

Final Assessment Report

Bachelor of Knowledge Integration (BKI)

April 2016

Summary of the Program Review:

In accordance with Waterloo's Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the Department of Knowledge Integration's self-study, external evaluation and the internal response of the program. The self-study was submitted to the Associate Vice President, Academic on June 25, 2015. Volume I presented the program descriptions and learning outcomes, an analytical assessment of the BKI program, and program data including feedback collected from students and alumni. Volume II included the CV's of instructors associated with the Knowledge Integration (KI) program, and Volume III listed a number of arm's-length external reviewers.

The suggested external reviewers were ranked and selected by the Associate Vice President, Academic. The reviewers were Dr. Frédéric Bouchard (Associate Professor, Department of Philosophy, Université de Montréal) and Dr. Alastair Summerlee (Professor, Department of Biomedical Science, University of Guelph). The internal reviewer was Dr. James Skidmore, Professor, Department of Germanic and Slavic Studies.

The reviewers examined the self-study documentation and participated in the site visit on November 12-13, 2015. The visit included interviews with the Associate Vice President, Academic, Mario Coniglio; the Dean of the Faculty of Environment, Jean Andrey; the Associate Dean, Undergraduate Studies, Jeff Casello; and Rob Gorbet, Chair of the Department of Knowledge Integration. Meetings were held with individuals working with Mapping, Analysis and Design (MAD) as well as Waterloo Unlimited (WU). Reviewers had lunches with current Knowledge Integration students and separately with KI faculty members, and breakfast with alumni. Staff members also had the chance to meet with the reviewers. In addition, the reviewers observed part of an INTEG 120 class in the Knowledge Integration Studio and toured the Faculty of Environment workshop.

The external reviewers' report was submitted on December 3, 2015 and the department's response and implementation strategy was received on February 23, 2016. Endorsement of the program response from the Dean of Environment was received via email on March 9, 2016.

This final assessment report is based on information extracted, in many cases verbatim, from the self-study, the external reviewers' report and the program response.

Program characteristics:

Knowledge Integration is a four-year, regular (i.e., non-co-operative) honours undergraduate program. Students completing the program are awarded a Bachelor of Knowledge Integration (BKI) degree. As with most undergraduate programs at Waterloo, admission is by direct entry in first year, although students have transferred into KI from other programs. In addition, there are several options for students registered in other programs to get varying types of KI experience: concurrent degrees, joint honours with BKI, minor in Knowledge Integration and an option in Knowledge Integration. Approximately 25% of KI students complete a joint degree with another honours program. An additional 58% of KI graduates thus far have completed at least one minor in another area.

The department's steady-state faculty complement is four. Current first-year intake is between 25 and 30 students, with an eventual target of 40 majors with another 10 minors. KI currently admits about 60% of their applicant pool, with about 50% of those confirming. In addition to

the BKI undergraduate program, it runs the Waterloo Unlimited high-school outreach program on behalf of the University; it does not currently have a graduate program.

Summary of strengths, challenges and weaknesses based on self-study

Strengths

BKI Students are:

- engaged, reflective and knowledgeable according to employers, fourth-year thesis supervisors, and faculty across campus with whom they interact through their elective courses
- well represented on the Dean's Honours List (60%-70% of the graduating class each year, and a cumulative average over 83%)
- successfully completing their BKI degree (there is a 91% retention rate of students who are registered in KI in their 2A term)
- able to benefit from the connectivity this program has with the rest of campus through guest lecturers, breadth and elective courses taken across campus, upper-year thesis supervision, and other meaningful engagement of faculty outside the department and Faculty,
- able to enjoy a flexible program that:
 - enables them to think broadly across disciplines, acquire depth through their area of concentration and pursue their individual academic interests
 - is characterized by a small cohort size and intentional opportunities for cross-cohort interaction (e.g., INTEG10, museum field trip to Europe) that help build a tight community

Faculty are:

- dedicated to the success of the BKI program
- highly engaged in research, teaching, and service - two of their five faculty members have received Waterloo's Distinguished Teaching Award two others (including the Senior Design Demonstrator) have been short-listed for this prestigious award

