

# **STeLA Leadership Forum 2010 in Beijing**

**August 15<sup>th</sup> ~ 22<sup>nd</sup> @PEKING University**

## **Forum Report**

Organized by:

Collaborators:

Supporters:

Science and Technology Leadership Association

MIT – Japan Program

MIT Leadership Center

Office of International Relations, Peking University

The University of Tokyo Beijing Office

Tokyo Institute of Technology

Beijing Institute of Technology



**“Bridging the Gap ~ Technology Transfer ~”**

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STeLA is an association to educate future leaders on real global issues in science and technology fields, and to prepare them for encountering these issues in the future. Global society is now facing imminent problems such as climate change, pandemics and other natural disasters. Global leadership, with a science and technology background, is required to tackle these issues. STeLA has organized the annual STeLA Leadership Forum which is an intensive one-week leadership program for university students from all over the world. This year, STeLA has achieved a major accomplishment by organizing the forum in Beijing.

Participants of the STeLA Leadership Forum are brilliant university students from the US, Japan, China and France. They were exposed to leadership lectures, scientific discussions and challenging projects to develop their capacity as future global leaders in science and technology field. We believe the 4th annual STeLA Leadership Forum has impacted their personal visions and enhanced a global network of future leaders.

On behalf of STeLA, we would like to thank all of our sponsors, collaborators and advisors for all of their support. This forum could not have achieved such success without our supporters. New staff members for the STeLA Leadership Forum 2011 have already started to prepare for the next Forum, and we hope our supporters continue to aid this activity and make difference in the future.

Thank you,

**James Li & Paul Zhu**  
**STeLA-China President & Vice President**

**Masaru Nagura**  
**STeLA-Japan President**

**Brianne Holmbeck & Chris Moses**  
**STeLA-US Presidents**

**Garance Bruneau**  
**STeLA-France President**





*I would like to extend my welcome to STeLA Leadership Forum 2010 participants. This is the fourth STeLA leadership forum and the MIT-Japan Program has been proud to support all four conferences. This conference is dedicated to the subject of technology transfer and sustainability. You will look at the various disciplines that are involved in this complicated topic and you will participate in leadership exercises. This is the first conference held in China and the MIT-Japan Program and STeLA are delighted with the Beijing location, China's participation and the internationalization of the conference. It is STeLA's hope that the conference will generate young technologists that are aware of today's world, that are connected to each other and will bring their considerable knowledge and energy to this critical issue.*

**Patricia Gercik**  
**US Advisor, STeLA**  
**Associate Director, MISTI**  
**Managing Director, MIT-Japan Program**

*I am delighted to announce the opening of the STeLA Leadership Forum 2010 in Beijing, because I am proud to have been collaborating with STeLA as an advisor from its founding. Before the Forum 2010 starts, please let me say that, in order to reach this point, STeLA faced new difficulties which had never been experienced before in the preparation, and finally overcame them with the tireless dedication of the staff and priceless help from greathearted people. Therefore, from the bottom of my heart, I hope everyone keeps in mind that STeLA can never work out without such precious and high-spirited support. During the Forum, I believe both participants and staff will have wonderful experiences with the lessons about "What is leadership in the context of science and technology?" and everyone might find his/her own answer to the question by the end of the Forum. Prospective leaders who should stand up against critical global issues need passion, wisdom (knowledge plus experience), and responsibility in their growing-up process. I hope that many of you young people will be inspired by the Form and will take the first step to be qualified in these characteristics by joining the STeLA network that is spreading all over the world.*

**Shigeki SAITO**  
**Associate Professor**  
**Tokyo Institute of Technology**



Four years ago, the Science and Technology Leadership Association (STeLA) was launched by graduate students studying science and technology at MIT, Harvard University, and Boston University. Through informal meetings and friendly discussions between highly motivated students from different countries and various fields, the founders understood the need for a network of a younger generation of scientists and engineers which would allow for the exchange of ideas on the critical role of science and technology in global society. Shortly after the creation of STeLA in the US, a few founding members, upon completion of their studies, returned to Japan and established the second branch in Japan, composed of students from the University of Tokyo, Keio University, and the Tokyo Institute of Technology.

