Clicking LAMS: Participative Philosophy in both offline and online learning

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Nanyang Technological University: established 1955
6000+ staff and 24000 undergraduates (80/20 local/int’l mix)
4 main Colleges: Engineering, Science, Business, Humanities and Social Science. NIE and other small colleges makes the total.
WHY?
Learners of today?
Or more like these?

Characteristics:

- Social learners
- Multi-taskers
- Short attention span
- Wants information fast
- Wants it anytime, anywhere
Gen Y, Millennials, Net Generation

- **Tech savvy**
  - Continually connected with IM, SMS
  - Socially connected with devices

- **Cosmopolitan**
  - Influenced by peers

- **Short attention span**
  - Skim text and information quickly

- **Achievement oriented**
  - Seek recognition, fame and feedback
  - Wants meaningful work and a solid learning curve

- **Team-Oriented**
  - Value teamwork and seek the input and affirmation of others
  - Loyal, committed and wants to be included and involved
Characteristics of this Generation

- Access to hyperlinked, ubiquitous information in all aspects of their life
- Hyper-statual mind; twitch-speed; short-attention span (Puchta 2007)
- Wants empowerment; a chance to share between peers (Daniel Pink 2008)
- Evidence from neuroscience: Synaptic plasticity of the brain; malleable; they are engaged in a different way.

So, what then??
Teacher

Didactic

Communicator

Knowledge transfer

Content

Textbook

Courseware

Learner

Receptor

Current/Previous Mode
Emerging Model

- Participative
- Collaborative

Content
- Internet
- Web
- OER
- Video Lectures

Learner

Teacher
- Textbook
- Courseware

Facilitator
- Curator
Philosophies driving the tools introduced
Learning is Everywhere. With Everyone. F2F and Online.

Participative

Collaborative

Sustainable
Evidence

Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses

Richard R. Hake
Department of Physics, Indiana University, Bloomington, Indiana 47405

(Received 6 May 1996; accepted 4 May 1997)

A survey of pre/post-test data using the Halloun–Hestenes Mechanics Diagnostic test or more recent Force Concept Inventory is reported for 62 introductory physics courses enrolling a total number of students \(N = 6542\). A consistent analysis over diverse student populations in high schools, colleges, and universities is obtained if a rough measure of the average effectiveness of a course in promoting conceptual understanding is taken to be the average normalized gain \(g\). The latter is defined as the ratio of the actual average gain \((\%\text{(post)} - \%\text{(pre)})\) to the maximum possible average gain (100).

Mechanics Baseline test of Hestenes–Wells imply that IE strategies enhance problem-solving ability. The conceptual and problem-solving test results strongly suggest that the classroom use of IE methods can increase mechanics-course effectiveness well beyond that obtained in traditional practice. © 1998 American Association of Physics Teachers.

Cited by 1857
Evidence

What we have done?

Face to Face (F2F)

Physical Classrooms changing to a more facilitative setup.

Where collaboration and discussion is encouraged.

Affordances in tools such as Clickers are introduced.

Psychosocial moratorium: (Gee; 2007) ‘learners can take risks where consequences are lowered.’

Peer learning and instruction

What about online learning??
Blended learning: Needed

- eLearning alone is not enough. Many edveNTUre (NTU BB system) sites have online instructional resources that offer flexibility in delivery of high quality content anytime anywhere, but lacks the social and learner engagement found in a classroom.

- Blended Learning combines the benefits of both F2F and online instruction for more effective engagement and learning experience. e.g. a lesson may have pre or post online activities or resources, while the classroom time can be used to engage students in feedback, clarification and other interactive learning experiences.

- Blended learning is on the rise in education institutions

Proliferation of MOOCS

Aggregation
Remixing
Repurposing
Sharing
of Learning Content
WHY BLENDED/ONLINE LEARNING: Learning Continuity

- Continuing Education
- Seminar/Conferences
- Overseas attachment
- On leave (urgent, sick)
- Distance Learning
Continuity of Learning

**continuity** - uninterrupted; when something continues without being changed or stopped

**learning** - the activity of obtaining knowledge
eLearning Week @ NTU

• Initiated since AY2006/2007 Sem 1 as school based exercises to enhance use of eLearning environment for learning continuity situations

• Enable NTU’s systems to fine tune their response capabilities and procedures to respond to higher learning demands.

