Waterloo Bridge to 2020

STUDENT LEARNING ENVIRONMENT

Issue Paper
May 2018

UNIVERSITY OF
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Acknowledgements

The Advisory Group on Student Learning Environment, one of seven groups formed to provide context for discussion and consultation as the University of Waterloo develops its Strategic Plan for 2020-2025, prepared this issue paper.

The following individuals provided the insight, time, and effort to put this issue paper:

Executive Summary

The purpose of this issue paper is to stimulate campus discussion around the University of Waterloo's learning environment.

Before Waterloo can address how to build a high quality learning environment, there needs to be a fundamental commitment to honouring students and their learning development. The Learning Environment Issue Paper Advisory Group strongly articulated their belief that Waterloo's student learning environment is a vital component of Waterloo's success as an institution, and that our institutional values need to reflect this position. The members proposed the following **value statement** to be put forward for discussion among the Waterloo community:

> *Achieving a positive learning experience requires a proactive community that demonstrates and encourages genuine care, concern, and respect for students and all members of the university community.*

The group ultimately determined that the proposed value statement be presented with **three outcome areas** that will serve to promote a 'call to action' for discussion, revision, and ultimately, for endorsement:

- Student support
- Student involvement on campus
- Learning culture

The next phase of the strategic plan should determine whether or not this value statement resonates with the larger community. If it does, the next question is whether the three categories are representative of the value statement, and whether anything else needs to be included. Examples of questions that could facilitate this discussion include:

- What changes do we want to see in the learning environment?
- What would ideal student relationships, support, and student involvement look like?
- What would assure us that the values of the institution are being applied?
- How could you, as an individual, contribute to ensuring that this value statement is enacted?

Based on feedback from the community, the new strategic plan should refine the value statement areas/outcomes to contain indicators against which change can be evaluated, so that these can guide the direction that Waterloo will go.

Current context for student learning at Waterloo – our take

Waterloo has a long-held reputation of excellence as an institution of higher learning. At the same time, the learning environment at Waterloo is perceived as suboptimal. Issue group members noted that there is a perception of significant competition among students that negatively impacts student-to-student relationships, and that some members of Waterloo's faculty do not consistently act in a supportive manner towards students. Waterloo's co-operative education also provides a challenge for the student environment, as it means that a large proportion of students are frequently spending four months away from campus, which may create a fractured relationship with the university community.

Waterloo monitors the quality of the learning environment through several surveys including the National Survey on Student Engagement (NSSE), National College Health Assessment

(NCHA), and Canada University Survey Consortium (CUSC). Internally, Waterloo also conducts the Canadian Graduate and Professional Students Survey (CGPSS) with graduate and professional students.

In many ways, students at Waterloo demonstrate excellent learning and achievement outcomes, compared to students at other institutions. For example:

- Fewer undergraduate students at Waterloo experienced interruptions to their studies and delays in completing their program,
- A higher proportion of Waterloo undergraduate students had a grade of A- or higher, received financing from co-op, internships, or other financing opportunities, and were employed full-time after graduating,
- The majority of undergraduate students were satisfied with their decision to attend Waterloo and recommend it to others,
- Two thirds of Waterloo graduate students rated their relationships with the faculty as very good or excellent.

Altogether, these results suggest that students at Waterloo are more successful in certain areas than their counterparts in other universities across Canada, and are highly accomplished and relatively satisfied. However, other data provide further insight into the lives of students:

- Over half of first-year Waterloo survey respondents indicated that Waterloo places *quite a bit* to *very much* emphasis on overall well-being compared to less than half of graduating year respondents. Compared to Ontario peers and universities in the U15/U6, Waterloo's results are significantly lower, although the actual effect is very small for both first-year and graduating-year respondents.
- About three out of four first-year undergraduate survey respondents were satisfied (*satisfied* and *very satisfied*) with the concern shown to them by the university, compared to about half of graduating year respondents. The satisfaction with concern shown by the university among Waterloo's graduating year student respondents is significantly lower than that of other Ontario's graduating year students.
- Results from a 2016 survey demonstrate that Waterloo students and those at other institutions across Canada report nearly identical frequencies of physical, mental, and social health issues. At Waterloo, almost four out of ten students met recommendations for moderate-vigorous exercise; a quarter felt things were hopeless; one in six felt so depressed it was difficult to function; almost a third felt very lonely; over half felt exhausted for reasons other than physical activity; and more than a quarter felt overwhelming anxiety.
- Just over half of graduate students rated the advice on career options outside of academia as *good*, *very good* or *excellent*.

In contrast to the results of academic excellence and satisfaction, answers to survey items related to physical, mental, and social health expose conditions of unhappiness and distress. The Issue Paper Advisory Group did not believe that Waterloo should be content with having our students report satisfaction with a learning experience that is "as good as" other universities in Canada, and that Waterloo should seek to offer a student experience that is of higher quality. A review of the literature on best practices of the learning environment reveals that students can be empowered by their surroundings in multiple ways, and that these initiatives can further improve academic success.

A further look at the outcome areas

To support the value statement, the Issue Paper Advisory Group worked to identify key, visible outcomes that would demonstrate that the value had been achieved. These outcomes could eventually serve as benchmarks for institutional change. The values statement is operationalized by action in three areas:

Student support

For students to benefit from the learning environment, there needs to be widespread awareness and accessibility of services offered on and off-campus. Service support and awareness should also extend to faculty and staff members, who can work together to enhance student services and reduce individual work burden. Ideally, students should want to stay on campus for subsequent degrees, after class, as alumni, and/or to work.

