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The state of course learning outcomes at leading universities

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ABSTRACT
Within higher education, the importance of learning outcomes has become well-established. They are expected to guide the teaching and learning process, assessment, and curriculum development, while at the same time act as foundational elements to transitions towards national qualifications frameworks, competency-based education, and international partnerships such as the Bologna agreement. However, as essential as learning outcomes have become, very little is known about the quality of learning outcomes within courses. Through a content analysis of publicly available syllabi, this paper examines course learning outcomes from some of the leading teaching universities in the world. Results of this exploratory study indicate that the quality of learning outcomes is quite poor, and that a great deal of work is required until most outcomes would be aligned with internationally accepted best practices.

KEYWORDS
Assessment; education; student-centered learning; learning objectives; bloom

Introduction

As a concept, learning outcomes within higher education are firmly becoming established as an international norm (Proitz et al. 2017). No longer can learning outcomes be considered a passing fad that faculty members or administrators can ignore. Whereas only a few years ago learning outcomes were seen strictly as the purview of education faculty, with increased demands for transparency, accountability, and employability, transitions towards national qualifications frameworks, competency-based education, and the Bologna agreement, learning outcomes now appear to be within the scope of all higher education. Learning outcomes are representative of, or even catalyst towards, the larger transition to student-centered learning (Adam 2002; Ewell 2005). Partially driven by the massification of higher education, well-crafted learning outcomes can lay the groundwork for a more student-centered classroom and foster alignment between learning, activities, and assessment (Biggs and Tang 2011).

Though Havnes and Proitz (2016) question whether or not a shared understanding of how learning outcomes should be written is even possible, as the learning outcomes movement has matured, a consensus surrounding the characteristics of well-written learning outcomes has emerged. While some differences exist, and there are varying degrees of guidance and expectations provided, most universities, accreditors, national and international higher education, and pedagogically focussed organizations agree on the use of a student-centered introductory stem, the use of concrete or operational verbs, and a focus on what students should know or do by the end of a unit of learning. Given this shared understanding, questions about the current state of course learning outcomes should be asked and leading universities seem the logical starting point to ask such questions.

The current paper addresses questions concerning the quality of course learning outcomes from 10 of the world's leading teaching universities. It will examine the degree to which a sample of their

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course learning outcomes located from publicly available syllabi adhere to international best practices of writing learning outcomes because, as Adelman (2015) stated, faculty need to pay close attention to the language of their learning outcomes. Where learning outcomes do not follow best practices, the paper will then identify where the learning outcomes fail to meet expectations.

Learning outcomes understood

Over 20 years ago Allan (1996) wrote about the development of the learning outcomes in higher education and chronicled the transition from objectives, seen to be tarnished from behaviorist underpinnings, to the development of subject-specific outcomes, more student-centered in nature. She described that

> there is a dichotomy between learning and teaching intentions, but the process of defining and expressing learning outcomes should enable lecturers to reflect upon what they intend their students to learn and thereby articulate the relationship between what they teach and what students do, in fact, learn. This presupposes that the learning outcomes are clearly expressed, in a form which enables learners to know at the commencement of a course … what it is they are expected to achieve. (104)

Later, Harden (2002) discussed the differences between learning outcomes and objectives in medical education and re-affirmed that learning outcomes focus on what is learned, not what the intentions of teaching are. Over time, these understandings have become accepted and implemented throughout higher education.

From an American perspective, the regional accreditor Western Association of Schools and Colleges (WASC), defines a learning outcome as 'a concise statement of what the student should know or be able to do' (WASC Outcome section, n.d.). The UK's Higher Education Academy (HEA) defines learning outcomes as 'the skills and knowledge that a student should possess on successful completion of a course of study' (Higher Education Academy para. 1, 2015). Both organizations also go further to provide guidance as to how learning outcomes should be written. WASC states that well-articulated learning outcomes demonstrate how students achieve an outcome and that to do this, non-measurable verbs such as appreciate, learn, and know should be avoided in favor of measurable verbs such as describe, analyze, or create (WASC n. d.) In a more thorough manner, the HEA offers considerable guidance as to how to write effective learning outcomes. Guidance about use of active verbs, consideration of assessments, implementation of a student-centered introductory stem, and examples of good learning outcomes are all provided (Overton 2010). A number of the universities used in the present study also offer similar guidelines to their faculty into how to draft learning outcomes (see, e.g. Lapp n.d.; Stanford University n.d.; Yale University 2016.).