The first STeLA Leadership Forum was held in 2007 in Tokyo, Japan, organized under the auspices of the MIT-Japan Program. Both the US and Japan branches actively contributed to the success of the Tokyo forum, bringing together students from their respective nations to exchange ideas and learn leadership techniques with and from one another. The STeLA Leadership Forum 2008 experienced similar success at the Massachusetts Institute of Technology in the US and included participants from Japan and China. The third Forum returned to Tokyo in 2009, expanding further to include students from France. The mandate of the Forum was, and still is, to create an intellectual network and to develop leadership skills with the intent of preparing participants to cope with the overarching theme of global issues in science and technology.

The STeLA Leadership Forum 2010 was held in Beijing, China, at Peking University. Sixteen students from Japan, eleven from the US, ten from China and three from France gathered to spend eight days together collaborating across language, cultural and disciplinary barriers.

The Forum itself consists of three components:

- (1) Leadership Education: modeled after the educational materials developed by leading experts in leadership and organizational behavior including those at the MIT Leadership Center at the MIT Sloan School of Management
- (2) Thematic Sessions: focused on the important theme of “technology transfer” in the domains of energy and agriculture
- (3) Capstone Group Project: Allowed participants to apply the leadership skills and domain-specific knowledge that they learned during the week to a hands-on project, viz. applications that employ solar collectors



## Schedule



<b>Registration &amp; Ice Breaking</b>			
<b>Day</b>	<b>Time</b>	<b>Location</b>	<b>Activities</b>
<b>8/15(Sun)</b>	15:00 - 17:00		Arrivals & Registration
	17:00 - 19:00		Introductions
	19:00 - 20:00		Welcome party & Ice Breaking Events
<b>Leadership Education Session</b>			
<b>8/16(Mon)</b>	7:30 - 8:30		Breakfast
	8:30 - 9:00		Daily Morning Check-in
	9:00 - 9:30		Introduction to the Conference
	9:30 - 10:00		Introduction of Technology Transfer
	10:00 - 11:30		Leadership Self-Assessment
	11:30 - 12:00		Learning Goal-Setting
	12:00 - 13:00		Lunch
	13:00 - 15:00		Beer Distribution Game
	15:00 - 16:30		Debrief: Five-Level Perspective
	16:30 - 17:30		Exercising Leadership
	17:30 - 18:30		Keynote Speech
	18:30 - 20:00		Dinner
	20:00 - 21:00		Daily Reflection
<b>Thematic Session : Agriculture</b>			
<b>8/17(Tue)</b>	7:30 - 8:30		Breakfast
	8:30 - 9:00		Daily Morning Check-in
	9:00 - 9:30		Introduction to Agriculture
	9:30 - 11:00		Case Study: Agriculture
	11:00 - 12:00		Presentation by Japan International Cooperation Agency
	12:00 - 13:00		Lunch
	13:00 - 14:00		Case Study: Agriculture
	14:00 - 16:30		4-Player Model
	16:30 - 18:30		Visioning
	18:30 - 20:00		Dinner
	20:00 - 21:00		Daily Reflection
<b>Thematic Session : Energy</b>			
<b>8/18(Wed)</b>	7:30 - 8:30		Breakfast
	8:30 - 9:00		Daily Morning Check-in
	9:00 - 9:30		Introduction to Energy
	9:30 - 12:00		Role-play simulation on Technology Transfer in Energy
	12:00 - 13:00		Lunch
	13:00 - 14:30		Panel Discussion on Technology Transfer
	14:30 - 15:30		Mental Models
	15:30 - 16:30		Focused Conversation Method
	16:30 - 18:30		Group Facilitation Method
	18:30 - 20:00		Dinner
	20:00 - 21:00		Daily Reflection