> Best practices for consideration: access to person-centered counselling/advisory services can promote success; service delivery models that are proactive, preventative, and easy to navigate improve accessibility

Student campus involvement

The way students engage in and experience the learning environment is an essential representation of the learning environment. The group declared that student voices should be heard across the community of Waterloo, and they should feel that their involvement on campus is worth their time. Students should feel comfortable in approaching faculty and staff with their needs, embodied by an "open door" policy that directs students to the services they need no matter where they access them. This would also be reflected by increased participation by students and faculty in student-focused initiatives such as on-campus lectures, Faculty/program activities, student leadership, and community engagement activities.

> Best practices for consideration: in general, enthusiastic, compassionate, and respectful attitudes have been identified by students as important characteristics of faculty members; discussions with faculty/staff about career plans and content from outside readings, working with professors on research projects or activities outside of class

Learning culture

The group contended that Waterloo should celebrate learning in small ways, while also acknowledging that the process of learning is inherently difficult. A challenge that has been identified at Waterloo specifically is a "culture of competition," wherein students are encouraged to compete and succeed over others. Maintaining a balance between co-operation and achievement and celebrating the success of others would strengthen the community at Waterloo and reduce unnecessary stressors among students.

> Best practices for consideration: academic skill-building interventions that build on motivation and emotional regulation, such as workshops for study habits, learning strategies, and test-taking strategies; first-year seminars, hosting events on intellectual discourse, celebrating diversity, and providing opportunities for research can increase student engagement

Overall, the Issue Paper Advisory Group hopes to consult with campus on the value statement and supporting outcome areas. By initiating a conversation on institutional values within the campus community, Waterloo has an opportunity to innovate its approach to student learning and build a stronger community in the process.

1.Introduction: value of the learning environment

The purpose of this issue paper is to stimulate campus discussion around the University of Waterloo's learning environment. For the purpose of this issue paper, the Learning Environment Issue Paper Advisory Group defined the learning environment as the academic, physical, social, and psychological factors outside of the classroom that impact student learning inside the classroom. Before Waterloo can address how to build a high quality learning environment, there needs to be a fundamental commitment to honouring students and their learning development. This commitment is reflected in the values of the institution, which inform which indicators are reported and acted upon. This Issue Paper Advisory Group, with members selected by University and student leadership, strongly articulated their belief that Waterloo's student learning environment is a vital component of Waterloo's success as an institution, and that our values need to reflect this position. To that end, the members proposed the following value statement to be put forward for discussion among the Waterloo community:

> *Achieving a positive learning experience requires a community that proactively demonstrates and encourages genuine care, concern, and respect for students and all members of the university community.*

The group also discussed the importance of understanding the context of the learning environment at Waterloo. This paper is informed by a review of promising practices from the literature, the group members' experience and their discussions over the course of six meetings, and the feedback obtained in recent roundtable discussions that President Feridun Hamdullahpur held with faculty members, students and staff. Ultimately, the group developed a proposed call for action on the learning environment and a set of questions for consultation with the campus community. The group met between December 2017 and May 2018. Detailed methodology about how this paper was developed is in Appendix A.

2.Operationalizing the value statement

The advisory group brainstormed a set of key, visible outcomes as a starting point to demonstrate that the value statement had been successfully adopted on campus. These outcomes could eventually serve as benchmarks for institutional change. The values statement was operationalized by action in three areas:

Student support

Widespread awareness and accessibility of services offered on and off-campus is required for students to benefit from the learning environment. Efforts to improve communication about available services should also extend to faculty and staff members, who may often act as the first point of contact for students seeking help. Students should feel comfortable approaching faculty and staff with their needs, demonstrating an "open door" policy that directs students to the services they require no matter where they attempt to access them.

Student campus involvement

The way that students engage in and experience the learning environment is an essential component of learning. The group asserted that student voices should be heard across the community of Waterloo. Students should feel that their involvement on campus is worth their time. Interactions with faculty and staff should also occur informally outside of the classroom, facilitating a more personalized culture. Using students' names would also demonstrate

increased personal connection, and help show that students are individuals and not just "another student." Ideally, students would want to stay on campus for subsequent degrees, as alumni, and/or to work; this would demonstrate that Waterloo is a desirable place to be. An increase in participation in student-focused initiatives such as on-campus lectures, Faculty and program activities and student leadership and engagement activities would also reflect a student-involved campus.

Learning culture

The group advocated that Waterloo should celebrate learning in small ways, while also acknowledging that the process of learning is inherently difficult. Waterloo has an opportunity to address perceptions of a "culture of competition," wherein students may feel pressure to compete and succeed over others. Maintaining a balance between co-operation and achievement and celebrating the success of others would strengthen the community at Waterloo and reduce unnecessary stressors among students.

3. The issue: current context for student learning at Waterloo

Waterloo has a long-held reputation of excellence and a strong academic track record. At the same time, sources that the group reviewed and the issue paper advisory group's own discussions pointed to several areas where the student learning environment could be improved. One of the issues is the perception that a highly stimulating and demanding environment leads to high levels of competition among students, which can negatively impact student to student relationships. There is also a perception that some members of Waterloo's faculty and staff do not consistently act in a supportive manner towards students. Waterloo's co-op education system also provides a challenge for the student environment as it means that a large proportion of students are frequently spending four months away from campus, which may create a fractured relationship with the university community.

