near-universal student need.

Vocational Identity items show a more variable pattern. Some are widely shared concerns at intake: needing to know what career to pursue (32% of students arrive feeling settled), not knowing the tasks of different occupations (34%), and limiting career options to a clear set (20%). Other identity items show more variation across the student population, reflecting that students arrive at different points in their identity formation journey.

The Barriers subscale shows the opposite pattern. Most students arrive with relatively low perceived structural barriers. Ninety percent are not worried about family disapproval, 76% are confident in their talents, 72% are not worried about completing their studies, and 67% are not concerned about money. This is a healthier starting point than career development literature often predicts and suggests that the most impactful program work at uOttawa is in identity development and information provision, not in barrier remediation.

Figure 3 shows the complete item-level picture across all 26 MVS items, organized by subscale. The clustering of Occupational Information items at low readiness, the wide spread of Vocational Identity items across the readiness range, and the clustering of Barriers items at high readiness make the three distinct entry patterns visible at a glance.

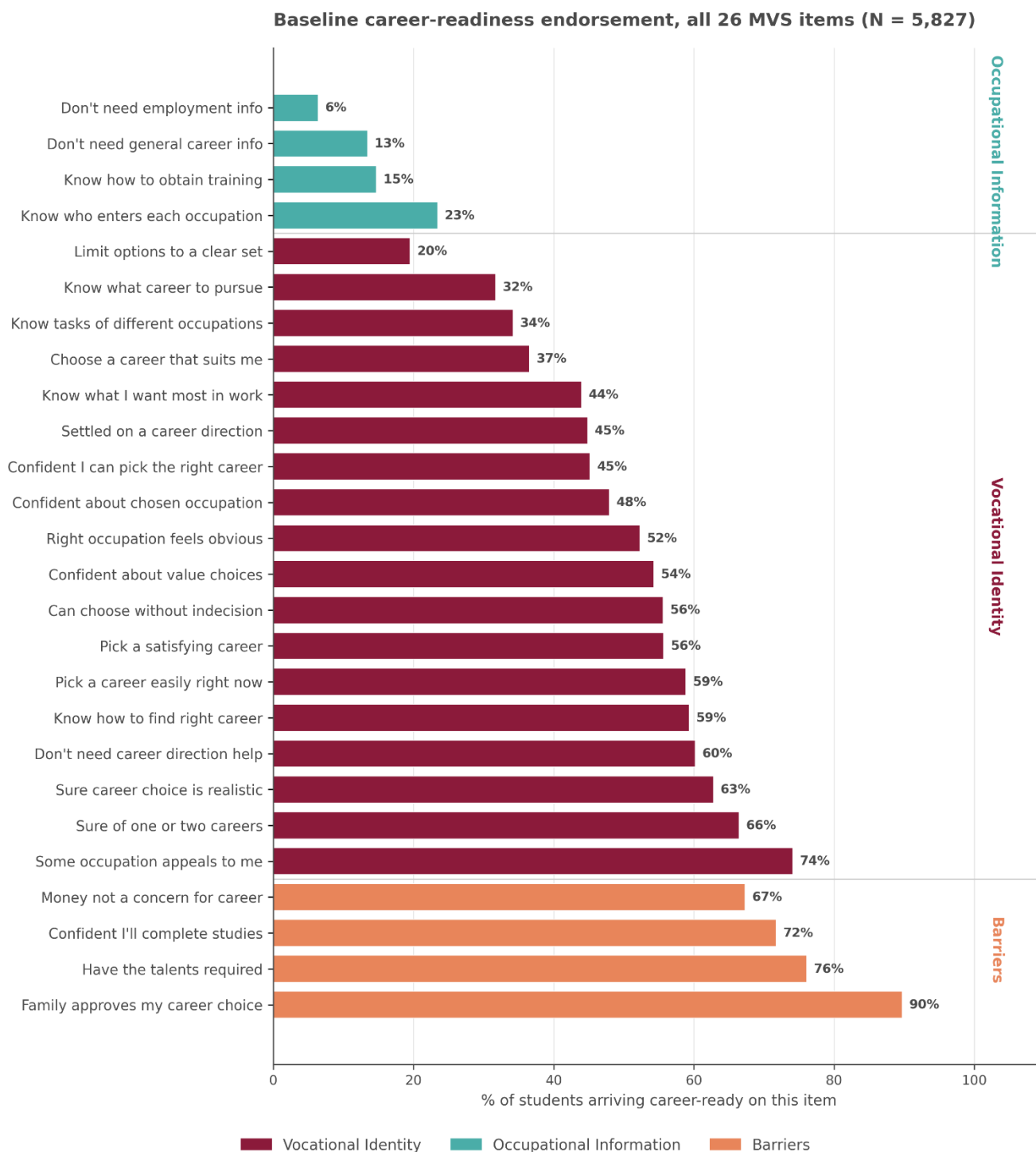


Figure 3. Baseline career-readiness endorsement across all 26 MVS items, organized by subscale (N = 5,827).

