AC 2007-995: THE INNOVATION INITIATIVE FOR SOCIAL ENTREPRENEURSHIP: FOSTERING AWARENESS OF GLOBAL AND SOCIAL ISSUES VIA ENTREPRENEURSHIP EDUCATION

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His research interests include the performance analysis of computer and sensor networks, signal and image processing, and engineering education. He was a co-recipient of both the Myril B. Reed Best Paper Award from the 32nd Midwest Symposium on Circuits and Systems and the 1986 Best Paper Award for Authors under 30 from the Signal Processing Society of the IEEE. He has served as an associate editor of the IEEE Transactions on Circuits and systems and was an elected member of the Board of Governors of the IEEE Circuits and Systems Society. He was the general chair of the 1997 IEEE/EURASIP Workshop on Non linear Signal and Image Processing. Dr. Coyle is a Fellow of the IEEE and in 1998 was named an Outstanding Engineering Alumnus of the University of Delaware.

Dr. Coyle was a co-founder, with Professors Leah Jamieson and Hank Dietz, of the Engineering Projects in Community Service (EPICS) Program at Purdue. He was also a co-founder and co-director, with Professor Leah Jamieson and Bill Oakes, of the National EPICS Program, which supports and coordinates EPICS sites at Purdue and 16 other universities.

For their work with the EPICS Program, Professors Coyle and Jamieson have jointly received Purdue's Class of 1922 Award for Outstanding Innovation in Helping Students Learn and the 1997 Chester F. Carlson Award for Innovation in Engineering Education from the American Society for Engineering Education (ASEE). The EPICS Program has been honored with several awards, including the Corporate and Foundation Alliance Award and, from the State of Indiana, the Inaugural Governor's Award for Outstanding Volunteerism. With Professors Jamieson and Oakes, Coyle was a co-recipient of the National Academy of Engineering's 2005 Bernard M. Gordon Prize for Innovation in Engineering and Technology Education.

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Nancy Clement received both her Bachelor's ('89) and Master's degree ('05) from Purdue University's College of Technology. Her research interests include social entrepreneurship programs in academia, entrepreneurship opportunities for women and minorities, and social and organizational change through leadership and entrepreneurship.

Nancy is currently the Interim Director of the EPICS Entrepreneurship Initiative (EEI) and Program Coordinator. In addition to working with the EPICS undergraduate students, Nancy also makes annual visits to a local elementary school presenting information on Inventions, Innovations and Protection of Intellectual Property. She has also mentored PhD and MBA students enrolled in the Innovation Realization Lab. Nancy has been with the university since 1996 in business services for Minority Engineering Program, Women in Engineering Program, and the Purdue Libraries. Prior to her university career, Nancy owned several businesses including a wholesale/retail business, rental property business, and a direct marketing business. As an independent contractor she has worked for the Department of Education, the US Census Bureau, and was a teacher for a private mental health institution.

Nancy was awarded the Frank Murphy Outstanding Faculty Fellow of the Year for 2006 Windsor Halls. She was also recognized by the Residence Hall Association as the 2006 Fredrick L. Hovde

Outstanding Faculty Fellow for all of Purdue University. From 1990-93, as a member of the American Society for Quality, Nancy introduced Koalaty Kid to the Lafayette School Corporation. "ASQ Koalaty Kid trained schools see results using quality processes". For more information please visit the Koalaty Kid website at http://www.asq.org/edu/kkid/whatis.html Nancy has volunteered at several local organizations including the Lafayette Adult Resource Academy and the Hanna Center.

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Joy Garton Krueger serves as Visiting Assistant Professor within the Purdue University College of Engineering, Department of Engineering Projects in Community Services (EPICS). Initially prepared at the undergraduate level as a science and mathematics educator in 1981, Dr. Krueger expanded her professional interests in educational and organizational assessment and evaluation, instructional research and development, and adult learning by obtaining Master's and Ph.D. degrees from Purdue's College of Education in 1987 and 1991.

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Dr. Krueger's research interests include educational and organizational assessment and evaluation, teaching and learning engineering within P/K-16 and its application to the college curricula and academic performance standards as a means for developing quality diverse engineers and entrepreneurs; and the role of multidisciplinary faculty within engineering education.