Waterloo monitors the quality of the learning environment through several surveys including the National Survey on Student Engagement (NSSE), National College Health Assessment (NCHA), Canada University Survey Consortium (CUSC) Graduating Year, and CUSC First Year surveys. These surveys are administered by consortia of post-secondary institutions across Canada and the United States (NSSE and NCHA), and within Canada (CUSC). The Canadian Graduate and Professional Student Survey (CGPSS) is also conducted with graduate and professional students. In Appendix B we report the main results from these surveys.

In many ways, students at Waterloo demonstrate excellent learning and achievement outcomes. According to the CUSC Graduating Year survey in 2015, compared to graduating-year students from other post-secondary institutions across Ontario, fewer students at Waterloo experienced interruptions to their studies (16% vs. 18%) and delays in completing their program (27% vs. 33%). Additionally, Waterloo student respondents more often had grades of A- or higher (46% vs. 30%), received financing from co-op, internships, or other practical experiences (56% vs. 9%), and had full-time employment arranged for after graduation (86% vs. 66%). The proportion of students who were satisfied with their decision to attend their university and who would recommend their university were similar between Waterloo and other institutions across Ontario (87% vs. 88% and 85% vs. 87%, respectively).

Altogether, these results suggest that students at Waterloo are more successful in certain areas than their counterparts in other universities across Ontario and are highly accomplished and relatively satisfied with their university experience. However, data obtained from the NCHA, NSSE, and CUSC provides a different insight into the lives of students:

- In the 2017 NSSE survey, over half (54%) of first-year Waterloo respondents indicated that Waterloo places *quite a bit* to *very much* emphasis on overall well-being, but less than half (43%) of graduating year respondents felt the same.
- In the CUSC first-year survey, about three out of four (74%) first-year respondents were satisfied (*satisfied and very satisfied*) with the concern shown to them by the university, compared to about half (48%) of CUSC graduating year survey respondents. The satisfaction with concern shown by the university among Waterloo's graduating year student respondents (48%) is significantly lower than Ontario graduating year students (59%).
- The relationship between faculty members and their students influences student success. At Waterloo, four out of five (80%) first-year undergraduate survey respondents agree that most of their professors treat students as individuals, not just numbers, compared to 76% of graduating year respondents (CUSC FY 2016 and CUSC GY 2015). These data highlight that about a quarter of graduating year respondents still feel they are treated impersonally, which warrants further attention.
- Results from the 2016 NCHA survey show that students at Waterloo and at other institutions across Canada report nearly identical frequencies of physical, mental, and social health issues. For example, at Waterloo, only 39% of students met recommendations for moderate and/or vigorous exercise. In the prior two weeks, 25% felt things were hopeless, 16% felt so depressed it was difficult to function, 32% felt very lonely, 53% felt exhausted for reasons other than physical activity, and 26% felt overwhelming anxiety.

In contrast to the results of academic excellence and satisfaction, answers to survey items related to physical, mental, and social health illustrate a considerable level of unhappiness and distress. The Issue Paper Advisory Group questioned whether this is acceptable, and is resolute in their belief that there is significant room for improvement in Waterloo's learning environment. In particular, the group believes that Waterloo should not be content with having our students report satisfaction with a learning experience that is "as good as" other universities in Canada, and that Waterloo should seek to offer a student experience that is of higher quality. Finally, the survey results presented may lead one to the conclusion that conditions like overwhelming stress and depression, social isolation, and poor health behaviours are necessary sacrifices for academic achievement. However, a review of the literature on best practices in the learning environment reveals that students can be empowered by their surroundings in multiple ways, and that these initiatives can improve both satisfaction and academic success.

4.Current initiatives and looking forward

Advisory group members discussed challenges and opportunities within each category of the operationalized value statement. Notes from the president's roundtable discussions with faculty, staff and students are also integrated. Additionally, the Issue Paper Advisory Group engaged Waterloo's library to conduct a literature scan to identify promising practices in the student learning experience. These recommended practices are not comprehensive; however, they signal potential areas of discussion for consideration by the university community. A more elaborate

discussion of the literature, including evidence of impact on student learning, can be found in Appendix C.

a. Student support

i. Current initiatives and opportunities at Waterloo

The president's roundtable discussions with students highlighted the importance of recognizing mental health issues on campus and building up relevant services and policies. In March 2018, the President's Advisory Committee on Student Mental Health (PAC-SMH) released a report with a comprehensive set of recommendations on policies, programs and services to support student mental health. Many services on campus are also dedicated to mental health, including clinical psychology services, AccessAbility services, Campus Wellness, and peer support programs like MATES, which is run by the Federation of Students with training by campus wellness staff.

Financial aid is necessary for some students to complete their degree and achieve good grades (Brock, 2010; Burns, 2010; Goldrick-Rab, 2010; Webb et al., 2007). Waterloo has already implemented financial aid programs, including scholarships and bursaries. Co-op and internship positions can also help Waterloo students to finance their education, although these opportunities are program-based and not always uniformly available across campus (e.g., there are relatively fewer opportunities for Arts students).

Many other groups and individuals provide support in a variety of areas, including Faculty-based services such as academic advising, Residence Life, student success initiatives, writing and communication support, etc.

ii. Promising practices

Service delivery models for mental health that are proactive, preventative, and easy to navigate can improve accessibility; components of such a model include a dedicated mental health accessibility office, faculty mental health training, and stigma reduction campaigns (Dietsche, 2012; EAB, 2013; Eisenberg et al., 2012; Markoulakis & Kirsch, 2013). Many of these systems are in place at Waterloo but require greater integration and awareness promotion, as outlined in the PAC-SMH report.