The standard definition that I use in faculty development workshops is that learning outcomes are statements that specify, in measurable terms, what a student will know or be able to do as the result of having successfully completed a unit of learning. This means that learning outcomes are written from the perspective of a learner, rather than from the perspective of the teacher. I explain the importance of learning outcomes by stating that their clear articulation communicates expected standards of performance and serves as a foundation for curriculum development and assessment of the teaching and learning process. Though rooted in the behaviorist approach to learning (Melton 1996), the focus is on active learning principles. My definition and justification have been developed over years of professional practice and are aligned with international norms.

To manage the development of effective learning outcomes I often present a set of writing guidelines which describe things to do and things to avoid (see Table 1). Besides the guidelines, providing examples of poor and good learning outcomes demonstrates what type of learning outcomes should be avoided and what type should be created (see Table 2). The exemplars also serve as the application of the learning outcome writing guidelines.

Although the language of learning outcomes is becoming well-established, their remains some confusion over like terms, most often the terms goals or objectives. The differences between these

Table 1. Guidelines for learning outcomes.

Begin with a consistent short stem: • Students will be able to … • Students can … • At course completion students …
Avoid needlessly wordy stems: • Students will be able to demonstrate the ability to calculate … • Students will be able to demonstrate a capacity to …
Accurately represent the specific contents of a course
Must be set at the appropriate level of cognitive and behavioral level
State the desired student performance/behavior using concrete action, or operational, verbs such as create, apply, interpret, describe, identify, categorize
Avoids verbs that are difficult to measure like understand, know, learn, appreciate, become aware of, and experience
Should be limited to one, and very rarely more than two, related verbs
Should number between 4 and 8
Can be effectively measured and assessed

Table 2. Examples of course learning outcomes.

Poor	Good
Students will be familiar with research methods in marketing.	Students can critically review the methodology of a research study published in a marketing journal.
Be introduced to the most commonly used lab equipment in environment health.	Students can safely and efficiently operate standard environmental health laboratory equipment.
Students will be able to demonstrate an ability to discuss the impact of new technology.	Students will be able to critically evaluate the impact of new technology on E-commerce activities.
Know how to develop an ILP for a child with a learning disability. Know how to implement an ILP. Know how to evaluate the ILP.	Students will be able to design, implement, and evaluate the effectiveness of an individual learning plan for a child with a learning disability.
Students understand a text's formal features in light of social, historical, and psychological concepts.	Students construct coherent arguments that interpret a text's formal features in light of social, historical, and psychological concepts.

terms, though not the focus of this paper, can enhance an understanding of what learning outcomes are and are not. Goals are conceptualized as broader constructs than learning outcomes, more often associated with programs. Suskie (2009) describes them as statements of what faculty and programs are aiming to achieve both internally and externally to the teaching process. Statements about a *desire to have all students complete a professional internship* would be a goal. Objectives on the other hand, are drafted from the perspective of a teacher and represent the process leading to an outcome (Suskie). They are a specific statement expressing teaching intention (Allan 1996; Kennedy 2006). A phrase like *teach the strengths and weaknesses of quantitative methods* represents an objective.

Literature review

Statements like 'learning outcomes currently play an increasingly important role in higher education' (Melton 1996, 409) remain pertinent today, and yet very little is known about the actual state of learning outcomes in higher education. Through Proitz (2015) content analysis of Norwegian government documents we know that learning outcomes language appeared in about 2000, peaked about a decade later, and has now stabilized as a commonly used language. To date, the most comprehensive analysis of learning outcomes at universities comes from the UK Quality Assurance Agency's (QAA) Institutional Audit (Quality Assurance Agency 2009). In this audit of 76 institutions and their learning outcomes, the overall finding was that nearly all had identifiable learning outcomes. However, outcomes were at times too generic or were lacking in differentiation between levels to be of much use. More recently, Dobbins et al. (2016) found that faculty from there different schools in a single institution used learning outcomes to drive their course design and delivery, but they also found that

there were still faculty members resistant to learning outcomes because they viewed them as an encroachment of the managerialist approach into higher education. A debate clearly exists in higher education as to whether learning outcomes are a driver in the paradigm shift from teaching to learning (Ewell 2005) or if it is an accountability tool (Proitz 2015). It is this tension that appears to be the cynosure of much of the current learning outcomes literature.

