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Skills, Competencies and Credentials

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1. Executive Summary

As Gallagher (2016a, p. xv) points out, universities, as well as offering an education, also deliver degree certificates to those students who successfully complete their studies. Along with this credential, a student receives a transcript that indicates the grade achieved (usually in the form of a grade point average) together with details of the courses taken and the individual grades for these courses.

This state of affairs does not serve most undergraduate students well: the graduating student's credential and the associated transcript indicate the extent of the student's knowledge of content, but neither directly conveys any information to employers about the level of the student's skills. As a result, employers, in respect of most undergraduate degrees, must infer the level of skills from information about content knowledge.

Some characterize this as an awareness gap: the students do not know their university education has helped them develop general skills. Some go further and assert that there is a skills gap: the graduates do not have the skills employers need. Either way, it reflects a failure on the part of universities to talk to students about the skill development inherent in their education.

In the meantime, we observe that employers advertising jobs claim they cannot find applicants with the skills needed for the positions. One such skill often mentioned is critical thinking, but when students are given a chance to take a test to tell them the level of development of their critical thinking, they apparently see no value in these tests, perhaps because they believe the results are not reflected in their grades.

Universities should accept that it is their responsibility to prepare their students for the workplace, which means they have to come to terms with the fact that content is actually the vehicle for skill development. Having helped the student to develop the skills, the universities also need to ensure that there is good evidence to support the claim that this skill development has occurred.

Learning outcomes, competency-based education and accreditation are attempts to address the problem, as are co-curricular transcripts, ePortfolios and curriculum mapping. But with only transcripts that record content knowledge at their disposal, employers are increasingly testing job applicants because the tests help them to make a match with the appropriate applicants. Meanwhile, the private sector is desperately looking for ways in which it is able to help the employers in this regard.

In response, universities could usefully work with each other and with employer groups to come to some agreement on both which skills are being developed and how they are most effectively assessed. Once this is resolved, the next step will be to embed these skills into the curriculum and include the outcome of the assessment of these skills in a concise student record that quickly and effectively tells employers what the

graduating student knows and can do. In short, the universities need to do all they can to help students make the match with employers.

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2. Introduction

As Gallagher (2016a, p. xv) points out, universities, as well as offering an education, also deliver certified, reliable credentials to those students who successfully complete their studies. Along with the credential, a student receives a transcript that indicates the grade achieved (usually in the form of a grade point average) together with details of the courses taken and the individual grades for these courses.

Many have pointed out that this state of affairs does not serve most undergraduate students well. This paper offers suggestions for how things might be changed for the better. But to make sense of these suggestions requires first some context and then some background material on skills, learning outcomes, competencies, assessment and accreditation.

3. Context: The Skills Gap

Much has been written in both Canada and the US about the existence or otherwise of a “skills gap.” A shortcoming of many contributions to this discussion is that the problem remains ill-defined, even while the solution is being outlined in considerable detail. Whatever the data does or does not reveal, it is unambiguously the case that we are, in the words of Weingarten, Drummond and Finnie (2015), “plagued with endless debates questioning whether Canada is producing graduates with the right skills.”

At the same time, surveys of employers indicate that “general skills ... not specific to a particular discipline” are what they are looking for. More specifically, employers say they seek students who are able to communicate, think critically and solve problems, who display resilience and creativity, and who work well in teams.¹ Whether this indicates a skills gap is debatable, but we have, at a minimum, a problem of perception: even if graduates do have the required skills, these skills do not appear to be on display.

There are those who claim a university education should not be about preparing students for employment. For example, Moore (2016), talking specifically with reference to the liberal arts, asserts that the argument should not be “graduates get respectable jobs with their degrees.” To be fair, the writer is more qualified in his language elsewhere in the article, but it would surely be more balanced to say that it is not only about “respectable jobs.” I say this because, whether the academy likes it or not, students go to university in the hope that this will help them get “respectable jobs,” and it is often these students (or their parents) who are most vocal in arguing they lack preparedness for the job market.

¹ See Weingarten, Drummond, and Finnie (2015).

