An Academic Dictionary: Defining Academic Terminology Differences Between Australia and the United States

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ABSTRACT

CONTEXT

In the pursuit of global collaboration and knowledge dissemination in academia, clarity in terminology is essential. However, differences in academic language between regions like the United States and Australia, can hinder effective communication and collaboration, especially when these differences go unrecognized.

PURPOSE OR GOAL

This study aims to bridge the gap in academic language between the United States and Australia within the context of engineering education research and enhance global collaboration. The primary goal is to define and compare key academic terms specific to both regions, providing a comprehensive resource for researchers navigating international collaboration.

APPROACH

The terms included in this paper were identified through years of informal conversation about the U.S. and Australian educational systems. Recent work published in the International Journal of Qualitative Methods calls for the use of informal conversations in qualitative data analysis. Key terms such as "faculty," "department," and "college" are defined and compared between the two regions, and real-world examples are provided.

OUTCOMES

Outcomes include a comprehensive understanding of academic language differences between the United States and Australia within engineering education research. The study is expected to provide translational tools to support fruitful discussions and evidence-based practices in educational settings. By addressing terminological disparities, this research aims to facilitate more effective global collaboration and knowledge dissemination in engineering education.

CONCLUSIONS

Explicit terminology definitions are imperative for overcoming communication barriers in engineering education research. These findings contribute to the existing body of knowledge by highlighting the importance of addressing terminological disparities in global collaboration efforts. Recommendations include implementing translational tools to promote clearer communication and enhance collaboration between researchers from different regions.

KEYWORDS

academic terminology, global collaboration

Introduction and Purpose

Different countries' academic systems are often structured differently and commonly use different terminology to refer to different elements of said system. For example, first year students are commonly referred to as freshmen in the U.S. and U.K. higher education systems but not in the Australian context. While some of these differences may be easily searched for a definition or explanation online, others are not. A lack of clarity or understanding of these differences can make it challenging to translate research and practice between contexts, having several implications. Beyond individual understanding and thus translation of research between context seamlessly, these differences can hinder collaborations, making effective communication from a shared understanding of language difficult (Borrego & Bernhard, 2011; Borrego & Newswander, 2008; Deters et al., 2023; Lucena et al., 2008; Xian & Madhavan, 2012).

This paper aims to offer a resource to aid engineering education researchers and engineering educators adopting evidence-based practice in working between Australian and US contexts or translating between these contexts and their own. We believe such a resource is important in responding to the call for the need to bridge gaps in engineering education between international contexts (Borrego & Bernhard, 2011) as well as, democratizing knowledge from those with the experience and privilege of working collaboratively across sectors, to those who may not have the privilege of established relationships. It aims to answer the question - what are the key terms and definitions used in engineering education in the U.S. and Australia.

The US and Australia are often used as comparative position points when discussing engineering education research fields (Borrego & Bernhard, 2011; Deters et al., 2023; Klassen et al., 2023) due to vast synergies between the contexts as outlined in Deters et al, 2023. Further, as commented by Klassen et al. (2023), "the US is widely studied and often implicitly positioned as the benchmark ... of EER" while "Australia, while small in relative size, has a quiet reputation for its robust and impactful field of EER".

Methods

The research team used informal conversations (Swain & King, 2022) to form the underpinnings of this paper. During a conference in September 2023, the undergraduate U.S.-based research student, Author 1, commented on the linguistically different terms the Australian based researcher, Author 2, used in conversations with U.S.-based researcher, Author 3, about scholarship and practice. The author team noted the challenges that could arise from such nuanced language differences, where the same terms are used across contexts but often have different meanings.

Given the aim and scope of this paper, informal conversations were deemed an appropriate method to use in this context. That is, the authors wanted to draw on the wealth of knowledge and experience of Authors 2 and 3 on elements that are seldom defined or, where defined, only done so through specific university documentation. As this is intended as a resource that goes beyond an individual institution, we did not want to tie the definitions and descriptions back to an individual institution.

