Report on

International Workshop on

Innovative Teaching for Improved Learning

held on July 16–18

at Sheraton New Delhi Hotel, New Delhi, India

On the first day of the workshop, Prof. C. Ramasamy, National Project Coordinator, AIP welcomed the participants to the program with a brief introduction on the AIP project. He emphasized the significance of the workshop for the Indian academia in general and the AIP partner universities in particular. Referring to the transformational changes triggered by mechanized farming at some levels of Indian agriculture, the burgeoning population in recent times, along with the diverse necessities of the Indian populace with respect to food grain production, he emphasized the critical challenges faced by Indian farmers to generate more food on shrinking farm lands. To prepare tomorrow's agricultural professional face the challenges, Prof Ramasamy stressed on the importance of re-orienting Indian agricultural education. He also stressed on the demand that India will face with respect to the availability of trained manpower in agriculture in the near future.

Further, he said that a change in the agricultural curricula was imminent to fulfill the varying needs of the agricultural services in a demand-driven production system. Agricultural education thus had to work in tandem with the changing market needs. New trends in agricultural education include collaborative learning (learning through social networking; tech-powered learning, real-time learning, problem-based learning seen during experiential modules, etc). Changes in ways and modes of learning as well as fast-evolving technological changes in agriculture call for revamping the agricultural curricula to meet the demands of our economy. Our graduates should be industry/market-ready by the time they are out of their educational institutions. So, there is a need to train the teachers as well. Excellent teaching is now a demand of time, which will lead to effective and quick learning. The teachers also need to be trained in teaching excellence to meet the emerging demands of agricultural education.

After the introductory speech by Prof Ramasamy, faculty from the University of Illinois took over the stage and shared their ideas on establishing a center for teaching excellence in Indian universities. The faculty members were **Dr. Prasanta Kumar Kalita**, Professor and Leader of Soil & Water Resources Engineering Program, Agricultural & Biological Engineering Department, University of Illinois, Urbana-Champaign; **Dr. Robert J. Hauser**, Dean and Professor of College of Agricultural, Consumer and Environmental Sciences (ACES), University of Illinois, Urbana-Champaign; **Ms. Chilan Bo-Linn**, Senior Specialist in Education in the Center for Teaching Excellence (CTE) at the University of Illinois, Urbana-Champaign and **Dr. Walter Hurley**, Professor of Animal Sciences at the University of Illinois at Urbana-Champaign. The distinguished speakers opened up discussion on several important topics with the participants over the next few days.

Prof Prasanta Kumar Kalita, University of Illinois highlighted the significance of holistic development of students and the need to nurture the students to become good leaders

who can successfully usher in changes in the future. There was a need to incorporate leadership qualities among the students through changes in the curricula. Another critical area where Indian agricultural education needed to focus on was preparing the next generation of teachers, apart from training existing faculty members in teaching excellence. He also felt the need to initiate reforms in educational institutions that would go a long way in changing the face of Indian agricultural education. Reformations in the Indian agricultural educational system could be prompted through teacher recognition, rewards, transformation in institutional hierarchy, greater student-teacher interaction and involvement, encouraging student participation through experiential learning and internships, etc.

Prof. Kalita looked at ways in which AIP could sensitize agricultural institutions, policy makers and academic managers/faculty members to the current trends and changes in the academia and agricultural education. He stressed on how AIP could be a platform to introduce/initiate reforms at all levels of the educational system to usher in the much-required changes in the Indian agricultural education system.

Prof. Robert J. Hauser briefed the participants on the educational system in US Land-Grant Universities and the underlying need for demand-driven education across institutions all over the world. He also stressed on the need to produce the right kind of graduates by universities in the US, especially due to the emerging, highly-competitive environment in the academia due to the recent trend of education in the Land-Grant Universities becoming more student-funded as opposed to the previous trend of being funded more by the state.
Educational institutions across the world are expected to cope with the changes triggered by the changing needs of the time and cater to the demands of the society. Prof Hauser emphasized the important role played by centers for teaching excellence in US Land-Grant Universities in improving the teaching-learning processes. The successful models of such centers that have done so well in the US educational system could also be adapted to suit the Indian agricultural educational systems.