From the teaching and learning perspective, the learning outcomes movement was seen as a way to transform higher education teaching to be more student-centered (Adam 2002; Ewell 2005). Early on, Otter (1992) saw that learning outcomes could better focus faculty on the type of learning they wanted students to achieve. Similarly, Allan (1996, concluding remarks section) later recognized the potential to use 'learning outcomes to view learning from the perspective of the learner, rather than the lecturer, and thereby to enrich the quality of learning.' As positive as this potential seems, more recent research has found that the more traditional approach still dominated regardless of what was stated in course syllabi (Nasrallah 2014). She discovered that there was a misalignment between stated university goals, promoted student-centered teaching methods and classroom practices in that they remained very teacher-centered. Nasrallah (2014, 268) felt that 'although the learning outcomes occupy a section on the syllabus, they do not indicate a shift in teaching towards a student-centered environment that is intended to empower today's learners.' In a similar manner, Hadjianastasis (2016), set out to examine whether or not learning outcomes were meaningful or just a box ticking exercise in which faculty engaged through a survey of early career academics, Hadjianastasis found that faculty believed learning outcomes useful for their teaching, but a misconception emerged in that learning outcomes were often thought of as nothing more than a table of contents for a course, not learning outcomes as purported by the UK's QAA.

The other aspect of learning outcomes is that they are now used as an administrative and accountability mechanism through qualifications frameworks, transfer agreements, and international assessment projects like AHELO. Havnes and Proitz (2016) warned that emphasizing this feature of learning outcomes can weaken their impact on transforming teaching and learning processes to more student-centered approaches, and learning outcomes end up 'as policy devices to support mobility, assure accountability and promote political initiatives' (220). Though proponents like Proitz (2015) posit that the learning outcomes movement places student learning at heart of higher education, there is clearly a tension between pedagogy implications and managerialism. In the early 2000's, Hussey and Smith (2003) argued that the positive focus on student learning gained from learning outcomes needed to be reclaimed from the monitoring and audit mechanisms that had come to dominate the learning outcomes conversation. They argued that learning outcomes needed to be flexible and framed in general terms, so that they could better reflect 'the practical realities of teaching' (359). As the perceived tension between learning outcomes as a pedagogical tool or monitoring mechanism continued to grow, Hussey and Smith (2008) distinguished between types of learning outcomes. From this analysis, they put forth that learning outcomes at the course level had become too precise and not of much use. Sin (2014) recently compared the realities of understanding and enactment of learning outcomes across three Bologna nations. Findings questioned the assumption of policy-makers 'that the implementation of learning outcomes as degree and course descriptors will automatically trigger a shift to student centered learning' (1833-1834).

Research questions

While common guidelines and expectations toward how to craft effective learning outcomes now exist, the degree to which these are being applied remains unknown. If these guidelines are indeed meaningful, it is natural to investigate the publicly displayed learning outcomes from leading teaching universities. Because of this, the research questions guiding this study are as follows:

(1) What is the current state of learning outcomes in courses at 10 leading teaching universities?
(2) Where weaknesses in learning outcomes exist, what types of problems occur?

(3) Is the research method employed a suitable mechanism to answer the previous research questions, and does it establish a benchmark for further study?

Method

This research project employed a content analysis because it provides the framework to systematically examine key documentation and determine their meaning (Busch et al. 2012). The key documentation in this study was course syllabi and the meaning was determined from the learning outcomes listed within each of the courses. As is the case in a content analysis, the steps taken in this study were to determine the research questions, choose the documents for examination, develop a coding mechanism, and then analyze and interpret the results (Gall, Borg, and Gall 1996). To conduct this research, syllabi containing learning outcomes from 10 of the world's leading universities were located, and the learning outcomes where then analyzed manually for their adherence to accepted best practices as demonstrated through Tables 1 and 2. However, although two key elements of good learning outcomes are that they accurately represent the specific contents of a course and are set at the appropriate level of cognitive and behavioral level, these guidelines were not included in the analysis because a syllabus rarely offers sufficient content to make these judgments. In some cases, a review of teaching materials and student work would be necessary for such an evaluation. Nevertheless, a course syllabus containing learning outcomes does offer adequate information to analyze the technical quality of the outcomes.