Before a subsequent conference in December 2023, Author 2 and Author 3 met to brainstorm and discuss all key terms associated with their teaching, classroom-centric educational research, and scholarship of learning and teaching practice. The notes associated with these conversations formed the basis for this paper that was worked on collaboratively by all authors with the main body of the draft being prepared by Author 1. Due to institutional variety within each country, our terms and definitions may not universally apply to all institutions within each country, but aim to hold true for the majority of institutions. The intention of this work is to aid scholars in interpreting work from the U.S. and Australian contexts, respectively, and to foster communication and collaboration across contexts.

Research Team Positionality

The two early career researchers on the team developed a working relationship thanks to investments made by mentors in the field. This relationship has been furthered by working collaboratively over the last 4.5 years on research projects and coordinating conference attendance schedules. While working on a prior project understanding experiences of academics in Australian and U.S. contexts, we recognized that linguistic differences existed between the contexts, constantly translating between the two in discussing results and developing manuscripts. While recognized earlier, the importance of sharing about these differences was underscored when discussing research and practice with the undergraduate research student team member at a conference in 2023. The team decided, in the interest of democratizing the shared understanding developed from years of working between sectors, it was important to publish our shared reflections.

Both early-career researchers have received formal training in engineering education. Author 2 has a Ph.D. dissertation and has worked in engineering education for nine years across five Australian institutions, collaborating with multiple other Australian institutions on projects. Author 3 received a Ph.D. in Engineering Education from a U.S. institution, and has a cumulative eight years of experience in the engineering education field (one years as an undergraduate student researcher, five years as a graduate student, and two years as an assistant professor). Author 1 is an undergraduate student at the same U.S. institution as Author 3. She is a rising fourth-year (senior) in Mechanical Engineering and has been conducting engineering education research as an undergraduate student researcher for two years, under the mentorship of Author 3. To date, Author

1 has authored six peer-reviewed conference proceedings and conducted data collection and analysis across multiple projects.

Limitations

The researchers acknowledge that there is a lot of variety within each context. While we have attempted to provide general standardized definitions, we keep in mind that terminology may vary between universities across each context. We have aimed to write this paper using language and definitions that would resonate with the widest variety of the engineering education field.

Discussion

Degree Program Context

The Academic Year and Semester Structure

In Australia, the academic year runs from February to December and is typically broken into 2 semesters beginning in February and July, Semester 1 and Semester 2 respectively. A select few universities run on a trimester schedule where teaching is almost continuous throughout the year, termed Trimester 1, 2 and 3. Some universities also make use of intensive mode teaching in the summer and winter breaks between semesters. Each semester typically follows a pattern of 13 or 14 weeks of teaching inclusive of 1 week of mid-semester break, a week of exam preparation or study vacation (Stuvac or SWOTVAC), followed by 2-3 weeks of examination and final assessment period. The largest pool of student intake occurs for February commencement, with a lower proportion at mid-year.

In the United States, the academic year runs from August to May and is typically broken into two semesters beginning in August (fall semester) and January (spring semester). Some universities operate on a quarter system or other non-semester scheduling, but nearly all universities operate on an approximately August to May academic year. Similar to Australia, it is common for universities to offer compressed courses during winter and summer terms. Each semester has approximately 16-weeks. The fall semester often includes breaks for Labor Day (one day), Fall Break (one to three days), and Thanksgiving Break (three to five days). The spring semester often includes breaks for Martin Luther King Jr. Day and/or Presidents Day (one day each) and Spring Break (one week). Many universities have a “finals week” as the last week of the semester, though it is common for classes to continue until a few days before finals begin. Most students begin their studies in the fall semester. The typical, advertised time-to-completion is four years (or eight semesters); however, it is not uncommon for students to take nine or ten semesters to complete their engineering degree. The largest portion of students typically graduate in the May commencement ceremony, though universities often offer a December and sometimes August commencement ceremony as well.

Degree Programs

In Australia, students looking to enter practice as professional engineers will typically enroll in a variation of a Bachelor of Engineering (Honours) degree program. These programs will typically have a specialization or specific field of engineering declared (e.g. mechanical engineering, civil engineering, environmental engineering). Many institutions offer common enrollment pathways, allowing students to declare a specialization at a point (commonly end of first year) during their degree program. These programs will typically be accredited by Engineers Australia (see accreditation) such that the awarding of the degree program serves as a direct entry into professional engineering practice in Australia. As Australian engineering degrees are commonly designed around the principles of outcomes-based education, the core (mandatory) elements cover key concepts outlined in the accreditation standards.

