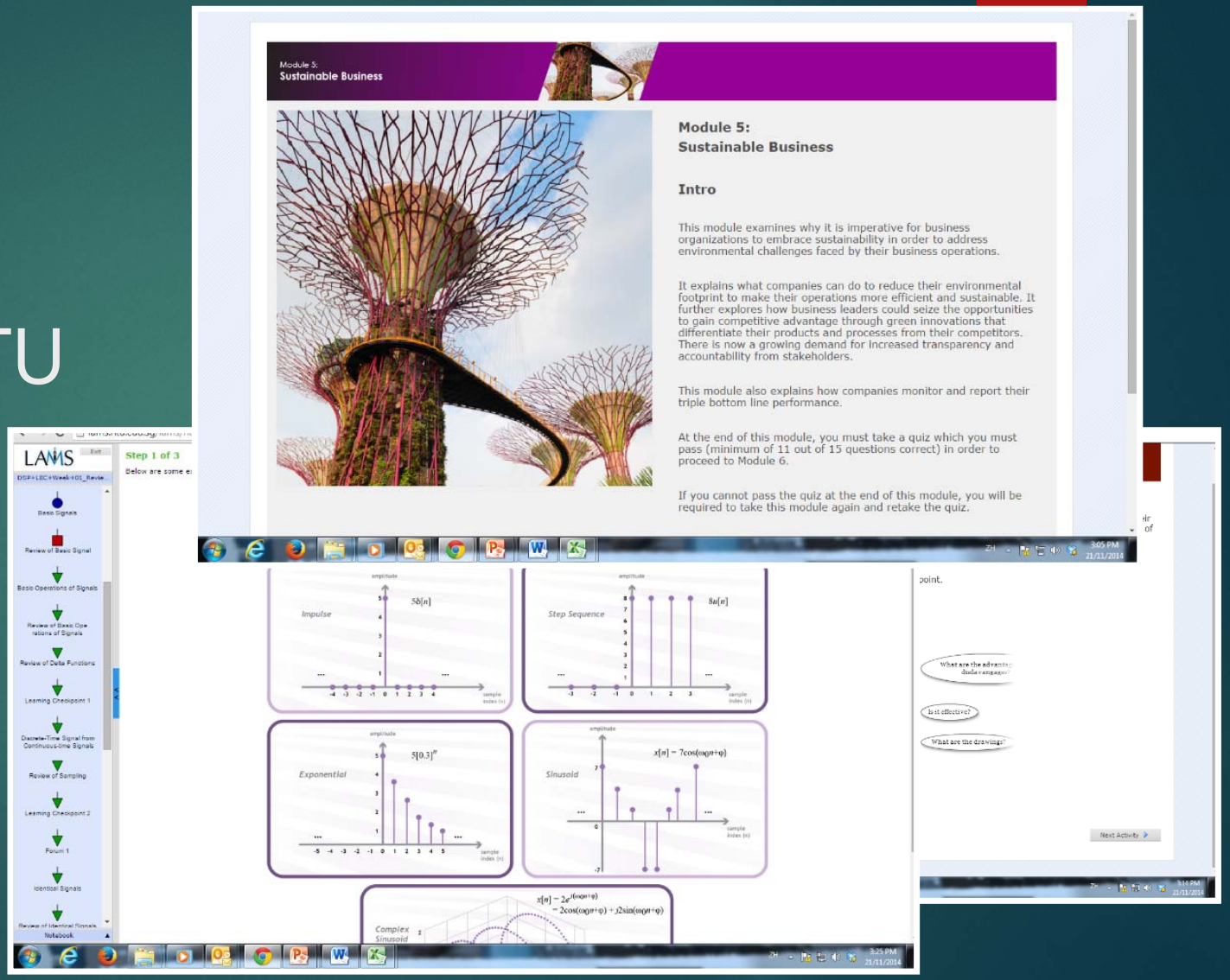
NANYANG TECHNOLOGICAL UNIVERSITY

Large Class Implementation using LAMS in NTU



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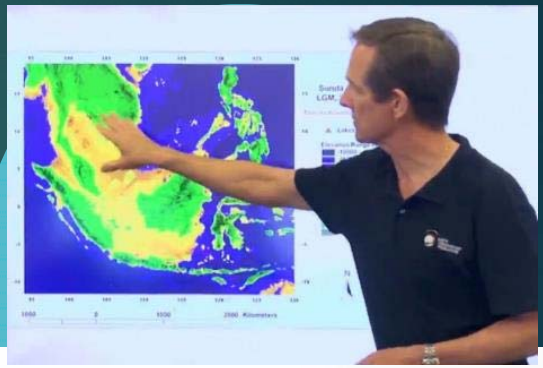
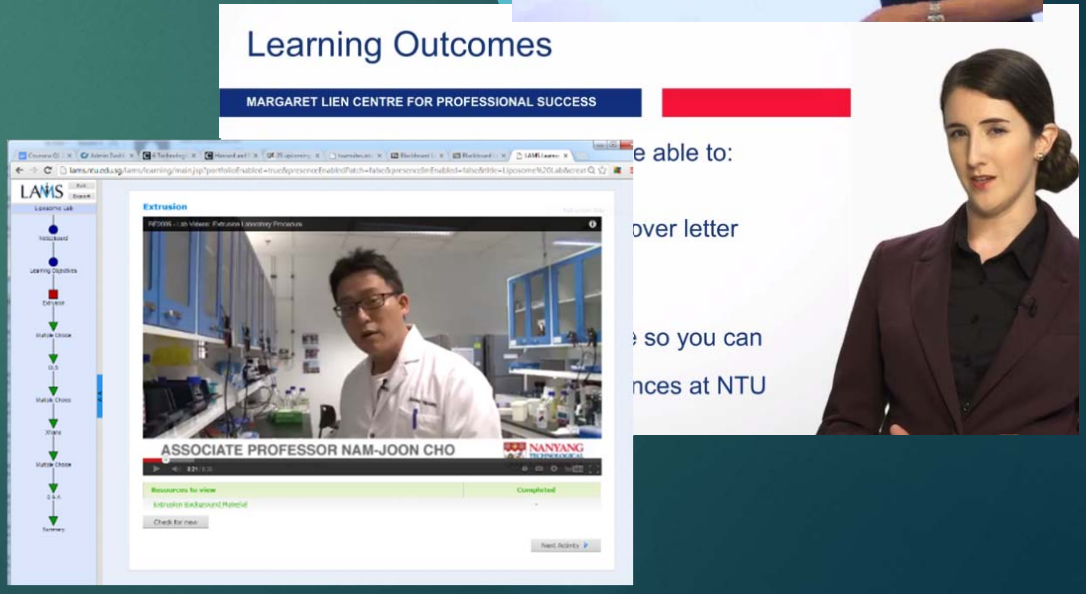
Learning Solutions
& Applications

CITS, NTU

Coverage

- Past/Current TEL Courses in NTU using LAMS
  - Philosophy and Approaches
  - Current Numbers (Front and Back End)
- Feedback and Statistics from Key Courses
- Large Course Implementations
  - Key considerations
  - Learning Moments
- Future Plans