• Encourage faculty to explore new ways of innovative teaching, and provide an integrative online learning experience that blends with the classroom
WHY LAMS?
The Problem: elearning Content Today

• Most assumes single learner, self-paced learning

• Often little more than textbooks online

• Content-centric, transmission model of education
  – What is the implied pedagogy?

Now what?!!
Implied Pedagogical Models

• Most of the current elearning standards/specifications tend to assume:
  – Single, isolated learner
  – Primary focus on content delivery
  – Interactivity provided by self-test questions, exercises
  – Course length generally 30 minutes to a few hours

• Pedagogical theory?
  – Transmission model of education
  – Computer as authority by proxy
  – Learning as short, bite-sized “chunks”

• Focus on technical details, not learner experience
E-learning Content Today

- Teachers can feel something fundamental is missing

  “This doesn’t feel like what I do everyday in my teaching”

- Why doesn’t elearning facilitate “Lesson Plans”?
  - That is, software that describes and manages sequences of collaborative learning activities (not just content)
Learning Design Importance

• Learning Design assumptions:
  – Single or multi-learner environments, flexible groupings
  – Primary focus on learning activities
  – Interactivity provided by discussion groups, chat rooms, etc (as well as by self-test & simulations)
  – Includes content delivery as one type of learning activity
  – Able to describe long-term learning

• Pedagogical theory?
  – Supports different models, including constructivist & transmission
  – Computer as gateway to other learners and resources
  – Learning is still broken down into “chunks”, but can be part of a broader whole
LAMS: Introduction

- World’s leading software for Learning Design
  - 1000s of educators across 80+ countries
  - Translated into 27 languages

- Visual “drag and drop” approach to designing activities
  - Helps educators to visualise teaching and learning processes

- LAMS Sequences can be shared, re-used and adapted
  - LAMS Community (www.lamscommunity.org)
  - Approximately 3600 members, 86 countries, 300 shared sequences downloaded 8000 times, 3800 discussion postings

- Rapid content design development and comes with many learning activity tools, supporting interactive and pedagogically driven learning sequences.
LAMS Overview: Author View
LAMS activity types

**Informative**
- Tasklist
- Spreadsheet
- Noticeboard
- Image Gallery tool
- Pixlr
- Share Resources

**Assessment**
- Submit Files
- Assessment tool
- Multiple Choice

**Collaborative**
- Scribe
- Forum
- Chat
- Google Maps
- Wiki tool

**Reflective**
- Notebook
- Question and Answer
- Data Collection tool
- Survey tool
- Mindmap
- Voting
- Video Recorder tool
Learner View

Video 1.1: General Introduction

Please click the above link to view the video lecture. After viewing please answer the question below.

Time: 08:15
Notes: L1.pdf 1-5
Instructor: Ast/P Sunil Chandrakant Joshi

Question 1:

What are your learning objectives for this course? Remember, there is no right or wrong answer. However, it is important for you to answer as best as you can.

Answer:

Submit
LAMS Learner View

- Where the learner is currently
- Activity(ies) learners have not completed
- Activity(ies) which learners have completed
An example using LAMS

How a learner view the HS209 course

Q&A require you to submit your answer first before viewing others.
LAMS Monitor (Sequence Tab)

These small icons represent the position of Learners in the sequence.

The Sequence tab shows a graphical representation of the sequence, the same as shown in the Authoring Environment.

Finished Learners: 0 of 8
Learners who have completed the sequence are listed here.
LAMS Monitor (Learners Tab)

- View the progress of the class and learners
- Learners view (shown below) presents learners’ progression of activities.
  - Blue circles indicate activities completed by learner
  - Red squares indicate current position of learner in sequence
  - Green triangles represent activities not yet reached.
When to use?
Balancing online and in-class activities with LAMS

- Paper from Paul Lam, Mary Yeung and Carmel McNaught (CUHK)

Case 1

Student learning is carried out as out-of-class activities but closely monitored by the teacher, hence control is exercised.
Balancing online and in-class activities with LAMS

Case 2

The online LAMS sequence was mainly used as an in-class learning tool. Activities are designed to be more flexible and less structured, thus allowing the students to learn at their own pace and as many times as they like, and the teacher only need to spend time on the needy students.
NTU Example 1: Using LAMS for students to learn how to setup a wind tunnel experiment (restricted access)

Lecture I - Setup of Experiments and Wind Tunnels

The next activity is a lecture on how to plan and setup an experiment and on how wind tunnels are designed.

