

FROM THE EDITOR:

IJSLE, Scholarship, and the Academic Community

The *International Journal for Service Learning in Engineering: Humanitarian Engineering and Social Entrepreneurship (IJSLE)* will soon begin its eighth year of publication. Over these past seven years, there has been a significant growth in the number of faculty, courses, and programs at universities across the country and beyond which engage students and faculty in exciting and productive experiential learning opportunities, while collaborating with communities to make a difference in people's lives. We at the journal are proud to be an outlet for the dissemination of this research, design and pedagogical work.

Over the past decade, at various conferences and workshops around the country, there has been a recurring, and growing, interest expressed by practitioners as to how we might form a better defined 'community' and how we might elevate our work to a more scholarly level. There are often suggestions that our work might better be undertaken as part of the more 'traditional' engineering disciplines and 'massaged' into making it more relevant to our readers. This editorial is intended to comment on such notions and suggest that what makes the practitioners and authors who submit to the IJSLE different is their significant emphasis on **both** the technical content of their engineering endeavors as well as the cultural, entrepreneurial, political, sustainable and user-focused aspects; in other words, the interdisciplinary nature of our work. This editorial is intended to spur discussion and seeks to catalyze action in this regard.

BACKGROUND

Efforts to create the *International Journal for Service Learning in Engineering (IJSLE)* began in the fall of 2004 and the first issue was subsequently published spring of 2006. The two principal goals of the Journal were: a) to foster inquiry into rigorous engineering design, research and pedagogy and direct those efforts toward collaboratively addressing issues experienced by marginalized communities, and 2) to nurture service learning in engineering as a distinct body of scholarly knowledge and to facilitate community building amongst practitioners.

Interested authors were strongly encouraged to examine the cultural appropriateness of their work, seek to collaborate with their community partners to develop economically and culturally sustainable solutions, and implement appropriate technologies in a pro-active sense. Focus was also placed on associated pedagogy and program development. In the spring of 2009, IJSLE expanded the scope of its publications to include manuscripts in the closely aligned fields of humanitarian engineering and technology-based social entrepreneurship. With that, the journal's name was modified to the *International Journal for Service Learning in Engineering: Humanitarian Engineering and Social Entrepreneurship (IJSLE)*.

The journal is currently published twice per year and is offered at no cost to subscribers online at www.ijsle.org. It provides open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge. The manuscripts to date have focused on engineering service learning (SL), humanitarian engineering (HE) and social entrepreneurship (SE) in the following areas:

- Program Assessment
- Engineering Design Projects
- Engineering Research
- K-12 Engineering Outreach
- Engineering-Related Entrepreneurial Projects
- Pedagogy in Engineering-Related Service Learning

The journal utilizes the Open Journal System (OJS) which is a journal management and publishing system and employs the LOCKSS (Lots of Copies Keeps Stuff Safe) archiving management software system to create a distributed archiving system among participating libraries and permits those libraries to create permanent archives of the journal for purposes of preservation and restoration. To ensure open access and dissemination to users around the world who might benefit from the publications, regardless of available funding resources, the journal uses the Creative Commons Attribution 3.0 License which permits one to copy, distribute and transmit the work with proper attribution. The journal is indexed with EBSCO (*Academic Search Complete database*, EDS Discovery Service, and *EBSCO Engineering Collection: India database*); ProQuest (*ProQuest Engineering, ProQuest Environmental Science, ProQuest Natural Science Collection, ProQuest SciTech Collection, ProQuest Technology Collection*); Cabell Directories, Directory of Open Access Journals (DOAJ), Ulrich Directories, and Google Scholar.

Since its inception, the number of journal subscribers has grown to over 6000+. There remains a strong desire on the part of the IJSLE editors to be more than a place to publish papers—it also strives to help build a vibrant community of scholars and practitioners dedicated to advancing SL, HE and SE through a sustainable cycle of research, design and improvement of this element of engineering education. Toward this end, IJSLE recently published a book entitled ‘Convergence: Philosophies and Pedagogies for Developing the Next Generation of Humanitarian Engineers and Social Entrepreneurs’ found at <http://www.mse.mtu.edu/~pearce/papers/2012%20Convergence.pdf>.