The Innovation Initiative for Social Entrepreneurship: Fostering Awareness of Local and Global Social Issues via Entrepreneurship Education

1. Introduction

The Engineering Projects in Community Service (EPICS) program is a team-based engineering design program that operates in a service-learning context. The undergraduates enrolled in this program earn academic credit for the real-world design work they perform and the professional skills they develop while creating products requested by non-profit organizations in their local community.

The EPICS Entrepreneurship Initiative (EEI) was created in 2001 to enable EPICS teams to learn about entrepreneurship in the context of the innovative products and services that they create with their community partners. The culmination of the EEI's activities each year is the EPICS Idea-to-Product® (I2P®) Competition.[1] In this product-feasibility competition, a panel of distinguished entrepreneurs listen to the EPICS e-teams' presentations about their products and determine which of their ideas have the greatest potential for both commercial sustainability and benefit to society.

The educational and commercialization benefits of the EEI and its I2P® Competition have led us to generalize them beyond EPICS to include all areas of engineering-focused social entrepreneurship. The EPICS I2P® Competition has thus been extended to the *National I2P® for EPICS and Social Entrepreneurship* by inviting e-teams with engineering-focused projects to participate in the competition along with EPICS teams. The first competition of this type took place in 2006 at San Jose State University; the next will take place in 2007 at Princeton University. The inclusion of non-EPICS teams has led us to change the name of the EPICS Entrepreneurship Initiative to the *Innovation Initiative for Social Entrepreneurship (IISE).*

In this paper, we discuss the goals and structure of these efforts in social entrepreneurship and entrepreneurship education, report on the first I2P® for EPICS and Social Entrepreneurship, summarize the results of evaluations by the student participants in and judges of this competition, and describe plans for the development of these programs. Section 2 provides background on EPICS and the EPICS Entrepreneurship Initiative. Section 3 describes how the National I2P® has been extended to encompass social entrepreneurship efforts in addition to EPICS. Section 4 summarizes the results of evaluations by the students and judges who participated in the 2006 National I2P® Competition for EPICS and Social Entrepreneurship. Section 5 describes future plans for these efforts, including the 2007 competition and the creation of the *Innovation Initiative for Social Entrepreneurship* as the new umbrella for all of these activities.

[1] *Idea-to-Product* and *I2P* are registered trademarks of the University of Texas at Austin. The National EPICS I2P® is one of a family of entrepreneurship competitions that are based on product-feasibility plans instead of business plans. For more information, please see http://www.ideatoproduct.org/index.cfm.

2. Background on EPICS, the EEI, and Service-Learning

2.1. The EPICS Program

Engineering Projects in Community Service – EPICS – is an engineering design program that operates in a service-learning context [1-3]. EPICS students earn academic credit for their participation in design teams that solve technology-based problems for not-for-profit organizations in the local community. The teams are: multidisciplinary – drawing students from across engineering and around the university; vertically-integrated – maintaining a mix of freshman through seniors each semester; and long-term – each student participates in a project for up to seven semesters. The continuity, technical depth, and disciplinary breadth of these teams enable delivery of projects of significant benefit to the community.

EPICS was initiated at Purdue in 1995 to fulfill the complementary needs of engineering undergraduates and the community [4]. The unique structure and operation of EPICS enables solutions of significant benefit to the community to be delivered. Key features of the EPICS model include:

- *Community Partners*: Each EPICS team is matched with a not-for-profit organization in the community that is referred to as the "Project Partner." The team and its Project Partner work closely together to identify and solve the project partner's technology-based problems. The end result is the delivery and support of a system that is used by the Project Partner to improve the services they provide to the community. The Partner's suggestion of project ideas and constant feedback on the efficacy of the systems being developed and deployed provides the "real-world" context for each EPICS project. An EPICS team's delivery – in most cases, at no cost – of systems that the Project Partner needs, provides the "real-world" assistance that the partner needs to better serve the community. The very beneficial effects that these systems have on the community provide a very compelling reason for students to join and pursue these projects.
- *Large, Vertically-Integrated Teams*: Each EPICS team consists of eight to twenty students, thus enabling projects of significant scale and potential impact on the community to be undertaken. The large team size also enables them to be vertically-integrated; that is, to include freshmen, sophomores, juniors and seniors. In general, the seniors provide technical and organizational leadership, the sophomores and juniors perform the technical work organized by the seniors, and the freshman learn about the project partner's needs and participate in teams tasks as possible.
- *Long-Term Student Participation*: An EPICS student can participate in an EPICS team for up to seven semesters, joining a team in the second semester of the freshman year and remaining with the team until graduation. New freshmen or sophomores replace students that graduate or otherwise leave the team. There is thus significant continuity in team membership from semester to semester and year to year. When this continuity in membership is combined with team procedures for the training of new students and with mentoring by senior members and team advisors, the team's effectiveness can be maintained for as long as required to complete a large-scale project. This continuity also provides each student with the time and mentoring opportunities required to learn and practice different roles on the team, from trainee to design engineer to team leader.

