

Psychology Majors' Understanding of
Skills-Based Learning Outcomes

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Abstract

The current research examined the extent to which psychology undergraduates felt that skills-based learning had been emphasized in their courses, the transferable skills that they believed were developed during the degree, and their understanding of three major skill areas: communication, critical thinking and collaboration. The study included psychology majors in the first (n=195) and upper (third and fourth year; n=141) years. Results suggested that participants did not believe that transferable skills were being emphasized in their classes. Although students identified many of the skills that a psychology degree is intended to foster (e.g., communication), they demonstrated only a rudimentary understanding of the competencies that underlie these skills. Findings are discussed in relation to the likely consequences for students entering the job market, as well as possibilities for increasing students' understanding of important transferable skills within the curriculum.

Psychology Majors' Understanding of Skills-based Learning Outcomes

Recently, there has been much discussion in the media and among academics about the skills acquired by college and university graduates. The issues being raised are threefold. The first concerns the question of whether Canada and the US are facing a “skills gap,” with new graduates failing to acquire the skills and competencies that are needed in the workplace (Weingarten, 2013). A second and related issue concerns the process by which young people should acquire job-relevant skills. Although businesses lament the fact that new graduates are not “job ready,” many academics have suggested that colleges and universities are charged with developing a collection of generic or transferable skills (e.g., communication, critical thinking), and that more job-specific training needs to come from employers (Blouw, 2013; Capelli, 2011). If higher education is indeed intended to foster transferable skills, then it makes sense to consider the third issue that is currently being debated; namely, whether graduates are developing the transferable skills that administrators and faculty claim that they are. This question has prompted an ongoing discussion about whether and how best to measure such skills-based learning outcomes among college and university graduates (e.g., Lalancette, 2013).

Taking this broad-based public discussion as a starting point, we suggest that there is a fourth issue that can and should be addressed with regard to transferable skills. This issue has students squarely at its center and is associated with such questions as, ‘What skills do college and university students believe that they are acquiring through their postsecondary education (PSE)?’ and ‘To what extent do undergraduates understand the key transferable skills that PSE attempts to foster?’

To date, this student-centred perspective concerning students' *understanding* of transferable skills (as compared to their *acquisition* of such skills) has been largely absent in public discourse and the broader research literature. We would suggest that this is an important oversight because if students are unable to recognize and articulate their skills-based learning they will be disadvantaged when they try to leverage these skills as they enter the job market. The current study attempted to address this gap in the literature by examining undergraduates' beliefs about the skills-based learning outcomes (SBLOs) they have developed during their degree, as well as their ability to define some of the well-established SBLOs articulated by employers and university administrators (e.g., critical thinking).

Articulating Important SBLOs: The 3Cs and Beyond

The process of defining learning outcomes in higher education has been the subject of great interest and debate among both national PSE organizations (e.g., American Association of Colleges and Universities, 2008; National Institute for Learning Outcomes Assessment, 2013) and researchers (e.g., Berdrow & Evers, 2011). Efforts to define learning outcomes have also taken root at the disciplinary level: The American Psychological Association's *Guidelines for the Undergraduate Psychology Major 2.0*, for example, emphasize the importance of specific SBLOs for students pursuing a degree in psychology (American Psychological Association/APA, 2013).

It is worth noting that many of the SBLOs articulated by postsecondary institutions and governing bodies such as the APA share several common features with the desired attributes articulated by employers (e.g., National Association of Colleges and Employers/NACE, 2012). Three skills that are inevitably included on these lists of desired

graduate attributes might best be described as the 3Cs: communication, critical thinking, and collaboration (i.e., teamwork and leadership). For psychology majors, the APA has also identified scientific inquiry, ethical and social responsibility, and professional development as key learning outcomes (APA, 2013).

The 3Cs and many other SBLOs are often referred to as “generic” or “transferable” skills, and they typically describe things that college graduates ought to be able to do. However, employers are increasingly expressing interest in self-management skills (e.g., Conference Board of Canada/CBC, 2013; NACE, 2012), which Bridgstock (2009) has defined as being related to “the individual’s perception and appraisal of themselves in terms of values, abilities, interests, and goals” (p. 37). Desired attributes in this category include being adaptable in the face of rapid change, demonstrating integrity, and being comfortable with uncertainty (CBC, 2013; NACE, 2012). A number of self-management skills are also represented in the *APA Guidelines 2.0*, including an appreciation of human diversity and the adoption of community-enhancing values and ethical standards of conduct (APA, 2013).