These item-level patterns will be tracked across reporting cycles to identify where student readiness is shifting over time, where new gaps are emerging, and where program emphasis should evolve in response.

6. Year-over-Year Growth

The data presented in earlier sections describes the cumulative state of Horizons through April 2026. This section examines the program's trajectory: how it has grown from Year 1 to Year 2, where that growth is concentrated, and what the pattern reveals about program development.

6.1 Growth at Every Funnel Level

Year-over-year comparisons use academic year boundaries: Year 1 is May 2024 to April 2025, the first full operational year of Horizons; Year 2 is May 2025 to April 2026, the most recently completed year.

Table 6. Year-over-year growth across the engagement funnel.

Stage	Year 1	Year 2	Change
Visited the Welcome page	3,118	6,232	+99.9%
Took the Career Readiness Quiz	2,224	3,431	+54.3%
Engaged with content beyond the quiz	1,404	2,205	+57.1%
Earned 1+ theme badge	259	285	+10.0%
Earned the Horizons Certificate	59	86	+45.8%
Total badges issued	776	911	+17.4%

Growth is visible at every level of the funnel. The active learner base nearly doubled at the entry point and grew significantly at every step that follows.

Year-over-year growth across the engagement funnel

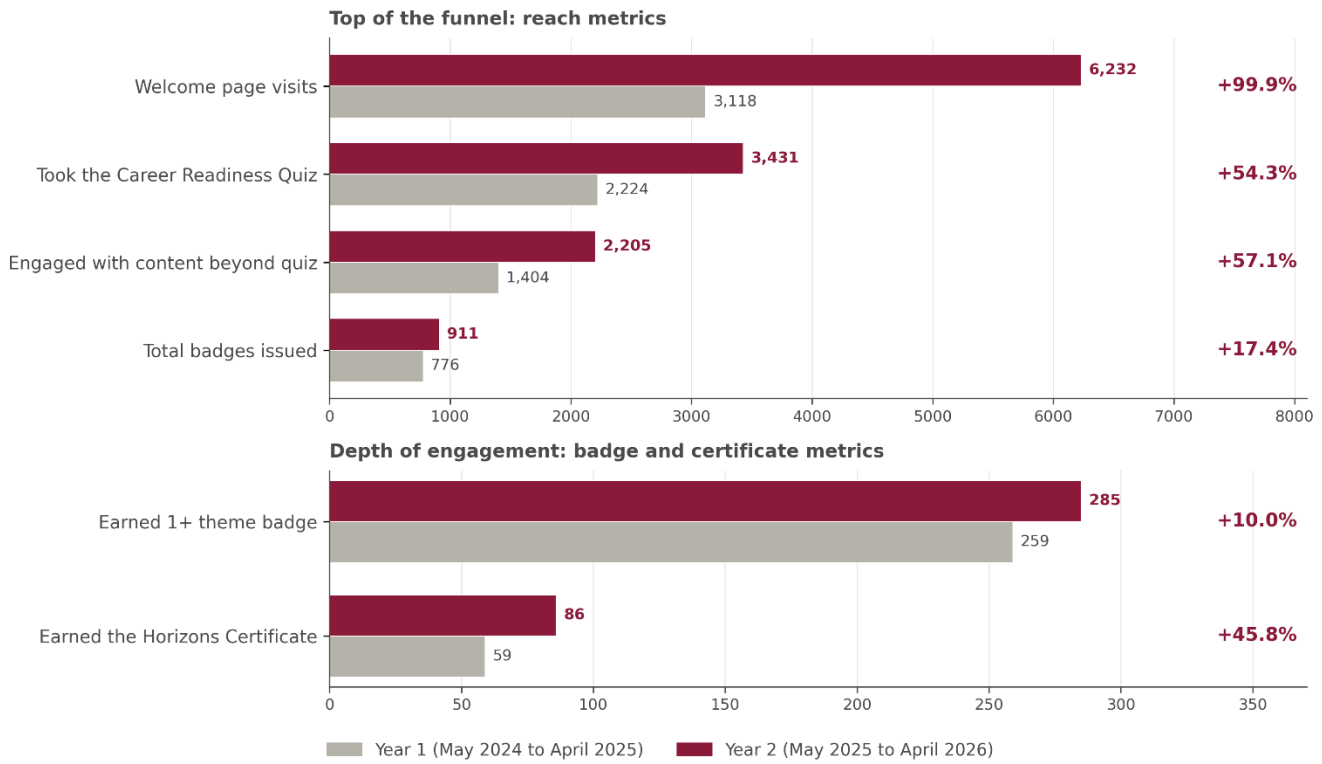


Figure 4. Year-over-year growth across the engagement funnel, comparing Year 1 (May 2024 to April 2025) and Year 2 (May 2025 to April 2026). Reach metrics are shown in the top panel; depth metrics in the bottom panel. Percentage change is shown to the right of each metric.

6.2 What the Growth Pattern Reveals

Three observations stand out.

First, reach is expanding rapidly. Welcome page visits doubled, and quiz takers and content engagers grew by more than 50%. More students are encountering Horizons, entering it, and engaging with it each year. This is a program in expansion, not maintenance. Some of this growth reflects the natural trajectory of a program still in its early years, but the pace and magnitude are consistent with sustained institutional investment paying off in measurable reach.

Second, depth is growing faster than the badge tier alone suggests. While unique badge earners grew by 10% year-over-year, certificate completions grew by 46%. The proportion of engaged students who progress all the way through the developmental arc is rising. This is partly an effect of program maturation: students who began Year 1 with a single theme badge are completing the full sequence in Year 2. It is also an effect of the new Final Assessment requirement, which is creating a clearer pathway to certification for students who complete the program.

The growing pool of students who complete the full Horizons arc also represents an opportunity for curriculum integration. Faculty can recognize and build on demonstrable career development competencies in capstones, experiential learning placements, and upper-year courses, using Horizons as a shared foundation that students bring with them.