<b>Site Visit</b>			
<b>8/19(Thu)</b>	7:30 - 8:30		Breakfast
	8:30 - 9:00		Daily Morning Check-in
	9:00 - 15:30		Site Visit
	15:30 - 16:30		Group Project Introduction
	16:30 - 18:30		Keynote Speech
	18:30 - 20:00		Dinner
	20:00 - 21:00		Daily Reflection
<b>Group Project</b>			
<b>8/20(Fri)</b>	7:30 - 8:30		Breakfast
	8:30 - 9:00		Daily Morning Check-in
	9:00 - 12:00		Group Project
	12:00 - 13:00		Lunch
	13:00 - 18:30		Group Project
	18:30 - 20:00		Dinner
	20:00 - 21:00		Daily Reflection
<b>Group Project</b>			
<b>8/21(Sat)</b>	7:30 - 8:30		Breakfast
	8:30 - 9:00		Daily Morning Check-in
	9:00 - 12:00		Group Project
	12:00 - 13:00		Lunch
	13:00 - 17:30		Group Project
	17:30 - 18:30		Keynote Speech
	18:30 - 20:00		Dinner
	20:00 - 21:00		Daily Reflection
<b>Group Project &amp; Final Presentation</b>			
<b>8/22(Sun)</b>	7:30 - 8:30		Breakfast
	8:30 - 9:00		Daily Morning Check-in
	9:00 - 12:00		Group Project
	12:00 - 13:00		Lunch
	13:00 - 16:00		Final Presentations
	16:00 - 19:00		Final Reflection and Debrief
	19:00 - 20:00		Dinner
	20:00 - 22:00		Farewell Party





### Sunday, August 15th Welcome Reception

#### **Ice Breaking Game**

In the opening reception, participants and staff members mingled together over dinner learning more about one another and their common interests. Later in the evening, the participants played an icebreaking game. Each participant stated three sentences concerning herself or himself, one of which was a lie and the other participants would attempt to guess which one was not true. Throughout the fun filled evening the participants learned more about one another, their similarities as students and differences between cultures and academic disciplines.



### Monday, August 16th Leadership Education

#### **Introduction to Distributed Leadership and the STeLA Leadership Forum**



After the morning check-in exercise, the STeLA Leadership Forum 2010 started with an introduction to the Distributed Leadership model. Joe Hsueh asked the participants to reflect on and share “an experience where you or someone else you know exercised leadership in the past.” After hearing the stories, the concept of “creative tension” between a vision and the current reality was introduced. To reduce the tension, it is common for people to either lower the vision or deny the current reality. However, neither of them helps bring about a real change towards the vision. An effective leader is able to hold the creative tension and gradually bring a group of people from where they

are (current reality) to where they want to go (vision). This requires four Distributed Leadership capabilities, as developed by researchers at the MIT Sloan School of Management and other collaborators. They are:

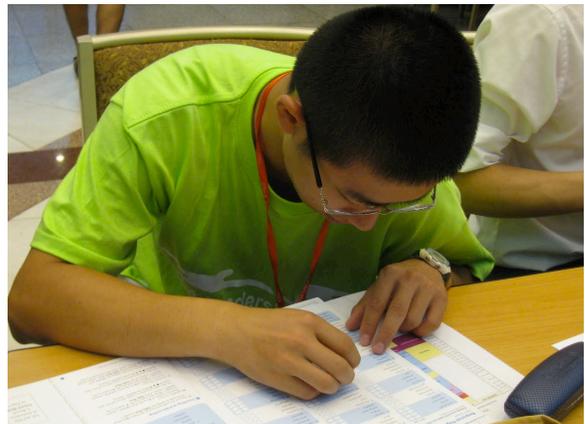
- 1) VISIONING the future: focusing on what we really want to create.
- 2) SENSEMAKING the current reality: seeing the current reality for what it is, applying systems thinking to see the underlying structure that creates the behavior we observe in a social system.
- 3) INVENTING the path: co-creating concrete steps to bring about the changes needed to realize the vision.
- 4) RELATING with people: understanding each other’s mental model of how we perceive the reality and listening intently one’s aspiration so we can better collaborate as a team.

After the introduction of the distributed leadership framework, Jennifer Howard introduced the overall forum design composed of 1) Leadership Education (some theories and models of leadership); 2) Thematic Sessions (the context for leadership and domains of application); 3) Group Project (the practice of leadership). The participants got an overview of the whole forum and were ready and excited to start the learning journey!