To access the lecture click on the link below.

Recorded Lecture - Wind Tunnel (25m 06s)
Example 1: A LAMS activity to encourage peer and reflective learning

- Multiple varied answers to the same question
- Good, poor, incomplete, right, wrong, partial, model answers
NTU Example 2: Use of LAMS and video segments for Engaged Learning in a Distance Education course

Welcome to M6426 Management of Technology and Innovation

- The syllabus lists class meeting time and venue
- Here are two useful getting-started guides: Orientation Video and Distance Education Study Guide

This course is an elective subject under MScs (Logistics) and is also open to other post-graduate programs' students of NTU. The main focus of this course is to provide both strategic and operational perspectives of the process and organization in the management of technology, innovation and entrepreneurship. The course takes a multi-level view from the strategic analysis at the national level to the industry and enterprise levels, and to the management of product innovation and development projects. We will examine the key activities and issues at each of these levels of management.

As your instructors, our responsibilities are facilitating course interactions as well as imparting and sharing our knowledge.

As a student in this class, your commitment to learning is vital to your successful course experience. This involves developing content knowledge, learning skills, and awareness necessary to function as an independent thinker as well as a team player. I expect you to be challenged, be creative, and be engaged in your learning activities.

A/P Yeo and A/V Kumar
Import from LAMS Community

- The templates that forms the previous examples can be downloaded from the LAMS community.

Import from lamscommunity.org

**Compare And Contrast**

A sequence template for comparing and contrasting two different topics/ideas/examples/etc. It uses 4 small groups for discussion of each individual topic, then a combined class discussion for comparing and contrasting these, followed by submission of an essay in which the student gives his/her own opinion of the comparison. As a template, the sequence includes advice on how to edit the template.

- Downloaded: 9 times

Updated on: July 18, 2012

**First Fleet Role Play**

Keywords: History; first fleet; Australia; convicts; colony; colonisation; role play

Subject: First fleet

Audience: Stage 3, Stage 4

Run time: 1 day - 2 weeks

Delivery Mode: Online or blended


Outline of Activities: Database research; collaboration; online discussion; persuasive writing

- Downloaded: 6 times

Updated on: June 21, 2012

**Middle East Simulation**

Keywords: Simulation; Politics; Middle East; negotiation; collaboration, peace talks

Updated on: June 11, 2012
Findings: Quality of Learning Goes Up!

• View video course content segmentation + interactive learning activities + group participation
  – More engagement as more senses are used
  – More active participation
  – More thought
  – More reflections
• More self-directed learning
• More peer-peer collaborative learning and assessment and
• Develops more discerning learners
• Professors have a better gauge of students’ learning
“It's very engaging and beneficial. I enjoyed doing this elearning. We were exposed to different speakers giving their speeches in different styles and we were allowed to comment. At the same time, we were able to reflect on areas for improvement in giving our own speech! Thumbs up! ;)

“I have found this elearning session to be productive. I was actually impressed at the structure and outline of the lesson, given the limitations of using Internet to conduct a short course, what more a subject that requires face-to-face interaction.

Nevertheless, I think the videos you uploaded as well as the students' have achieved the 'human' aspect of it - something novel to me, as far as elearning courses are concerned.
Looking at all courses, the numbers are encouraging with over 450+ unique courses incorporating LAMS sequence(s) in their online courses.

Focusing on just academic courses, the estimated numbers for this AY is about 270 courses with the numbers reaching 470 courses to include other types of courses.

With an average of 3 Faculty using the same course sequences, an approximate 1000 Faculty have used LAMS in NTU over the last AY.

Big dip in 2010/2011 but with new initiatives beginning in early 2012, the adoption numbers for academic courses have increased by 79% and 210% YOY.