Ms. Chilan Bo-Linn emphasized the urgent need for establishing such centers at Indian universities. She gave more detailed ideas on the possible location and hierarchical system of such a center, since these factors are critical for the efficient functioning of the centers. She also highlighted the significance of good teachers and underscored student participation in learning processes. The need for good instructional designing techniques in courseware; curriculum designing; measurement and evaluation; valuing and recognition were stressed upon by her. These were directly related to the learning outcome.

Dr. Walter Hurley defined the characteristics of a good teacher which included enthusiasm, preparation, concern for the students, simulation of interest, rapport-building, encouraging discussions, clear explanation, fair grading, etc. He enlisted the characteristics of a scholarly teacher, who, according to him, engages students the best in the class. A scholarly teacher is always interested in knowing when, how and why their students are learning. He discussed the key features of the center for teaching

excellence in the University of Illinois and stressed on the significance of an effective learning environment. He also discussed the traits of an effective teacher which is critical for achieving a better learning environment. He also enquired about any existing system of faculty assessment by the students in place in India. To which P. Subbian, acting vice-chancellor, Tamil Nadu Agricultural University answered that there is a system but it's conventional and not reviewed very often. Prof. K. V. Raman, Associate Director, International Programs, Cornell University added that North American Association of Agricultural Teachers, (NACTER) which provides a platform for all the faculty of different agricultural colleges to come together, interact and share their experiences. He mentioned that such interventions could be very useful in the Indian context as well.

The faculty from the University of Illinois sensitized the policy makers – the Vice-Chancellors and the Deans on the significance of establishing a center for teaching excellence in their respective universities. The whole exercise was a consultation process between the participants and the resource persons. The policy makers were asked to develop a preliminary version of an action plan. The policy makers from the participating Indian institutions subsequently made brief presentations on their action plans. They also shared some of the initiatives which they have already taken in this direction. All the participants assured to go back and work on the plan of establishing centers for teaching excellence in their respective institutions. They also assured that the graduate students will be involved in teaching the undergraduate students which will lead to nurturing the next generation teachers in the universities. Centers for Teaching Excellence, when successfully set-up and run at each institution, will help train faculty on teaching and learning methodologies, which, in turn, will improve the quality of both classroom teaching and learning. The following policy makers/senior administrators planned to establish centers for teaching excellence. Here is a brief synopsis of their thoughts and plans.

Dr. Kamal Mathur, Director, National Institute of Agriculture and Marketing (NIAM), proposed to create a center for teaching excellence in agribusiness through collaboration with an international center of agribusiness in the US, which could be implemented within a period of two years. India needs a lot of agribusiness management professionals who can address issues related to agriculture. NIAM could act as the nodal agency to establish a centre in India. Dr Mathur further observed that though there are a large number of agricultural graduates in the country, there is a shortage of good teachers in the educational institutions. In order to establish the center for teaching excellence, the right goals and work plans are required and collaboration with universities has to be worked on. Dr. Mathur proposed to put forth a proposal within a period of three months, and send request letters to US universities within a month to initiate the process of creating the center.

Dr. R. R. Hanchinal, Vice-Chancellor, University of Agricultural Sciences, Dharwad proposed to organize teaching programs for the university faculty. He hinted at the possibility of making suitable provisions to create a separate wing to facilitate teacher training programs and allocating budget to implement such programs. He also

suggested the possibility of rating the teachers for their capabilities in imparting quality education and training to improve teaching skills. This will help improve the academic standards of the colleges and universities. He stressed on the significant impact of the availability of qualified resource persons, networking between universities, availability of language laboratories and financial support for the success of such ventures. He also highlighted the importance of organizing one day training programs to identify qualified resource persons and the need of a separate budget for implementing such programs. He assured that he will make suitable efforts to groom suitable professionals who would be able to impart necessary trainings at the university level.

Dr. M. B. Chetti, Dean, College of Agriculture, University of Agricultural Sciences, Dharwad highlighted the importance of organizing training programs for teachers and setting up suitable evaluation performers. He also suggested making a separate budgetary allowance to implement the teachers' training program. He also suggested rating teachers on the basis of their capability of imparting quality teaching. He added that it was essential to o improve the teaching skills and the quality of education; effectively implement the teachers' training programs at all higher education institutes; improve the academic standards of the university; brining in qualified resource persons, establishing language laboratories and providing financial support. He also recommended one-day training programs to identify qualified resource persons.