Teaching Undergraduates about Important SBLOs

Although PSE researchers have noted the importance of transferable skills for graduates who are entering the job market, there is some evidence that instructors do not typically discuss SBLOs in the classroom (Cranmer, 2006; Evers, Rush & Berdrow, 1998; Martini & Clare, 2014). This is not to suggest that instructors are unaware of the importance of transferable skills, or that they fail to create opportunities for skill development in their classes. Instead, we suggest that faculty are more likely to *explicitly* communicate with students about course content than they are about the skills they are attempting to foster through course-based assignments (Evers et al., 1998; Light, Chen & Ittelson, 2012). We

suggest further that instructors often assume that an understanding of what the key SBLOs are, and the competencies that underlie them, will be developed *implicitly* across the degree program if appropriate learning experiences are built into the course structure (e.g., if a sufficient number of instructors within the degree program include group-based projects, then undergraduates will develop an understanding of the key elements of teamwork).

There appear to be at least two potential problems associated with this belief about implicit development of undergraduates' thinking with respect to skills. The first lies in the questionable assumption that learning experiences that have the potential to help students understand skills will actually accomplish this goal. For example, simply providing a series of group-based assignments over the course of the degree program may not foster a good understanding of effective teamwork unless it is accompanied by some explicit direction with respect to the factors that characterize optimal team functioning, or the strategies that might be enacted when a team is not working well together (Fisher, 2014; Michaelsen, Knight, & Fink, 2004).

The second problem with the idea of implicit skill development is more closely linked to the consequences for undergraduates when they approach the labor market. Specifically, when instructors fail to make students explicitly aware of the skills that their assignments are intended to foster (and the competencies associated with those skills), it is possible that students will focus exclusively on how the assignment furthers their understanding of content and will miss skill development as an intended outcome (Cranmer, 2006; Evers et al., 1998; Martini, Rail, & Norton, 2014). The net result may be that even if students develop the intended skill implicitly, they will have difficulty communicating this aspect of their learning to potential employers because they have not

developed the language associated with skills-based learning. This is of particular concern, given that interviews with potential employers are rarely focused on the student's understanding of disciplinary content (which employers often assume), but instead emphasize the skill set that the student is likely to bring to the organization.

The Current Study

The current study examined three issues. The first concerned the extent to which psychology undergraduates believe that skills-based learning outcomes (SBLOs) are being emphasized in their university courses. We anticipated that, in keeping with concerns expressed by other scholarship of teaching and learning (SoTL) researchers (Berdrow & Evers, 2011; Evers et al., 1998), *students would indicate that little emphasis had been placed on discussing SBLOs in their courses.*

The second and third issues related to the SBLOs that psychology undergraduates believe they develop during their degree, as well as their ability to define some of the well-established SBLOs articulated by employers and university administrators (e.g., critical thinking). We expected that *undergraduates would be able to name many of the key SBLOs outlined in the APA Guidelines 2.0 (APA, 2013).* However, in the absence of extensive discussion about SBLOs from instructors, we hypothesized that psychology *undergraduates' ability to define SBLOs such as the 3Cs (i.e., articulate the key competencies that comprise them) would be limited.*

In addressing these three issues, we also investigated developmental differences in students' ability to name and define key SBLOs. We expected that, owing to their greater experience in the university environment, *upper-level undergraduates would be more likely than*

those in their first year to (a) name competencies related to the 3Cs and (b) define the 3Cs in terms of the competencies that underlie them, rather than using general, undifferentiated terms.

Method

Participants

This research was carried out at a mid-sized university (17,000 undergraduates) located in southwestern Ontario, Canada. All participants in this study were undergraduate psychology majors. We combined the data from two studies for this study. The first included a group of first-year psychology majors ($N = 196$; 161 female; mean age = 19.73 years, $SD = 4.46$, range = 18 to 47 years) who provided their data as part of a larger package of materials for a seminar in introductory psychology. Because we gathered the data as part of a homework assignment, no compensation was provided to members of this group.

The second study included a group of upper-level psychology majors in either their third (85 participants, 70 female) or fourth year (55 participants, 45 female). The age of these participants ranged from 19 to 50 years of age, with a mean age of 21.66 ($SD = 2.91$). These students completed the measures as part of a larger study investigating the utility of e-portfolios, and were recruited from core psychology courses (i.e., research methods in third year and capstone courses in fourth year). These students received course credit for participation.