Even if students are developing these skills, the perception thus far is that the students are not well prepared. Markovitz refers to this situation as an “awareness gap,” arguing that although “graduates may leave universities with transcripts and résumés, employers [are not] able to see many of the skills [the students have] developed through coursework and co-curricular activities” (Markovitz, 2017).

This gets to the crux of the issue: the graduating student’s credential and the associated transcript indicate the extent of the student’s knowledge of content, but neither directly conveys any information to employers about the level of the student’s skills. As a result, employers, in respect of most undergraduate degrees, must infer the level of skills from information about content knowledge.

Markovitz clearly believes that students do have the skills but employers have no evidence of this. This does not, however, rule out the possibility that students themselves also lack an awareness of their own skills. If they do, it is primarily because of a failure on the part of universities to talk to students about the skill development inherent in their education.

Fixing this problem is not all that universities need to do differently. For too long, content has ruled the roost. Universities need to accept that it is their responsibility to prepare their students for the workplace, which means they have to come to terms with the fact that content is actually the vehicle for skill development. Having helped the student to develop the skills, the universities also need to ensure that there is good evidence to support the claim that this skill development has occurred.

The current situation does not serve students well.

4. Skills

As noted above, employers say they are looking to hire individuals with strong general skills. In Canada an increasing number of students, once they complete their undergraduate degrees and, we hope, acquire these skills, are subsequently going to colleges for a second credential. In response, universities are offering certificates and diplomas that can be taken concurrently with, or subsequent to, baccalaureate degree studies; in either instance, students usually benefit from double counting of some credits. Why are students doing this? More often than not, they are seeking a credential that is more focused on a work-related set of skills (e.g., human resources) after completing a degree that, whether or not the students were aware of it, allowed them to develop their general or transferable skills.

One reason students are looking to broaden their skill sets is that a university degree is not the distinguishing factor in the employment market it once was. This is because, over the years, an increasing proportion of the 18–24 age group has gone to university and graduated successfully.

There was, of course, a time when high-school completion served as a distinguishing factor, but those days are past. The difference is that, so far as I am able to tell, when high-school completion was no longer deemed to be all one needed to get a job, nobody leapt to the conclusion that a high-school education was any less useful. By contrast, there is no shortage of commentators now who take delight in suggesting that pursuing a university degree is a waste of time because, they say, the graduates are not prepared for employment.

I do not share this view, but I do believe we would hear it being asserted less frequently if universities were to focus more explicitly on the development of students' transferable skills. Some universities have begun to do so, and the next two sections of the paper provide more detail about exactly what they have done.

5. Learning Outcomes

Recently, some universities including several in Ontario have begun paying attention to learning outcomes, which typically include an explicit consideration of skills as well as content. In Ontario, the forerunner to this came with the development in 2005 of guidelines for undergraduate degree-level expectations. According to the website of the Council of Ontario Universities, the guidelines “express the expected learning outcomes, skills, and creative and intellectual development that university undergraduates should possess upon completion of their degree.”² This observation notwithstanding, the guidelines say rather more about content knowledge than about skills, but they do mention “critical-thinking and analytical skills” as a sub-category of the student’s “depth and breadth of knowledge.” Additionally, “communications skills” are a category unto themselves and a final category with the title of “autonomy and professional capacity” includes a reference to “transferable skills necessary for ... employment.”

What is more striking is the explicit statement in the guidelines that students who are awarded an undergraduate degree must “have demonstrated” that they have met the guidelines. It follows that graduating students must have demonstrated they have developed the transferable skills necessary for employment. Despite this, there is typically no indication that the development of these skills was the explicit focus of their studies nor any suggestion that the level of these skills was at any time assessed.

The guidelines have now been in place for 12 years, but for a long time little if anything was done in universities to live up to the requirements of the guidelines. Recently, though, things have begun to change. In particular, the Higher Education Quality Council of Ontario established, and financially supports, the Learning Outcomes Assessment Consortium, a group of three universities and four colleges in Ontario. The

² See cou.on.ca/reports/guidelines-for-university-undergraduate-degree-level-expectations/, which also has a link to the guidelines themselves. In the spirit of full disclosure, I should acknowledge that I was involved in the development of these guidelines.

consortium’s website³ describes how the resulting “articulation and assessment of learning outcomes” is shifting “the focus from courses and credit hours to knowledge, skills and competencies.”