Sample

The selection of the sample involved two phases. The first phase was the selection of the 10 universities, while the second phase was locating appropriate syllabi from those institutions. The institutions that made up the sample were selected from data provided by both the Times Higher Education (THE) World University Rankings 2016–2017 (Times Higher Education 2016) and the 2016 QS University Rankings (QS Top Universities 2016) – only English-speaking universities were included in order to complete the analysis of learning outcomes. For the THE, the rankings were filtered from high to low according to the Teaching criteria which accounts for 30% of the total score. For the QS, the rankings were filtered from high to low according to the student-to-faculty ratio, which they purport measures teaching quality and accounts for 20% of the total score. However, as Zha (2016) noted, the efficacy of these criteria are questionable since they are only proxies for teaching quality. Nonetheless, they remain key measures that impact international rankings. Starting from the top ranking and progressing downward, the two lists were compared and where there was overlap, an institution was selected to be one of the 10. The final set of 10 should be considered a list of the leading English-medium teaching universities as identified by 2 of the leading ranking bodies. The institutions chosen are not controversial and are commonly the overall top ranked universities in various ranking tables. Only institutions from the US and the UK emerged from the tables and given the commitment to learning outcomes from both the US regional accreditors and the UK's QAA this seemed a justified sample. The universities selected were the California Institute of Technology (CalTech), Stanford University, University of Cambridge, Massachusetts Institute of Technology (MIT), University of Oxford, Yale University, Columbia University, Imperial College London (ICL), University of Pennsylvania (UPenn), and John Hopkins University.

Once the list of universities was generated, recent, publicly available syllabi from each of the institutions were sought since syllabi are where the sets of course learning outcomes are expected to be located. The goal was to collect 5 recent undergraduate or graduate course syllabi from the 10 universities for a total sample of 50 syllabi. Given the guideline of about 6 learning outcomes per course (Lindholm 2009), a sample of 300 learning outcomes was possible. Google was primarily used to search for syllabi and a variety of search strings were employed depending on levels of success

experienced. Example search strings included but were not limited to Imperial College of London syllabus, Massachusetts Institute of Technology course syllabus, MIT syllabus, Columbia University syllabus pdf, Stanford University Syllabus filetype:pdf past year, and UPenn course syllabus. Often, locating one syllabus at an institution would lead to others, or on-site navigation would lead to the discovery of other syllabi. Only one syllabus per faculty member was included and no preference for college, department, or program was considered. This meant that syllabi were gathered from numerous disciplines including Economics, Math, Linguistics, Engineering, Sociology, Computer Science, Japanese, Nursing, Business, Psychology, and Accounting. Discipline was not a consideration in syllabi because at the macro level (US regional accreditor and UK QAA), similar expectations exist across disciplines. It is not as though linguistic program are exempt from using learning outcomes while engineers are not.

All syllabi were reviewed for the existence of course learning outcomes, and if learning outcomes were present, the syllabus was retained. If course learning outcomes were not present, the syllabus was discarded. The determination of the presence of learning outcomes was quite flexible in that whether embedded in paragraphs or termed course goals or objectives, they were included in the sample if the statements seemed to be learning outcomes. Nonetheless, far more syllabi were found to have no discernable learning outcomes, than had learning outcomes. In cases where learning outcomes were absent, the syllabi generally listed a set of course topics instead of outcomes.

In total, having collected no more than 5 syllabi from any single institution, 42 syllabi with learning outcomes were found and included in the final data set. CalTech, MIT, University of Oxford, UPenn, and Stanford University were the institutions where less than five syllabi with discernable learning outcomes were identified. Most importantly, these 42 syllabi led to a total of 174 learning outcomes that could be analyzed. Though less than initially sought, this number was thought to be sufficient to gauge the current state of learning outcomes at the institutions under examination. It also reflected the fact that the content analysis proved challenging since numerous syllabi did not include learning outcomes.

Analysis and results

From the 10 universities targeted, none had more than 5 courses selected and only CalTech and MIT had a low of 3 course syllabi utilized (see Figure 1). Of the 174 learning outcomes which were located, Oxford provided the lowest number at 10, while Columbia supplied a high of 25 (see Figure 1).