- *Variable Credit Hours*: An EPICS student earns one credit per semester as a freshman or sophomore. As juniors or seniors, they earn 1 or 2 credits per semester, with the choice being made by the student each semester. The doubling of credits available to juniors and seniors parallels their growing technical capabilities and organizational responsibilities. How the academic credit counts towards a student's graduation requirements varies by department. For example, in ECE, up to 6 credits may be used as ECE elective credit, and 3 credits in the senior year may be used to fulfill the capstone design requirement. ME students may use up to 6 credits to fulfill a technical elective requirement.
- *Multidisciplinary Teams*: The large team size also enables students from disciplines across engineering and around the university to participate in an EPICS team. The disciplinary composition of an EPICS team can thus be tuned to a project's needs. For example, teams producing devices to assist children or adults with disabilities have drawn from such disciplines as electrical engineering, mechanical engineering, computer science, child development and nursing.
- *Start-to-Finish Design Experience*: EPICS provides a start-to-finish design experience for students. Each project begins with identification of the Project Partner's needs and the definition of a project to meet that need. It then progresses through design, development, testing and deployment with the Project Partner. This process typically takes two or more years, thus providing the students with sufficient time to master the many different aspects of an engineering design project, including: exploration of design alternatives, project planning and management, team leadership, technical innovation, design revisions, and economic considerations.

While one or sometimes several of the above attributes of EPICS can be found in other design programs, EPICS is unique in combining all of them.

The National EPICS Program [5,6] is a consortium of universities across the country that each implements their own version of the EPICS model. Although each university may operate differently and under a unique program name, they all adhere to the basic principles of the EPICS model or engineering-based service to their local communities. Seventeen universities in the United States and one university in New Zealand currently participate in the National EPICS Program.

2.2. The EPICS Entrepreneurship Initiative (EEI)

Many very useful products have been created by EPICS teams for their non-profit partners and the communities they serve. These products, if commercialized, could also be of benefit to many other non-profits and communities, and thus be of benefit to society at-large. These products therefore provide a compelling context for the EPICS teams that developed them to learn about entrepreneurship and commercialization. The EPICS Entrepreneurship Initiative (EEI) provides this learning opportunity [7,8]. Its goals are to:

- Create opportunities for EPICS students to learn about and experience entrepreneurship.
- Enable EPICS teams and their project partners in the community to identify, protect, and benefit from the intellectual property they create together.
- Spread the benefits of EPICS products to all communities.
- Develop a model of entrepreneurship that can be emulated by other institutions.

The EEI is housed in Purdue's Discovery Park, a multi-disciplinary research initiative created to bring faculty, staff, and students together to collaborate on projects at the cutting edge of academic research. The Burton D. Morgan Center for Entrepreneurship addresses the pre-commercialization needs of the research done at Purdue University and in Discovery Park [9]. Because of the multi-disciplinary nature of the EPICS teams and the potential commercial application of their products, the program fits perfectly within the mission of Discovery Park. The inclusion of the EEI and its focus on the non-profit sector do, however, bring a broader perspective to both the Burton Morgan Center and Discovery Park.

Via the EEI, EPICS teams are provided with the opportunity to learn about and experience social entrepreneurship and the commercialization process. An average of 300 EPICS students are eligible to participate in the EEI each year. It is not a mandatory part of their EPICS experience, so it draws only the students who have a real desire to learn more about entrepreneurship. These students are thus highly motivated, believe deeply in their community partner's mission, and understand how commercialization of their product can spread its benefits to other communities.