Third, the growth is sustained and broad-based, not a one-time spike. The Welcome page doubling and the certificate completion increase of 46% are both evidence that program awareness, entry, and follow-through are all improving in parallel. Growth at every level, rather than only at the entry point, is a stronger indicator of program quality than reach metrics alone. Horizons shows growth at every level, indicating that the program is delivering value that prompts continued engagement.

6.3 Continuous Development

The growth pattern is not accidental. It reflects sustained investment in the program. Three to four modules are renewed each year as part of a continuous improvement cycle. New activities, updated examples, and expanded resources are added regularly. The Career Readiness Quiz methodology has been refined to produce better post-completion measurement through the Final Assessment. English and French versions are maintained at full parity, with all content kept current in both languages.

This work is what makes the year-over-year growth possible. A program that does not evolve loses its students; a program that grows alongside its students retains them and attracts new ones.

7. The Infrastructure That Makes Horizons Work

The findings in Sections 3 through 6 describe what Horizons produces: reach, sustained engagement, measurable readiness change, and consistent growth. This section addresses what produces it. The results documented in this report are not the output of a static platform or a one-time content development effort. They are the product of an ongoing, multi-layered set of investments that together constitute the infrastructure of a living career development program.

7.1 Continuous Curricular Development

Three to four modules are renewed each year. This is deliberate, sustained pedagogical work: reviewing existing content against current career development theory, evolving labour market realities, and emerging workplace technologies such as artificial intelligence that are reshaping professional work. The cycle includes identifying where students are showing gaps in MVS data, redesigning activities to better support the targeted learning, refreshing examples, expanding resources, and communicating updates to returning students through regular Brightspace announcements so they encounter renewed content when they revisit. Without this cycle, Horizons would degrade in relevance and lose its audience. With it, the program retains the multi-year companion behaviour documented in Section 4: students return because there is something new to return to.

7.2 Universal Design at Every Level

The program's design choices reflect an explicit commitment to universal design for learning. Differentiated engagement is supported at the program structure level: students choose the depth and breadth of engagement that fits their needs, from targeted single-module use to full thematic completion. Multi-modal delivery is supported at the content level: every module exists as video, audio narration, and downloadable PDF, with full transcripts and downloadable activity templates. Bilingual delivery is maintained at full parity: all content exists in fully developed English and French versions, not as one-off translations but as parallel developmental experiences.



These are not features that emerge by default. They reflect ongoing decisions about how the program is built, maintained, and expanded.