Regarding overall wellness on university campuses, the Okanagan Charter (2013) is a promising framework for health promotion on university campuses that has already been implemented by some post-secondary institutions across Canada, and has been recommended for adoption at Waterloo by the PAC-SMH. Other practices identified in the literature involve embedding a wellness course into the curriculum, providing healthier and sustainable food choices on-campus, and hosting clubs organized around exercise (Wharf-Higgins et al., 2010).

Finding new ways to create and use scholarships, bursaries and other incentives to support low-income students would help relieve financial stressors (Brock, 2010; Burns, 2010; Goldrick-Rab, 2010; Webb et al., 2007). Another alternative is to increase employment opportunities on campus to help students who are not in co-op programs to become more financially stable, which in turn can increase student engagement (Kuh, 2009).

b. Student campus involvement

i. Current initiatives and opportunities at Waterloo

Supporting interactions between faculty and students outside the classroom is one way to increase individual connection. Roundtable discussions highlighted barriers to promoting faculty / student interactions, including lack of physical spaces and events dedicated to informal events, time constraints, and isolation from other academic disciplines.

Although post-secondary education has become more accessible to women, minorities, and non-traditional students, these groups continue to face obstacles to their academic success and may be at greater risk of feeling isolated and disconnected from the campus community (Brock, 2010; Burns, 2010; Swaner & Brownell, 2008). In roundtable discussions with faculty and staff, it was noted that there is a need for greater commitment to equity, diversity, and inclusiveness, especially among racialized and LGBTQ2+ student groups, to ensure that these groups feel welcome and inspired to participate in student life.

ii. Promising practices

Maximizing opportunities for interactions between faculty members and students outside of the classroom is one method of improving relationships, with the added benefit of providing students with opportunities to be involved in campus activities (Grantham et al., 2015). Some examples of academic extracurricular activities for faculty and students include discussions about career plans, seminar attendance, and research projects or activities.

University environments that are perceived by students to be inclusive and affirming are related to higher levels of student engagement (Brown & Burdsal, 2012; Kuh, 2009; Swaner & Brownell, 2009; Wolf-Wendel et al., 2009). Methods of building an inclusive culture include offering practical experiences involving and encouraging students to interact with students of various racial, ethnic and cultural backgrounds, and other forms of diversity; providing social supports such as clubs and events, integrating information about diversity into academic classes and workshops, and enforcing inclusive policies (Brown & Burdsal, 2012; Kuh, 2009).

c. Learning culture

i. Current initiatives and opportunities at Waterloo

Learning communities create groups of students who are enrolled as a cohort in a set of courses organized around a central theme, typically beginning in first year. Students, faculty members, staff, and academic advisors are clustered together to enhance inter-personal relationships, studying methods, and student engagement (Bonet & Walters, 2016; Crisp & Taggart, 2013; Hatch, 2017; Kilgo, Sheets, & Pascarella, 2015; Kuh, 2009; Stanton, Black, Dhaliwal, & Hutchinson, 2017). At Waterloo, Residence Learning Communities have been implemented, wherein students from the same program or faculty live together in a common space and are provided with an upper-year peer support leader.

ii. Promising practices

The manner in which faculty members treat their students influences student success. Enthusiastic, compassionate, and respectful attitudes have been identified by students as important characteristics of faculty members (Hsieh, Sullivan, & Guerra, 2007; Grantham et al., 2015; Lillis, 2011). In addition, academic skill-building interventions that build on motivation and emotional regulation, such as workshops for study habits, learning strategies, and test-

taking strategies, demonstrated strong effects on academic performance (Robbins et al., 2009). Other possibilities include first-year seminars, hosting events on intellectual discourse, celebrating diversity, and providing opportunities for research can increase student engagement (Kuh, 2009).

5. Relationship with other issue papers

The learning environment interacts to some degree with all issue papers. There are explicit links between the themes of undergraduate learning and graduate studies. There is continuous interplay between the experience students have inside and outside the classroom, including relationships between faculty and students and mental and physical well-being. Advancing internationalization at Waterloo requires that social and support services are available in the learning environment for international students. In addition, internationalization initiatives at home and abroad enhance the student learning environment by enabling cross-cultural experiences. Empowering people and leveraging resources both address the roles that people and structures play in the learning environment.

6. Questions for the community & conclusion

The primary question for the community is whether there is support for the value statement:

> *Achieving a positive learning experience requires a proactive community that demonstrates and encourages genuine care, concern, and respect for students and all members of the university community.*

If this statement resonates with the community, the next question is whether the three categories (student support, student campus involvement, and learning culture) are representative of the value statement, and whether anything else needs to be included. Examples of questions that could facilitate this discussion include:

- What changes do we want to see in the learning environment?
- What would ideal student relationships, support, and student involvement look like?
- What would assure us that the values of the institution are being applied?
- How could you as an individual contribute to ensuring that this value statement is enacted?

Discussions on the value statement going forward should be kept within the current context at Waterloo, which is strong in achievement and satisfaction, but requiring greater support in the areas of student psychological and social health. It is encouraging that the value statement outcomes generated by the advisory group were similar to the ones recommended by the PAC-SMH, even though these were two separate processes. The more often the same ideas are articulated by different members of the community, the greater validity they hold. In this conversation with campus, Waterloo has an opportunity to examine its approach to the student learning environment, build on current initiatives and promising practices, and strengthen the campus community in the process.