The IJSLE editors are deeply indebted to the many individuals and organizations who helped the journal achieve so much over these seven years, particularly: the National Collegiate Inventors and Innovators Alliance (NCIIA), Queens University and Penn State University, the IJSLE editorial board, and the IJSLE international partners, authors, reviewers, and readers, and many individuals from the engineering and education communities at-large.

OUR COMMUNITY

As editors of the IJSLE, our goal is to build and nurture a journal which serves the needs of a particular academic community; those researchers and practitioners who work in the areas of SL, HE, and SE, as well as the partnering communities. This academic community is relatively new and there exists a question of how we might attain greater scholarly recognition and credibility. At present, there are numerous programs, professional groups and student groups around the country which engage in such activities or promote such efforts. To list them all would be difficult. Suffice to say, however, that there are numerous academic structures associated with these efforts. Some are student organizations; some offer students opportunities via projects housed in independent study courses or other experimental courses. However, more and more, universities appear to be offering students opportunities to engage through dedicated courses, certificate programs, minors, or co-curricular efforts with a focus on SL, HE, and SE. These various programs and efforts might be categorized by name, or type - some of which are listed below:

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|---|-----------------------------------|----|---|
| 1 | Service Learning in Engineering | 6 | Learning Through Service |
| 2 | Humanitarian Engineering | 7 | Community Service Engineering |
| 3 | Frugal Engineering and Innovation | 8 | Engineers Without Borders (EWB) |
| 4 | Development Engineering | 9 | Engineers for a Sustainable World (ESW) |
| 5 | Social Entrepreneurship | 10 | Engineering World Health (EWH) |

Given the different names of these programs/efforts listed above, it can be argued that this has led to a fragmentation of perceptions of this sort of work and consequently some skepticism and a lack of clarity as to what we are about and the benefits of our work. Perhaps some consolidation and branding may prove useful – in order to move towards a more clearly defined academic field – with scholarly champions.

This sense of an ‘academic community’ is critical in our view. There are strong currents in academia which hold to the opinion that our work should indeed simply be part of the established engineering order, publishing the technically rigorous work in traditional engineering journals. Following ‘approval’ of such research by our peers, the publications might be ‘adapted’ to make it more suitable for application in a marginalized community environment. This is precisely the mindset of the ‘development community’ of the past 60 years; that is, adapt technology developed in the developed world and apply it in the developing world. In the editor’s opinion, this not only continues a pattern which has proven unsuccessful, but it also reduces the opportunities for the development of the next generation of engineers such as ASME’s Vision 2030 and the associated skill set including: increased interpersonal skills, systems thinking, increased invention and entrepreneurship, innovation, leadership both in the technical and societal domains, and sustainability – many of which are directly enhanced through service learning.

However, given the various program types listed above, there are issues of ownership and turf issues which must be overcome. Toward that end, it might be useful to list some perceived commonalities among the various efforts. Some commonalities may arguably be that each:

- 1 Attempts to incorporate engineering-design applications, and
- 2 Partners with audiences who are marginalized to some degree, and
- 3 Strongly emphasizes sustainability in real life scenarios including:
 - a) Economic – entrepreneurship, financial contexts
 - b) Social – cultural immersion and awareness
 - c) Environmental
 - d) Appropriate technology, and
- 4 Stresses professional skills development, and
- 5 Has found success in outreach/retention/recruitment/diversity, and
- 6 Engages in research (to some extent)
 - a) Technology
 - b) Pedagogy
- 7 Are there others you might add?

It might be argued that our work does not consist of any one or two of the above listed activities; but rather, our field of praxis encompasses them all. As such, does engaging in precisely all of these ‘commonalities’ allow us to define ourselves as an ‘academic discipline’? If so, do we engage in teaching and research at the university level in a scholarly manner guided by these ‘commonalities’?

Engineering education research and practice have assumed a higher degree of scholarly attention over the past decade. Similarly, research efforts in the areas of SL, HE and SE are part of a growing cross- and inter-disciplinary field of scientific inquiry. Some recent noteworthy developments which serve to facilitate this growth include: a) the approval of the new ASEE Community Engagement in Engineering Education division created in 2012, b) professional

society participation through programs such as ASME's Engineering for Change and IEEE's Global Humanitarian Technology Conference, c) the phenomenal work done by the National Collegiate Inventors and Innovators Alliance (NCIIA) in supporting such work, d) the USAID-supported Development Engineering thrust, e) the increasing number of NSF grants that fund related research and educational activities, and f) the emergence of similar activities, networks and organizations throughout the world.