### **Leadership Self-Assessment and Goal Setting**

The first hands-on and focused activity was the leadership self-assessment session by Vivek Sakhrani. The goals for the session were to enable the participants to understand (1) their behavioral tendencies in teams (2) team members' perception of the individual's behavior (3) how to improve the effectiveness of their team's performance by dynamically enhancing or suppressing behavioral tendencies.

Vivek began by discussing with the participants the importance of behavior and attitudes in a leadership setting. Participants were encouraged to identify myths and truisms of leadership as articulated by The LeaderShape Institute and think about why many aspects of leadership can be learned and practiced. Participants then took the DiSC Assessment test published by Inscape Learning. The results of the test provided participants with a report on their behavioral tendencies and suggestions for how to modulate them. This was followed by a discussion of the usefulness of an assessment model like DiSC for identifying leadership skill sets that could be improved.



The self-assessment session was conducted early in the week to provide participants with a common metric for evaluating their own and each others' leadership styles. The common language and report style gave them a specific vocabulary for communicating about their behavior for the rest of the Forum. It also made the Forum individual-specific. Thus, participants not only learned about leadership in general, but also about their own styles in the context of the general framework. This balance was emphasized throughout the Forum. With the results of the assessment in hand, participants were encouraged to set individual learning goals for the rest of the week. The objective was to allow each one decide what they wanted to learn during the Forum, and develop a personalized plan to achieve it. They were given specific prompts:

- What skills or behaviors do you want to learn and practice during the Forum?
- Who can you learn these from?
- What can you help someone else learn this week?

Additionally, the goal setting exercise encouraged participants to create a positive community experience. They were asked to identify behaviors that would:

- enhance their learning as a community, or
- sabotage their learning

Progress on individual and community goals was revisited during other sessions and in the daily reflection sessions.

### **Beer Distribution Game**

After lunch, Joe Hsueh led a simulation developed by the System Dynamics group at the MIT Sloan School of Management, called the Beer Distribution Game. Each participant plays one of four roles, the factory, distributor, wholesaler or retailer in the beer industry supply chain, with a goal to minimize their total inventory costs without running out of the beer. It was an experience full of chaos between the different roles and surprises. Participants learned of the challenges of leading and collaborating in a complex social system while also having fun through the game. They learned about how our limited mental models often lead to suboptimal results in an overall system despite everyone's best intentions, and the importance of shifting from siloed thinking to seeing the whole system.



After playing the beer game, Joe debriefed with the Five-Level Perspective framework – event, pattern, structure, mental model and shared vision. This introduced the participants to the importance of moving from superficial observation and attribution of an event to identifying the underlying structure, mental model and vision that created the pattern of behavior we experienced in the game. Systems thinking, the ability to view and understand the whole system, diagnose a problem systematically and identify high leverage points, is a critical sensemaking capability of a leader. Joe closed the session with an example that demonstrated the central concept of this session: “structure creates behavior”.

### **Systems Thinking**

To further our learning on systems thinking, Joe Hsueh led a session starting with a group juggling exercise. Ten volunteers were asked to stand in a circle. Balls were thrown in one by one and passed around the circle. At the beginning the balls were passed around smoothly. Then more balls were thrown in until they reached a critical growth limit, overloaded the system, and eventually collapsed.

Following the exercise, the Five-Level Perspective Framework introduced in the Beer Game debrief was used to analyze the behavior of the group dynamics. A Causal Loop Diagram was introduced to map out the underlying feedback structure that caused the system to overshoot and collapse. After seeing how the structure created the behavior, participants were asked to propose various solutions. They were then asked to think about which one of the solutions would be the highest leverage point and have the most impact. The participants engaged in a lively discussion and learned to appreciate the differences between reactive (low) and generative (high) leverage points in a social system. In this session, we learned that seeing the underlying structure that caused the behavior is a crucial **sensemaking** capability, while identifying high leverage points to intervene is a critical **inventing** capability of a leader.

