Participatory Learning and Action (PLA) Techniques

Introduction: Participatory learning and action (PLA) can be defined as "a growing family of approaches, tools, attitudes and behaviours to enable and empower people to present, share, analyse and enhance their knowledge of life and condition and to plan, act, monitor, evaluate, reflect and scale up community action." It is a practical, adaptive research strategy that enables diverse groups and individuals to learn, work and act together in a co-operative manner, to focus on issues of joint concern, identify challenges and generate positive responses in a collaborative and democratic manner.

Goals: Exemplify the importance of group involvement in analysis, decimation and solving various life and societal issues.

Preparation:

1) Faculty members gather information regarding social issues that can be solved by technology.
2) Faculty members classify the information in to three categories
   a) Problem statement
   b) Current status of solutions in place
   c) Technological expectations / new technologies that can serve as replacement of existing systems
3) Faculty members prepare short presentations or lectures to introduce problem statement in context of course curriculum.
4) Faculty members conduct quizzes or provide links to external quiz pertaining to topic discussed.

Methods / Procedure:

1) Instructor presents problem statements in regular class one week prior to discussion in association class.
2) Problem statements are related with the topics that were covered in the class and also with the current socio-economical demands.
3) The students are required to gather material through online resources and discussion with their parents, family members and peers to comment on currently available solutions.
4) In association class the student groups discuss the potential of introducing new schemes to improve current system.
5) All the points discussed are summarized in form of short notes.
6) Notes are shared in student's social groups for further discussion.
7) Small summary is released every fortnight stating the problem statement, current solutions and proposed modifications for review by other faculty members, students and interested parties.

Significance of results:

1) A participatory approach brings together representatives of all the local stakeholders.
2) It allows students to listen, analyze and comprehend the viewpoint of other members of society.
3) PLA techniques allows students to understand the power and responsibilities they have towards society as engineers and future professionals.

Presentation:

1) The core topic of PLA discussion is introduced in regular class.
2) This allows the students to prepare before coming to the association class.
3) The topics discussed in the classroom are shared in social media groups of institute.
4) The students, faculty members and other stake holders comment and elaborate on proposed solutions.

Reflective critique:

1) Collection of PLA discussion notes are published in department cloud drives every fortnight.

2) Students are encouraged to find correlation between different discussions.
3) Extra homework credits are awarded to students who proposes justifiable modifications in existing proposed solutions.
4) Faculty members conduct free writing sessions to help summarize the PLA discussion as weekend assignments helping the students to use their knowledge to present a workable-viable solution to the problem statement.

Topics discussed

1) Diabetes: Health care system for Indian Women:
Introduction: Diabetes in India rising, with women at a particular disadvantage
Indian women with diabetes still play 'caretaker role' in the family and prioritise the health of others above their own
The disease itself may not discriminate on the basis of gender, but when it comes to healthcare for patients with diabetes, women in India find themselves at a disadvantage compared with men.
This is the conclusion of a study, Impact of Gender on Care of Type 2 Diabetes in Varkala, Kerala, which analysed gender roles, norms and values in a household and found women patients to be more vulnerable.
Ref:
[1] https://www.theguardian.com/global-development/2013/may/24/diabetes-india-women-disadvantage

Students input:
Students discussed their personal experience with a diabetic patient (Parents or family members).
Faculty input: Faculty explained the impact of technology in combating diabetes. New technology; as given below; that are currently being used were discussed.
a) Insulin delivery
b) Self-monitoring of blood glucose
c) Continuous glucose monitors
d) Automated insulin delivery
Ref:
[2] https://www.webmd.com/a-to-z-guides/condition-15/diabetes/gadgets

Conclusion:
The students were asked to submit a 500-word essay on “Which diabetic combat technology will you prefer at you home”

2) Role of ICT in agriculture
Introduction: The application of Information and Communication Technology (ICT) in agriculture is increasingly important. E-Agriculture is an emerging field focusing on the enhancement of agriculture and rural development through improved information and communication processes. More specifically, e-agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use information and communication technologies (ICT) in rural domain, with a primary focus on agriculture. E-Agriculture is a relatively new term. E-Agriculture is one of the action lines identified in the declaration and plan of action of the World Summit on the Information Society. The Food and Agriculture Organization of United Nations (FAO) has been assigned the responsibility of organizing activities related to the action line C.7 ICT Applications on E-Agriculture. The main phases of the agriculture industry are: Crop Cultivation, Water Management, Fertilizer Application, Fertigation, Pest Management, Harvesting, Post-Harvest Handling, Transporting of Food/Food Products, Packaging,

Food Preservation, Food Processing/Value Addition, Food Quality Management, Food Safety, Food Storage, Food marketing. All stakeholders of agriculture industry need information and knowledge about these phases to manage them efficiently. Any system applied for getting information and knowledge for making decisions in any industry should deliver accurate, complete, concise information n time or on time. The information provided by the system must be in user-friendly form, easy to access, cost-effective and well protected from unauthorized access. Information and Communication Technology (ICT) can play a significant role in maintaining the above mentioned properties of information as it consists of three main technologies. They are: Computer Technology, Communication Technology and Information Management Technology. These technologies are applied for processing, exchanging and managing data, information and knowledge.

Ref.:
[1] http://www.economist.com/specialreports/displaystory.cfm?story_id=12411882.
[2] http://www.economist.com/specialreports/displaystory.cfm?story_id=12411864.
[3] http://www.economist.com/specialreports/displaystory.cfm?story_id=12411854.

Student input: Students discussed the review of different hardware and software implementations available to improve agriculture related activities. The students presented their views based on the literature survey they had conducted over last 2 weeks.

Faculty input: Faculty members discussed the implementation issues for development and deployment of low cost circuits for agriculture. Some of the topics that were discussed are as follows.

a) Autonomous Weed Removal Robot
b) Wireless Soil Moisture Probe
c) Plant Disease Detection
d) Smart Irrigation
e) Getting Weather Data
f) Cloud services for data collection

Conclusion: Students were asked to form group of 3-4 members and submit literature review on “Circuits and systems for agriculture in my area.”