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Appendix A: Issue paper process and method

This Learning Environment issue paper is part of an overall process to develop Waterloo's next Strategic Plan, 2020-2025. To begin this process, the President, Provost, Deans, and other members of the Executive Council identified broad themes and issues that are vital to strengthening and advancing the unique value proposition for the University of Waterloo. The themes were explored through a series of brief issue papers that will inform the strategic plan consultations. High quality learning environment is one of these areas of focus. The ultimate purpose of this paper is to provide a series of questions to stimulate the consultation process.

The Executive Council and deans identified faculty and staff to participate in this initiative, while the student represenatives were recruited by reaching out to the student senators, the Graduate Students Association and Federation of Students. Waterloo's library provided support for the literature scan, and a writer was hired to compile results and create the report. The process was facilitated by Institutional Analysis and Planning (IAP). The Learning Environment Issue Paper Advisory group consisted of the following members:

Advisory group members: Chris Read (Chair, Associate Provost, Students), Quinn Abram (Student Representative), David Harmsworth (Faculty of Mathematics), Heather Henderson (Faculty of Arts), Rebecca Lintaman (Faculty of Applied Health Services), Jen Parks (Faculty of Science), Gordon Stubley (Faculty of Engineering), Andrew Trant (Faculty of Environment), and Maya Venters (Student Representative).

Support: Jana Carson (Institutional Analysis and Planning), Annamaria Feltracco (Institutional Analysis and Planning), Jerrica Little (Writer), Sara Thompson (Library), Daniela Seskar-Hencic (Institutional Analysis and Planning).

Through a series of six meetings between January and May of 2018, the group defined the issue, developed literature search strategy, summarized the literature, provided input to the drafts, and developed the questions for the community.

Initial meetings of the working group established the research parameters pertaining to the learning environment, and distinguished them from issues belonging to undergraduate learning, graduate studies, and internationalization. High impact learning practices in the classroom, teaching culture, technology use, and experiential education were all identified as factors outside the scope of the learning environment. Factors outside of the classroom that facilitate academic success were proposed as appropriate inclusion in the learning environment paper.

In subsequent meetings, the group elaborated on the core issues of the learning environment that needed to be covered. The group posited that before the university can address the learning environment, there needs to be a fundamental commitment to valuing students and their learning experience. As a result, this paper evolved into one focused on institutional values rather than specific research questions, which are provided below for reference.

This paper reflects the process engaged by the issue group and is not intended to be a comprehensive overview of the learning environment issue.

Research questions

During the initial meeting, research questions from university leadership were revised by the group members to focus on factors outside the classroom and how they influence in-classroom experiences, what success means in a university context, what models currently exist that integrate student services and academics, and which factors predict academic success. Ideas of

student success were shared, including quality of life, community integration, engagement, and confidence.

In the second meeting, the group identified factors influencing in-classroom in three distinct areas: psychological, social, and physical. Psychological factors are the mental aspects that influence learning, including mental health, cognitive functioning, and engagement. Social factors refer to the cultural and inter-personal conditions in which learning occurs, such as community integration, social opportunities, and relationships among faculty, staff, and students. Finally, physical factors encompass the spaces and living conditions on campus. A potential list of factors representing these three areas was generated and given to the librarian to inform the literature scan. The scope of the literature scan was then further revised to categorize factors by whether they are internal or external to the university, with a focus on which factors the university can realistically impact.

Following the second meeting, questions regarding external factors that influence the in class experience and those predicting academic success were combined into one comprehensive question, with definitions of academic success as an underlying theme. A summary of the literature review conducted by the librarian was also shared during this time, revealing two levels at which psychological, social, and physical factors of the learning environment affect academic success: pre-institutional conditions and institutional conditions. After reviewing the summary, it was proposed that the librarian organize the literature into categories based on the final revised research questions, which are as follows:

1. What are the psychological, social, and physical factors outside the classroom that influence in-classroom experience and academic success?

- What does success mean in a university context?
- Categorize responses by what is internal/external to the university that impacts success; then identify what the university can realistically impact

2. What are some models of integration between student services and academics? Are there some promising practices in integrating student services and academics?

Following a review of the literature and the influencing factors from the initial meetings, the group brainstormed the proposed value statement and operational definitions. Strengths and opportunities, including examples of current and promising practices, were considered within the categories of the operational definitions. Lastly, the group integrated the value statement and definitions into Waterloo's current context and data, and proposed a set of questions for consultation with the community.

Appendix B: Detailed data on University of Waterloo context

Table 1. CUSC first-year (2015) and graduating-year (2016) survey questions

Satisfaction with concern shown by the university for you as an individual (satisfied and very satisfied)			
	Waterloo		**Ontario**
First-year	74%		76%
Graduating-year	48%		59%*
	Co-op	**Non co-op**	
First-year	73%	75%	
Graduating-year	47%	50%	
	Canadian	**International**	
First-year	74 %	68%	
Graduating-year	46%	***	
	Faculties: First-year satisfaction rates of over 70% for all Faculties except for Environment (66%). For graduating-year students, half of respondents were satisfied in Arts (51%) and Math (56%), with the lowest satisfaction in Engineering (39%). Sample sizes were too small to compare for AHS, Environment, and VPA (VPA captures Software Engineering, and Computing and Financial Management).		
Level of agreement: I feel as if I belong at the University (agree and strongly agree)			
	Waterloo		**Ontario**
First-year	88%		88%
Graduating-year	72%		78%*
	Co-op	**Non co-op**	
First-year	89%	85%	
Graduating-year	74%	68%	
	Canadian	**International**	
First-year	88%	***	
Graduating-year	71%	***	
	Faculties: First-year students with the highest level of agreement were in Engineering (90%). Graduating-year students with the highest level of agreement were in Math (85%). Sample sizes were too small to compare for AHS, Environment, and VPA.		
Level of agreement: most of my professors treat students as individuals, not just numbers (agree and strongly agree)			