Materials and Procedure

First-year students provided their information online as part of a larger survey for a seminar in introductory psychology. These participants completed the survey at a time and location of their own choosing. Upper-level students signed up to come to the lab and

participate in the e-portfolio study. They completed the materials for the study individually, with the number of students participating at any given time ranging from one to five.

Course-based emphasis on SBLOs. Only upper-level students indicated their views about the extent to which SBLOs had been stressed in their coursework, and the extent to which they had thought about SBLOs while completing their assignments. They provided responses to both questions on a 7-point scale that ranged from 1 (not at all) to 7 (a great deal). The first-year students did not answer this question because they had been enrolled at the university for a very short period of time.

Naming skills. All students named up to 10 skills that they believed their degree would help to promote. First-year psychology majors wrote down the skills that they felt they *would be developing* over the course of their undergraduate degree. In contrast, senior students named the skills that they believed they *had developed* during their degree. In keeping with recent literature citing the importance of the co-curriculum in fostering undergraduates' skill set (Bass, 2012; Kuh, 2010), we encouraged students to name skills that had been developed through both their curricular and cocurricular experiences (e.g., volunteer or part-time jobs, involvement with clubs or sports teams, etc.).

Defining skills. Given their prominence in the *APA Guidelines 2.0* and lists of attributes desired by employers, we asked students to define the 3Cs: communication, critical thinking, and collaborative skills (i.e., teamwork and leadership). In the *Defining Skills* section of the study, we were interested in getting at students' understanding of the competencies that are associated with the 3Cs. In the case of critical thinking, for example, the question read: "In some job ads, employers will indicate that they are interested in hiring

someone who has good critical thinking skills. What are critical thinking skills?” Parallel questions were asked for communication, teamwork and leadership.

Development of the naming and defining skills coding scheme. We coded data related to naming and defining skills using a scheme whose development was informed both by the literature concerned with PSE learning outcomes assessment (e.g., Astin & Antonio, 2012; Banta, Jones, & Black, 2010) and an in-depth examination of student responses. Overall, there was considerable overlap in terms of the transferable skills noted by the two groups of students and they corresponded well to those that are important, according to employers and the APA *Guidelines* (APA, 2013; NACE, 2012). We paid particular attention to the 3Cs: communication, critical thinking, and collaboration (including both teamwork and leadership). For these skills, we coded at a more nuanced level by defining several subcodes that represent the competencies that underlie these skill categories. The coding scheme is detailed in the Appendix.

In addition to the 3Cs, a variety of other transferable skills emerged in students’ spontaneous responses to the naming skills task. Three in particular were noted often enough that we created separate coding categories for them: *global and community engagement*, *conducting empirical research*, and *technical skills* (use of hardware/software).

We also noted that students mentioned a wide variety of *self-management* skills (e.g., “creativity,” “integrity”) when asked to name skills developed across the degree program. These skills also emerged in the defining skills task, for which students had to define or explain the 3Cs. For the most part we coded these self-management responses as a single group, but we noticed that one particular self-management skill – *being organized* – appeared

very frequently in both groups' responses to the naming skills task. As a result, we examined it separately from other self-management codes, and it is referred to as "organization".

A number of students cited skills that could be considered very narrowly academic (e.g., "completing multiple choice tests") or job-specific (e.g., "using a cash register"). In addition, a small number of responses reflected discipline-specific content (e.g., "I learned about the parts of the brain") rather than any type of skill. We coded these as three distinct categories in the coding scheme and they were not examined further. In total, then, the coding scheme consisted of eight main categories: communication, critical thinking, collaboration, global and community engagement, conducting empirical research, technical skills, organization, and general self-management skills.

Given the manner in which we coded the data, it was possible for students to have multiple responses that fell within a particular skill category. For example, if a student cited that they had further developed both their writing and speaking skills, both would count under the broader skill category of communication. For both the naming and defining skills tasks, we calculated inter-rater reliability by having a second research assistant code 90 of the transcripts (25%). Cohen's kappa was .87 for the naming skills data and .90 for the defining skills data.