At the most basic level, the issue of whether or not learning outcomes could be identified within the syllabi needed to be addressed. This meant that learning outcomes should have been clearly labeled in the syllabus through a heading like *Learning Outcomes- Student will be able to:* or

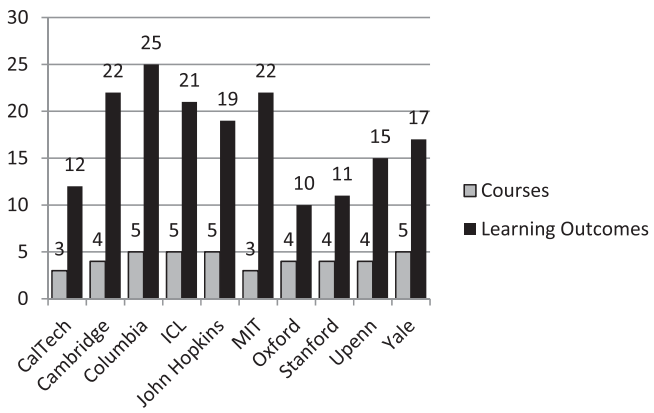

Figure 1. Number of courses and learning outcomes.

COURSE LEARNING OBJECTIVES- Students who successfully complete this course will be able to:, rather than being directly embedded as sentences within a paragraph making them a challenge to identify. I found that 76% (32/42) of courses had the learning outcomes clearly displayed. Given the guideline that an appropriate number of learning outcomes per course is between 4 and 8, 50% (21/42) of the courses fell within this parameter, and 61% (106/174) of the total learning outcomes were grouped in this way. The highest number of learning outcomes in a single course was 12 and the least was 1. However, in the course with 12 learning outcomes, each learning outcome was actually many learning outcomes in one. Though there were 12 bulleted learning outcomes, within each of these a number of additional learning outcomes were listed. For example: *Analyze worst-case running times of algorithms using asymptotic analysis. Compare the asymptotic behaviors of functions obtained by elementary composition of polynomials, exponentials, and logarithmic functions. Describe the relative merits of worst-, average-, and best-case analysis.* Though there was clearly an attempt to group the outcomes according to an overarching concept, this was not successful since an outcome such as *describe the relative merits of worst-, average-, and best-case analysis* lacks the required specificity to link it only to asymptotic analysis. As written, it could be an outcome for a number of unrelated concepts. I made the decision to consider these bulleted outcomes as a single poorly crafted outcome rather than a multitude of poorly written outcomes which would have skewed the data.

The analysis of most consequence is whether the individual learning outcomes were fine as written, or whether they should be re-written to better follow the best practices. This was an iterative process in which learning outcomes from each course were read and re-read in order to establish a representative coding framework that emerged as good, non-measurable verb, lacking or having too much specificity, and non-measurable with accompanying specificity issues (when more than one verb was present in a learning outcome, the more cognitively demanding verb was considered).

Table 3 provides example learning outcomes that demonstrate the types of problems that were coded. Ignoring whether or not the learning outcomes were clearly labeled, numbered between 4 and 8, or had a student-centered introductory stem, the analysis showed that fully 60% (104/174) of the learning outcomes would need to be re-written if this were a quality assurance check.

With 70 (40%) of the learning outcomes being fine as written, the 104 requiring edits from using non-measurable verbs, lacking or having too much specificity, or having a combination of a non-measurable verb and lacking or having too much specificity, were distributed as shown in Figure 2. By far, the largest area of concern was the use of verbs or phrases which were not measurable ($n = 67$), specificity was less of a concern ($n = 24$), and having a combination of a non-measurable verb and lacking or having too much specificity was coded only 13 times. Overall, a great deal of improvement is needed to raise the learning outcomes to a level of accepted best practices. This is especially true considering that the degree to which the learning outcomes accurately represent the specific

Table 3. Problems with learning outcomes.