### LAMS Usage in NTU (Over 4 years):

<table>
<thead>
<tr>
<th></th>
<th>AY12/13</th>
<th>AY11/12</th>
<th>AY10/11</th>
<th>AY09/10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of unique edventure course-sites with LAMS Sequences</td>
<td>470</td>
<td>454</td>
<td>433</td>
<td>248</td>
</tr>
<tr>
<td>No of unique edvNTUre course-sites with LAMS Sequences (Academic Courses only)</td>
<td>270</td>
<td>86</td>
<td>48</td>
<td>97</td>
</tr>
<tr>
<td>YOY Increase for Academic Courses</td>
<td>210%</td>
<td>79%</td>
<td>-50%</td>
<td>NA</td>
</tr>
</tbody>
</table>
LAMS Future Use in NTU

• Part-Time B.Eng. Blended Modules
  – 2 Modules are in development now with completion by end July 2013. (EE2004 and MA1002)
  – Leveraging on the Learning Activity Management System (LAMS) that integrates with the edveNTUre LMS to allow for the social aspects of learning via collaboration and active learning to occur even in the online space.
  – Flipped Classroom pedagogy is emphasised with higher-order thinking and learning when learners come to class.
  – 2 further modules will be developed from August 2013 onwards for delivery by end of the year.
Clickers @NTU
- Access to hyperlinked, ubiquitous information in all aspects of their life
- Hyper-statial mind; twitch-speed; short-attention span (Puchta 2007)
- Wants empowerment; a chance to share between peers and **craves feedback** (Daniel Pink 2008)
- Evidence from neuroscience: Synaptic plasticity of the brain; malleable; they are engaged in a different way.
Feedback was most powerful when it is from the student to the teacher.

*Hattie, 2009*
Hattie says ‘**effect sizes**’ are the best way of answering the question ‘**what has the greatest influence on student learning**’.

An effect-size of 1.0 is typically associated with **improving the rate of learning by 50%**, or a **two grade leap in GCSE**, e.g. from a C to an A grade.

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**Mean effect-sizes from over 500 meta-analyses of various influences to achievement.** Professor John Hattie

<table>
<thead>
<tr>
<th>Influence</th>
<th>No. of effects</th>
<th>Effect-Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback</td>
<td>139</td>
<td>1.13</td>
</tr>
<tr>
<td>Students’ prior cognitive ability</td>
<td>896</td>
<td>1.04</td>
</tr>
<tr>
<td>Instructional quality</td>
<td>22</td>
<td>1.00</td>
</tr>
<tr>
<td>Instructional quantity</td>
<td>80</td>
<td>.84</td>
</tr>
<tr>
<td>Direct instruction</td>
<td>253</td>
<td>.82</td>
</tr>
<tr>
<td>Acceleration</td>
<td>162</td>
<td>.72</td>
</tr>
<tr>
<td>Home factors</td>
<td>728</td>
<td>.67</td>
</tr>
<tr>
<td>Homework</td>
<td>110</td>
<td>.43</td>
</tr>
</tbody>
</table>

**OVERALL EFFECTS**

500,000+ | .40
You have taught them; Have they learn?
Interaction in class is key

Co-constructor of learning

Peer learning

Challenge: Not all learners want to speak up.

Pedagogically:
Team-based learning
Constructivist
Peer assessment
Facilitative

Suitable Tools?
Learner Response Systems allows individual participants to respond to questions through the use of a device such as the keypad (Clickers) here.

Affordances in this technology:
- Inclusive: even quieter students will respond
- Non-threatening: psychosocial moratorium (Gee; 2003)
- True feedback garnered
- Break the monotony of lecture and increasing the PTV, PTS and EC in the self-system
The Components

Hardware:

Clickers and Receivers
RF Frequency with 60m range

The Clickers are given to all students
The Receivers are installed in 90% of teaching venues within fixed enclosures.

Software:

Turning Point 2008 is an add-in that integrates 100% into Microsoft PowerPoint®, allowing educators to transform a passive lesson into an Interactive learning experience.

Turning Point Anywhere is a stand-alone software that allows educators to transform anything shown on the PC/Mac into the a similar interactive learning experience.
I am most likely to use Clickers ... (Choose 3 options..)

1. for formative evaluation
2. for summative evaluation
3. to break the monotony of the lesson
4. to take attendance
5. to elicit discussion
6. for peer evaluation
Real Examples from others:

1. Comparing class survey with survey from published studies:
   Brings meaning to their learning and contextualising it to the real world.

Show students the published results and the class results and get them to discuss the differences and/or similarities.

Imagine that the US is preparing for the outbreak of an unusual Asian disease which is expected to kill 600 people. Choose a program to address the problem.

- A: 200 people will be saved
- B: 1/3 chance that 600 people will be saved. 2/3 chance that no people will be saved.
Real Examples from others:

2. Opinion based questions: to encourage debate and discussion

Do you think that violent video games encourage players to be violent/aggressive in the real world?