Queen’s University, one of the three universities in this consortium, is in the final year of a four-year longitudinal analysis of students’ development of a number of general skills, including critical thinking. The project’s website, as well as describing the work underway, also contains links to resources others are able to access and use. These include a practical guide to developing effective learning outcomes, which provides three “frameworks of learning ... to ensure alignment among the design, delivery, and assessment of learning.”⁴

Progress there is, but even though universities are now engaging in formal assessment of learning outcomes, they have not yet seen fit to regard the results of the assessment as worthy of inclusion in transcripts. Students’ needs are thus not being well served and, meanwhile, we witness the dialogue of the deaf between employers who claim graduating students do not have the skills that employers need and universities who, without any evidence to back up their claim, assert that they do.

6. Competencies

In a development that has clear links to the notion of learning outcomes, some US universities have for some time been paying attention to students’ competencies. In what has become known as competency-based education (CBE), students are expected to achieve mastery of a competency.⁵ A demonstration of mastery requires both a precise and clear definition of the competency and a measurable learning outcome (hence my suggestion that CBE has clear links to learning outcomes); until mastery is demonstrated, the student does not proceed.

CBE in some form dates back to at least the 1970s, but it came into prominence in the US a few years ago with American media making claims that there would be “no more semesters” (National Public Radio); that “traditional ways” would be “upended” (*Boston Globe*)⁶; and that we were facing a “college without classes” (*The Atlantic*).⁷ The most likely explanation for CBE being thrust into the limelight then was probably that

3 See www.heqco.ca/en-ca/OurPriorities/LearningOutcomes/Pages/Assessment-Consortium.aspx.

4 For more information, see the project’s website (www.queensu.ca/qloa/resources-0); for the practical guide, see Kolomitro and Gee (2015). Lest this be seen as an act of shameless self-promotion on behalf of my institution, I should also mention HEQCO’s handbook on learning outcomes, for which see Goff et al. (2015).

5 For a good overview of CBE, see Educause (2014).

6 For these two headlines, and a number of others, see Education Advisory Board (2015, p. 14).

7 Semuels (2015) uses these words as the title of her article about CBE in *The Atlantic*.

three major public institutions — Michigan, Purdue and Wisconsin — were all dipping their toes in this water at the same time.⁸

McClarty and Gaertner (2015) suggest that the “case for CBE is intuitively appealing”: instead of holding “time constant” (through the requirement of credit hours) and allowing different levels of achievements (through the assignment of grades), CBE holds achievement constant (the student reaches some level of mastery) but the amount of time spent varies from student to student. Craig (2016) argues that because programs offered in a CBE format “invert the seat-time model ... colleges and universities should be able to produce more competencies in less time and for significantly less money.”

For the US at least, this is an important aspect of CBE because, according to one estimate, almost half of all the students who begin a baccalaureate program fail to complete it (Craig, 2016). When students leave university without a degree, any credits they have accumulated typically count for little with employers. Building on the credits earned and at the same time helping the students to develop competencies — ideally ones that would be valued by employers — is, therefore, seen as a way of making the students more employable.

To the extent that this situation is a result of students’ inability to afford the cost of the conventional university credits, anything that takes less time and costs them less money is surely a good thing. Canada is quite different from the US insofar as it does not experience the problem of students leaving university without a degree to anything even remotely comparable. This perhaps explains why CBE has not attracted as much attention in this country.

The notion of CBE as an inversion of the seat-time model is, essentially, a declaration of war against the credit hour and, thus, the history of the credit hour itself needs to be understood when explaining the development of CBE. The credit hour first put in an appearance in the early years of the 20th century as a solution to the problem of how to provide faculty members with a pension.⁹ Despite caveats, both at the time and subsequently, with respect to the appropriateness of the wider application of the credit hour, 120 credits (four years of study, 10 one-semester courses per year, and three credits per one-semester course) became viewed as the measure of attainment for the baccalaureate degree. To be sure, this is less true when a student is seeking to transfer credits earned elsewhere; as Laitinen (2012, p. 7) puts it, “[t]hrough its everyday actions, the higher education system itself routinely rejects the idea that credit hours are a reliable measure of how much students have learned.”

