The WREASN Typology of Student Involvement Activities

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***Abstract*—This Research Work in Progress paper presents a typology for categorizing undergraduate extra-curricular activities. We observed that the all of the activities listed on a corpus of student resumes could be fully described by defining two levels of identifiers, the first of which describes the *type* of activity while the second is a *descriptor* of the activity. As a proof of concept, the typology was applied to resumes of participants in a program that serves underrepresented students studying engineering at a large public R1 institution. Simple descriptive findings are reported, and potential future applications are discussed.**

Keywords—co-curricular activities, extra-curricular activities, typology

Several studies show that participation in extra- and co-curricular activities in college is related to enhanced academic performance and graduation rates, in addition to personal development outcomes. Astin's Theory of Involvement [1] posits that greater student involvement, defined as the quantity and quality of energy invested in the college experience, including participation in extracurricular activities, results in greater positive changes in learning and personal development outcomes. Building on Astin's work, Foreman and Retallick [2] found that the number of extra-curricular clubs in which a student participated was associated with leadership outcomes and suggested that the optimum number of extra-curricular involvements was 3 or 4. In a study of undergraduate engineering students, Wilson et al. [3] found that involvement in both academic and non-academic co-curricular activities was positively related to academic emotional engagement.

Research also suggests, however, that different types of extracurricular involvements may have differential effects on student outcomes. In a study of extra-curricular involvement of traditionally underrepresented college students, Baker [4] found that while participation in varsity or junior varsity sports was not a significant predictor of academic performance for any of the studied groups, involvement in political organizations was found to have positive effects on grades for Black males and Latino students of both genders, while artistic involvement had a positive effect on grades for Black students of both genders. When Wilson and colleagues investigated the relationships between specific co-curricular activities and academic engagement, the authors found that only participation in professional societies, university communities, faculty-led groups, and informal study groups had significant positive links to academic engagement, while involvement with a sorority, fraternity, and organizations geared towards women and minorities were found to have negative relationships to academic engagement [3].

While it has been shown that participation in extra- and co-curricular activities is a significant contributor to positive student experiences and academic outcomes, such participation is generally not well documented. One promising and readily available source of such information is student resumes, which are stored in databases maintained by university career centers. Because resumes target potential employers and are typically limited to a single page, they may not be ideal sources from which to glean a full picture of student involvement. Nevertheless, they can provide a glimpse of what activities students believe are important to potential employers.

In this work, we analyzed student resumes obtained from career center databases using a latent coding methodology, cross referencing against a database of student organizations. The purpose of the analysis was to define and describe the types of activities in which students participated. The resumes were used as a data source, and no attempt was made to connect student participation in various types of activities to professional ambitions and/or attainment. Nevertheless, we believe that the activities students list on these resumes can be used to define a typology of the various activities in which they participate.

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From the resumes, we observed that the all of the listed activities could be fully described by defining two levels of identifiers, shown in Tables I and II. The first describes the ***type*** of activity: Work (W), Research (R), Entrepreneurial (E), Academic (A), Student organizations (S), and Non-student organizations (N), hereafter referred to as WREASN. The second is a ***descriptor*** of the activity: STEM-related, international, athletic, community engagement, social, professional, identity-based, leadership, teaching, and diversity/multicultural.

TABLE I. TYPE OF ACTIVITIES IN THE WREASN TYPOLOGY

Symbol	Type	Description	Example
W	Work	Any paid or unpaid employment experience	Job, internship
R	Research	Research position with a faculty member or laboratory	Lab assistant
E	Entrepreneurial	New business endeavor initiated by the student	Start-up founder
A	Academic	Coursework related experience	Capstone design experience
S	Student Organization	Recognized student-run campus organization	Society of Women Engineers, Solar Car Team
N	Non-student organization	Organization or unit that is not student-run that may or may not be affiliated with the university	Boy Scouts, Marching Band

In this typology, a given activity could be of only one *type*, but may have multiple *descriptors* associated with it. Table III shows examples for the coding for hypothetical listings on a resume. The first entry is related to employment (W) at an engineering firm (s) in Europe (n) and is thus coded W-sn. Student often also list projects they completed as part of their coursework to demonstrate various technical competencies to potential employers. Therefore, the second entry in Table 3 is listed as A-s, indicating that this activity is Academic and STEM-related. The third listing in Table 3 illustrates the power of the WREASN typology in codifying the complex and often multifaceted nature of student activities. The National Society of Black Engineers (NSBE) is a student organization (S) related to STEM (s) serving the Black student population (i). Additional descriptors require a closer look at the mission of NSBE, which is "to increase the number of culturally responsible Black engineers who excel academically, succeed professionally and positively impact the community." Thus, the codes p and c should be added. It could be argued that this organization could also carry the Diversity/Multicultural descriptor, but we chose to differentiate organizations that serve the needs of specific groups, which we refer to as Identity-based, from those that promote or educate others about those groups, which we refer to Diversity/Multicultural. Finally, this particular entry lists that the student held an official leadership position, adding the final l descriptor. (Note that the order of the descriptors is arbitrary.)