Learning outcome	Problem
To learn and appreciate linear algebra and discrete mathematics	Non-measurable verb
Familiarity with debates over how language is represented in the mind	Non-measurable verb
Able to analyze and report on material learned	Specificity – lack of
Apply statistical tools to make inference about a single binomial proportion or two sample proportions using – approximate confidence intervals – hypotheses testing using approximate or exact methods – calculation of power, sample sizes and detectable effect sizes	Specificity – too much
Will have a basic understanding of the marketing concept, the marketing mix (product, place, promotion and price), segmentation, targeting, positioning, customer value, branding, services marketing, global marketing, marketing metrics, consumer and business behavior, ethics and social responsibility in marketing, market planning, market research and competitive analysis	Non-measurable and specificity issues (Too much)
Knowledge of contemporary issues	Non-measurable and specificity issues (too little)

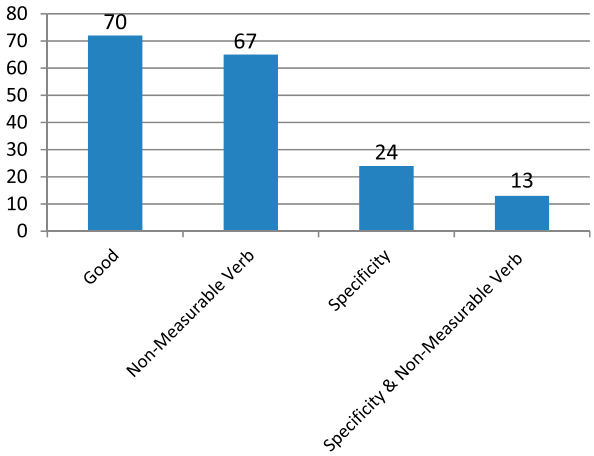

Figure 2. Learning outcomes quality.

contents of a course or are set at the appropriate level of cognitive or behavioral level cannot be analyzed through a multi-disciplinary syllabus investigation.

Adding the criteria of the learning outcomes being labeled, having a student-centered stem, and numbering between 4 and 8, to the existing analysis, only 11% (19/174) of the learning outcomes would not require edits. At course level, only 7% courses (3/42) had a good set of learning outcomes following all best practices. Examples of some of these quality learning outcomes from the three exemplar courses are (for readability purposes, the phrase, *Students will be able to* has been used for all introductory stems):

Students will be able to …

- Identify the major events and accounting decisions behind the numbers reported in financial statements.
- Apply control volume analysis and the integral momentum equation to estimate the forces produced by aerospace propulsion systems.
- Translate simple problems involving mechatronic control systems into a form which can be solved using standard mathematical methods.

Even with the many weaknesses noted, within the majority of courses there were often examples of well-crafted learning outcomes. Of the 42 courses investigated, 55% (23/42) had at least one well-crafted learning outcome. Examples of these included:

Students will be able to …

- Identify strategies to eating a healthy diet in different cultural and environmental settings.
- Deconstruct a broad problem into logical units and pick a strategy for analysis based on the structure of the data.
- Critically assess policies, programs, and proposals that are aimed at promoting urban sustainability
- Estimate the efficiency of simple algorithms, using the notions of average-case, worse-case, and amortised costs.
- Describe the roles biostatistics serves in public health and biomedical research.
- Describe the activities of civil engineers, their duty to act in the public interest, and the role of professional institutions.

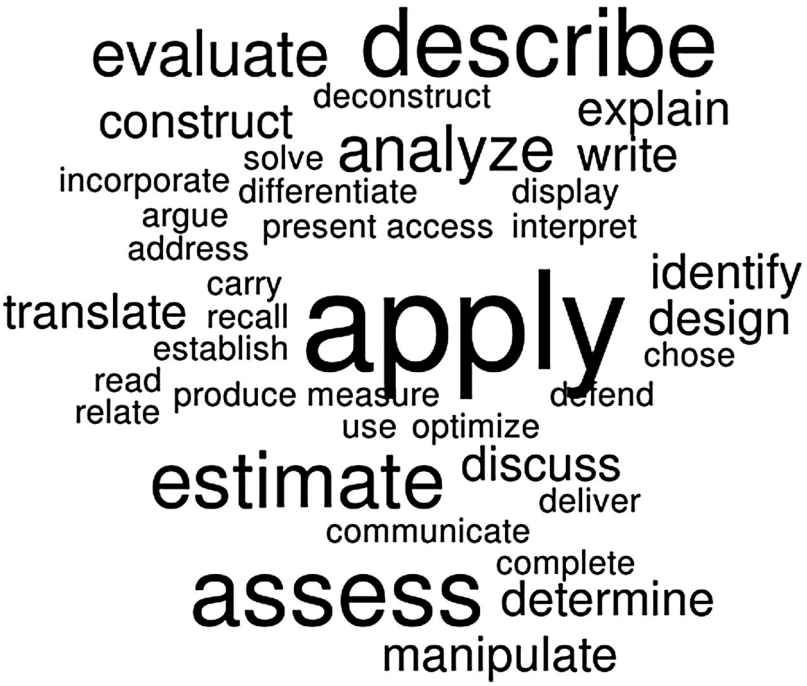

Figure 3. Word cloud of verbs.