⁸ See Fain (2014) for more details.

⁹ This, and considerably more, is wonderfully well explained by Laitinen (2012).

The virtually simultaneous introduction of CBE programs by Michigan, Purdue and Wisconsin changed the landscape. That large and highly regarded public universities were entering the fray caught people's attention and suddenly CBE was the next big thing. The reality has turned out to be a little different: the programs at these universities are "narrow in scope, experimental and not aimed at the vast numbers of undergraduates who come to those campuses for the traditional college experience" (Fain, 2014).

7. Assessment

Today assessment in universities is about determining how much the student knows. The notion that a course consists of a fixed number of credit hours is one reason why, at the end of the course, some students know more than others, with appropriate consequences for their grade and their rank in that course. Knowledge of content aligns well with such an approach, but the essence of CBE — mastery of a competency — does not because it sets the achievement level and allows students to spend as much time as they need to reach that level.

The credit hour first appeared on the scene about 100 years ago, but its introduction formalized what was already in place going back to the late 14th century when "Joan Cele single-handedly created the European model of the graded school, examinations for promotion, and ranking of students on the basis of merit" (Wilbrink, 1997, p. 34). The purpose of this process was, at the time, still to get students to the point where they "knew," which is to say could recite, religious texts with the incentive of being "more likely after one's death to be admitted to heaven" (Wilbrink, 1997, p. 32).

In this sense, mastery was for several hundred years alive and well and, moreover, assessed through testing, although it was not associated with competencies as the term is now used. The importance of mastery did recede, albeit very slowly: it took until the early part of the 20th century for what Wilbrink (1997, p. 39) calls the "competitive examination," the model of assessment that spawned the credit hour, to become well established. The purpose of this competitive examination was to establish how much a student knew and not much has changed over the last 100 years. In short, content still rules the roost.

This said, content is surely a vehicle for skill development: students learning this content at the same time develop competencies; in particular, development of students' critical-thinking skills is often cited. Perhaps because critical thinking is not assessed directly, tests like the Collegiate Learning Assessment (a standardized test of, among other things, critical-thinking skills) have become more commonplace in recent years and technology has enabled them to be more sophisticated and, as a result, more informative. They are, it must be said, still on the periphery of university education and assessment. Indeed, universities that administer such tests find that it is sometimes difficult to persuade students to take the tests; even if they do, the concern is that the students do not treat them seriously.

This all seems inherently contradictory. Students want jobs after their degrees. Employers advertising jobs claim they cannot find applicants with the skills needed for the positions, and one such skill often mentioned is critical thinking. But the students apparently see no value in tests that will tell them the level of development of their critical thinking. As I have said now several times, students' needs are not being well served.

8. Accreditation

Accreditation in a variety of guises is the norm in a wide range of regulated professions, including architecture, education, engineering, law, medicine and nursing. It serves to validate any academic program for which successful completion is a necessary precondition for entrance into the profession. For example, a graduate from an undergraduate engineering program will not be able to practise as a professional engineer unless that program is accredited. In some professions, graduation from an accredited program is all that is required. In others (e.g., law), students also have to fulfil other conditions.

Typically, the accreditation is conducted with reference to standards dictated by the accrediting agency. This is often a body representing the profession itself and the group of individuals who conduct the accreditation of a particular university's program typically includes those who teach in similarly accredited programs in other universities.

The accrediting agencies should, I would argue, ideally set standards based only on the assessment of an outcome such as mastery of competencies. But, perhaps because counting inputs is easier than measuring the quality of outputs, at least in universities, a typical accreditation is not above specifying required numbers of credit hours, maximum student-faculty ratios and the like.