SCHOLARSHIP

One definition of scholarship is 'knowledge resulting from study and research in a particular field'. Robert Diamond and Bronwyn Adam (1993)¹ more formally identify six characteristics that typify scholarly work:

- 1 The activity requires a high level of discipline expertise
- 2 The activity breaks new ground or is innovative
- 3 The activity can be replicated and elaborated
- 4 The work and its results can be documented
- 5 The work and its results can be peer reviewed
- 6 The activity has significance or impact

The activity or work is conducted in a scholarly manner with:

1. Clear goals
2. Adequate preparation
3. Appropriate methodology

The work undertaken by practitioners of SL, HE and SE and their subsequent submissions to the journal over the years has clearly been conducted in a scholarly manner. This alone provides some credibility to our endeavors. But relative to the level of scholarship being undertaken, several issues have surfaced which need to be addressed. First, we must examine the level of rigor of our work. The efforts undertaken by faculty in the area of SL, HE and SE are often of high value to the collaborating communities, but may not contain a high degree of engineering expertise as deemed appropriate by the more traditional engineering disciplines. However, given the highly interdisciplinary nature of our work, it is important to note that there is plenty of highly interdisciplinary research that is very rigorous (see for example, the field of science and technology studies, or engineering education research). Second, relative to 'breaking new ground' or being 'innovative', many of the submissions have a technical component, and maneuver through complex social and economic constraints to achieve success, but an examination of what is technically 'innovative' or 'breaking new ground' often leaves one searching. Perhaps the innovations that we seek may be in the form that engineers are beginning to engage communities (e.g., moving away from paternalistic approaches towards true partnerships) and in the way we are teaching engineering students (e.g., pedagogies of engagement)? We need to be careful with a narrow conception of innovation (e.g., groundbreaking technologies like the iPhone) and focus on processes (e.g., the ways we engage students and communities). Thirdly, based on the characteristics of scholarship listed above,

¹ Diamond, Robert M and Adam, Bronwyn E (1993). *Recognizing Faculty Work: Reward Systems for the Year 2000*. Jossey-Bass Publishers.

many of the manuscripts do not offer solutions or methodology which can be replicated as they are very much case-based; that is, specific to a certain location or setting. Given that replication implies some sense of generalization or universality of solutions, we must remember that one of the golden rules of engineering for community development is that each situation is **UNIQUE** as it lives in a different context. Lastly, in measuring the impact or significance of the efforts, what criteria are used to determine that impact? Is it the solution to the community's need? Or is it the technical merits derived by the project and subsequently made available to the broader academic community to build upon?

The need for increasing the level of scholarship for our work is driven by the current reward system – the promotion and tenure (P&T) review process. In a national survey of 109 college administrators, including chairs, department heads, and college deans² (Adams, 2003) found considerable uniformity across institutions concerning what these gatekeepers regarded as criteria of merit. The table below provides the results of the survey. These performance criteria cast the discussion in straightforward terms; that is, service is not valued in the P&T process very much, while publications are weighted heavily – particularly publications in print media.

Index of Importance of Performance Criteria for Academic Rewards

100	Book that advances knowledge in candidate's field
97	Published refereed articles or reports in print media
83	Extramural grants or contracts
76	Teaching awards or nominations
63	Favorable written student teaching evaluations
47	Presented papers at conventions
46	Published refereed articles or reports in online media
21	Favorable evaluations of student advising
14	Developed and managed an online course
10	Member or has participated in major committees
0	Recognition for significant service to community

This can be addressed by the IJSLE community publishing books and refereed articles about SL, HE and SE, and hence, the importance of elevating the rigor (and not the disciplinarity) of this journal.

HOW TO BECOME A MORE RIGOROUS ACADEMIC FIELD?