## 4-Player Model

In this session the participants learned about a systems approach to team-building, called the 4-Player Model. Vivek Sakhrani described the four actions that are the essential building blocks of both dysfunctional and healthy team behavior. They are:

- **Move** — establishes a direction and sets the team in motion.
- **Follow** — provides support for the mover and serves the function of completion.
- **Oppose** — questions the move that has been initiated.
- **Bystand** — provides perspective and invites the team to be more reflective.

These four actions offer “direction and energy; momentum and connection; correction and elaboration; and perspective taking, reflection, and openness to the workings of teams.” In the appropriate sequences, these acts enable team members to consider a wide range of alternatives, examine each alternative in some depth, refine and elaborate the alternatives with ideas from inside and outside the team, choose an alternative, and act. The participants then experienced the four roles through two team building exercises, ‘Straw Towers’ and ‘Paper Plane Supply Chain.’

In the Straw Towers exercise, Vivek asked the participants to form small groups of four to five people and attempt to build the tallest, free-standing straw tower with a limited number of drinking straws, sticky tape and paper clips. In addition to achieving the explicit objective, i.e. building the tower, the participants were expected to exercise behaviors from the 4-player model. After the activity, the debriefing session elicited how participants found themselves exercising one behavior or another depending on the actions and reactions of their team members. This activity helped to reinforce the message that leadership is dynamic and behavior can be adapted to enhance the effectiveness of teams.

In the Paper Plane Supply Chain activity, Vivek organized the participants into larger groups of 10 to 12 people. They were asked to form a paper plane manufacturing company that involved making and flying the plane to the customer destination. Some members were assigned explicit roles such as pilot, quality control, accountant and assembly line workers. The goal of this activity was to illustrate how positional roles in the real world are different from assumed behavioral roles of leadership. Additionally, the activity also illustrated the difficulty of being dynamic in a very large group of people when the interactions are often chaotic. In spite of the chaos and intensity of the task, the groups succeeded in practicing the 4-player model, while having a great time!



## **Visioning**

Visioning is one of the four Distributed Leadership capabilities discussed previously. To lead we need to know what we want to create first. Visioning involves creating compelling images of the future. While sensemaking charts a map of what is, visioning produces a map of what could be, and more importantly, of what a leader wants the future to be. Joe Hsueh began the session with an exercise of the “magic iron arm” to demonstrate the power of a strong vision. Joe then asked the participants to sit down quietly, close their eyes, take a deep breath and relax. He led them through a visioning process to envision the future that they truly desire – the ideal self-image, career, relationships, community and personal legacy.

After envisioning the future, participants were invited to visualize their visions in the form a mind-mapping exercise. Each participant used crayons to draw a picture of his or her vision on easel paper. The completed pictures were displayed on the tables and turned the conference room into a colorful art show of futures. The participants took turns to explain their visions to each other and were allowed to comment on the visions and discuss with one another throughout dinner. It was an enlightening exercise where both participants and staff members learned about each other on a more personal level, strengthening the bonds that will create the STeLA network.



## **Mental Model and Ladder of Inference**

Mental models are representations of reality that people use to understand specific phenomena and guide their actions. They are deeply ingrained assumptions, generalizations, pictures or images that influence how we understand the world and how we take action. Because mental models are usually tacit, existing below the level of awareness, they are often untested and unexamined. A core capability of a leader is to bring mental models to the surface, explore what has caused them and discuss them with minimal offense so we can better understand the perspectives of others and find ways to create new mental models that will better serve us in the world.

Joe Hsueh started the session with an astounding exercise that demonstrated how we tend to jump to conclusions without reassessing our underlying assumptions. The Ladder of Inference was introduced to diagnose our mental models. It illustrates that we begin with Real Data, the kind that would be captured by a video camera. We then choose a set of Selected Data that we pay attention to. To this Selected Data we add Interpretations, make Attributions, form Generalizations and finally adopt Beliefs. Beliefs then form the basis of our Actions which bias how we Select Data. It is important that we become aware of where we are on the ladder and check our mental models with reality through inquiry and advocacy.

The group then engaged in an interactive dialogue among the participants on why certain members speak up less than others and how the community can co-create a set of norms for helping each other to express one’s opinion and support one’s learning. The whole group analyzed the situation with amazingly open honesty and exhibited immense care for each others’ concerns.