After the first year of operation of the EEI, it became clear that the students in EPICS needed significant help if they were to learn the process of commercialization. Skills sessions were therefore created on the topics of intellectual property (IP), patents and copyrights, and tools and techniques for conducting effective patent searches. These sessions have since been made available to all EPICS students and their advisors. In addition, attorneys with expertise in patent law were invited to provide annual lectures on IP protection and to mentor students as they progress through the process of obtaining protection for their products.

Working in conjunction with the Purdue Libraries, three additional skill sessions are now offered to EPICS students. Patent search seminars are coordinated with the Engineering Library to familiarize the students with US Patent and Trademark Office databases and to assist them with searches of these databases. The Management Library offers an EPICS-specific skill session on market research that provides valuable information on how to conduct studies of market demographics and corporate information. The Digital Learning Collaboratory, a collaborative effort between the Undergraduate Library and Information Technology at Purdue, provide the students with tips on developing professional media presentations and the creation of effective PowerPoint presentation. Taken together, these three skills sessions provide the knowledge that these engineering teams need to understand the commercialization process, how it applies to their product, and how to incorporate it into effective presentations for the EPICS Idea-to-Product® (I2P®) Competition.

The EPICS I2P is a day-long *product feasibility* competition [10] that identifies the EPICS teams that have done the best job of combining all of the elements found in EPICS – including problem solving, engineering design and service learning – with their new knowledge of intellectual property, markets and social responsibility. The EPICS teams demonstrate the products they have developed and the plans they have formulated for commercializing them to a panel of distinguished entrepreneurs. The panel ranks the teams' products and plans based on the effectiveness of their answers to the following questions:

- What is your team's product (or service) idea?

- What is the underlying technology?
- What makes your product or idea unique and/or innovative?
- Who is your initial customer?
- How do you anticipate developing IP protection for your technology?
- What is the initial size of the market for your product?
- Is there a clear window of opportunity for the product/service idea?
- What social pain (problem) does your product/service address?
- What is the competitive advantage of the product/service idea?
- What is the current status of your product?
- How does this product help your non-profit project partner achieve its mission in the community?

The three teams that are rated the highest by the panel receive cash prizes. These prizes can be used to pursue patents, further develop the team's product, launch a start-up company to commercialize the product, license the product to an existing company, or any other activity that is approved by the team's advisor and the Director of the EEI. Since the competition's first offering in 2003, several teams that have won these prizes have used them to patent their products and/or pursue their commercialization. To facilitate teams pursuing commercialization, the EEI has also established a unique agreement with Purdue's Office of Technology Commercialization. It specifies that any royalty income resulting from the commercialization of products they requested from their EPICS team be split equally – one half will go to them and the other half will go to the Purdue. The full text of this agreement can be found in the Appendix of [7].

The EPICS I2P® Competitions have proven to be exciting opportunities for EPICS National teams to compete with and learn from each other, learn from successful entrepreneurs, and experience the excitement of proposing to make the world a better place through their commercialization efforts. They have also helped determine which EPICS products are the most innovative, satisfied the most critical social need, and had the most promising initial market. In addition, the students had a unique opportunity and environment in which to develop a holistic entrepreneurial and social viewpoint.

The uniqueness of the EEI and its I2P® competition comes from the requirement that teams address the needs of the project partner and the local community. In their presentations, the students' are required to answer the question: How does this product help your non-profit project partner achieve its mission in the community? This technology commercialization and community service partnership thus fits the definition of Social Entrepreneurship; that is, the act of pursuing a "double bottom line" by maximizing the financial *and* social returns on investments. Adding this element to the EPICS model has created yet another avenue for student learning: the topic of social entrepreneurship.

2.3. Service-Learning

Service-Learning combines service to the community with student learning in a way that benefits both the student and the community. According to the U.S. National and Community Service Trust Act of 1993:

Title I – National and Community Service State Grants Program
Subtitle A – General Provisions

Section 101 [42 U.S. C. 12511] Definitions:

(23) SERVICE LEARNING:

The term 'service-learning' means a method -

(A) under which students or participants learn and develop through active participation in thoughtfully organized service that- (i) is conducted in and meets the needs of a community; (ii) is coordinated with an elementary school, secondary school, institution of higher education, or community service program, and with the community; and (iii) helps foster civic responsibility; and

(B) that- (i) is integrated into and enhances the academic curriculum of the students, or the educational components of the community service program in which the participants are enrolled; and (ii) provides structured time for the students or participants to reflect on the service experience.