Challenges

- Student recruitment suffers from difficulty in identifying their target audience. The program's 2012 strategic plan sets an annual enrolment target of 40 students in the KI major and an additional 10 students doing the minor, which implies doubling the current cohort size
- Identifying suitable space to house the Museum Course projects during their public showing is an ongoing challenge
- the Waterloo Unlimited program supports KI, both as a tool for recruitment and as partial support for two of its staff positions (0.9 FTE total)

Weaknesses

- The department has a small number of faculty, half of whom are pre-tenure. Sessional instructors are recruited when faculty are on sabbatical
- Student feedback suggests the curriculum requires refinement to better articulate the connections between and sequencing of courses, and the program structure and goals
- Faculty, staff, and students indicate the weekly community seminar (INTEG 10) is not being used to its fullest potential
- There is no co-op version of the program although many existing KI students have been successful at finding their own summer internships

Opportunities for Improvement and Enhancement:

- Curricular improvements should include:
 - more scaffolding to help students make connections throughout the curriculum, either through changes to INTEG10 or possibly through the adoption of an e-portfolio exercise
 - better coordination of deadlines for course deliverables during Winter courses to assist both students and faculty

- helping students identify an area of interest earlier on in the program, so it can frame selection of breadth electives and eventually career plans
- development of KI courses for non-KI students would increase KI's connections across campus through teaching
- KI should enhance marketing and awareness building of the program by profiling successful alumni
- KI should formalize an optional internship so that students who are interested in a co-op experience would consider the KI program
- Faculty research interests should be leveraged creatively to emphasize the value of interdisciplinarity in working on complex problems in the 21st century

Summary of key findings from the external reviewers:

Overall the external reviewers were very impressed with the KI program and considered it to be well conceived, executed and supported by a very dedicated, supportive faculty. Reviewers found that students and alumni were complimentary about the program, the faculty and the University, and the current resources available support the current program needs. The reviewers viewed the KI program as an innovative approach to the concept of a more traditional 'liberal arts undergraduate degree program' and saw it as being entirely consistent with the external perception of the innovative solutions and programs provided at the University of Waterloo.

The reviewers identified a number of issues, however, and these are addressed below in the program response.

Program response to external reviewer recommendations

- 1. Consider a rebranding exercise for the program.** The words "knowledge integration" are not necessarily readily understood, especially by applicants but also by parents and others involved in decision-making about programs to study at University. Coupled with the lack of clarity of the marketing of the program, there is an opportunity to find ways to simplify and solidify the messaging around the KI program. There is a need to explain why design thinking is directly and critically linked to the future of employability in the workforce which is currently lacking. There is already a sense that the program has branded itself by default as the "KI program" and there may be elements of that concept that could be developed. Creating a clearer brand and brand recognition will lead to more effective response to the next set of recommendations.

Response

KI agrees that this is an important priority that, as the reviewers point out, is distinct from marketing and will in fact make their marketing efforts more effective. In focus groups run during research for the self-study report, different students reported differences in the way the program was represented over time and by different staff or faculty. In the reviewers' report, there are multiple comments which call for clarity on things such as the role of design thinking in the program and of "thinking with your hands," and suggestions to clarify the goals of the program in language suitable for a 17 year-old applicant. We believe the reviewers have rightly identified a fundamental area for focus: identifying and clarifying the Knowledge Integration brand.

- 2. Adjustments to the marketing and advertising strategies for the KI program**

Reviewers suggested KI develop a more coherent marketing and advertising strategy for the program including integration of the messaging throughout all the media used to advertise the program. It is further recommended that proactive use of social media should be included in this exercise.

In addition, there should be greater focus on the critical structural elements of the program including design thinking and prototyping. The descriptions of design thinking and its relevance to the workplace of tomorrow should be clearer in the advertising material. There should also be greater focus on important philosophical aspects of the programming including “solving real world problems”.