TABLE II. DESCRIPTORS WITHIN THE WREASN TYPOLOGY

Symbol	Descriptor	Description
s	STEM	in the fields of science, technology, engineering, and/or mathematics (STEM).
n	International	participation in an experience outside of the U.S. and/or the students home country.
a	Athletic	Involvement in an organized competitive program that has some sports component to it.
c	Community Engagement	Collaborative work with a community group to address issues that impact its well-being
s	Social	an interest group where like-minded students are there primarily to interact and build social relationships.
p	Professional	an association of like-minded students to build and strengthen relationships pertaining to their professional goals.
d	Diversity/Multicultural	a group or organization that has a clear emphasis on embracing and/or recognizing diverse cultures and backgrounds.
i	Identity-based	a group or organization that has a clear emphasis on supporting the needs of specific identities
l	Leadership	a formal role in which a student has the ability to lead peers.
t	Teaching	a role in which a student has the ability to teach or instruct others.

The WREASN typology was applied to 40 resumes of recent graduates from a school of engineering at a large public research university. The sample resumes were obtained from participants in a program that serves largely underrepresented, lower income, and first-generation students. The sample population is representative to the overall population of the program with regard to demographics (race/ethnicity, gender) and grade point average. All of the activities listed on the sample resumes were classifiable by the WREASN typology.

While the sample size was too small to support inferential statistics or generalized claims, several interesting trends were observed. For this target population, the mean number of reported involvements was 8 with a standard deviation of 3. While no significant differences were observed in the number of reported involvements between underrepresented and majority students or between males and females, when analyzed together, underrepresented females had 3 more involvements than majority females. Males had a similar number of involvements regardless of minority/majority status. While not statistically significant, students who come from the most affluent or highly educated families report a slightly higher number of involvements compared to students from the least affluent or educated families. For example, both Black and White students from low income families have an average of 6.5 involvements, compared to 10 for high income families.

The exception to this is for Asian students, for which students from low income families have 8.5 involvements, compared to 4 for high income families. However, the total number of students in this sample is very small, which may account for this difference.

TABLE III. EXAMPLES OF APPLYING THE WREASN TYPOLOGY FOR LISTINGS ON A HYPOTHETICAL RESUME

Coding	Listing
W-sn	Engineering Mechanics Intern, Daimler Trucks, Stuttgart GERMANY
A-s	EECS 452 Fall Prevention Device for People With Low Vision Project
S-sipcl	National Society of Black Engineers, Vice President

The majority of the experiences listed on resumes are STEM-related work or student organizations. Ninety three percent of students self-reported having involvement in at least one Work experience, compared with 85% in Student-Run Organizations, 83% in Non-Student-Run Organizations, 73% in Research, 35% in Academic, and 3% in Entrepreneurial experiences. The majority of the involvements were described as STEM-related. Specifically, 100% of Research, 100% of Entrepreneurial, 100% of Academic, 94% of Work, 72% of Student Organization, and 72% of Non-student Organization involvements were coded in this way. Involvements with Student organizations were typically described as leadership (62%) and/or professional (51%). Other common descriptors for this type of involvement were identity-based (37%) and community engagement (19%).

None of the findings of this preliminary study are particularly surprising on their own, nor are they generalizable to the student population as a whole. However, comparing these findings to the number of reported involvements of other segments of the student population (e.g., program nonparticipants, high income, racial/ethnic majority) would be valuable in revealing differences in how students from different backgrounds present themselves to potential employers. This work also suggests that the WREASN typology may be used as a classifier of student activities more generally. For instance, our typology may be used as a way to classify self-reported student involvements obtained not only from resumes, but also from interviews, survey data, or student organization rosters. Use of the WREASN typology may support the efforts of higher education researchers, college administrators, career counselors, and others to better understand how students spend their time outside of the classroom and how they communicate their extracurricular involvements to others.

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