Service Learning thus embodies teaching and learning strategies that integrate community service with instruction and reflection to enlighten the learning experience, teach civic responsibility, and strengthen communities. The *National Service Learning Clearinghouse* [11] provides a timeline for the development of Service-Learning programs dating back over a century. In academia these service-learning programs were first introduced around 1903 as cooperative education programs that focused on agriculture.

By the definition above, both the EPICS Program and the EPICS Entrepreneurship Initiative (EEI) operate in a service-learning context [2,12-15]. They involve students enrolled in EPICS directly in projects in which they work closely with non-profit organizations in their local community to address the technical challenges and opportunities faced by those organizations. In EPICS, this takes the form of the design, development and deployment of products that are requested by the teams' project partner. When these teams enter these products into the EPICS I2P Competition and begin investigating the initial market for the product, their concept of service is expanded to the national level. Successful commercialization of the product or service they developed means it is available to all organizations around the U.S. and the world that provide the same services as the teams' local partner.

3. From the EEI to the Innovation Initiative for Social Entrepreneurship

The first three offerings, from 2003 through 2005, of the EPICS I2P® at Purdue focused exclusively on the products developed by EPICS teams at Purdue and the other EPICS sites around the U.S. By the time of the 2005 I2P however, several other technology-oriented service learning projects expressed interest in participating in the competition. One of these teams, from the School of Technology at Purdue was invited to participate in the I2P as an experiment. This experiment was very successful and led to a broadening of the EPICS I2P to include all technology-focused service-learning programs. Thus, in 2006 we offered the first *National I2P® Competition for EPICS and Social Entrepreneurship*.

This expanded I2P® competition was hosted by the EPICS Program at San Jose State University. It included: (a) an I2P® Competition amongst EPICS teams from around the U.S.; (b) an invitation-based showcase for technology-oriented service learning programs around the U.S.; and (c) an evaluation process whose goal was to determine the effectiveness of the process and event. The evaluation focused on how well the competition succeeded in: (i) teaching students the professional skills needed to be entrepreneurs; (ii) developing their understanding of the commercialization process; and (iii) increasing their understanding of the concepts and process of social entrepreneurship.

3.1. The 2006 Idea-to-Product Competition for EPICS and Social Entrepreneurship

The showcase teams invited to participate in the 2006 I2P competition were given the opportunity to present their projects to and receive feedback from the same judges as the EPICS teams. Due to the sources, nature and amount of funding available within the EEI, these showcase teams did not compete for prize money but were given participation awards to cover their travel costs and to help advance their programs.

The competition attracted a total of 11 teams. Six universities and one high school sent their EPICS teams – they represented Butler University, the University of California at San Diego, the Illinois Institute of Technology, Pennsylvania State University, Purdue University, San José State University, and Bedford North Lawrence High School. In addition, teams from three universities showcased their products – they represented the University of California at Berkeley, the California Institute of the Arts, and the IDEAS Program at the Massachusetts Institute of Technology.

3.2. The Definition of Social Entrepreneurship

By broadening the scope of the Idea-to-Product competition to include all technology-related social entrepreneurship efforts, we entered an ongoing debate in academia and elsewhere about the definition of social entrepreneurship. In "The Meaning of 'Social Entrepreneurship'," J. Gregory Dees of Duke University states [16]:

> "Though the concept of social entrepreneurship is gaining popularity, it means different things to different people. This can be confusing. Many associate social entrepreneurship exclusively with not-for-profit organizations starting for-profit or earned-income ventures. Others use it to describe anyone who starts a not-for-profit organization. Still others use it to refer to business owners who integrate social responsibility into their operations."

The definition of social entrepreneurship that we will use comes from the Schwab Foundation for Social Entrepreneurship [17]. It states that:

> "Social entrepreneurship is about applying practical, innovative and sustainable approaches to benefit society in general, with an emphasis on those who are marginalized and poor."

By this definition, technology-based projects whose aim is to develop innovative, practical products and services that help non-profit organizations better serve individuals, local communities, and society at-large are taking the first step toward of the social entrepreneurship process. The next step is the creation of a sustainable approach – whether it is in the not-for-profit, for-profit, or government sector – to disseminate this product or service to all organizations or individuals that can use it to benefit. This is the step that EEI enables EPICS teams to learn about, and to even undertake, via the education programs and the I2P® Competition that it supports.