Response

Once KI has completed a branding exercise, they intend to undertake a revision of their marketing and communication strategy and materials, including but not limited to: web redesign, social media strategy, and print materials. The reviewers specifically mentioned clarifying the description and focus on the relevance of Design Thinking philosophy and practice.

3. Curriculum

The reviewers suggested that KI rethink the name, aim and scope of the Museum Course. Physically bound knowledge mobilization exhibit stations are an excellent project to have and are a strength of the program, but limiting it to the museum context may limit its appeal and pertinence, and creates a dissonance with the pedagogical and professional goals tied to the program.

The reviewers recommended enhancing the opportunities for students in the program to reflect more carefully on career options through more effective academic course mapping. This could be achieved by restoring the academic curriculum mapping exercise that was originally present in the 1A core course or by deliberately creating an opportunity for all students to meet one-on-one with staff to discuss career and course choices at the end of each academic year.

It was also suggested that KI increase the presence of entrepreneurship and social entrepreneurship within the curriculum and its promotional material. The reviewers indicated that there were several oblique references to the importance of these topics but no clear reference to their presence in the core courses or the promotional materials.

Furthermore, the reviewers recommended exploring opportunities to create clearer links with the Faculty of Environment without making the connection too explicit. There are definitely contraindications for recruitment to label the program as connected with ‘environment’ too strongly. However, reviewers felt that there is an opportunity to steer some, if not all, of the fourth year projects towards local city and community-based activities.

Response

Knowledge Integration feels that their core and broader program curriculum are strong, while acknowledging the opportunities for improvement pointed out by the reviewers. They are planning a review of the scope and goals of the Museum Course, and have already been discussing formalizing student selection of an Area of Concentration at the end of 2B as well as regular reflections on course selection. In addition, they plan to expand their current integration of social entrepreneurship and environmental sustainability within their courses, and will consider mounting related elective courses.

Additional curricular projects include revisiting the goals and structure of INTEG10, introducing a Science, Technology and Society (STS) specialization, and increasing the explicit structure of the program. In addition, KI notes that it is important for them to continue work on developing courses for delivery in large classes to students from across campus.

4. Resources available to support the program

The reviewers indicated that KI should explore ways to create a better balance between the strong identity of the program and the intensity of current faculty ownership of the

program. There are opportunities to expand faculty resources by encouraging adjunct/joint appointments with faculty in other parts of the university (a simple start would be an official designation for faculty who currently supervise students in the fourth year projects but the connections could be more substantial than that). Moreover, opportunities such as joint or team teaching the core courses should be considered by bringing in faculty from other units across campus, and recruiting faculty from other universities nearby who might be interested in teaching within the core courses of the program.

KI was encouraged to engage members of the wider University of Waterloo community by better advertising their Friday seminar and attracting people to take an interest in and thereby understand the KI program and its aspirations more effectively (i.e., broaden the base of faculty support for the program to a wider audience). The reviewers stated KI also might include in this advertising, conferences and presentations developed by the students in their final year projects.

Last, in regards to resources, reviewers stated that KI should consider developing a more effective and transparent financial modelling system for equipment replacement and upgrades in the MAD facilities.

Response

KI agrees with the reviewers, that the available resources are sufficient given the current program size. Questions raised by the reviewers about financial planning for the MAD workshop and plans to extend into more of a “maker space” are not within the purview of KI, though they will pass on the comments to the MAD Director and Dean. KI appreciated the reviewers’ strong encouragement, based on their experience and observations of activity-based budgeting at other institutions, that activity-based budgeting be “used for decision making at the Faculty level and above.” This will be critical for Knowledge Integration given the class size and pedagogical model, which sees their students taking a lot of courses from other units across campus.

There is currently strong support across campus from those who know about KI, including dozens of faculty members who enthusiastically teach and supervise KI students in their thesis work. The department recognizes that they could increase the understanding of KI among those who remain unaware of the program. This is a slow process, and revision of our approach to marketing internally will likely increase the effectiveness of our current channels for advertising the seminar, conferences, and student projects such as the annual Museum Exhibit and fourth year thesis Symposium.