7.3 Theoretical and Pedagogical Grounding

Horizons content draws on established frameworks in career development theory (Holland, Super, Savickas, Krumboltz, Social Cognitive Career Theory), experiential learning (Kolb), positive psychology, and growth mindset research. These frameworks are translated into accessible learning experiences appropriate to a digital, asynchronous, self-directed environment. The program is structured around CDEL's five Career Development Learning Outcomes, building progressively toward the program-level objective of Career Agency. The MVS instrument anchors the readiness measurement framework and aligns with the early outcomes in this developmental sequence.

This grounding is what makes Horizons more than a collection of resources. The program reflects a coherent developmental theory, applied consistently across all twelve modules and reinforced through the badge structure, the Career Readiness Quiz, the Final Assessment, and the relational programming offered at Career Corner.

7.4 Continuous Evidence-Gathering

The data presented in this report did not emerge automatically. It is the product of deliberate measurement design: building the Career Readiness Quiz on a validated instrument, structuring badge and certificate awards to allow engagement to be measured at multiple depths, designing the Final Assessment to produce clean post-completion data, and analyzing engagement patterns at student, theme, and module levels. The MVS question-level analysis informs ongoing curricular decisions, closing the loop between evidence and practice. The program is set up to learn from itself.

7.5 Relational Scaffolding

Horizons is the digital arm of a broader career development ecosystem. Students access Horizons in their Brightspace, but they also encounter it through Career Corner drop-ins, workshops, in-class presentations, career fairs, and individual appointments with career and employment specialists when needed. The group enrollment that places Horizons in students' Brightspace shells is itself a product of relational engagement: a student attending a workshop is enrolled into Horizons, extending the touchpoint into a standing resource. The integration between digital program and human services is what makes the program's reach possible, and what allows different types of students to find their way in through different channels.

7.6 What This Adds Up To

Horizons is not an off-the-shelf platform. It is not a course that was built once and now runs itself. It is a continuously developed, theoretically grounded, universally designed, evidence-informed, bilingual program embedded in an emerging relational career services ecosystem. The findings in this report reflect what that infrastructure produces.

8. Recommendations

The findings in this report point to a program with strong evidence of impact, sustained year-over-year growth, and a clearly differentiated engagement model. Sustaining and expanding this impact requires

action at the architectural level, at the operational level, and at the institutional investment level. The following five recommendations are offered in support of Horizons and CDEL's broader program development agenda. Recommendations 1, 2, and 5 are supported jointly by the quantitative evidence presented in this report and the qualitative evidence presented in the companion thematic analysis (Mitsou, 2026b). Recommendations 3 and 4 address operational and outreach conditions that emerge specifically from the engagement funnel and multi-year companion data.

Recommendation 1: Provide automatic access to Horizons for all incoming students

The data documents an awareness and access pattern that institutional architecture can address directly. Of the 13,680 students currently enrolled in Horizons through Career Corner touchpoints, 9,727 visited the Welcome page and 5,827 took the Career Readiness Quiz. The drop-offs at each step reflect, in part, students who never knew the program existed until a Career Corner touchpoint placed it in their Brightspace, and others who found it but did not yet have a reason to enter. Providing automatic Brightspace enrollment in Horizons for all incoming students at the start of their first year would remove the discovery barrier entirely and ensure that career development is a visible, expected part of the university experience from the beginning. First-year students benefit most from early career development intervention. Universal enrollment would also amplify every other access pathway: classroom visits, faculty integrations, and peer outreach all land differently when Horizons is already waiting for the student.

Recommendation 2: Expand and formalize multiple embedding pathways for Horizons

Career development should not require students to find their way to a single door. The engagement data in this report reflects the diversity of ways students currently encounter Horizons: through self-directed enrollment, through CDEL-led classroom delivery, through professors and departments integrating modules into graded coursework, and through in-person engagement at Career Corner. Each pathway reaches a different student. Together they begin to approximate what an equitable access architecture looks like.

Horizons functions as the shared foundation underneath these varied access points. The 30 course integrations across 8 faculties this year show how this foundation can support adapted spin-off activities: workshops on labour market data for specific fields, in-class sessions that build on the resume and LinkedIn modules with graduate-level specificity, applied activities that take a module's content and tailor it to a faculty's professional context. Faculty-specific programming becomes more efficient and more consistent when it builds on a shared base rather than starting from scratch each time.