	Waterloo		Ontario
First-year	80%		80%
Graduating-year	76%		84%
	Co-op	**Non co-op**	
First-year	81%	77%	
Graduating-year	75%	78%	
	Canadian	**International**	
First-year	81%	***	
Graduating-year	76%	***	
	Faculties: Over 70% of first-year respondents within each Faculty agree, with the highest level of agreement in Math (85%) and lowest in SCI (73%). Over 70% of graduating-year respondents within each Faculty agreed, except for Science (66%). Sample sizes were too small to compare for AHS, Environment, and VPA.		

Level of agreement: most of my professors look out for students' interests (agree and strongly agree)

	Waterloo		Ontario
First-year	86%		86%
Graduating year	80%		83%
	Co-op	**Non co-op**	
First-year	86%	86%	
Graduating-year	78%	83%	
	Canadian	**International**	
First-year	87%	***	
Graduating year	79%	***	
	Faculties: Over 80% of first-year respondents within each Faculty agree. About four out of five graduating-year respondents across all Faculties agree and strongly agree, except for Science (66%). Sample sizes were too small to compare for AHS, Environment, and VPA.		

Experience vs. Expectation: "Getting lost in a crowd" (less or much less)

	Waterloo		Ontario
First-year	39%		46%*
	Co-op	**Non co-op**	
First-year	36%	49%*	
	Canadian	**International**	
First-year	39%	35%	
	Faculties: Math had the lowest proportion among the Faculties.		

Satisfied or very satisfied with opportunities to be involved in campus activities

	Waterloo		Ontario
Graduating-year	72%		77%*

	Co-op	Non co-op	
Graduating-year	69%	76%	
	Canadian	**International**	
Graduating-year	71%	80%	
	Faculties: Consistent across all the Faculties.		

*Statistically significant ***Cannot be reported, sample too small

Note: Valid percentages are calculated based on raw survey data received from the survey company (PRA. Inc.) and include all respondents (unweighted). Results might differ from the CUSC reports provided by PRA.

Table 2. NSSE (2014) and NSSE (2017) survey questions.

Waterloo places quite a bit or very much emphasis on overall well-being (2014)			
	Waterloo		**Ontario**
First-year	64%		63%
Graduating-year	49%		57%*
	Co-op	**Non co-op**	
First-year	64%	64%	
Graduating-year	48%	51%	
	Canadian	**International**	
First-year	64%	65%	
Graduating-year	49%	51%	
	Faculties: AHS had the highest positive results for first-years (71%) and graduating-years (62%).		
Waterloo places quite a bit or very much emphasis on overall well-being (2017)			
	Waterloo		**Ontario**
First-year	54%		60%*
Graduating-year	43%		51%*
	Co-op	**Non co-op**	
First-year	53%	57%	
Graduating-year	42%	42%	
	Canadian	**International**	
First-year	53%	60%*	
Graduating-year	42%	46%	
Waterloo places quite a bit or very much emphasis on providing opportunities to be involved socially (2014)			
	Waterloo		**Ontario**
First-year	60%		62%
Graduating-year	46%		57%

	Co-op	Non co-op	
First-year	59%	61%	
Graduating-year	45%	47%	
	Canadian	International	
First-year	60%	58%	
Graduating-year	45%	51%	

Waterloo places quite a bit or very much emphasis on providing opportunities to be involved socially (2017)			
	Waterloo		Ontario
First-year	53%		60%*
Graduating-year	43%		54%*
	Co-op	Non co-op	
First-year	52%	54%	
Graduating-year	43%	44%	
	Canadian	International	
First-year	52%	56%	
Graduating-year	43%	44%	

*Statistically significant

Note: Valid percentages are calculated based on raw survey data received from the survey company (NSSE) and include all respondents weighted by institution-reported sex, enrollment status and institutional size.

Table 3. NCHA (2016) survey questions

Waterloo has a sincere interest in the well-being of their students (agree or strongly agree)		
	Waterloo	
	Co-op	Non Co-op
Undergraduate	73%	74%
Graduate	***	77%
All students	73%	74%
	Canadian	International
Undergraduate	73%	79%
Graduate	74%	83%
All students	73%	80%*
	Faculties: Results were similar across all faculties except for Engineering and Math, both of which have the lowest proportion of respondents who selected *agree* or *strongly agree*.	

I feel part of the community at Waterloo (agree or strongly agree)		
	Waterloo	
	Co-op	**Non co-op**
Undergraduates	71%	65%*
Graduates	***	69%
All students	71%	66%*
	Canadian	**International**
Undergraduates	59%	69%
Graduates	68%	76%
All students	69%	71%
	Faculties: Results were similar across all faculties except for Math which has the lowest proportion of respondents who selected *agree* or *strongly agree*.	

*Statistically significant

Note: Valid percentages are calculated based on raw survey data received from the survey company (American College Health Association (ACHA)) and include all respondents (unweighted).