Of the 70 learning outcomes that were fine as written, a further analysis into their verbs utilized was conducted because as Adelman (2015, 7) stated 'the verb is the center, fulcrum, engine of a learning outcome statement.' A total of 39 different verbs were used in the 70 learning outcomes. Figure 3 is a word cloud of all 39 verbs, and the size of the verb in the cloud indicates the relative number of times a verb was employed in the learning outcomes. Apply, being the largest verb was employed on eight separate occasions, describe and assess occurred five times, estimate appeared 4 times, analyze and evaluate followed with three instances, while all other verbs appeared once or twice.

In terms of the cognitive levels represented by the 70 total instances of the verbs, an analysis using Bloom's Taxonomy of Educational Objectives within the Cognitive Domain (Bloom et al. 1956) found

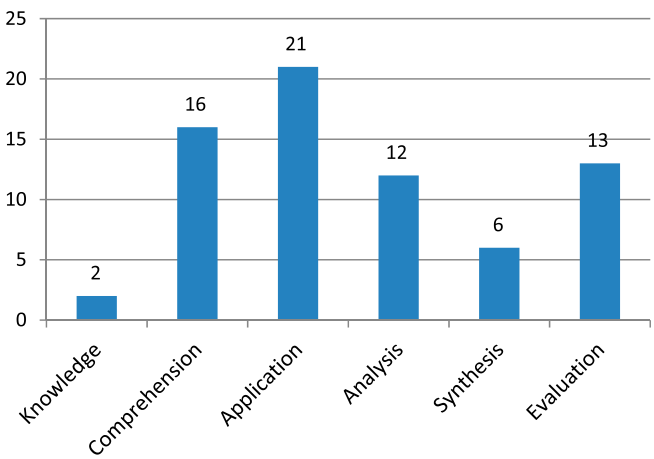

Figure 4. Learning outcomes on Bloom's taxonomy.

that the middle order dominated (see figure 4) – Bloom's taxonomy is a hierarchical model that ranges from lower order to higher order thinking – knowledge, comprehension, application, analysis, synthesis, evaluation, and is often used to classify learning outcomes. The middle order categories of application and analysis accounted for 47% (33/70) of all the learning outcomes, the lowest order level of knowledge only emerged 3% (2/70) of the time, and the highest order category of evaluation occurred at a rate of 19% (13/70). Similar to the earlier analysis of the quality of the learning outcomes, this was an iterative process in which each of the verbs was read and re-read in context of the learning outcome in order to make an accurate coding decision and assign it to one of Bloom's levels. Though Otter (1992) described how Bloom's taxonomy helped the development of learning outcomes, the iterative process was required because as Stanny (2016) has noted, all verbs do not unambiguously align to Bloom's level- language is flexible.

Discussion

In answering the first two research questions, the two that dealt with the current state of learning outcomes and where problems in the learning outcomes occurred, the results of this research indicate that major improvements are required in the way learning outcomes are displayed and crafted within courses. Though just over three quarters of learning outcomes were clearly displayed, only half of all courses had what is normally considered a standard number of learning outcomes. If learning outcomes are to be meaningful, there cannot be too many since assessment and coverage can become a concern. If there are too few learning outcomes, a course might not be accomplishing enough or the outcomes might be too broad to be of use. However, as both Sin (2014) and Hadjianastasis (2016) noted, faculty need to have a clear understanding that learning outcomes are not merely a list of course topics if this is to occur. Having all courses clearly display the expected number of learning outcomes should be the minimum expectation from institutions, especially from institutions purported to be the world's leading teaching institutions.