Formalizing and expanding this multi-access approach would include:

- automatic enrollment partnerships with faculties and programs
- continued classroom delivery
- support for professors integrating Horizons into course assessments
- structured workshop offerings built on module content
- sustained investment in the in-person relational environment of Career Corner

Together, these measures would ensure that career development is accessible regardless of program, year, language, or background.

Recommendation 3: Strengthen Horizons onboarding and navigation support

The engagement funnel reveals friction at the entry point that targeted intervention can address. Students who reach the Welcome page encounter a button leading to the Career Readiness Quiz, but the relationship

between the quiz and module access is not always immediately clear. Some students may navigate to language menus or theme pages without realizing the quiz must be completed first to unlock content, and may disengage before understanding how the program works. Strengthening onboarding through peer-led walk-throughs, term-start orientation sessions, clearer Welcome page messaging, and embedded prompts in classroom presentations would reduce this friction directly. This recommendation pairs naturally with universal access (Recommendation 1) and with multiple embedding pathways (Recommendation 2): a program that is automatically available to every student is more impactful when students also know how to use it.

Recommendation 4: Communicate continued access to Horizons to graduating students and alumni

Horizons remains accessible to students after graduation through their continued Brightspace access. This is a deliberate design feature that extends the program's value into the workforce, where the resume, networking, interview, and transition modules become directly applicable to career advancement, job changes, and continued professional growth. Many students are likely unaware of this feature. Targeted communication to graduating cohorts and alumni would surface this resource at exactly the moment it becomes most useful, while also positioning Horizons as a lasting institutional investment in graduate outcomes and a continuing point of connection between alumni and the University of Ottawa.

Recommendation 5: Sustain investment in Horizons curricular renewal and the Career Corner relational infrastructure

The growth documented in this report (a doubling of Welcome page visits, a 57% increase in active learners, a 46% increase in certificate completions, and a 17% increase in badges issued) is the product of sustained investment at two levels. The first is curricular: three to four modules are renewed each year as part of a continuous improvement cycle, ensuring that Horizons content remains current, theoretically grounded, and responsive to identified student needs. The second is relational: the deepest developmental outcomes documented in the qualitative analysis are produced through sustained interaction with the staff, peer mentors, and specialists at Career Corner. Both layers require ongoing investment as the program continues to grow. Research evaluating structured career development interventions at scale has documented one-year retention rates 8.8 percentage points higher and four-year graduation rates approximately 15 percentage points higher among participating students (Clayton et al., 2019). Sustained investment in career development infrastructure supports a measurable contribution to broader institutional outcomes. As Horizons reaches more students through universal access and deeper institutional embedding, sustaining the curricular renewal cycle and the relational infrastructure of Career Corner is what will ensure that growth translates into developmental outcomes rather than simply into participation numbers.

9. Methodology

9.1 Data Sources

All data were extracted from Brightspace on May 1, 2026 and reflect program activity from launch (January 2024) through April 30, 2026. Five files form the analytical base:

- **Career Readiness Quiz attempts** (main quiz file plus English and French Final Assessment files): 7,163 attempts from 5,827 unique students.

- **Awards Issued:** 1,952 award records (1,786 badge awards and 166 certificate awards) issued to 558 unique students. The 166 certificate awards reflect 164 unique certificate holders, including two students who earned both the English and French versions of the certificate.
- **Learner Usage report:** student-level engagement metrics for 13,680 enrolled students.
- **Content Progress report:** 40,673 student-by-content-topic interactions.

9.2 Anonymization

Student identifiers (Brightspace Org Defined IDs, normally the student number at the University of Ottawa) were replaced with sequential anonymous identifiers (STU_XXXXX) prior to any analysis. The mapping table linking real student numbers to anonymous identifiers was generated locally using a PowerShell script and stored on the analyst's local machine. The mapping table was not transmitted to any external system or included in any analytical output. The anonymous identifiers were used consistently across all five data files to allow students to be linked across sources without exposing personal information.

9.3 Career Readiness Quiz Cleaning Rules

The Career Readiness Quiz is built on the My Vocational Situation (MVS) instrument, with 26 binary questions (18 True/False and 8 Yes/No items) measuring Vocational Identity, Occupational Information, and Barriers. The following cleaning rules were applied to produce the pre-and-post analytical dataset:

1. **Baseline:** the first chronological attempt per student. Zero scores were retained at baseline.
2. **Minimum post-attempt duration:** post-attempts under 60 seconds were excluded as likely click-throughs.
3. **Zero post-scores:** post-attempts with a total score of zero were excluded. A zero score on a 26-item self-report instrument is highly unlikely to reflect a genuine measurement and most often represents an abandoned, accidental, or click-through submission.
4. **Same-day highest score:** where a student completed multiple post-attempts on the same calendar day, only the highest was retained.
5. **Highest qualifying post-score** was used as the post measurement, capturing peak demonstrated readiness across the post period.
6. **Decline exclusion:** pre-and-post pairs with declines greater than 30 percentage points were excluded as likely measurement artifact rather than genuine readiness decline.