Seeing a good thing, especially if it makes for more effective advocacy for more faculty positions, other university programs without such a direct connection to professions are now increasingly accredited. As an example, the Association of Collegiate Schools of Business was first established in 1916. It quickly became the American Association of Collegiate Schools of Business (AACSB) and is today, after a couple of other minor changes, AACSB International. It accredits business schools in over 50 countries¹⁰ but the accreditation it provides is not in any direct way connected with the professions that business schools serve.

Engineering accreditation, on the other hand, is very much a part of the profession that engineering schools serve. The Engineering Graduate Attribute Development (EGAD) project is an initiative that is worthy of a notable mention.

¹⁰ In Canada, 22 business schools are AACSB-accredited.

EGAD is not itself an accreditation process, but it is designed to provide assistance to engineering schools that are going through the Engineers Canada Accreditation Board (ECAB) process. More precisely, EGAD is designed with reference to the graduate attributes ECAB expects of students graduating from an ECAB-accredited engineering school. The engineering school must “demonstrate” that its graduates “possess the attributes,” which include general skills such as team work and communications. Thus, the programs of accredited engineering schools are required to pay attention to competency-based outcomes (although it is fair to say that some engineering schools accept this requirement only reluctantly).

9. Serving Students’ Needs Within Academia

I turn now to a discussion of how students’ needs might be better served. Kevin Carey, writing on this topic in 2013, was scathing about universities’ poor service to their students. From his perspective as an employer of baccalaureate graduates, he described transcripts as “horrible” with “no useful information about what [graduates] learned in school.” For good measure, he added that the value of universities’ credentials lay “solely in the alleged integrity of the granting institution” (Carey, 2013).

Carey’s suggested solution was to organize “evidence of students’ knowledge and skills” so that it was searchable, which required that the evidence “be tagged and assigned to specific learning objectives within a course.” He noted that to do this, professors would need to identify their learning objectives and “express them in a logical and orderly way,” and “cooperate within and among disciplines and institutions to achieve some semblance of order.” As he observed, such practices were not, to put it mildly, “universal” and he suggested that much of what was happening to address the shortcomings was “taking place outside the academy.”

There are, to be fair, developments inside the academy too. In the several subsections that follow, I focus on these before discussing in the paper’s final section why and where the private sector has been exploring opportunities to steal a march on universities completely.

Co-Curricular Transcripts and EPortfolios

Co-curricular transcripts (sometimes called co-curricular records) seem to be of relatively recent origin, although a paper in the late 1970s made a case for something similar.¹¹ Prepared by the student, a co-curricular transcript documents the student’s co-curricular activities with the purpose of both reporting these activities to interested parties (e.g., prospective employers) and encouraging the student to be

¹¹ See Brown and Citrin (1977), who proposed what they called a “student development transcript.”

purposeful in the selection of which activities to pursue. Given its function, the co-curricular transcript is clearly complementary to the standard academic transcript. It is, moreover, fundamentally different from the academic transcript insofar as it is prepared by the student and involves no assessment of the activities reported therein.

Many universities in the US and Canada have encouraged their students to chart their development using a co-curricular transcript and there is no doubting that this is a useful exercise for students and one that could be of benefit when seeking employment. Whether the co-curricular transcript itself is valued by employers is, however, more questionable.

The same could well be said of any complement to the standard transcript, another example of which is electronic portfolios, or ePortfolios.¹² Paper-based portfolios have long been used to good effect in some fields (e.g., fine art). The ability to produce an electronic portfolio expanded the application of portfolios to almost all fields of study, and many US universities were, by the early 2000s, “encouraging” or “even requiring” students to prepare ePortfolios.¹³

Like co-curricular transcripts, ePortfolios are not easily assessed and validated. Batson (2007) goes so far as to suggest that assessing an ePortfolio represents a case of a “learning idea ... hijacked by the need for accountability.” Undaunted, one university (the University of Wisconsin-Stout) has developed a rubric to facilitate assessment,¹⁴ which measures the success of the student in terms of criteria such as the selection of artifacts and work samples, the quality of the student’s reflections and the ease of readability of the ePortfolio’s layout. The employer must still, though, infer from the ePortfolio what he or she is seeking when recruiting for a position.

