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Extreme Learning Process

Submission for Reimagine Education Awards

**Objective**

The aim of XLP is to become a “crowd learning” operating system that enables the creation of rich learning ecosystems. Ultimately, as the number of participants in “crowd learning” ecosystems increases, we envision each such ecosystem increasingly approximating the “real world”.

Student Perspective

1. XLP engages students by giving the responsibility to make financial, legal, cultural and technical decisions in a stimulating, inviting, yet challenging context.
2. XLP is realistic. It provokes realistic human/social dynamics and utilizes real technologies and social norms and regulations. It blurs the boundary between ivory towers and the global society.
3. XLP helps students to realize their un-tapped potentials and emerging powers of collaboration by stretching them to accomplish challenging and open-ended projects.

Teaching Perspective

1. XLP enables a repeatable and evolutionary process to create tailor-made programs for individualized learning activities in a sociable context.
2. XLP redefines teachers’ roles by letting them serve as curators of learning resources and as discoverers of students’ learning-potentials.
3. XLP provides the network-enabled learning data management technology to help stakeholders record, analyze and identify learning trajectories and new directions for improvements.

**Approach**

Extreme Learning Process (XLP) re-composes individual and school-based learning activities into a unifying, continuous learning/publishing workflow. It utilizes popular and open source technologies to provide a digitally enabled operating environment, orchestrates inter-disciplinary students and teachers into Crowd Learning participants, and creates a concurrent, yet stage-gate controlled learning process integrated with an outcome compilation process to produce digitally publishable learning outcomes.

**Operating Environment**

XLP provides a coherent set of digital and physical infrastructures to enable learners to practice their four basic rights. All learning activities are governed by exercising these rights. These four rights are in alignment with constitutional scholar Lawrence Lessig’s “Four Forces”, known as:

* Architecture: Technologies that enable certain behaviors of the crowd.
* Law: Conflict resolution mechanisms that punishes or rewards certain crowd behavior
* Market: Asset exchange platform that entices or pulls out certain actions
* Norm: Culture, or public media that pushes on peer to act

In the world of XLP, students have the right to apply technical/natural resources to learn, the right to resolve conflicts or defend their rights during the learning program (litigation), the right to exchange their assets, especially digitally transferrable and exchangeable assets with other participants, and the rights to present their opinions and ideas in the learning environment. These four basic rights enable teachers and students to operate within a wide range of dynamic learning contexts. XLP utilizes open sourced, multi-platform digital content distribution system, such as Git, to replicate and digitally track any digitally recordable content, from source code, design plans (technology), conflict resolution records (law), asset exchange records (market), and students’ learning reflections on blog entries (media). The schools that operate XLP must also provide the physical in-presence learning environment to allow in-person learning activities.

**Participants**

To orchestrate inter-disciplinary collaboration, teachers and students are assigned three different kinds of roles. Teachers and school administrators are called “Learning Event Organizers”, who provide resources and decide the main theme of learning outcome. Students and content providers (can be teachers or domain experts) are organized into two roles, “Challenge Designers" and “Mission Executors". Challenge Designers are activity designers, who collaboratively create tailor-made learning experience that fits the resource constraints and contextual requirements of its target students. Challenge Designers also serve as seed Mission Executors. They must try out their own learning activity design and refine the activity design before “Mission Executors” participates in the learning program. “Mission Executors” are empowered by the “four forces” provided in the Operating Environment. They also provide face-to-face feedback to “Challenge Designers”, so that learning activities can be refined during and after the learning activities.

**Process**

XLP treats every learning team as a microscopic society in a digital publishing / learning workflow. The learning workflow in each learning experience is divided roughly into five stages:

* idea generation and goal definition;
* resource planning;
* distributed content management;
* product development; and
* media publishing.

In the first stage of a learning experience, some learners, called “Challenge Designers,” workout activity ideas an define a set of learning objectives to draw domain-specific experts to participate in a learning experience as content providers or learners.

In the latter four stages of the learning experience, Challenge Designers leverage the “Four Forces” mechanisms to facilitate the participation of scalable problem solving teams comprising “Mission Executors” (the other learners) in customized learning experiences that enable “crowd learning.”

The form that learning experiences can take is flexible. At this point, they generally take the form of intensive one-week workshops or semester college courses. “Presence learning” sessions serve as technology transfer lectures, dispute resolution hearings, asset auctions or exchanges, product or service demonstrations, or press conferences. Learners define and refine the “Four Forces” mechanism of “crowd learning” through their respective and collective experiences.