Results

Course-based Emphasis on SBLOs

Upper-level students indicated that their instructors had placed little emphasis on the SBLOs being fostered by assignments or other activities in their classes ($M = 3.09$, $SD = 1.18$, range = 1-6). These students further noted that they had given relatively little thought

to these types of skills when completing their university assignments ($M = 3.75$, $SD = 1.42$, range = 1-7).

Naming Skills

Students were asked to indicate up to 10 skills that they believed a degree helped to develop. Again, first-year students reported on skills they *expected* to learn or further develop, while upper-level student indicated the skills they believed that they *had* learned or further developed. Each response was coded separately. The average number of skills noted by first- ($M = 8.76$; $SD = 2.39$) and upper-level students ($M = 8.94$; $SD = 1.98$) did not differ ($t(336) = -.75$; $p = .46$; 95% CI [-.67, .30]). Further, in keeping with our hypotheses, both groups demonstrated that they were able to name many of the key transferable skills that a psychology degree is intended to develop (see Table 1). We noted that some skills, including communication, teamwork, and organization, were mentioned very frequently by students in both groups. In contrast, other skills (e.g., community/global awareness, conducting research, technical skills) were mentioned much less often. Given their importance to employers, we also found the relatively small percentage of participants who spontaneously mentioned leadership and critical thinking (for upper-level students) noteworthy.

Developmental differences in naming skills. To explore potential group differences between first-year and upper-level psychology majors, the relevant dependent measures were the number of student responses that fell within each of the eight major skill categories (communication, critical thinking, collaboration, global and community engagement, conducting empirical research, technical skills, organization, and general self-management skills). In other words, for each student we calculated the number of times that each skill category was mentioned during the naming skills task.

Using a multivariate analysis of variance (MANOVA), we investigated whether there were differences between groups in terms of the mean number of times that the eight skills categories were mentioned. The overall MANOVA was significant ($F(8,329) = 13.50; p < .001; \eta^2 = .25$). In examining the follow-up univariate analyses of variance, we employed a Bonferroni correction to account for the possibility of inflated Type 1 error (adjusted alpha = .006). Using this criteria, first-year students were more likely to cite critical thinking ($F(1,336) = 11.93; p = .001; \eta^2 = .034$) and general self-management (excluding organization/time management) skills ($F(1,336) = 23.87; p < .001; \eta^2 = .07$) than were upper-level students (see Table 1). In contrast, upper-level students were more likely than those in their first year to note empirical research ($F(1,336) = 61.06; p < .001; \eta^2 = .15$) and technical skills ($F(1,336) = 8.20; p = .004; \eta^2 = .024$) (see Table 1). There were no group-based differences in the number of mentions for communication, collaboration, time management or global awareness.

Defining Skills

Based on our belief that students receive little explicit instruction about SBLOs in class, we hypothesized that students' capacity to explain the 3Cs -- communication, critical thinking and collaboration (i.e., teamwork and leadership) -- in terms of their constituent competencies would be limited. To test this assumption, we examined students' ability to articulate specific competencies related to these skills rather than relying on very general, undifferentiated responses. Consistent with this hypothesis, we found that a large proportion of students in both groups provided at least one undifferentiated response (i.e., one that was given an *undifferentiated* code in our coding scheme; see Appendix) when asked to explain

the 3Cs. Further, they mentioned very few specific competencies related to the 3Cs, with the vast majority of students in both groups mentioning, at most, just one (see Table 2).

Developmental differences in defining skills. We hypothesized that upper-level students would be better at articulating specific competencies related to the 3Cs than first-year students, owing to their greater experience in the university environment. The four dependent measures of interest in testing this hypothesis were the number of competency-related codes mentioned for each of the 3Cs, with teamwork and leadership examined as two separate components of collaboration. In other words, we were interested in examining students' use of the codes for communication, critical thinking, teamwork and leadership that were not classed as *undifferentiated* in the coding scheme (see Appendix).

A significant MANOVA ($F(4,313) = 11.41; p < .001; \eta^2 = .13$) partially confirmed our hypothesis: An examination of the follow-up univariate analyses using a Bonferroni correction (adjusted alpha = 0.01) suggested that upper-level students provided more competency-related codes than first-year students for both critical thinking ($F(1,316) = 20.53; p < .001; \eta^2 = .061$) and teamwork ($F(1,316) = 30.49; p < .001; \eta^2 = .088$). There were no significant differences between first-year and upper-level students with respect to the number of communication- or leadership-based competencies.