The degree programs comprise a series of core (mandatory) and elective (optional) subjects of study. Electives are typically selected from a pre-approved list that typically relates to or covers engineering related concepts. When students should take which subjects while working towards a degree program are outlined in course or programs outlines. Students must pass every core subject listed and a suitable number of electives to graduate with their degree program (see grades). That is, achieve a minimum grade of 50% in each subject. There may be additional requirements for graduation such as completing an internship or work integrated learning placement.

In the United States, students intending to earn an engineering degree will enroll in a Bachelor of Science in [discipline] Engineering degree program. These programs are most often discipline specific (e.g., mechanical engineering, civil engineering, electrical engineering, etc.). Many institutions have common requirements for engineering students across the first two years, so students do not typically begin taking exclusively major-specific courses until their third-year (junior year). Engineering programs in the United States are accredited by the Accreditation Board for Engineering and Technology (ABET) and must meet the standards set by the accreditation criteria.

The degree program comprises a series of required and elective courses. Required courses are comprised of major-specific courses and general education requirements. Often times, students are given the option of several approved courses to meet any given general education requirement. Elective courses are typically selected from a pre-approved list and typically relate to technical or non-technical engineering concepts. Most universities offer a suggested curriculum or plan of study to help students plan out each semester. It is common for required courses to be pre- requisites for the next course in the series, and this highly sequenced curriculum can be a reason that students take more than four years to complete their degrees. Universities set their own internal requirements around the minimum grade that students must earn in each course in order for it to count towards their degree. Individual degree programs and colleges may also set their own grade requirement. It is common to require students to earn at least a “C” – or above 70% – for a class to count towards graduation requirements.

Typical Award Duration and Subject Loading

In Australia, B.Eng (Hons) degree programs are typically 4 years full time equivalent loading. A full-time equivalent load is considered 4 subjects per semester totaling 8 subjects per year. Each subject commonly has an equivalent loading and runs for a semester in duration. There are some exceptions to this, for example, it is common for capstone or final year project subjects to run over 12 months and be worth the weight of 2 subjects (although enrollment is commonly managed through 2 separate subjects, each ‘running’ for a semester in duration). A select few universities run on a trimester schedule where a full-time equivalent loading is equal to 3 subjects per trimester totaling 9 subjects per year. Commonly, a full-time load (4 subjects) is considered equivalent to 48 hours of work per week, split between all learning and assessment activities including self-study. This is approximately 12 hours work per subject per week.

In the United States, B.S. in engineering degree programs are typically advertised as four-year programs, but require somewhere around 130 credit hours (exact credit hour requirements vary by university). A credit hour measures educational credit, based on the number of classroom hours per week throughout a term. For example, most lecture courses meet two or three times a week for an hour and fifteen minutes or fifty minutes, respectively. These lecture courses are three credit hours, or credits. Lab courses are typically one credit hour, and recitation courses are often considered within the lecture credit hours (i.e., you may take a three-credit hour course with two hours of lecture every week and a one-hour recitation). A student is considered a full-time student if they are taking at least twelve credit hours in a semester. A student taking fewer than twelve credits is considered part-time. A typical course load for full-time engineering students ranges from twelve to eighteen credit hours. Full-time status is required for certain fellowship and financial aid opportunities; full-time students are often given additional campus resources or opportunities (e.g., wellness center access) included in their student fees.

Accreditation Systems

A person must hold an accredited professional engineering degree program equivalent to the International Engineering Alliance’s Washington Accord standard to practice as a professional engineer in Australia (Engineers Australia, 2024). It follows that it is advantageous for universities to offer accredited engineering degrees. In Australia, this accreditation of engineering degrees is undertaken by Engineers Australia. Typically, a university will prepare a self-study report against a range of areas and criteria including things like mapping curriculum against the Engineers Australia Stage 1 Competencies for the Professional Engineer. A panel of peer experts then review this documentation, visit the institution holding formal interviews before detailing a report on how said institution meets the set-out criteria, making recommendations for improvements where necessary.

Accreditation is undertaken every 5 years by every institution on a rolling cycle (i.e., not every institution undertakes it concurrently). A full list of accredited degree programs is available publicly.