The EEI however, has been focused for most of the last six years exclusively on EPICS teams and the products and services that the undergraduates on these teams create. By broadening the scope of the effort to include other programs in academia that are also developing technology-based solutions to societal problems, the EEI can provide benefits to many more teams. By helping these additional teams to learn about and possibly pursue the sustainable dissemination of their product or service, the EEI can ensure that the processes it has developed will have a maximum impact.

By broadening the program beyond EPICS we can also address global as well as local social issues. For example, two of the teams that participated in the I2P® showcase in 2006 were addressing challenges to the health and economic well-being of the very poor in developing countries. By including teams with graduate students as well as or instead of undergraduates, we can also provide a social entrepreneurship forum for beneficial products and services that require deeper expertise to make them practical and cost-effective.

To formalize this expansion of the EEI to include all areas of technology-based social entrepreneurship, we have renamed it the *Innovation Initiative for Social Entrepreneurship.* It retains the I2P® and e-team focus of the EEI but has additional dimensions that include: (a) entrepreneurship education for graduate students as well as undergraduate students; (b) real entrepreneurship outcomes – by smoothing the pathway to disclosure, patenting and commercialization; and (c) a global perspective – by the inclusion of products that benefit the developing world as well as local non-profit agencies.

4. Assessment: Current Results and Future Plans

All students who participated in the *2006 National I2P® Competition for EPICS and Social Entrepreneurship* were asked to provide feedback on their participation in the competition. An on-line survey was offered immediately after the Idea-to-Product Competition took place. Aside from the general information on the mechanics of the program, specific questions were created that identified what the student learned from the experience. Students reflected on the educational and professional value they gained from the competition. They also identified the impact their participation in the competition had on the quality of their product, and addressed the increased awareness of social issues that their community partner faced. The seven judges of the competition were also asked informally to evaluate the competition and suggest possible improvements.

4.1. Results of Student and Advisors Evaluations of the I2P®

The student and advisor assessment criteria were focused on the six desired outcomes contained in the following statement: "Upon completion of the 2007 National I2P® Competition for Social Entrepreneurship, students will – 1. Benefit from information gathering and processing skills; 2. Create real products that will improve society; 3. Learn how to identify and protect intellectual property; 4. Identify how their product meets the mission of their non-profit project partner; 5. Receive feedback from judges who are experts in their respective fields which will improve the products; and 6. Be better prepared to address social and environmental problems."

An on-line survey completed by students required reflections on both the professional skills they learned and their experiences leading up to and during the competition. Advisors of the e-teams in the competition were also asked to provide their assessment of the event and to provide suggestions for improvement. The following results were gleaned from these surveys, the full details of which are available upon request.

Professional Skills Development (Students)

- They believed their research skills were improved.
- They became better at presenting, business planning, project organization, teamwork, time management, and public speaking.
- They gained better skills in understanding questions and giving effective answers.
- They were able to adapt quickly to new situations.
- They improved their leadership, design and communication skills.

Competition Reflections (Students and Advisors)

- The students believed the competition was rigorous and motivated them to do their best work.
- It provided both students and staff with a better understanding of the entrepreneurial process, reinforced their interest in entrepreneurship, and increased their awareness of global opportunities.
- The students believed it better prepared them for their careers and planned to add the experience to their resume.
- The students were impressed with their (competition) competitors from other universities.
- The students had a better understanding of the social issues being addressed by their project and others' projects. They also gained greater awareness of what other universities were doing to solve global problems.
- The students identified the competition as a great experience and a unique opportunity to interact with students from other universities.
- An advisor suggested that more interaction with the judges would be nice. During the banquet the judges should not sit all together – a they should be more spread out and available to the students.
- One team gave handouts to the judges on their presentation. An advisor thought that this was unfair to the other teams. All teams need to know whether they can give the judges extra information or not.