Discussion

To the extent that our findings can be generalized to other college and university psychology programs, we believe that our results provide some reason to be optimistic about training in psychology at the undergraduate level, but that they also underscore areas that might deserve additional attention from instructors. As a starting point, we note that the upper-level students from our sample indicated that explicit discussion of SBLOs was not

common in their courses, and that they had given these learning outcomes little thought while completing their assignments (the means for both of these questions fell below the midpoint of the scale). Such findings suggest that instructors, for the most part, may be leaving any learning related to skills-based outcomes to the students themselves. Perhaps they prioritize disciplinary content, believing that there is insufficient time during the course to discuss skills. Alternately, they may believe that an explicit discussion of transferable skills is not necessary because students will come to understand them implicitly as a function of doing their assignments and preparing for tests.

Our data suggest that students *do* have some understanding of the skills that a psychology degree is intended to foster, but it is also clear from their responses that this understanding is somewhat rudimentary. In the sections that follow, we highlight key findings from this study and use them as a springboard for suggestions regarding possible improvements in undergraduate training.

Naming Skills

In this study we employed a methodology that allowed us to examine the skills that spontaneously come to mind when students consider the skills that are learned during the degree. We believe that this is a useful approach, as it allowed us to examine students' thinking about this issue independent of any researcher-driven prompts about what skills faculty believe are important. Results from the naming skills exercise suggest that the psychology majors in this sample have a good working understanding of key SBLOs that are important, both in terms of the goals of the discipline and in terms of attributes considered desirable by employers. This was true even for students in their first year: Many of the students in introductory psychology were clearly aware of skills that we seek to foster in

psychology programs, and believed that they would be developing them over the course of their degree.

In terms of developmental differences, however, the data only partially supported our hypothesis that upper-level students would be more likely than those in their first year to name key SBLOs. For example, fourth-year students were more likely than first-year students to name technical and research-based skills. In contrast, first-year students were more likely to list self-management skills (apart from organization) during this task, suggesting a greater focus on how the degree would foster development of their beliefs, values, and the *way* that they did things, rather than what they could do. Of some interest, however, was the fact that these first-year students were more likely than upper-level students to articulate critical thinking during the naming skills task. Possibly, this finding may stem from the fact that the textbook used in this course places a heavy emphasis on this skill, with “Critical Thinking” boxes appearing in almost every chapter. Our results may also be a function of the timing of our data collection, which was carried out soon after first-year students had completed a major paper in the introductory psychology course. It is likely that many students had internalized the message being sent by their instructors and seminar leaders; namely that the assignment was intended to support and develop their ability to think critically about psychological research.

While our results suggest that, across the entire sample, there was a broad understanding of the important skills developed in college, a look at the descriptive statistics also underscores that not all students think spontaneously about the skills that many faculty members consider to be central to the degree. For example, although a large percentage of students in both groups mentioned communication and teamwork skills, fewer mentioned

leadership or critical thinking. Given the importance that both faculty and employers place on the latter two skills, it is somewhat troubling that, for a large proportion of students, they do not come to mind spontaneously.

Defining Skills

Our data suggest that students' understanding of the 3Cs was not very nuanced, as demonstrated by their heavy reliance on general, undifferentiated statements as a means of defining these skills. Examples include statements such as "Critical thinking is when you can think outside the box," "Leadership means that you can effectively take charge," and "Teamwork means that you know how to work with others". In keeping with this observation, many of the students in our sample provided little evidence that they could articulate any of the more specific competencies that underlie the 3Cs with the vast majority supplying, at most, just one.

Why are these findings noteworthy? Our observation that students' spontaneous skills-based responses are quite rudimentary suggests that they may have difficulty leveraging their important learning experiences to maximum effect, because doing so requires an ability to map elements of the learning experience to the competencies that such an experience might develop. For example, when students understand that leadership goes beyond "effectively taking charge" and requires the management of both tasks (e.g., appropriate division of labor; managing resources; working to timelines) and people (e.g., recognizing individuals' skills and delegating accordingly; conflict management) (Fisher, 2014), they can think about their learning experiences in those terms and consider how both elements of leadership might be fostered by the experiences that they have had.