The department will consider suggestions for formal adjunct and joint appointments, within the framework of what’s possible at the University. The activities and budgeting of MAD are beyond the scope of KI’s mandate.

5. Faculty efforts

The reviewers encourage greater scholarship on the pedagogical impacts of “KI-thinking” and cognitive development among students. The reviewers recommended that the University seek to codify the process of the understanding of the ‘cross-appointment’ letter that is made available to faculty engaged in the KI program. It is the understanding of the reviewers that such a letter, whilst recognized as best practice in other institutions, is neither common nor codified in human resources practices at the University of Waterloo. This has the potential to expose the University in the event of a challenge in promotion and tenure processes.

Response

Several of the KI faculty are interested in SoTL research and appreciate the reviewers' suggestions to study the effectiveness of the program within the Waterloo context. As resources become available for such research, we will plan to undertake it. KI strongly supports the implementation at Waterloo of best practices regarding MOUs for cross-appointments. We will pass on the comments to the Secretariat and will be happy to work with them and FAUW to share our research and practices to determine whether, and how best to, extend these campus wide.

6. Other aspects that could be considered

The Knowledge Integration program attracts some of the best students nationally and is competing against the highest level scholarships (often referred to as "President's Scholarships") in other institutions, but the KI program cannot match the dollars offered to these students. The reviewers stated that KI consider ways to provide high level scholarships for their students as a competitive recruitment tool.

They also indicated that KI consider developing a more active approach to placing the exhibits from the current third year "Museum Course" not only in other places in the University of Waterloo, but expand the reach and notoriety of the program by negotiating opportunities to display the exhibits in the city Museum and possibly in the museums of neighbouring cities.

Knowledge Integration should also consider capitalizing on the opportunities presented by the approach to problem-solving and design thinking used in the KI program to expand offerings to other groups of students. For example: the program could run transition programs for students entering any program at the University of Waterloo – such activities may significantly help in the transition of students from high school to university. But similar offerings could be made as orientation to graduate programs where problem-solving skills and design thinking are at best very different among students.

Response

KI indicated that expanding the reach and partnerships related to the Museum Course beyond the University, is already underway. Two student exhibits are being shown at THEMUSEUM in Kitchener from March to May 2016 as a pilot, and the museum is interested in hosting all the projects in future years. We also have a strong collaboration with the Waterloo Regional Museum, with several students working there each summer and loan arrangements for objects for the student exhibits. A review of the course will need to consider an expanded project scope and identify potential corresponding partners.

The department will continue to monitor surveys of non-confirms as well as including questions in exit interviews about the importance of large scholarships. With limited resources available, we continue to believe that spreading the funds widely is more effective than offering fewer large scholarships. We will of course continue development efforts to increase the funds available for KI entrance scholarships.

Implementation Plan:

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
1.	Complete a branding exercise for the program.	We look forward to working with Faculty-level and University-level Marketing and Undergraduate Recruitment (MUR) units to identify the appropriate expertise on campus. Should it be necessary, we would look to the Faculty to provide resources to engage external expertise.	Chair	<p>December 2016 Plan in place (identify resources, develop detailed timeline)</p> <p>Oct 2017 Branding exercise complete in time for 2018 admissions cycle</p>
2.	Review and revise marketing and communication strategy and materials.	The reviewers identified social media as a particular area in which we could do better, and we will seek out expertise within MUR and Communications (and externally if necessary) to help develop social media strategies and expertise within KI.	Chair	<p>Nov 2017 Any new initiatives (e.g., around Fall Open House) and updated web material developed</p> <p>Jan 2018 Social media strategy developed and implemented, including any necessary training</p> <p>Winter 2018 Updated print marketing materials developed for 2019 admissions cycle</p>
3.	Complete review of the Waterloo Unlimited structure and implementation	One of the goals of the review is to identify a model that would allow the Waterloo Unlimited program to move to a more stable funding situation through budget restructuring and continuing development efforts.	Director of Waterloo Unlimited	<p>Mar 2016 Contact reviewers for clarification on their comments about Waterloo Unlimited</p> <p>Jul 2016 Confirm staffing for 2016-2017 programming</p> <p>Nov 2016 Clarify funding for 2017-2018 and beyond</p>