So the questions which must be addressed are: a) How do we enhance the journal to a degree which will be viewed by our peers and P&T committees as rigorous and scholarly, and b) who determines what is 'scholarly'? It is suggested that it is we, the body of experts engaging in this work, who give credibility and validity to our efforts. It is our academic community which needs to coalesce and, as a group, identify the prominent publications, recognize the scholarship, and place value on our work. Some of the factors which need to be considered in this regard are listed below. These correspond very closely with P&T review committees expectations for publications:

² Adams, J. (2003). Assessing faculty performance for merit: An academic accomplishment index. *Journalism and Mass Communication Educator*, 58(3), 240-250.

1	Editorial board of the Journal	7	Number of manuscripts published in the Journal
2	Indexed in major indices	8	Impact factor of Journal
3	Who publishes in the Journal	9	Quality of the articles
4	Acceptance rate	10	Topics of articles (research not simply application)
5	Consistency of Quality	11	Refereed status
6	Promotion (conferences, classes)	12	Sponsorship of major publisher or association

But what is different about what we do? What separates us from the more traditional engineering disciplines? It is suggested that we are interdisciplinary-focused rather than strictly discipline-focused. Juan Lucena (Colorado School of Mines) suggests that we need to be careful not to fall into the entrapments of disciplines. Disciplines become silos, ivory towers, with specialized jargon that often makes them irrelevant and disconnected to the real problems of the world. What if instead of being discipline-driven, IJSLE manuscripts are problem-driven where the core problem being addressed is “How can engineering serve the problems of demographic groups (e.g., poor, disabled, ill, disaster stricken, etc) that have been ignored for so long”?

We are also professional skill development-oriented, diversity driven, user-focused and committed to making a difference in communities sustainably. Thus, our goals are necessarily somewhat different from the traditional engineering discipline. However, at the same time, we continue to stress the shared goals of engaging in rigorous engineering research, design and technical innovation. It would seem we are seeking to enhance **scholarship** in a somewhat new field - sharing some goals with traditional engineering disciplines but diverging from those traditional disciplines in other goals – all the while being **evaluated** based on criteria of the traditional disciplines. Review committees still have as their primary criteria that of recognizing scholarship – which is driven by recognition of quality research and its dissemination through respected scholarly publications. Toward that end, IJSLE seeks to serve in this capacity – to provide an outlet for high quality, rigorous, scholarly research in the areas of SL, HE and SE undertaken in an interdisciplinary fashion.

Most readers would agree that we need a global ‘community’ of practitioners and scholars and a more formal sense of ‘community’ amongst these folks. To accomplish this, we would suggest that the ‘community’ consider: a) broadening involvement in experiential learning in engineering while strongly and fundamentally incorporating research into the social, cultural and economic complexity of such engagement; b) encouraging broad interdisciplinary and geographic collaborations, and c) increasing access to high quality journals to publish such work. Strategies for accomplishing these include: a) SL, HE and SE practitioners participate in symposia and workshops globally, b) elevate the scholarship required by journals dedicated to SL, HE and SE as well as the practitioners who support this effort with their manuscript submissions and citations, and c) support a SL, HE and SE engineering education research conference through the ASEE CEEE.

BUILDING A WORLD CLASS JOURNAL

Recent Actions

Over the last seven years, IJSLE has reviewed and revised practices to assure it includes the appropriate engineering and educational expertise, experience, and diversity it needs.

- A four-person editorial board was replaced by an eighteen-person editorial board whose purpose is to provide advice on the content, implementation, and review of progress of the goals of the journal and on other matters important to the success of the journal. The

editorial board is composed of a broad set of stakeholders, including engineering faculty, education researchers, academic administrators, and individuals drawn from engineering and/or education-related organizations. Presently, the board is composed of 7 women and 11 men – all of whom are actively involved in engineering service learning, humanitarian engineering or social entrepreneurship.