Dr. Anil Sirohi, Dean & Professor, College of Biotechnology, Sardar Vallabhbhai Patel University of Agriculture & Technology highlighted the significance of promoting innovative ideas among the teachers on improving the level of education in the educational institutions. He also stressed on the importance of developing mechanisms for rewarding excellent teachers and taking students' feedback at the end of each semester and at the end of each degree program. He also recommended that teachers should attempt self-assessments at regular intervals for improvement.

Dr. P. Subbian, Registrar, Tamil Nadu Agricultural University, Coimbatore, suggested that assessment of teachers should be attempted through student feedback once every semester and by administrators once in three years. He also recommended introducing best teacher awards every year to improve the quality of teaching, encouraging good teachers and recognizing them. He also suggested involving private partners in the whole process. He added that within a period of one year he will make all efforts to introduce a center for teaching excellence, establish a technology lab with the necessary facilities for teachers' training and frame the guidelines for the best teacher award.

Dr. S. Santhana Bosu, Dean, Agricultural Engineering College and Research Institute (AEC&RI), Coimbatore underlined the importance of taking feedback from the recent graduates on their teachers. He also emphasized the importance of imparting training to teachers on educational technology at both national and international levels and the importance of rewarding the best teacher. Feedback from the recently-graduated students, expected to be the most impartial ones, will help improve the performance of the teachers. These feedbacks will motivate the teachers too. He added that the budget and criteria for the best teacher award have to be fixed based on discussions. He added

that funding agencies like ICAR, AICTE, ISTE could help the educational institutions provide teachers' training.

Prof. P. Ramesh, Principal Scientist, National Academy of Agricultural Research Management (NAARM), Hyderabad, suggested sensitizing teachers to the importance of achieving excellence in the teaching-learning process. He added that he will establish a training center for coaching the teachers on teaching excellence. He recommended the idea of introducing the best teacher award which will also help understand and evaluate the teaching-learning process effectively. However, he could see social, psychological, financial and strategic hurdles on the way of establishing the center.

Dr. H. S. Gaur, Dean, Indian Agricultural Research Institute, New Delhi, suggested that in order to promote excellence in teaching and learning taking feedback from the students after the end of each course as well as each academic year is essential. In order to improve the students there could be one-on-one sessions with each student which will help them know their strengths and weaknesses. He also proposed nominating students for awards and appreciations following their achievements. All these will help in strengthening the student-faculty interaction and promote teaching-learning excellence. To achieve this Prof. Gaur proposed improving the infrastructure and providing more resources like computer and internet access along with providing support for publication of research papers. He also said that he will take necessary steps to identify and remove deterrent factors in his institution to promote further growth.

Dr. Alok Jha, Professor & Head, Banaras Hindu University, Varanasi proposed establishing Malviya Centre of Teaching Excellence and Innovation at Banaras Hindu University to augment excellence in teaching and learning. He also proposed supporting the students and faculties in their endeavors by providing enough funding and manpower. He supported the idea of rewarding both students and faculties for their achievements, which will also promote excellence in the institution. These steps, according to Prof. Jha will assist in improving the standard of teaching and knowledge transfer subsequently. However, he pointed out that lack of time to do research and development and fair assessment methods can act as major deterrents which can be countered by developing a pro forma for evaluation after consultation.

Dr. M. Neog, Associate Director of Extension in Education, Assam Agricultural University, observed that unplanned and unspecified teaching methods are one of the major deterrents in the way of establishing an educational environment supportive of teaching and learning excellence. To counter this he proposed establishing teaching excellence centers and also talked about taking initiatives in conducting workshops on teaching excellence to promote an improved learning and teaching environment. Dr. Neog also recognized the value of evaluating the best teacher by means of rewards and recognitions and also suggested proper student assessment processes.

Dr G. N. Hazarika, Director of Research, Assam Agricultural University, had several action plans that could be implemented in his own institution to promote teaching and learning excellence. He proposed evaluation of existing teaching methodologies to

identify deterrents like time consuming teaching methods, few numbers of students pursuing higher studies after their post graduation, etc. He also proposed frequent inter-university faculty interactions and workshops to promote new ideas. He also recommended the idea of inspiring teachers and students to work together towards the goal of improving the learning environment in educational institutions. Dr. Hazarika admitted the value of recognizing outstanding achievements among both students and teachers.