Ideally, students will also come to think about their learning experiences in an integrative way, understanding how curricular and cocurricular learning experiences work jointly to foster a variety of competencies related to each of the major skills (Huber & Hutchings, 2004). For example, part-time student jobs involving interaction with the public (e.g., waiting tables; customer service or retail jobs) often help to build *verbal* communication skills (i.e., the ability to speak to others, and to listen effectively to what others are saying). In contrast, class assignments are more likely to encourage the improvement of *writing* skills and the ability to *read and understand* complex material. When students attempt to persuade employers that they have a broad range of communication skills, they should leverage learning from a variety of experiences – both inside and outside of the classroom – in order to demonstrate the highest possible level of competence.

Limitations of the Present Study

The conclusions that we have drawn in this study must be tempered by its limitations. First and foremost, this study is limited by the fact that its participants come from a single university. Possibly, the discussion of skills-based learning is more explicit at other colleges and universities and their psychology undergraduates may, as a result, be much better able to articulate their skill set upon graduation. Anecdotal evidence suggests that this is not the case, and that psychology majors from many North American colleges and universities have similar challenges in terms of their understanding of skills-based learning during the degree. Nevertheless, the generalizability of our findings remains in question until such time as our results can be replicated with a broader sample from a variety of postsecondary institutions.

Second, we acknowledge that our findings may underestimate participants' understanding of skills-based learning if they were unmotivated to expend a great deal of time or energy on the tasks that comprised this study. Student motivation has been previously cited as an important determinant of validity in studies aimed at assessing learning outcomes (Hosch, 2012). While motivation must be cited as a potential limitation, we will add that we have no particular reason to believe that students in this sample were unmotivated while completing this study. Indeed, although we have no data related to the first-year students, most upper-level students took between 2 and 3 hours to complete the full study (which was the expected time commitment, based on RA completion times during pilot testing). Further, upper-level students indicated on their final evaluation (using 7-point scales) that the session had been very helpful in giving them some broad skills-based terms to organize their learning ($M = 5.72$; $SD = 1.11$) and clarifying what the skills-based terms meant ($M = 5.58$; $SD = 1.13$).

Finally, it should be noted that while the first-year students completed their materials online, upper-year students completed them in person in the lab. It is not clear that these different methods would create any systematic bias in the responses provided; however, such procedures did allow for first-year students to take short breaks during data collection (the system allows 30 minutes of inactivity before logging the user out) which might have allowed them additional time to consider their answers.

Conclusions

These limitations notwithstanding, we believe that our findings highlight the fact that an important component of the degree – skills-based learning – is not always well understood by psychology undergraduates. Having said this, we also believe that many

psychology instructors develop course assignments and other methods of evaluation with the intention of fostering skills as well as an understanding of content. However, when explicit discussion of skills-based learning is infrequent or superficial (or both), students may not recognize that skills are being fostered through their assignments (Martini et al., 2014). Further, they may not develop a nuanced understanding of the wide variety of competencies that underscore broad-based skill categories such as critical thinking.

An understanding of transferable skills that is somewhat rudimentary is problematic because it is likely to put students at a disadvantage when they enter the job market. Specifically, a poor understanding of the competencies that underlie key skills will make it difficult for new graduates to select important learning experiences to showcase to potential employers. Moreover, an inability to effectively articulate the transferable skills that they have learned will make it more difficult for new graduates to leverage those learning experiences to maximum advantage during a job interview. It is our position that students' ability to articulate their skills can be enhanced through many activities, including the use of well-established tools such as skills-based e-portfolios (Light et al., 2012). Perhaps most effective, though, would be the adoption of a "skills across the curriculum" approach, during which skills-based learning is continually emphasized in psychology courses. For example, individual faculty members could speak at regular intervals about the skills being fostered through learning experiences in their courses, and might further include this information along with the syllabus or any written information pertaining to assignments (e.g., instructions for assignment completion and deadlines). Instructors could also take some time to make clear the array of competencies that underlie broad skill terms such as critical thinking. Such an approach would reinforce the importance of the skills and provide

a continuous reminder to students about how skills are linked to coursework. Ideally, students would also have ongoing designated spaces in the curriculum to revisit their existing and desired skill sets, possibly through special assignments (e.g., development of an electronic skills portfolio). Doing so would ensure an ongoing evaluation of the concordance between the two and continued consideration of the learning experiences most likely to develop their skill set in desired ways.