- IJSLE has cultivated a pool of over 150 reviewers with broad disciplinary, organizational, demographic, and international expertise and experience. The increased attention to the quality of peer review has resulted in enhanced rigor and manuscript quality.
- Timely reviews are important, constructive, specific, and unbiased reviews are critical to manuscript improvement. The journal uses a double-blind review process to reinforce the importance of evaluating manuscripts on the merits of the research presented and not the researchers who performed it.
- The journal has made clear that it welcomes qualitative research methods as much as quantitative methods and research reviews as much as research investigations. Especially important has been an ongoing emphasis for authors to make more clear how the research reported contributes to improving SL, HE and SE educational performance.
- The journal reviewed its manuscript processing operations and implemented Open Journal System (OJS). Two overall guidelines were as follows: (1) the editor assesses a submission for its suitability for peer review and inform the author within 14 days; and (2) for those submissions forwarded for peer review, the process of review would be completed within 90 days. The performance of each editor and all editors collectively is monitored and shared with the editors on each manuscript.

Proposed Actions

Several suggestions have already been made to further develop IJSLE as a world class journal. These include branding the efforts mentioned above and the marketing of that brand. To further refine IJSLE as a world class journal, it will be necessary to have the community of practitioners (all of us), individual by individual, make a commitment to elevate the journal to a quality journal respected by peers across the engineering community and beyond. Developing grassroots efforts with faculty in each of the engineering disciplines (EE, ME, ChE, CE, etc.) who engage in research and teaching in SL, HE, and SE would help better define, promote and elevate the brand. This is similar to what Engineering for Change, IEEE Global Humanitarian Technology Conference, and others currently engage in. Building a consensus with faculty in those traditional disciplines as to what is scholarly in the SL, HE and SE arena, and repeating what value we bring to the academy, may prove very productive.

But beyond the marketing and awareness issues, the editors hope to: a) sharpen IJSLE's scope of publication to focus more intensely on research of what we do and the scholarly submissions, b) increase the quality of reviews, c) continue to assure timely manuscript processing, and d) expand the indexing services marketing the journal.

Strategies to accomplish these goals include: a) publishing special issues to shape and encourage scholarly inquiry in topics critical to advancing SL, HE and SE research and implementation, b) embracing broad representation among editorial board members, authors, editors, guest editors, and reviewers, c) cultivating a community of highly-qualified peer reviewers, and d) assuring timely and thoughtful reviews of manuscripts and the expeditious publication of accepted manuscripts.

It will be emphasized that in order to enhance scholarship, more research should be incorporated into the design projects, innovation and value addition should be focused upon, along with an increase in interdisciplinary expertise and rigor. Linda Barrington (Univeristy of Massachusetts-Lowell) expressed the following:

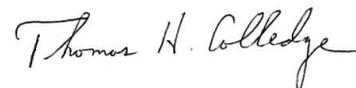
‘Conference sessions and their requisite papers give us a place to express “I did X and this is what I learned” and to share with people with similar experiences. This type of community of practice is valuable and useful to personal and professional development. The journal, by contrast, is a place where we can say “we researched V, using methodology W, and found X. Based on this we are going to change our practice to Y and study Z. I believe the academic rigor of a formal hypothesis and relevant measurement systems are important. We have not always been good about measuring the impacts of our work in a systematic way, especially with regards to the community.’

Creating that premier research journal for the SL, HE and SE community would allow for what Linda is recommending. We also feel that we must always keep in mind both of our audiences: a) faculty and researchers, and b) our partnering communities. Toward that end, from the perspective of IJSLE, this requires that:

- 1) Our academic community seek to reach some consensus on the branding of our efforts – to clarify and attain a consensus as to the goals and objectives of our work, and also to clearly differentiate and market the benefits relative to the more traditional engineering disciplines.
- 2) We continue to strive to build that sustainable, professionally-recognized outlet for faculty and researchers to publish in, while concurrently raising the stature of our community through a journal that is peer-reviewed, of high quality, rigor, scholarship, and is research-focused.
- 3) We disseminate the resulting technologies, methods and practices from the academic communities’ work with the marginalized communities around the world. These collaboratively developed resources might best be shared via blogs, YouTube, various databases, and specifically appropedia.com - as appropriate.

To facilitate these goals, the IJSLE seeks to publish a special edition of the Journal this spring to address topics such as P&T issues, research dissemination to all stakeholders, community-participatory research, multi-disciplinary research, and so on. A goal is to continue the effort to form a self-selecting community dedicated to enhanced scholarship. If you would like to participate in this effort with the IJSLE, please do not hesitate to contact us at the journal.

Sincerely,



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