Dr. Birendra Kumar, Director, Residential Instruction-cum-Dean Post Graduate Studies, Bihar Agricultural University, Sabour stressed on the need to sensitize the faculty members to the methods and philosophy of effective teaching and motivate/mentor the good teachers to become better and at the same time document teaching practices in the classroom. He further added that in order to set up a centre for teaching excellence, there should be focused group discussions among both teachers and students. Peer observation and recommendation from the senior professors would be taken into consideration seriously before setting up the centre. Even before the centre is started, there should be some system in place to determine the exact strengths and weaknesses of each teacher so that those can be worked upon and improved in the centre. Prof. Kumar referred to a few hurdles in the form of resistance from teachers in accepting change and the need to put too much extra effort in establishing the centre. He underlined the need of networking among state agricultural universities to impart teacher training; at the same time he referred to the need to mentoring young teachers; getting effective teaching money; identifying good teachers and inviting them to lecture. He also stressed on the need to reward deserving teachers, sending them to important workshops, motivating them to become effective teachers.

Dr. K. Anand Reddy, Director, HRD, National Institute of Agricultural Extension Management (MANAGE), highlighted the importance of networking with Cornell and other affiliated Universities and stressed on the need to collaborate to train Indian faculty at Cornell, Illinois and other universities on teaching excellence and explore the possibilities of organizing international student-teacher meets and student/faculty exchange programs.

Dr. S. N. Puri, Vice-Chancellor, Central Agricultural University, Manipur highlighted the importance of empowering the faculty to deliver the right kind of education to the students. He discussed his plan to establish centers for teaching excellence in three colleges at the earliest, which would go a long way in improving the performance of the students. He added that adequate financial assistance will be provided to the three colleges to set up the centers. He also promised to invite experts from other educational institutions to help nurture the centers, if necessary. The Deans of the concerned colleges will lead the initiatives in setting up the centers in their respective institutions. However, Prof. Puri could see a few hurdles on his way which include unavailability of senior faculty in some of the colleges.

Ms. Patricia Ramsey, Acting Mission Director, USAID/India, on the second day (July 17, 2012) of the workshop said that over the past 50 years, USAID has provided significant

support to universities and researches in agriculture, especially in India. In recent years, the USAID/India partnership has transformed dramatically. A paradigm shift in the relationship is noticed from a traditional donor-recipient relationship to a peer-to-peer partnership for addressing national and global challenges. Today agricultural educational institutions also need to respond to a new and rapidly changing economic, ecological, and technological environment to meet growing agricultural needs. Building institutional and human capacity is one of the many ways to achieve the desired goals. Through Feed the Future, a U.S. Presidential initiative that aims to reduce poverty and increase global food security, the Agricultural Innovation Partnership (AIP) once again brings together leading U.S. Land-Grant Universities and select Indian State Agricultural Universities, to increase agricultural productivity and strengthen food security in India through the process of improving agricultural education. The purpose being, to shift teaching and teachers from a content-centered approach to a learning-centered approach – where students develop critical thinking skills, and learn to work in a team, enabling them to apply themselves to experiential, problem-based learning that will make them competent and better equipped to face global challenges. With this in mind, the AIP project will trigger and facilitate to establish centers for teaching excellence in each partner state agricultural university to develop better prepared students to enter the dynamic Indian economy in the field of agriculture. This conference lays the groundwork to address the critical teaching demands in the state agricultural universities.

Dr. Arvind Kumar, Deputy Director General, Education, Indian Council of Agricultural Research (ICAR) informed the participants of the steps taken by ICAR over the years to improve agricultural education in India, which included funding by ICAR for creating educational infrastructure and upgrading the quality of human resources. He also discussed the support provided by ICAR to the state agricultural universities, resulting in the creation of facilities for large numbers of experienced learning modules. Dr. Kumar expressed his concern over the 25-30 per cent of vacant teaching posts in the state agricultural universities. The regional variations covering 15 agro-climatic zones are to be incorporated in the curricula by the universities in different agro-climatic regions. He also indicated that NAARM is training the teachers continuously through training programs, but to a minimal extent, given the level and size of the faculty in state agricultural universities. He also underlined the need of e-learning systems for undergraduate programs. The ICAR-appointed Dean's Committee, from time to time, develops a boarder framework of curricula for the undergraduate degree programs which are distributed to all state agricultural universities for adapting to the regional needs.