Appendix C: Detailed literature scan methods and results

The bulk of the literature search focused on the database ERIC, with additional searching in SCOPUS and Google Scholar. Reference searching was also conducted on pertinent articles. The decision was made to look at materials published between 2007 and the present, representing more recent research and thinking in higher education. A variety of sources were identified of possible interest to the working group. Systematic reviews, literature reviews, and meta-analyses were a primary focus but studies and key reports were also identified. Dissertations were generally excluded except for those germane to the topic. Materials recommended by members of the working group were also included.

Psychological, social, and physical factors were identified at three different levels: individual characteristics, pre-institutional factors, and institutional factors. The primary focus in this review is on institutional factors because they are subject to the greatest degree of control. However, pre-institutional factors have been shown to exert moderate effects on student success (Zepke, Leach & Butler, 2011), and individual characteristics have displayed large effects (Richardson, Abraham, & Bond, 2012), so they cannot be dismissed. While the university cannot directly affect pre-institutional and individual factors, it may moderate their effects on learning by introducing policies and services. Given the importance of these interactions, attention was paid to pre-institutional factors and student behaviours where they intersect with institutional factors.

Limitations

- The process of determining what the learning environment is, which factors are relevant, and which research questions should be asked is limited to the perspectives of the working group. What is presented in this paper is not comprehensive, and may not be applicable outside of the institutional context of the University of Waterloo.
- Student retention and GPA are the most commonly used indicators of student success; quality of life and indicators of learning other than grades are comparatively under-researched. Additionally, some outcomes such as student satisfaction may not be appropriate for evaluating certain institutional factors (Muijs & Bokhove, 2017). As a result of these issues, drawing conclusions about best practices is difficult. However, this represents an opportunity for innovation and future research.
- The effects of institutional values on student learning and development are difficult to evaluate empirically. The theoretical underpinnings of a value, their operationalization in research, and their intended outcomes must be established and rigorously tested.
- Students who participate in academic research projects and surveys may be qualitatively different from those who do not. Gaining information on this 'invisible' student population is, by its very nature, challenging (Kuh, 2009). Caution must be used when interpreting results of studies with low response rates.

Psychological factors

Mental health

Students' mental health and well-being are influential in learning outcomes. For instance, general and academic stress both showed small correlations with GPA scores (Richardson et al., 2012). Measures of anxiety and depression have also been associated with lower GPA scores and retention (Eisenberg, Golberstein, & Hunt, 2009). The impact of mental health on learning is

especially relevant now, as more students with pre-existing mental health conditions are entering into university (Markoulakis & Kirsch, 2013). Post-secondary students generally report a high need for mental health resources, but the number of students who access them are low (Dietsche, 2012; Education Advisory Board [EAB], 2013; Eisenberg et al., 2012). Lack of a formal diagnosis, the episodic nature of some mental illnesses, gradual onset, and the effects of stigma are all examples of issues that may prevent students from accessing mental health services (Condra et al., 2015).

At the institutional level, there are several ways in which the university can impact the effects of mental illness on learning. Access to regular, person-centered counselling and advisory services can promote academic success (Brock, 2010; Webb, Wyness, & Cotton, 2017), especially among first-generation and minority students (Bonet & Walters, 2016). Self-management interventions, which include skill-building strategies related to emotional and self-regulation, were highly correlated with academic retention (Robbins, Oh, Le, & Button, 2009). More specifically, mediators of self-management on academic success included social (e.g. social support, social involvement), emotional (anxiety, negative affect, stress, self-efficacy, self-esteem, personal adjustment), and motivational control (motivation and study skills, academic goals, achievement motivation, institutional commitment), which can be emphasized in student workshops. In terms of service use, service delivery models that are pro-active, preventative, and easy to navigate can improve accessibility (Dietsche, 2012; EAB, 2013; Eisenberg et al., 2012). More broadly, employing a dedicated mental health accessibility office, training faculty to recognize and understand mental health issues, and working to reduce stigma on-campus are pro-active protective factors that can be incorporated into the learning environment (Eisenberg et al., 2012; Markoulakis & Kirsch, 2013).

Student engagement

Student engagement has been studied as both a predictor and an outcome of academic success. Engagement has been described as the extent to which students participate in best learning practices and educational activities (Wolf-Wendel, Ward, & Kinzie, 2009). As an independent variable, it is important to differentiate between engagement and involvement, since a student can be involved in on-campus activities but may not be engaged by them (Wolf-Wendel et al., 2009). Many facets of student engagement have been implicated in academic success (Kuh, 2009). One example is the level and type of motivation that students feel towards learning. Intrinsic motivation was correlated with GPA, whereas extrinsic motivation was insignificant (Richardson et al., 2012), suggesting that internal desires to learn are more important than external achievements.

Learning environments have the potential to increase student engagement through several high impact practices. Examples from Association of American Colleges & Universities 'Liberal Education and America's Promise [LEAP]' project (2007) include first-year seminars, hosting events on intellectual discourse, celebrating diversity, and providing opportunities for research (Kuh, 2009). Academic skill-building interventions that build on motivation and emotional regulation, such as workshops for study habits, learning strategies, and test-taking strategies, demonstrated strong effects on academic performance (Robbins et al., 2009). Finally, students and staff who adopt an engaged approach to the entire university lifecycle felt that their expectations for program structure and culture matched their expectations (Lizzio, 2011). Identifying what gaps exist at different points during university can help student affairs develop effective programs for students.