Finally, it should be emphasized that our findings do not imply that the students in our sample have not learned these key skills; we do not believe that our data can speak to this issue. Indeed, we would like to stress the importance of viewing the *acquisition* of transferable skills (as measured by Evers and colleagues in 1998, for example) and the *ability to articulate* those skills (as measured in the present study) as separate, and possibly unrelated, constructs until such time as there are data to demonstrate otherwise. And while much attention has been paid to the methods by which institutions might measure the acquisition learning outcomes (e.g., standardized tools such as the Collegiate Learning Assessment test), data from the present study suggest that assessing the extent to which students explicitly understand and can articulate those outcomes might also be a worthy endeavour for institutions to consider.

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Table 1

Naming Skills

Skill	Average Number of Mentions per Student		Percentage of Students who Mentioned the Skill	
	First Year	Upper Year	First Year	Upper Year
Critical Thinking	1.21	.87	76.4	61.7
Communication	1.43	1.63	84.6	83.7
Collaboration - Teamwork	1.01	1.30	74.4	83.7
Collaboration - Leadership	.55	.49	52.8	42.6
Community/ Global Awareness	.02	.06	2.1	5.0
Conducting Research	.05	.01	4.6	.7
Technical Skills	.09	.21	8.7	17.7
Self-Management - General	2.86	1.77	87.7	69.5
Self-Management - Organization	1.24	1.43	74.9	85.1

Table 2

Defining Skills

Skill	Percentage of Students Providing, At Most, One Competency-based Response		Average Number of Competency-based Responses per Student	
	First Year	Upper Year	First Year	Upper Year
Communication Skills	74.2	76.6	.77	.73
Critical Thinking	83.7	57.0	.88	1.30
Collaboration: Teamwork	96.3	82.8	.49	.90
Collaboration: Leadership	88.9	83.6	.71	.84

Appendix

Transferable Skills**Communication**

- Communication skills – undifferentiated
- Oral Communication (*presentations; effective articulation of ideas*)
- Listening
- Writing skills (*essays, making revisions*)
- Reading comprehension
- Nonverbal Communication (*body language; tone of voice*)
- Other, not specified

Critical Thinking

- Critical thinking skills – undifferentiated
- Problem solving – undifferentiated (*resolve a problem/issue*)
- Identifying questions/problems/issues/gaps in research literature
- Examining questions/problems/issues from multiple perspectives or points of view
- Identifying information needed to address questions/problems/issues/gaps in literature (knowing what you don't know; metacognition)
- Identifying appropriate sources of information to address or inform problems/issues/gaps in research literature (i.e., knowing where to look for information, including the popular media; research literature)
- Evaluating/Analyzing/Synthesizing/Critiquing information obtained (information literacy)
- Using information obtained to address questions/problems/issues/gaps in literature (for example, to design a study; generate potential solutions; select the best solution)
- Applying concepts/theories/information gathered to new situations
- Other, not specified above

Collaboration: Leadership

- Leadership skills – undifferentiated (*take control, take charge*)
- Being a role model (*teaching, training, coaching, mentoring others*)
- Decision making
- Delegating
- Providing information/direction/guidance
- Motivating/encouraging others
- Taking responsibility for other people/tasks to be completed
- Other, not specified

Collaboration: Teamwork/Working with Others

- Teamwork skills – undifferentiated (*work as part of a team, get along with others*)
- Negotiating/Resolving Conflict/Working to See or Understand Others' Point of View
- Co-operating/Helping/Supporting others
- Appreciating Diversity (*including working with people who are different in terms of their opinions, work styles, personality, age, sex, cultural/religious background, persons with disabilities/other special populations, and difficult individuals; necessary communication/behaviour adjustments to work with these individuals*)
- Equality and Reciprocity (*including doing your fair share of the work, valuing other people's opinions and their work, contributing to group discussions and listening to other people's contributions*)
- Other, not specified above

Global/Community Engagement

- Engaging with/contributing to community
- Awareness of social issues

Research Skills

- Research skills (specific research methods, data gathering – note that this is only used when answers indicate that student is carrying out empirical research, and not simply “doing research for a paper” at the library or elsewhere)

Technical and Multimedia Skills

- Using hardware or software (including social media, emailing, web design, statistical programs, word processing packages, EEG machines etc.)

Self-Management Skills**Organization**

- Multitasking
- Organizational skills
- Planning and goal setting
- Prioritizing work to be done
- Time management (*meeting deadlines*)

General Self-Management

Other/ Miscellaneous

- Academic skills (study skills, note taking, taking multiple choice tests)
- Job specific (budgeting, certification, using public transit)

Disciplinary Content