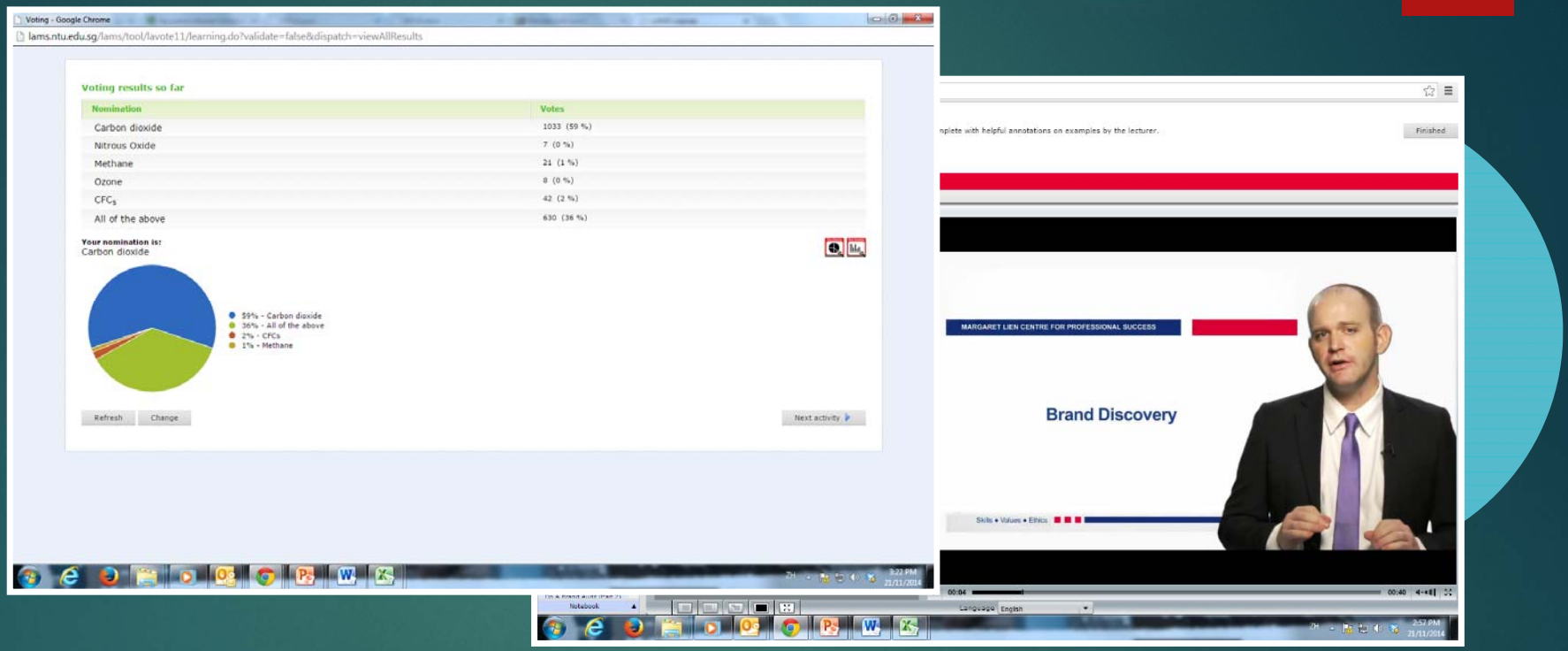
Past/Current TEL Courses using LAMS in NTU

- Before 2012:
  - Beta Testing and Initial Pilots: 2004-2007
  - Ad-Hoc Implementation – Introduction in 2008/2009
  - Faculty DIY effort and asking for advise on ad-hoc basis
  - About 200+ courses with at least 1 LAMS sequence
  - Most will have 1-2 LAMS sequence as part of total eContent in LMS and mostly for eLearning week period.
  - Breadth but not much depth

	AY12/13	AY11/12	AY10/11	AY09/10
No of unique edveNTUre course-sites with LAMS Sequences (Academic Courses only)	270	86	48	97
YOY Increase for Academic Courses	210%	79%	-50%	NA