- An advisor stated that "the I2P® is not a business plan competition, but a lot of questions focused on primary costs of the prototypes, what the per unit price would be, what it would it cost to the initial non profit, and what price the non profit would be willing to pay for it. If it is truly not a business plan competition, it should not be done that way."
- An advisor suggested that judges should have lunch away from the teams and students, since they can possibly talk to teams or students who might unfairly provide additional information about their project or voice their opinions about other teams.
- An advisor stated: "This has been a great experience, please continue on with this program and expand as much are you can."

4.2. Results of Judges' Assessment of the I2P®

Based on that feedback from the judges' assessment, a number of the criteria that judges were to apply were identified as unclear. They suggested a more thorough judges' briefing prior to the competition as one way to solve these problems. For example, different judges used different approaches when scoring the projects in the areas of Product Uniqueness, Innovativeness, and Value Added. Providing more precise definitions of these terms would help when they are assessing and comparing the projects. The criteria identified as being of greatest concern were: (a) Uniqueness – Is it a fresh and novel idea? (b) Innovativeness – What is the level of technical creativity? (c) Novelty - How unique is the product or its use of combined elements? (d) Value - The level or weight the idea carries?

The judges also wanted to know if innovation equaled a valuable idea, and if the social value should be ranked higher then the size of the initial or potential market. They also wanted to know if the completeness and quality of the project content should trump the judge's opinion of the commercial viability of the idea.

Additional suggestions were offered concerning the timing of the scoring process they used and types of score sheet that was available. Providing new scoring sheets at the beginning of each presentation, and picking these up upon conclusion of each presentation, was thought to be beneficial. Using subjective comments in addition to the numerical scores was suggested because the comments should help refresh the judges' memories after all the presentations and during their deliberations after all of the presentations are over. The use of a forced ranking system throughout the competition, and establishing rules in the event of a tie, were also suggested.

The introduction of the non-EPICS teams in the showcase portion of the day was well-received and approved by all of the judges. There was one question though, about the reason for confining these teams to the "showcase." It was suggested that these teams be allowed to participate fully in the competition even though they are not associated with EPICS, may have graduate students as team members, and may be addressing global problems, not just local ones.

5. The Future

5.1. The 2007 National I2P® for EPICS and Social Entrepreneurship

The *2007 National I2P® Competition for EPICS & Social Entrepreneurship* will have the same structure as the 2006 competition, but will incorporate improvements suggested by the students and judges who participated in the 2006 competition. Teams from all EPICS sites will be invited and there will again be three showcase teams. A more formal process in which teams apply to participate in the showcase has been implemented – a Request for Information (RFI) form is being used to collect information that will enable us to screen the teams that apply. Our goal is to select the teams with the most compelling projects according to the criteria of the competition. The event will be publicized more widely in order to increase both the number of attendees and coverage by the press.

The hope is that this collaborative, multi-disciplinary event will encourage public awareness of all current university programs in technology-based social entrepreneurship, foster the ideals of service-learning, and develop resources for the support of the student teams, their projects, and their community partners.

5.2. The *Innovation Initiative for Social Entrepreneurship*

The Innovation Initiative for Social Entrepreneurship will open its entrepreneurship education efforts and events to all university students working within a service-learning context. It is thus designed to add social entrepreneurship values and opportunities to the service-learning programs in which these students are enrolled.

The goal of the expanded program will be to create a multi-university community of students and faculty with a better understanding of social problems at both the local and global levels. It will also attempt to harness the creativity and energy of this community to develop sustainable approaches the solution of these problems.

6. References

[1] The EPICS Program's website: http://epics.ecn.purdue.edu/.

[2] E.J. Coyle, L.H. Jamieson, and W.C. Oakes, "EPICS: Engineering Projects in Community Service," *International Journal of Engineering Education*, Vol. 21, No. 1, pp. 139-150, January 2005.

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7. Acknowledgements

The EPICS Entrepreneurship Initiative (EEI) is located in the Burton D. Morgan Center in Purdue's Discovery Park. It was launched and has been sustained by funds for Discovery Park from the Lilly Endowment. The 2006 National I2P® Competition for EPICS and Social Entrepreneurship was supported by: the EEI; Hollister Incorporated; Bose McKinney & Evans LLP; San Jose State University; and the University of Texas at Austin.

Professors Steven P. Nichols and John N. Doggett of UT Austin created the product feasibility competition known as the Idea-to-Product® competition in 2001. For more information, please see: http://www.ideatoproduct.org/ut/index.cfm.