This last statement presumes that the employer takes the time to review the ePortfolio. Gallagher describes some of the challenges in this regard. For example, he cites a 2014 *Wall Street Journal* article that described hiring managers as “skeptical” about the usefulness of ePortfolios.¹⁵ Gallagher’s own interviews with major employers confirmed this. As one employer put it, “recruiting is a high-volume business,” meaning there is simply insufficient time to review in detail complements to the transcript and the résumé.¹⁶

12 The website of the University of Waterloo’s Centre for Teaching Excellence has an excellent and comprehensive description and analysis of ePortfolios. See uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/educational-technologies/all/eportfolios#Assessment%20of%20ePortfolios.

13 See Young (2002).

14 See <https://www2.uwstout.edu/content/profdev/rubrics/eportfoliorubric.html>.

15 See Korn (2014).

16 See Gallagher (2016a), page 115.

Comprehensive Student Record

In the summer of 2015, the Lumina Foundation announced that it had awarded US\$1.27 million to NASPA: Student Affairs Administrators in Higher Education¹⁷ and the American Association of Collegiate Registrars and Admissions Officers (AACRAO) in support of a joint project to develop “models for a more comprehensive student record” (Fain, 2015). The stated goal was to document “a broad range of student experiences, including co-curricular activities” as well as “learning from academic courses.”¹⁸

The approach NASPA and AACRAO took was to support 12 institutions representative of the “breadth and variety of American Higher Education,”¹⁹ with each of the 12 developing its own comprehensive student record. At the time, the registrar and associate vice-provost for student affairs at Stanford, one of the 12 universities selected, was quoted as describing the standard university transcript as a “record of everything the student has forgotten” (Mangan, 2015).

Some of the 12 institutions were selected not just for their willingness to try something different but also because they were already seen as “pioneers in the field” (Fain, 2015). Elon, for example, had a 20-year history of collecting and documenting students’ co-curricular activities and in 2013 this “experiential transcript” was made available to students together with the standard academic transcript as a single electronic document, its official status indicated by use of the university’s colours on the two transcripts.

The innovation made possible by the funding from Lumina was a visual co-curricular record, developed in conjunction with a third-party vendor. The same vendor also assisted Elon with the development of a web-based platform that converts information on a student’s co-curricular activities, uploaded as an Excel spreadsheet, into a visual format.²⁰ Bundling the co-curricular record with the academic transcript is certainly novel, but it is important to note that, whether bundled or not, the decision to document co-curricular activities is the student’s, not the institution’s. Nor, moreover, does the institution assess any activity included in the co-curricular record.

Stanford University’s focus was on enhancing the transcript so that, besides recording the grade awarded in a course, it also contained information about the learning outcomes associated with the course. Again, no

17 NASPA was originally an acronym for the National Association of Student Personnel Administrators, but this organization now uses the title of NASPA: Student Affairs Administrators in Higher Education.

18 See www.naspa.org/rpi/comprehensive-student-record.

19 See www.aacrao.org/docs/default-source/Lumina/csr-fact-sheet-4_2016.pdf?sfvrsn=0.

20 See www.aacrao.org/resources/resources-detail-view/growing-student-records-beyond-the-traditional-transcript for more information on Elon University’s project. See also www.aacrao.org/resources/record, which includes links, listed under “2016 Institution Feature,” to descriptions of all institutions’ projects.

assessment is included: anyone reading the transcript would probably still have to infer from the grade how well a student achieved the outcomes.

Neither of these examples goes as far as some might think necessary to serve students' needs well. The projects of two other institutions do, however, go much further. The University of Maryland University College (UMUC) worked closely with the University of Wisconsin Colleges and the University of Wisconsin-Extension as both developed competency-based, visual records of performance to support the forays UMUC and Wisconsin were conducting into competency-based education. I return to this initiative below.