In terms of the quality of learning outcomes in courses and ignoring the best practice guidelines of 4–8 clearly labeled learning outcomes that have a student-centered introductory stem, that 60% fail to meet a level of accepted best practice is dreadful given the learning outcomes work that has been underway for years. It may be a demonstration that the resistance noted by Havnes and Proitz (2016) remains very prevalent, or that confusion remains (Sin 2014; Hadjianastasis 2016). The main problem of learning outcomes – that verbs or verb phrases are not measurable – shows that non-operational or abstract verbs like appreciate, understand, develop, recognize, consider, reflect, review, observe, and realize dominate written learning outcomes. If the verb cannot be effectively measured, it is of little use to faculty or students. Finally, taking into consideration all of the best practice guidelines, the picture becomes even more dire since only 3 courses containing 19 learning outcomes could be considered exemplars. However, on a more positive note over half of the courses did have at least one well-crafted learning outcome, so there is something to build upon.

In the 40% of learning outcomes that were labeled as fine without considering the guidelines of 4–8 clearly labeled learning outcomes that have a student-centered introductory stem, 39 different verbs were utilized. Adelman (2015) posits that there are more than 120 verbs that can be used to meaningfully describe the outcomes of learning, so there is a great deal of potential vocabulary that remains untapped. In addition, that higher order thinking is a universal expectation of a university education, more verbs that represent Bloom's more cognitively advanced levels of synthesis and evaluation must be implemented past the current level of 27%. Overall, the portrait of learning outcomes within courses at the leading teaching universities in the world, even with pockets of best practice and elements to build upon, is quite dismal.

The final research question asked whether the method employed was suitable and whether or not it establishes a benchmark for further study. The answer to this two-pronged question is undeniably yes. Though the results demonstrated major weaknesses in the current state of learning outcomes, the sampling method or a similar one, could be scaled up massively to include more institutions and

learning outcomes. Alternatively, any single university could conduct a content analysis of syllabi within their own institution in order to learn their own strengths and weaknesses. This could, in all likelihood, be done without access restrictions to syllabi that is experienced externally.

Limitations and further research

There are a number of limitations that must be considered when reading the results of this research study. First, the sampling method utilizing 10 of the leading teaching universities takes at face value that the teaching proxies purported by the ranking bodies are legitimate. Zha (2016) has recently questioned this assumption. Second, the sampling method only yielded 174 total learning outcomes from a population of thousands. However, full access to the pool of learning outcomes would in all likelihood be impossible to achieve. As an exploratory study, enough has been learned to further expand this line of research because if learning outcomes truly matter, their prevalence and quality also matter and are worthy of investigation.

A logical next phase in this research may be to select specific samples from Education departments since they may be better informed about learning outcomes. How or if the implementation and understanding of learning outcomes differs between Education and other disciplines may bring forth some interesting results.

Conclusion

The bleak findings from this study lead one to ask a number of questions. First, it is essential to ask about the real importance of well-crafted learning outcomes to higher education. If most courses and nearly all learning outcomes within courses fail to meet best practice guidelines, perhaps the entire concept of learning outcomes is overblown. While the desire to have learning outcomes lead to a focus on what is learned rather than what is taught is noble, perhaps current levels of resistance and confusion make this highly unlikely. Second, do the findings suggest that the teaching proxies used by the ranking bodies are actually invalid and unreliable? Zha (2016) believed this to be the case and saw that the development of more effective measures for teaching and learning should be a priority. Though this is certainly contentious, this examination of learning outcomes failed to provide any evidence that good teaching and learning is occurring at these leading universities. In fact, the inability to craft quality learning outcomes suggests that a meaningful measure of learning outcome attainment, would be impossible to implement at this time. Third, should different universities, perhaps those with missions targeting quality teaching like McMaster or Loughborough University, be used to provide a more meaningful sample? Finally, do results point to a need for a far more concerted effort to get faculty understanding the vital role that effective learning outcomes can play in the development and delivery of courses and programs, while at the same time, emphasizing the student and their learning as key? This remains a challenging and long-term task. As Adam (2008, 17) stated

> the writing and implementation of learning outcomes is a formidable task that involves a huge staff development process as well as cost implications in terms of time and money. It is a massive undertaking … and this often takes years to accomplish.

Such undertakings need to be framed within the realization that there are both accountability and student-centered learning facets to the learning outcomes movement (Dobbins et al. 2016), but it is the learning aspect that will resonate best with teaching faculty. Whatever the cause of the current state of learning outcomes in course syllabi, this research has demonstrated that at the most basic level, there remains an inability to write quality learning outcomes at the world's leading universities.

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