## **Focused Conversation Method**

This method shifts the scope of learning from individual to shared insight, and enables the group to:

- Engage contribution from every member of the group;
- Transform raw experience into insight;
- Move together;
- Inquire;
- Stay focused yet adaptable to the evolving situation. Such conversations can be life or death to the learning organization.

The methodology guides the thinking of the group to a new and deeper understanding through a series of four types of questions:

1. Objective: (Facts, data, information), "What did you actually see and hear?"
2. Reflective: (Emotions, feelings, creative associations), "What was your gut level reaction?"
3. Interpretive: (Values, significance, implications), "What new insight did you get from this?"
4. Decisional: (resolution, decision about the future), "What can we do?"

This process flow enables the way we converse together to be more productive. As many of the participants in STeLA are students in science or engineering and plan to work toward solving global issues in the future, they will undoubtedly work with teams whether it be in academia or on an occupational project. The ability to effectively guide a group through a conversation and end with usable results is important for those who want to be successful in the real world.



## Tuesday, August 17th Agriculture Sub-theme Session

Through group work regarding technology transfer in agriculture, participants learned how to view the complicated network of relationships between stakeholders concerned with a single issue to be analyzed: the Green Revolution in India. The Green Revolution in India was chosen as an example of such a complicated situation because this is regarded as one of the most eminent success of technology transfer in increasing crop production. By discussing “for what purpose, for whom, and what goal is technology transfer necessary?” and analyzing the social structure related to the Green Revolution in India, participants were able to view where scientists, technologists and engineers fit into an overall social structure and discuss how such people could become more involved in such situations.

To analyze the relationships and overarching structure of the social system, participants created correlation maps in groups to represent their interpretation of who the stakeholders were and how they were related to one another. This process aimed to enable participants to visualize the social structure around technology transfer, which is often the biggest obstruction to success as it contains factors that are not necessarily related to the technology itself.



Following the correlation map creation, participants learned about technology transfer from a professional’s point of view: Mr. Junichi Imai, a project coordinator of Japan-China Sustainable Agricultural Technology R&D Project (Phase 2) of JICA in China. Project “Phase 2” focuses on “eco-friendly” agriculture techniques. Mr. Imai delivered a speech concerning the theory, reality, his experience and thoughts on technology transfer from Japan to China.

After the speech, each group discussed “what the scientists could have done to better the Green Revolution” and “what they can do in a similar situation in the future”, based on the correlation map they made. Groups presented to one another three actions scientists must take if faced with a similar situation again, the most common of which was to effectively communicate the technical aspects of the situation to those who may not understand it.

All the groups made correlation map with 10~15 stakeholders and relationships between each stakeholders. Many stakeholders that were not explicitly shown in the introduction and materials were considered (e.g. retailers as a stakeholder, law relaxation as a relationship between Indian government and foreign companies).

Each group presented what they discussed in their groups. To begin with, many groups thought “communication” between those who produced technology and those who use such technology is important



because the technology will not be sustainable if we do not consider where and whom the technology is translated to. Related to the communication, some group mentioned to the importance of “sharing the sense” with stakeholders working with, though there was a counterargument that scientists/technologists may not be any longer if they care so much of co-workers’ idea (e.g. policy, economics). “Responsibility” to the environment was also often mentioned. Scientists and technologists should not just introduce the technology but also need to take care of the ripple effects accompanied with. “Profitability” was not included as “the three must items” by many groups.

To begin with, set on Day 2, agriculture-session contributed to participants’ learning in two ways. Firstly, the connection to the contents of lectures on Day 1 was conveyed to participants. As a participant pointed out, an analogy lay between “ball-tossing (a short exercise in system thinking)” and “Green Revolution” by viewing “problems” as parts of an overall system, rather than reacting to specific part, outcomes or events. Secondly, agriculture-session gave a good pre-material for following leadership lectures. Each group had one to two “movers” in the discussion, and everybody was well involved in it with those movers centered. This worked for participants as an example of group dynamics when learning 4 player model.