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4.	Implement work-integrated learning more formally (but still optionally) in the program.	Working with WatPD, we will pilot an optional WIL recognition program in Spring 2016. We will build on this pilot in subsequent years in order that our students can take best advantage of their summer work experiences, connecting them explicitly with knowledge and skills gained on campus, and with their career goals.	Chair	<p>Apr 1 2016 Draft a proposal for a WIL pilot in Spring 2016, including suitability of existing WatPD courses</p> <p>Apr 15 2016 Identify 5-10 students to participate in the WIL pilot</p> <p>Nov 2016 Review of pilot and decision on path forward in time for 2017 recruitment activities/website</p>
5.	Increase the presence of entrepreneurship and social entrepreneurship within the curriculum. Review opportunities to better connect curriculum and student projects indirectly with Environment.	We will undertake discussions among the faculty to flesh out these suggestions, as well as consider the broader question of KI/Environment integration.	Chair	Jul 2017 Identify opportunities for curriculum integration and reflect on KI/Environment integration
6.	Implement pending curriculum changes.	Rationalizing and leveraging our existing courses, including: offering popular special topics/elective courses on a two-year rotating cycle (e.g., Creative Thinking, Research Methods); introducing a Science, Technology and Society (STS) specialization; and reviewing the structure and purpose of the INTEG10 seminar. There may be minor implications for workload related to changes in INTEG10; these will be monitored.	Associate Chair Undergrad	June 2016 changes ready for implementation for the 2017-18 calendar cycle

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
7.	Increase the structure of the curriculum.	This recommendation fits very well with opportunities for improvement already identified these include: requiring students to reflect periodically on the relationship between their past courses, those they plan to take, and their post-graduation interests; requiring students to submit a formal description of their area of specialization (whether or not this aligns with an existing option, minor, specialization, or joint degree), by the end of 2B; introducing more structure to first year, to require students to complete more of their breadth electives earlier in the program; considering the introduction of additional breadth electives (e.g., a course in conflict management) to the program.	Associate Chair Undergrad	June 2017 changes ready for implementation for the 2018-19 calendar cycle
8.	Develop new course offerings designed for a campus-wide audience.	We are currently pursuing the creation of a large 2 nd year course on Collaboration (INTEG210), involving three upper-year KI students in that course design process. We are also considering the feasibility of providing an upper-year applied group design course for non-KI students, as part of the University's proposed EDGE Certificate in experiential education. KI participation in the core of the EDGE Certificate is not yet finalized, but we intend to design and offer INTEG210 to students across campus, independent of the EDGE Certificate.	Associate Chair Undergrad (leading INTEG210) and Chair (leading EDGE connection)	Mar 2016 nature of KI's EDGE Certificate participation confirmed (for Apr 12 2016 SUC meeting) Winter 2018 First offering of INTEG210
9.	Review the aims, title, and scope of the Museum Course. Consider placing the product of the Museum Course beyond the University.	We agree that the scope can be revised without losing the important aspects of knowledge mobilization, impactful engagement, and communication to lay audiences. In particular, there may be opportunities in this review to better connect to (or at least provide access to) environment-themed projects and partners (see Recommendation 5). This is a significant undertaking, as the "Museum Course" is actually a sequence of four courses (1.5 units) taken from 2B to 3B, including an international field trip.	Museum Course instructor (who is also the current Department Chair)	Mar 2017 High-level revision of the goals and scope of the Museum Course Sep 2017 Detailed revision of learning objectives, delivery model, partnership possibilities, field trip