The later half of the day saw presentations by the faculty from the University of Illinois on several different areas which included attaining excellence in imparting contemporary agricultural education and exploring existing methodologies to address the issues related to teaching-learning gaps. Each topic was dealt by multiple presenters during the course of the presentations.

Creating Responsive, Effective Teachers: Understanding How Students Learn

For attaining excellence in imparting contemporary agricultural education, which will also strike a balance between addressing the immediate need of the students and improving teaching methodologies, one must deal with the issues related to teaching-learning gaps. Learning, being a biological process, needs a thorough understanding of how the human brain gathers and processes information, which can impact teaching positively and help formulate effective methodologies. The speakers discussed multiple ways in which teachers could be more effective instructors/trainers in the classroom environment and create ways in which they could boost the interest and response levels of the students.

Teaching Styles Vs Learning Styles: Match or Mismatch?

This session stressed on the possibility that, for a student, at times, the entire process of learning could be an isolated experience, bereft of the actual/intended learning outcomes of a course. In such scenarios, it becomes very important that students are made aware of the ulterior goals of the course. The session on 'Match or Mismatch' explored the delicate balance between teaching and learning styles and how teachers could design effective solutions for dealing with student issues and creating maximum interest among students in classrooms. According to the learning theory of Gregorc, there are four learning styles that students follow in classrooms – Concrete Sequential, Abstract Sequential, Concrete Random and Abstract Random. A teacher aware of his own teaching style and the different learning styles of his students has an advantage over his peers in being able to deliver his ideas more effectively.

Creating an Environment to Promote Significant Learning Experiences and Enduring Understanding

The speakers explored the scope of looking at several parameters to assess the faculty while introducing changes in curricula by initiating integrated, idea-based courseware to equip students with leadership qualities. They also shed light on how preferred learning styles are related to teaching methodologies and ways in which a faculty member could gain maximum mileage by adopting certain techniques. Several instructional methods, assignments, and evaluative procedures that would improve the interest level of the learners were also discussed. For introducing an effective teaching methodology, creating a teaching philosophy statement and portfolio that describe and document the teaching procedure, was proposed. Similarly, for an improved learning environment the need for informal and timely feedback and assessments was stressed on the second day of the workshop.

The last day of the workshop focused on the dire need to introduce collaborative learning modules at a large scale in the curricula of the Indian state agricultural universities. The discussions were broadly divided under the following topics:

Engaging Students in Active Learning and Effective Questioning

There has been an increasing concern that students must be cognitively active for deeper learning and retention of knowledge/information. Bonwell and Eison (1991) elaborated on the idea that when students are engaged in active learning, they take more responsibility for their learning and use higher levels of thinking, such as analysis

and problem-solving. Active learning can include activities where student are involved in doing, seeing, writing, feeling, and talking.

Maximizing Benefits of Students Working and Learning in Teams

Thus collaborative studies or active learning have the benefit of intensifying the learning procedure through identifying key issues faster and creating effective learning strategies through opportunities for implementing more beneficial inductive teaching methods. To attain a positive change in the existing agricultural educational system, the need of collaborative learning is high, for this has the potential to maximize the benefits of learning in a group, sharing ideas and bringing out leadership qualities. With the increased demand for students to work effectively in teams, many instructors have implemented short-term and semester-long team projects in their courses with proven benefits in terms of deriving team membership, appropriate team assignments, critical team skills, and assessment and feedback from the students.

Engaging Students through Experiential, Authentic Learning

The workshop measured the feasibilities of preparing curricula supportive of experiential learning by integrating authentic tasks, case studies and simulations. The final day sessions also explored inductive learning, the inquiry cycle, and several inquiry-based teaching approaches, supporting with examples of integrating inquiry-based learning into in-class and out-of-class learning environments. A need for creating a benchmark where the benefits of the new curricula can be shared and the progress can be monitored was also weighed and discussed in the sessions.