In the United States, ABET is the accrediting body for engineering programs. ABET’s accreditation policies and procedures are updated annually and detailed on their website (ABET, 2023a).

Specific engineering accreditation criteria are also updated annually and detailed on the ABET website (ABET, 2023b). A significant amount of work has been published about the ABET accreditation process, including papers about individual institutions and the accreditation system as a whole. From a comparative lens, Klassen’s work investigates accreditation across several countries, including Australia and the United States (Klassen, 2018, 2023; Klassen et al., 2023).

Subjects and Subject Delivery

Teaching Staff and Academic Appointment Types (General workforce structure and entry to workforce points)

In the Australian, higher education sector employees are classed as either ‘academic’ or ‘professional’ in nature. Academic staff are associated with teaching and research having appointments that are research only, teaching and research or teaching/education focused. These categories represent the proportion of one's time spent on teaching and/or research activities. Appointments can be casual (by work schedule agreement), fixed-term (a set period, e.g. 2 years) or continuing (on-going provided performance criteria are met). Appointment classifications, requirements, entitlements and renumerations are outlined in Enterprise Agreements at each institution. Appointments also have levels associated with them including Associate Lecturer (Level A), Lecturer (Level B), Senior Lecturer

(Level C), Associate Professor (Level D) and Professor (Level E). Most academics will begin their non-casual careers in Australia on fixed-term Level A or B roles, although, recent sector reform is attempting to reduce the reliance of a casualized and fixed-term workforce. Academics typically are hired, in part, for holding a PhD in engineering or a related discipline. There are an increasing number of professors of practice being hired throughout the sector, that is, those without a PhD being hired for their expertise and experience in the engineering industry.

n the United States, universities often classify their employees as ‘faculty’ or ‘staff.’ Faculty roles can vary and include tenure-track and non-tenure-track roles. Tenure-track roles are often research-intensive with teaching and service expectations and include three ranks: (1) assistant professor, (2) associate professor, and (3) professor (sometimes called ‘full professor’). Typically, when an assistant professor earns tenure at the end of their six to seven-year probationary period, they are also promoted to associate professor. Non-tenure-track faculty roles are often called Lecturers, Teaching Faculty, or Professors of Practice – the exact name varies by institution. The promotion opportunities for non-tenure-track faculty are also determined by individual institutions. Some universities hire Adjunct Professors, who are contracted on a semester-basis to fill specific teaching needs. Staff roles are often administrative support serving various functions from office management, financial, IT, advising, etc.

Subject Curriculum

Subjects in both Australia and the United States typically have a singular area of focus (e.g. introduction to programming, advanced thermodynamics, calculus). In Australia a unit outline, called syllabus is provided to students outlining the course objectives, expectations, grading policies and schedules. In Australia these are public information published in advance of the semester on Faculty pages. In the United States, syllabi are also provided to students for each course by their instructor, but are often shared directly with students rather than published publicly online.

In Australia, the specific curriculum that is encompassed by a subject is typically approved by a Faculty and/or Department Learning and Teaching Committee. Particularly in the case of core (mandatory) subjects, this is to ensure that the curriculum across a degree program meets accreditation requirements. The teaching and learning activities and assessment schedule have more flexibility to be adapted to the subject coordinator's preferences, although often still require institutional approval.

In the United States, the degree program’s curriculum is typically managed by each individual department. Changes to the curriculum typically must be approved by the university, often via a university curriculum committee. Within individual courses, instructors have flexibility in determining how to meet the learning outcomes. However, some courses – particularly large courses taught to all students, like calculus or first-year engineering – may impose stricter expectations on instructors, like common assignments or exams.

Teaching and Learning Activities

Delivery of Australian engineering subjects is commonly made up of a lecture or workshop coupled with a tutorial and/or practical session. A lecture is typically comprised of a lecturer delivering concepts and their application didactically to students either onsite in a lecture theatre or online through platforms like Zoom. These lectures may also have some activities in them, although the dominant focus is on lecturers delivering content to students. Workshops have varying definitions and ways of being employed. Often workshops refer to a session where concepts presented in a lecture or online in flipped classroom modules are revised and then applied in a facilitated manner. This facilitation may be done by lecturers in large scale formats or by casual tutors or demonstrators in small group teaching (typically around 30 students). A tutorial is like a workshop, undertaken exclusively in small group teaching (typically around 30 students) where students apply concepts to different problems or work through different activities related to the subject. A practical or laboratory session is typically where students undertake an experiment or work with hardware in both wet and dry laboratory rooms.