		In terms of expanding the reach and partnerships related to the Museum Course beyond the University, this is already underway.		<p>Nov 2017 Detailed course re-design for INTEG230/231</p> <p>Winter 2018 First cohort under revised course model starts the sequence, in their 2B term</p> <p>Sep 2018 Detailed course re-design for INTEG320/321</p>
10.	Enhance connections between KI and faculty across campus, as a way of increasing course offerings and understanding of the KI program.	Reviewers raise some interesting and novel suggestions for building community and connecting with faculty outside of KI. Some suggestions include “special designations,” and possible adjunct/cross-appointed status. We have also been considering some initiatives aimed at building community and connections both on campus as well as with the broader community, including a KI Teaching Fellow residency and creating a KI advisory board of UW faculty and other community partners.	Chair and Schweizer	<p>April 2017 strike a working group to consider benefits and models</p> <p>Sept 2017 produce a recommendation report</p>
11.	Consider offering Collaborative Design courses to new audiences, e.g., transition courses for students entering Waterloo, incoming graduate students.	The reviewers’ recommendation raises the possibility of repackaging many of the transferrable, professional skills education from the KI core into block courses or workshops for various audiences. If opportunities are identified and additional teaching resources can be secured, this is something KI could certainly build.	Associate Chair Undergrad and KI ENV Graduate Studies Council representative	Oct 2017 Produce a report outlining opportunities, benefits, and costs
12.	Encourage greater scholarship on the pedagogical impacts of “KI-thinking” and cognitive development among students.	There is great opportunity to study the impact of the KI education on the cognitive skills of our students, especially relative to their peers in the same courses that they take as electives. Gorbet and Plaisance are interested in taking this on as a SOTL research project. Given other priorities, however, it remains low on the list.	Gorbet and Plaisance	<p>Spring 2018 assess opportunities and establish a research question</p> <p>Jan 2019 study design complete</p> <p>May 2019 ethics approval complete</p> <p>Sept 2019 study ready for implementation starting in Fall 2019</p>

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
13.	Investigate appropriate external metrics of program performance. Develop internal metrics of program performance and assess how these compare with institutional metrics.	A department committee will be struck to consider what is important to measure internally, and how best to capture those measures in the KI context. In addition, they will also survey external interdisciplinary rankings we should consider targeting (e.g., whether there are appropriate QS rankings).	Chair	Oct 2017 produce a report for the Department on relevant external comparative rankings and internal metrics
14.	Ensure that all cross-appointed faculty members are listed as such on the web pages of their departments of cross-appointment.	We will investigate this and, to the extent possible, arrange for appropriate representation on departments' web sites.	Individual faculty members. Program Coordinator to follow up.	Sept 2016
15.	Activity-based budgeting as a decision-making model should be limited to the Faculty level.	We understand this to mean that individual Faculty units should work in good faith to balance revenues and costs. We will continue our activities to increase KI-owned campus-wide offerings in order to help offset our low core enrolment (see Recommendation 8).	Not ours to lead	ongoing
16.	Consider developing a more effective and transparent financial modelling system for the MAD facilities. Extend the capabilities of the workshop towards a full-fledged "maker space".	The Chair will communicate this support, along with the reviewers' recommendations, to the Director of MAD.	Chair	May 2016

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
17.	The University should codify KI's model of expectations and support frameworks for interdisciplinary cross-appointments.	The Chair will share this recommendation at the University level.		May 2016 Chair to communicate the recommendation to the Secretariat, Provost, and FAUW
18.	Consider ways to provide very high level scholarships for KI students as a competitive recruitment tool.	Recently changes and funds from a private donation, have ensured that a lack of scholarship funds is no longer a factor in an applicant's acceptance of our offer. We continue to seek more scholarships, and maintain relationships with our donors.	Environment Director of Advancement	ongoing

The Department Chair/Director, in consultation with the Dean of the Faculty shall be responsible for monitoring the Implementation Plan.

Date of next program review: _____ 2023
Date

Signatures of Approval:

Chair/Director _____ Date

AFIW Administrative Dean/Head (For AFIW programs only) _____ Date

Faculty Dean _____ Date

Associate Vice-President, Academic _____ Date
(For undergraduate and augmented programs)

Associate Provost, Graduate Studies _____ Date
(For Graduate and augmented programs)