Next, agriculture-session made a success of a new contents design. As with a new kind of group work, the correlation map-making, we were worried about each group could not make a certain map because of the lack of information, limited time, or other unexpected problems. However, all the groups have achieved making correlation map within a time. There was also a good diversity in the form of maps and relationships, despite our concern of all the groups coming up with similar maps.

On the other hand, the “three must items” presented were easy to extract, though all of them should be important. If we had had time after the presentation, we could have discussed why there “idealistic slogans” are difficult to be achieved by scientists/technologists. Given more time for open discussion, participants would have delved deeper into the dilemma between the chance of making profit lying behind technology transfer and the duty of scientist/technologist to save people in need.

The Agriculture Sub-Theme session allowed participants to experience viewing a system from a larger perspective, to make connections with the earlier leadership sessions, and to discuss how scientists and engineers play a role in solving global issues. By regarding the system as a whole, the participants were able to view where constraints and pressure points within the system existed socially. A participant connected the session to the ball tossing exercise by suggesting that the problems related to technology transfer may be structural issues, rather than related to stakeholder perspectives or event-based. The discussion concerning what scientists and engineers can do in a future generation allowed them to look at what roles they might be playing in the future and to keep in mind the lessons that they learned through this session. Moreover, the group work provided an experience in which the teams could later reflect on as they analyze their group dynamics and individual dynamics throughout the week.

## Wednesday, August 18th Energy Sub-theme Session

### **Case Study: Clean Coal Technology and Technology Transfer**

During the transition towards the solar age, an energy gap has to be filled, in the prevailing post-petroleum era. It looks as if the supply of oil, and later also natural gas, will not keep up with the ever growing demand for energy. Coal offers great potential as a substitute for oil and natural gas, but so far its versatility has been underestimated, mainly due to concerns about the overall efficiency and its detrimental effects on environment. However, significant research is ongoing in order to utilize the full potentials of coal as a primary source of energy. One such effort is “Clean Coal Technologies” (CCT), a venture to make conventional coal technology cleaner and reduce its environmental impact.

Conventional coal technology involves pulverizing coal into a fine powder, and then burning it. This type of technology is primarily used for the generation of electricity. However, as stated previously, the burning of pulverized coal can have serious environmental drawbacks. Hence, the need for CCT is paramount. The case study and presentation showed participants the generations of technological advances that have led to more efficient coal combustion processes and reduced the emission of sulfur dioxide, nitrogen oxides and carbon dioxide.

### **Role-playing Game**

After presenting a case study of CCT and its technology transfer, we held a role-playing game to simulate the real-world negotiation regarding the technology transfer of CCT. In short, participants were divided into groups comprised of six people and each participant was assigned a role: a CCT company, a professor, an environmentalist, an investor, and governments from both the developing and the developed country to discuss whether the developing country would invest in CCT from the developed county or not and under what terms.

This role-play was another opportunity to tackle an existing global issue by identifying the stakeholders and understanding the perspectives of each stakeholder. This “stakeholder” model is fundamental to the global leadership beliefs of STeLA. Often, the positions or beliefs of key stakeholders in any global challenge are steeped in a particular point of view, and are generally valid and vital to truly understanding the nature of the problem. After these activities, participants were given time for reflections of both personal experiences in small groups and group dynamics in the large group for gaining insight of leadership skills they have learned during the leadership sessions.



## Thursday, August 19th Site Visit and Group Project

### Group Project: Innovative Use of Solar Energy

Every year, participants at STeLA take on a difficult but rewarding challenge: the group project. In small groups, they experience working in multi-cultural and multi-disciplinary teams to achieve a common goal and put into practice the lessons learned from the leadership and thematic sessions. This year's group project took place at Beijing Institute of Technology (BIT) over a period of two and a half days.



In keeping with STeLA's goal of leadership education in science and technology and this year's theme of "Technology Transfer in Energy and Agriculture", the groups were given the task of building a device to focus and collect energy from the sun. They were asked to find innovative uses for the energy from the solar collector and to prototype a beneficial and practical future product. The group project culminated in the final presentation, in which groups presented their prototypes and gave short presentations on their ideas to a panel of judges. This event was open to the media, BIT students, and the general public, in order to raise awareness about STeLA and its vision and goals.