All learners must acquire digital identities when they participating in any XLP event. This digital identity enables them to use Digital Content Sharing and Change Management technologies to track their individualized “change history” data so that they are able to systematically exchange their respective digitally tracked contributions with other learners and negotiate their rights and resolve conflicts through this digital platform. To enable reliable and scalable data analysis and accumulation services, Challenge Designers should work with crypto-currency (Bitcoin) operators and Git-based learning process data solution providers to try out desirable technical services. When ever possible, Learning Event Organizer should invite real-world public media experts to work with students in writing press releases and even to conduct “real” press conferences.

**Demonstrated Results**

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Since June 2012, XLP-based orientation programs and semester-long courses have been conducted at Tsinghua University in Beijing, National Taiwan University of Science and Technology, Taylors’ University in Malaysia, Singapore University of Technology and Design, two vocational colleges, and many leading high schools in China. The program has served more than 1000 people in the last two years. In each orientation program, we typically involve from 50 to 100 Challenge Designers and similar numbered Mission Executors. Results of our activities have been published by many main-stream media, including Wired Magazine, People’s Daily, Slate.com/Washington Post, and Instructables.com. One of the XLP-based product entries submitted on instructables.com reached more than 100,000 views within two weeks. Tsinghua university and its affiliated high school have already decided to re-furbish one entire building (16000 Square Meter and 5000 Square Meter space, each) to conduct XLP-based learning activities to accommodate larger number of students.

A more intuitive assessment of XLP’s demonstrated result, comes from Mr. Wang Hong Yu, the General Manager of China’s largest educational material publishing house, Higher Education Press:

*“With shock and awe, I personally witnessed the transformative effective of a few XLP events on students. I realized that a radical transformation in education has already taken place here in China. The traditional textbook-oriented industry could no longer be lasting. We have to re-position ourselves in the future ecology of education.”*

XLP is scalable and applicable to a broad range of students. A teacher from Tian Jin Mechatronics Vocational College stated his observation:

*“In the past, I can only judge students’ quality by their test scores. However, after seeing the students with low test scores can sometimes be the most productive contributor in XLP-enabled learning process, I realized XLP presents many opportunities for students to demonstrate their natural talents.”*

XLP also utilizes its digital publishing workflow to produce enticing technical content, therefore enabling public media to broadcast our event, and draw top talents from around the world to contribute cutting edge content. In September 2013, we set the goal of dropping the cost of an Atomic Force Microscope from USD$50K to USD$1K. Within 4 months, with our preliminary technical results being digitally distributed around the web, and some public media, we got in touch with the leading expert, Dr. Hwu En Te, who came to Tsinghua University in January 2014, and lead our students to create such low cost scientific instruments in an XLP-enabled learning activity.

XLP also inspired many participants to create start-up companies. One of tis original participants, Mr. Wang Jian Jun, was since name Forbes’ 2012 Top 30 Entrepreneurs under 30 in China. Two other Forbes Top 30 winners, Pan Hao, and Thomas Yao have served as Challenge Designers and provided technical services and operational advises to students in various XLP-based activities.

**Lessons Learned**

XLP experiments present a new vision of how educational programs might function differently from the way they have in the past. Schools provide physical infrastructure that hosts students, teachers, and societal stakeholders (such as employers, state and local governments, and parents) to conduct XLP-enabled learning activities to achieve their desired ends. The digital network, open source technologies, and publicly available resources provide the context and content that enable learners to engage with real-world environments and contexts. Through applying Internet-scale content sharing and data collection tools, participants learn that advancements in a unifying digital publishing workflow are the determining factor that drives the quality and scalability of Crowd Learning. As the tools and skills of network-enabled digital publishing become more advanced and scalable, it will become increasingly possible to cultivate the collaborative potential and capabilities of connected individuals and learning organizations to develop, and to transfer between them, increasingly sophisticated, meaningful, and relevant collective knowledge. In an ideal world enabled by a smoothly functioning, user-friendly, and unifying crowd learning platform, individuals, families, schools, enterprises, and state and local governments become distributed agencies that jointly and continuously work on one big Work-in-Progress publication. In this ideal world, will we still need to judge the effectiveness of teachers or schools based on average student grades, standardized test scores, and graduates’ employment rates? Even before we enter that ideal “crowd learning” world, shouldn’t we rethink how schools and educators should prepare educational institutions to enable the approximation of that ideal world today?