A minimum interval rule (14-day or 30-day window between attempts) was considered and rejected, on the grounds that the MVS measures self-perceived readiness rather than knowledge recall, and that excluding intensive engagement periods would systematically remove students engaging in exactly the pattern Horizons is designed to support.

After cleaning, 910 students had a valid pre-and-post pair (16% of all quiz takers). The remaining 84% took the quiz only once.

Time-resolved engagement analysis (Section 5.4). For each matched pre/post pair, the engagement completed between the two MVS attempts was identified using Issue Date timestamps from the Awards Issued file. Badges earned in the window between a student's baseline and post-test were counted, and certificates earned in the same window were flagged. This allows the analysis to distinguish students who engaged with Horizons content during the period when score change could have occurred from students

who retook the quiz without engaging in between. Engagement tier classifications (no badges, 1–2 badges, 3–4 badges, 5 badges no certificate, certificate in window) are based on this time-resolved count.

9.4 Engagement Definitions

- **Enrolled in Horizons:** present in the Learner Usage report with the role "Student."
- **Visited the Welcome page:** at least one recorded visit to the Bienvenue / Welcome page.
- **Took the Career Readiness Quiz:** at least one quiz attempt recorded.
- **Engaged with content beyond the quiz:** at least one visit to any content topic other than the quiz itself or the Welcome page. Includes module content, theme landing pages, FAQ, and language selectors.
- **Earned a theme badge:** awarded a badge for any of the five career themes. English and French versions of the same theme badge are counted as a single badge for that theme.
- **Earned 3+ theme badges:** earned badges across three or more distinct themes.
- **Earned the Horizons Certificate:** awarded the Horizons Career Development Certificate.
- **Final Assessment cohort:** students who completed the dedicated Final Assessment quiz, which serves as a post-completion measurement instrument.

9.5 Time Periods

Table 7. Time periods referenced in the analysis.

Period	Start	End
Year 0 (launch period)	January 2024	April 30, 2024
Year 1	May 1, 2024	April 30, 2025
Year 2	May 1, 2025	April 30, 2026

Cumulative figures span from program launch through April 30, 2026. Year-over-year comparisons reference Year 1 against Year 2. A student is considered active in a period if they had any logged-in or content-visit activity within that period.

9.6 Limitations

Brightspace-mediated engagement only. All engagement metrics reflect activity logged within Brightspace. Horizons content is intentionally designed for portable, asynchronous, multi-modal use. All module content is available in video, audio, and downloadable PDF formats; activity templates are downloadable; and full narration transcripts are downloadable. Students who download materials and engage offline are not visible in the platform data. Reach and engagement figures should be read as a conservative estimate of actual program use.

Time-tracking reliability. Brightspace's time-tracking field has known reliability issues; content completion counts are used preferentially as the more reliable engagement measure.

Single-attempt students. Of 5,827 students who took the Career Readiness Quiz, 4,853 (83%) took it only once and are not represented in the readiness change analysis. The MVS findings apply specifically to students who chose to retake the quiz.

Self-report instrument. The MVS measures self-perceived career readiness. Score changes reflect changes in students' subjective sense of their readiness, which can move both upward (increased confidence and clarity) and downward (increased awareness of complexity and barriers). The Barriers Scale specifically captures perceived obstacles, which can grow as students develop sophistication.

Data extraction cutoff. Files were extracted on May 1, 2026. The most recent record in the dataset is dated April 30, 2026. A small number of records issued between extraction and the close of the term may not be reflected.

9.7 Tools and Documentation

Anonymization was performed locally using a PowerShell script that generates and applies a persistent crosswalk between real student identifiers and anonymous identifiers. Quiz cleaning, engagement profile construction, multi-year analysis, and MVS pre-and-post comparisons were conducted using Python and the pandas data analysis library. Cleaning rules, engagement definitions, and methodological decisions are documented in a separate methodology document maintained for technical review. Source data and the anonymization mapping are retained locally to allow re-analysis if needed.

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