1. Yes, definitely
2. Perhaps
3. I am completely undecided
4. Quite unlikely
5. No, absolutely not
<table>
<thead>
<tr>
<th>Admin</th>
<th>Mass Issuance</th>
<th>Ad-Hoc Issuance and Returns</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mass Recovery</td>
<td>Inventory Database</td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>Pedagogical Training</td>
<td>Round-table discussions</td>
<td>School-based or specialised workshops</td>
</tr>
<tr>
<td></td>
<td>Technical Briefing</td>
<td>User-group Meetings</td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>Helpdesk</td>
<td>Onsite Support</td>
<td>Pedagogical Consultancy</td>
</tr>
</tbody>
</table>
Clicker Database

Use to track inventory

This database allows us to check, at any one time, the number of devices deployed in the institution, number of devices expected to be returned per year and to ensure we have enough devices to deploy students, yearly. It helps us plan and also track faulty devices etc.

Use for generating class list

This database allows NTU educators to generate a class list that you can then import into Turning Point 2008 so you can identify students’ responses for analysis.

Analysis, that will allow you employ appropriate learning interventions etc.
Pedagogical Training

The Feedback Generation
- Characteristics of the Feedback Generation
- Implications on engaging and enhancing quality of learning
- Learner Response Systems

How do I start?
- Pre-lecture
- During the lecture
- Post-lecture

When should I use it?
- Best practices
- Giving credit
- Building an interactive lesson from my current PPT

Conclusion
- Recap
- Help and Support Information

Real Examples from others:
7. Predict the outcome of an experiment:
   - Describe an experiment: students predict outcome; show the results and get students to discuss.

Material A was mixed with Material B. What can happen?
   a) An exothermic reaction occurs
   b) An endothermic reaction occurs
   c) No reaction as both are inert
   d) Other things happen

During the lesson: Step 1 - Checklist at the start:

Do ensure the following:
- You have the following files:
  - The PPT file
  - The TPL file
  - The TPZ file

- You have copied the above files onto the PC that you are using.
  (This is important.

- Check that the Clickers are connected correctly to your session
  - Physical check of the USB (to your own laptop or venue’s PC)
  - Channel Setting by students
  - Test connections (only for small venues)

Please look at pages 36-18 to see the details of checking the Clickers connection.
Learning Moments

Why and When in Training is important. Helps maximise application of clickers in lessons.

Policies help. NTU’s refocus on teaching innovations improves interest from Faculty.

Online, trackable database implemented at the start, before deployment is very important.
Feedback from Students

“I feel that the clickers are quite a useful tool to get feedback from the class since it allows us to get feedback from all members of the class instead of just one or two people……”

“The most interesting thing about the class would definitely be using clickers ....... It also showed how some people’s views differed from others and this was brought to the center of the class and discussed instead of being written down and nobody would be able to see what anybody else answered…..”

“I found the clickers exciting. I have never come across this method of engaging the class. It actually helped to ease up the quiet atmosphere in class.”

“What I enjoyed the most was during the question and answer questions when we had to use our clickers to answer some questions posted on the screen.... More of such activities could have been incorporated into the lessons since it actually helped me learn much more than expected .....”
Clicker Usage in NTU (Over 4 years):

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Courses Using Clickers*</th>
<th>% of Courses</th>
<th>YOY</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY 2009/2010</td>
<td>143</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>AY 2010/2011</td>
<td>103</td>
<td>5%</td>
<td>-27.97%</td>
</tr>
<tr>
<td>AY 2011/2012***</td>
<td>205</td>
<td>11%</td>
<td>99.03%</td>
</tr>
<tr>
<td>AY 2012/2013***</td>
<td>774</td>
<td>41%</td>
<td>277.50%</td>
</tr>
</tbody>
</table>

*The numbers here are collated from the clickers database for those that uses the generated class list for clickers. Again this is not a complete picture because there are other courses that uses clickers for just formative evaluation.

**The 2012/2013 numbers are up to 17 April 2013

- Clicker usage picked up especially from AY2011/2012 Semester 2 and for this new AY2012/2013.

- Final numbers for this AY will reach at least 774 courses, at least 40% of courses here and YOY% increase of over 277%.

Clickers initiatives such as the Clickers@NTU Forum, Clickers website, revamped Clickers training has worked and are producing results.
Up to AY2011/2012, about 83% of students who were issued Clickers, have used it in 6 different modules. (On average)
Thank you.

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