Curriculum Mapping

In 2005, the Association of American Colleges and Universities (AAC&U) launched Liberal Education and America's Promise (LEAP),²¹ a key element of which was the development (in 2009) of a set of rubrics designed to assess learning outcomes. Each learning outcome has its own rubric, which defines the "fundamental criteria for each learning outcome" and provides "performance descriptors" for "progressively more sophisticated levels of attainment."²²

The AAC&U stresses that the rubrics are intended to "position learning at all undergraduate levels within a basic framework of expectations," which is to say they are not designed for the purpose of grading. They are, essentially, definitions of different levels of competency and it is left to the university to determine what level of competency it expects of its students at different stages of an undergraduate program.

This means that a university may, for example, expect students to reach what is called the "capstone" level before graduation, but not necessarily at the point of graduation: some students may reach this level sooner than others, which serves to illustrate the similarity between this approach and competency-based education. Ultimately, it is about mastery.

A critical element of the rubrics is that they are designed to score existing student work. The assignments do, of course, need to be constructed in such a way that they make this possible, but the AAC&U argues strongly for this approach over, for example, standardized tests such as the Collegiate Learning Assessment. Certainly one of the AAC&U's justifications for this claim ring true: because those taking the CLA perceive there to be no consequences, they are "not motivated to do their best work."²³

21 See www.aacu.org/leap.

22 See www.aacu.org/sites/default/files/files/VALUE/PartsofaVALUERubric.pdf.

23 See www.aacu.org/value-faqs.

The term curriculum mapping refers to the process of designing the work students are required to do so that it aligns well with, and allows assessment of, the learning outcomes. This is best undertaken from the point of view of the program. It is not a trivial exercise. Nor is the assessment against the levels of achievement, which ideally needs to be validated through, for example, standardized tests (with all their attendant disadvantages).

The return on the investment involved is equivalently significant, not least because it embeds the assessment of learning outcomes in the course and program assignment so that students are indeed motivated to do their best work. Moreover, the exercise opens the door for a comprehensive student record that shows both the grade for the course based on content knowledge and the level of mastery with respect to the learning outcomes.

Competency-Based Education

The earlier discussion of comprehensive student records made mention of two projects funded by the Lumina Foundation that are based on competency-based credentials rather than co-curricular records or ePortfolios. In the case of the University of Maryland University College (UMUC), many of its students are professionals seeking to advance their careers and the programs it offers are designed with this target audience in mind.

The associated student records, too, are thus designed, and are consistent with the university's goal of ensuring that its students achieve mastery: as UMUC's registrar makes clear, "they cannot pass until they have mastered the competencies." This is very deliberately different from a co-curricular record or an ePortfolio, insofar as the credential provides access to "university-verified artifacts," not a "student curated set of information."²⁴

Interesting and innovative though this is, it does not translate easily to the world of the regular undergraduate student. The comprehensive student record project of the University of Wisconsin Colleges and the University of Wisconsin Extension (UW-Extension) is, on the other hand, associated with undergraduate degrees, albeit "self-paced, competency-based options" for working adults to complete these degrees, a stage they will only reach when they have mastered all associated competencies. In both cases, the programs are competency based in the sense that mastery of the competencies is expected of the students. UMUC and UW-Extension are working together on the development of a pilot competency record, a digital transcript that UW-Extension calls a SmartScript. This is intended to provide

²⁴ See www.aacrao.org/resources/resources-detail-view/a-record-of-lifelong-learning.

employers with a complete picture of what the student can do and UMUC states explicitly that it is working with employers to ensure that the student records align with their needs.

Even though UW's focus is on undergraduate students, four of the five competency-based options they offer are B.Sc. degrees, all of them in quite specific professional areas (Nursing, Biomedical Sciences Diagnostic Imaging, Information Science and Technology, and Business Administration).²⁵ Ultimately, it seems, these competency-based programs are as narrow in scope as those others discussed earlier, and described thus, by Fain (2015).

10. Serving Students' Needs Beyond Academia

In light of the foregoing, it is not, I believe, unreasonable to suggest that academia has a long way to go before it is serving students' needs in the way that is required if the claims about a skills gap are ever to become a thing of the past. Gallagher (2016b) discusses in some detail what universities could do to "enhance the job-market value of their academic credentials." He proposes, for example, involving "employers and industry groups ... in the development of curricular offerings," and although the naysayers will probably be apoplectic at this suggestion, he builds a powerful case, outlining his arguments carefully and exhaustively.