Social factors

University Community

Social capital and community integration are frequent predictors of academic success (Brown & Burdsal, 2012; Burns, 2010; Karp, 2011). At the pre-institutional level, family support is a predictor of academic success among first-year students (Zepke et al., 2011). At the institution, fostering social relationships among students, as well as with university faculty and staff, is associated with positive academic outcomes, including higher retention rates and GPA (Beard, 2011; Brown & Burdsal, 2012; Karp, 2011; Reason, 2009). Promoting student interactions can also improve perceived community integration on campus (Pascarella & Terenzini, 1980). Examples of social opportunities that can be offered include committees, clubs, and other academic organizations.

An academic-oriented form of community that has shown potential success is the "learning community" (Bonet & Walters, 2016; Crisp & Taggart, 2013; Hatch, 2017; Kilgo, Sheets, & Pascarella, 2015; Kuh, 2009; Stanton, Black, Dhaliwal, & Hutchinson, 2017). Cohorts of students are created by enrolling them in a set of courses organized around a central theme, typically beginning in first year. Students, faculty members, staff, and academic advisors are clustered together to enhance inter-personal relationships, studying methods, and student engagement. Compared to students enrolled in a regular section, those in a learning community more frequently completed their courses with a passing grade (Bonet & Walters, 2016; Crisp & Taggart, 2013). Other outcomes that have been associated with learning communities include social and academic integration and higher self-reported satisfaction by students and faculty (Crisp & Taggart, 2013). Although the academic skills learned in these cohorts are useful, some studies have suggested that the structural and social aspects of learning communities are more critical to its success (Hatch, 2017; Robbins et al., 2004; Stanton et al., 2017).

Post-secondary education has become more accessible to women, minorities, and non-traditional students, but they continue to face obstacles to their academic success (Brock, 2010; Burns, 2010; Swaner & Brownell, 2008). Although sociodemographic variables cannot be changed, cultural barriers existing in the environment can be (Okanagan Charter, 2015). Universities serving primarily minority populations have been distinguished from other institutions by creating environments that are perceived to be supportive of students' academic and social needs, as well as enforcing inclusive academic policies and practices (Kuh, 2009; Swaner & Brownell, 2009). In general, university environments that are perceived by students to be inclusive and affirming are related to higher levels of student engagement (Brown & Burdsal, 2012; Wolf-Wendel et al., 2009).

Faculty-student relationship

The quantity and type of interactions between faculty members and students outside of the classroom are aspects of the learning environment that are crucial to student success. Interactions that students perceive as purposeful, such as discussing how learning can influence life outside the classroom, can affect their academic commitment (Cho & Auger, 2013; Wolf-Wendel et al., 2009). Discussions about career plans and content from outside readings, as well as working with professors on research projects or activities outside of class, were all reported as positive practices by undergraduate students (Grantham et al., 2015). A higher quantity of interactions with faculty members, including those outside of the classroom, has been associated with increased academic motivation (Trolian et al., 2016) and retention (Lillis, 2011).

In addition to type and quantity, the quality of interactions is also essential to learning outcomes. Enthusiastic, compassionate, and respectful attitudes have been identified as important characteristics of faculty members (Hsieh, Sullivan, & Guerra, 2007; Grantham et al., 2015; Lillis, 2011). High quality interactions have also been correlated with increased academic motivation and achievement (Creasy, Jarvis, & Gadke, 2009; Trolian et al., 2016). Creating opportunities for meaningful discussions between faculty and students outside of the classroom, and supporting incentives to participate in them, is one strategy for targeting high quality interactions. Providing training and resources to faculty members focused on inter-personal skills and mental health is another strategy for improving the quality of faculty-student interactions.

Physical factors

Campus space & living conditions

The campus environment, its size, and on-campus residences are related to student satisfaction, which is a strong predictor of student success and retention (Lei, 2016). Regarding institutional facilities, several factors were identified as having an effect on student learning, including the size and design of classrooms, computer labs, and other indoor buildings such as libraries. Classrooms that are intentionally designed to allow for student interaction and participation are considered good design (Niemeyer, 2003). Consulting literature on architectural design and organizational psychology when designing new buildings can help create a higher quality space on campus.

Regarding living conditions, financial aid is necessary for some students to complete their degree and achieve good grades (Brock, 2010; Burns, 2010; Goldrick-Rab, 2010; Webb et al., 2007). As a pre-institutional factor, universities can offer scholarships, bursaries and other incentives to attract and support low-income students (Brock, 2010). Financial aid should also be extended at the institutional level, in the form of scholarships, bursaries and paid work. Offering employment opportunities on campus can help students become more financially stable, which in turn can increase student engagement (Kuh, 2009). In addition, on-campus employment affords the opportunity for student affairs members to supervise students and help prepare them for future careers.

Health promotion is a major component of the Okanagan Charter (2015), which has been adopted by post-secondary institutions in Canada. Behaviours that promote good health, such as physical activity, nutrition, and safety practices, are important for aiding academic success. In a wellness survey administered to Canadian university students, physical activity and nutrition were the two lowest scores (Wharf-Higgins, Lauzon, Yew, Bratseth & McLeod, 2010). Fortunately, encouraging healthy behaviours can be facilitated through the learning environment in several ways. Embedding a wellness course into the curriculum, providing healthy food choices on-campus, and hosting clubs organized around exercise are ways in which the institution can promote physical health (Wharf-Higgins et al., 2010).