In the United States, course structures vary by institution and instructor. It is common for instructors to be given a set amount of time (e.g., three 50-minute sessions per week), which they can choose to use for lecture, small-group work, etc. Some courses are taught as laboratory courses or have a lab component (like chemistry). Other courses may include a recitation, which typically offers supplemental time for interactive learning. A typical lecture course involves an instructor delivering content to a large group of students through scheduled lectures, often supplemented by homework assignments, group projects, and exams. Lecture courses are sometimes supplemented by recitation and/or labs for more interactive learning. A recitation course is a supplementary class designed to reinforce understanding where students often review material from lectures in smaller student groups with a teaching assistant (TA). A lab course often supplements a lecture course as well and involves hands-on experiments on concepts learned in lecture. Supplementary labs are often taken during the same semester as the lecture course, while recitations are always taken in the same semester as the lecture course.

Assessment, Marking Structures, Grade Point Average (GPA) and Weighted Average Mark (WAM)

In Australia, at the end of a semester students' cumulative grades are calculated, resulting in a ‘final result’ for each subject. This final result is presented both as a percentage and a letter grade. The letter grades used are commonly pass, credit, distinction and high distinction with the percentage bounds on what defines each letter grade beyond a pass varying between institutions. A pass is commonly defined as 50-59%, a credit as 60-69%, a distinction as 70-79% and a high distinction as 80-100%. Some subjects also have additional hurdle requirements that must be additionally met for students to pass the subject. For example, it may be that students are required to achieve a minimum of 45% on all continuing assessments and their final major assessment, it might be that they are required to attend a certain number of classes.

In Australia, grade point average (GPA) and weighted average mark (WAM) are seldom used outside of official academic transcripts. Not all universities adopt the GPA model, however, most leverage the WAM system. In Australia the grade point average is either calculated on a 4.0 or 7.0 scale. In GPA, the letter grade of the final result in each subject is converted to a corresponding number that is then averaged across all subjects taken based on the weight of the subject’s load (i.e., if it is 1 or 2 semesters in length). Comparatively, in WAM the final grade is averaged across all subjects taken based on both the weight of the subject’s load and the level of the subject. Different institutions weigh the level of the subject differently, for example, reducing the weight of the subjects taken in the first year or increasing the weight of subjects in later years.

In the United States, students receive a ‘final grade’ in each course at the end of the semester; this grade will go on their transcript as a letter grade. A common grading scale is: 97-100% A+, 93- 96.9% A, 90-92.9% A-, 87-89.9% B+, 83-86.9% B, 80-82.9% B-, 77-79.9% C+, 73-76.9% C, 70-

72.9% C-, 67-69.9% D+, 63-66.9% D, 60-62.9% D-, and below 60% F. This scale can vary, with some institutions not offering an ‘A+’ option, some instructors opting out of +/- scoring, and some instructors offering ‘curves’ and slightly changing the percentage range for each letter grade.

Assessment structures vary by instructor but typically include homework, quizzes, exams, and/or projects. The final grade for a course is often a weighted combination of these assessments, such as 20% homework, 20% for each of the three exams, and 20% for a final exam.

In the United States, grade point average (GPA) is commonly used across universities. Students’ GPA appear on their transcripts. GPAs are often used by companies to screen candidates, and companies, scholarships, and graduate schools often have a minimum GPA requirement. GPA is calculated as a weighted average of grades (i.e., the more credit hours a course has, the more that course will count towards your GPA). At UNL, GPA functions on a 4.0 scale, as a 4.0 is an A or A+, a 3.67 is a A-, a B+ is a 3.33 … a D- is a 0.67 and an F (fail) or W (withdraw) is a zero.

Conclusion

This paper has provided an overview of higher education systems and engineering education in Australia and the United States. This work is intended to be useful for facilitating collaboration and communication among engineering education scholars situated in Australia and the United States, respectively.

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