In this context, competency-based education is certainly, to quote Gallagher again, at the "epicenter of the dialogue about greater alignment between higher education ... and employment" (Gallagher, 2016a, p. 160). Among the different approaches I have discussed above, I regard curriculum mapping, not competency-based education, as having the most promise from the point of view of serving the needs of the majority of undergraduate students. Whatever universities do, they must do it in close consultation with employers.

This consultation will need to bear in mind that there is some question as to whether employers understand what skills they need from graduates. It is also less than clear that employers' hiring practices would find these skills even if they were there. Gallagher quotes a 2015 survey of almost 500 hiring managers that found that employers were "generally unable to articulate discrete needs as competencies" (Franklin and Lytle, 2015, p. 11) and tend to rely on "fit" rather than competencies. In particular, many employers had not heard of competency-based education and those who had were hard pressed to provide a definition.

This is clearly a major challenge and probably explains why, as noted already, students are often reluctant to spend the time required to allow the universities to assess the level of their skill or competency. Individuals make investments of time when they see the value of the exercise. Why should students believe the

²⁵ See <http://www.aacrao.org/resources/resources-detail-view/smartscrip--a-model-competency-based-transcript>.

universities' claims that there is value in skills assessment when this value is not reflected in what those doing the hiring say when they are seeking to fill vacant positions?

As academia moves at its own sedate pace to navigate these turbulent waters, the private sector is hard at work trying to solve employers' challenges. One particular approach advocated by Ryan Craig is a "competency management platform," the purpose of which is to facilitate recruiting by including in the platform "search and sorting features" or "proactive sourcing, versus 'posting and praying' " (Gallagher, 2016a, pp. 115–116). One such product, *Portfolio*, is described on its website as the "search engine" for university recruiting.²⁶

A similar approach is probably what was behind LinkedIn's acquisition of *Lynda.com* and its courses and the subsequent introduction of LinkedIn Learning, which, as the promotional literature says, "will help people discover and develop the skills they need."²⁷ This approach is not without its critics, one of whom describes LinkedIn's mistake as "generalizing [*Lynda.com*'s] pedagogical approach as the solution for job-skills training" (Hill, 2016). Universities would do well to give thought to building on their own pedagogical approaches so that they might improve on the products of LinkedIn, because LinkedIn will, without question, continue to enhance what it is doing.

Meanwhile, other large private entities are not sitting idly by. Facebook was recently described as "trying to muscle in on LinkedIn's sacred grounds" when it "confirmed that it was experimenting with a suite of sourcing tools to capitalize on the boom in social recruiting" (Bagai, 2016). Google's introduction of Cloud Jobs API is attempting to create better matches between employers and potential employees by replacing the "industry- and company-specific jargon that job seekers do not search for" with equivalent information that better aligns with the search criteria used by potential employees.²⁸

11. Conclusion

Universities must come to terms with two facts: first, their undergraduate programs are where general skills are developed and second, it is these skills that make the graduates of these programs employable. Universities need to work with each other and with input from employer groups to the point where they agree on both what these skills are and how they are most effectively assessed. Once this is resolved, the next step will be to embed these skills into the curriculum and include the outcome of the assessment of these skills in a concise student record that quickly and effectively tells employers what the graduating

26 See blog.portfolium.com/10-reasons-kill-campus-recruiting-2016/. As an aside, it is perhaps noteworthy to mention that Troy Markovitz, who, as I noted above, believes the skills gap is actually an awareness gap (Markovitz, 2017), is a vice-president at *Portfolio*.

27 See learning.linkedin.com/blog/whats-new/launching-linkedin-learning#!

28 See cloud.google.com/jobs-api/.

student knows and can do. In short, the universities need to do all they can to help students make the match with employers.

The implications for curriculum delivery, especially as it relates to assessment, are profound, but a curriculum that explicitly includes embedded assessment of the competencies acknowledged by employers to be the ones they seek is worth the effort. If universities do not begin to expend this effort, the private sector could very well enable students to make matches with employers in ways that render an undergraduate degree much less valuable than it is today.

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