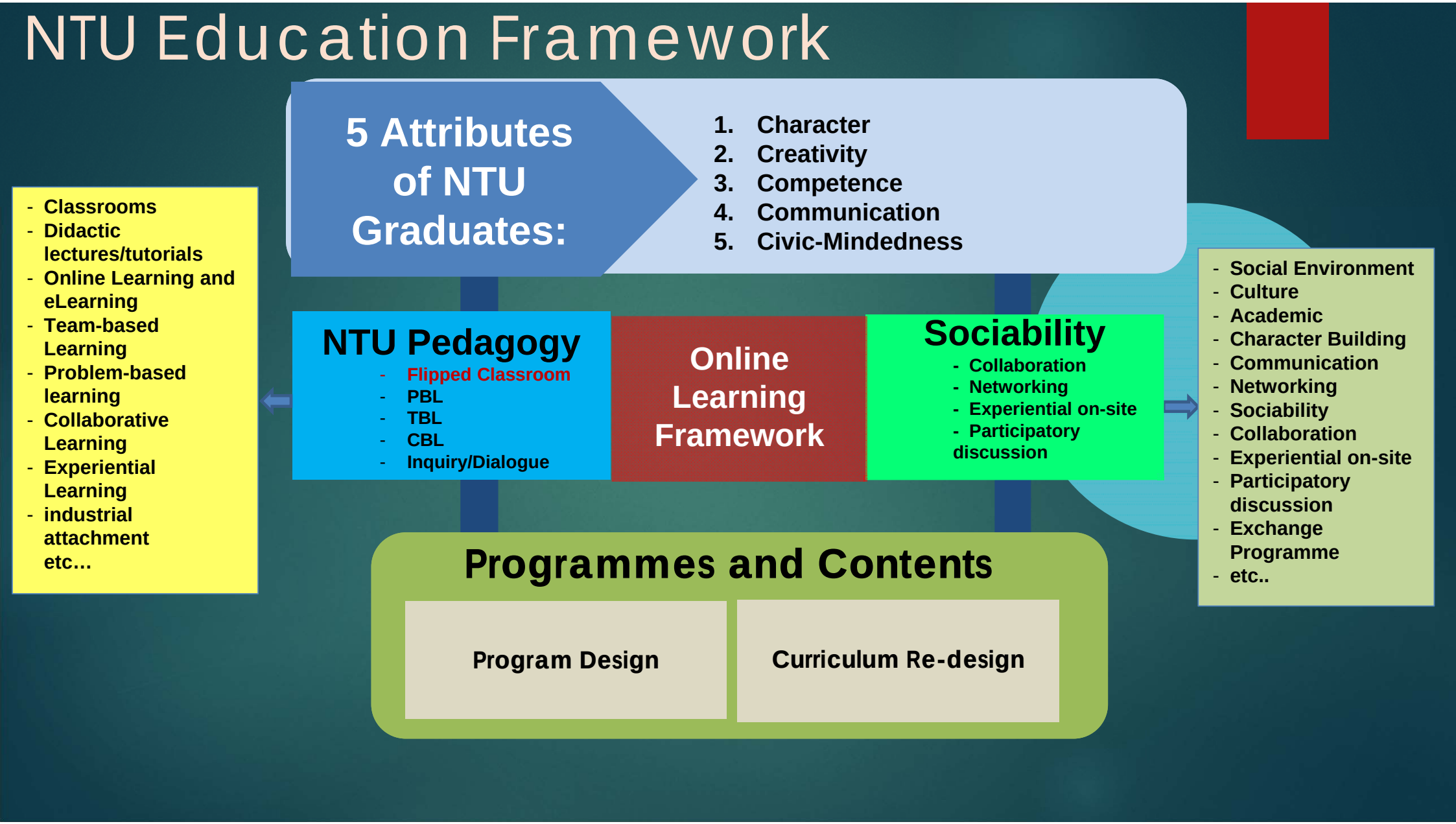
Past/Current TEL Courses using LAMS in NTU

- After 2012:
  - A much more concerted Implementation – Aligned with NTU Education Initiative
  - Learning Solutions Section in CITS project manage and develop TEL courses end-to-end with Faculty
  - Annually, **30 courses of at least 900 hours** of courses committed.
  - Comprehensive, holistic learning design that ensures at least 7-13 LAMS sequences per course
  - Deeper design and in the **next 5 years, more than 1500 courses, with more than 45000 hours of content.**
    (Over 60 courses internally per year, with about 100-200 outsourced, per year)

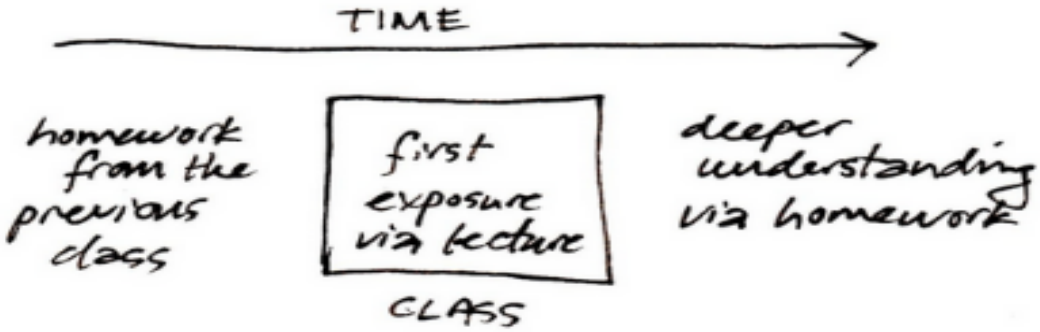


Philosophy and Approaches

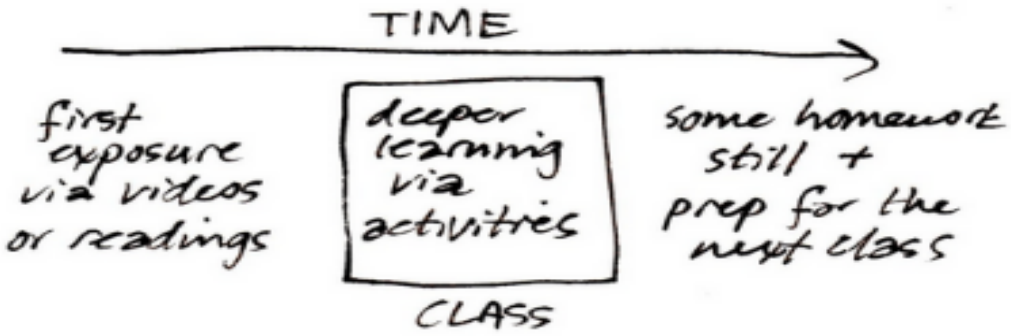
NTU Education Framework



Traditional Classroom:

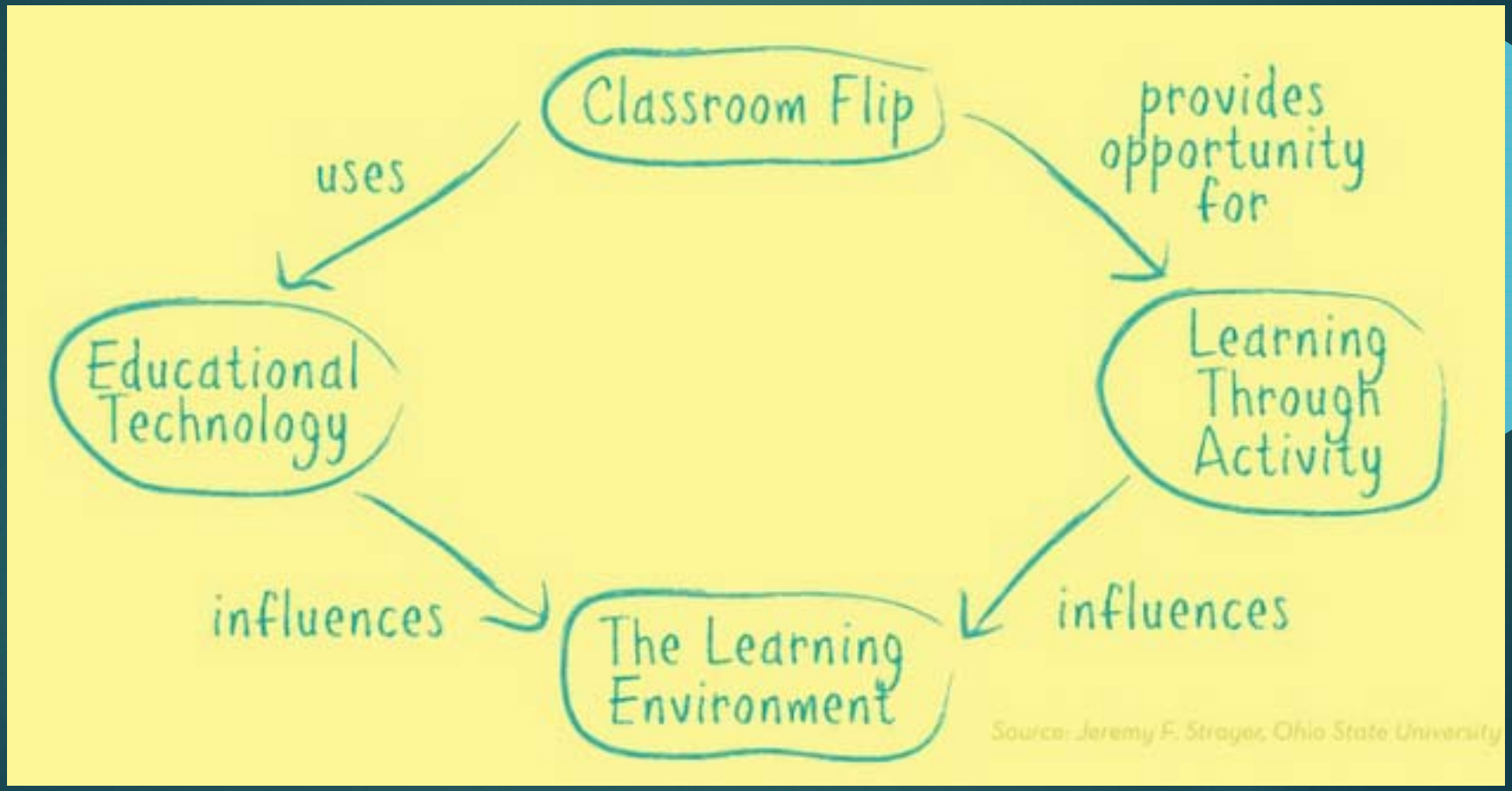


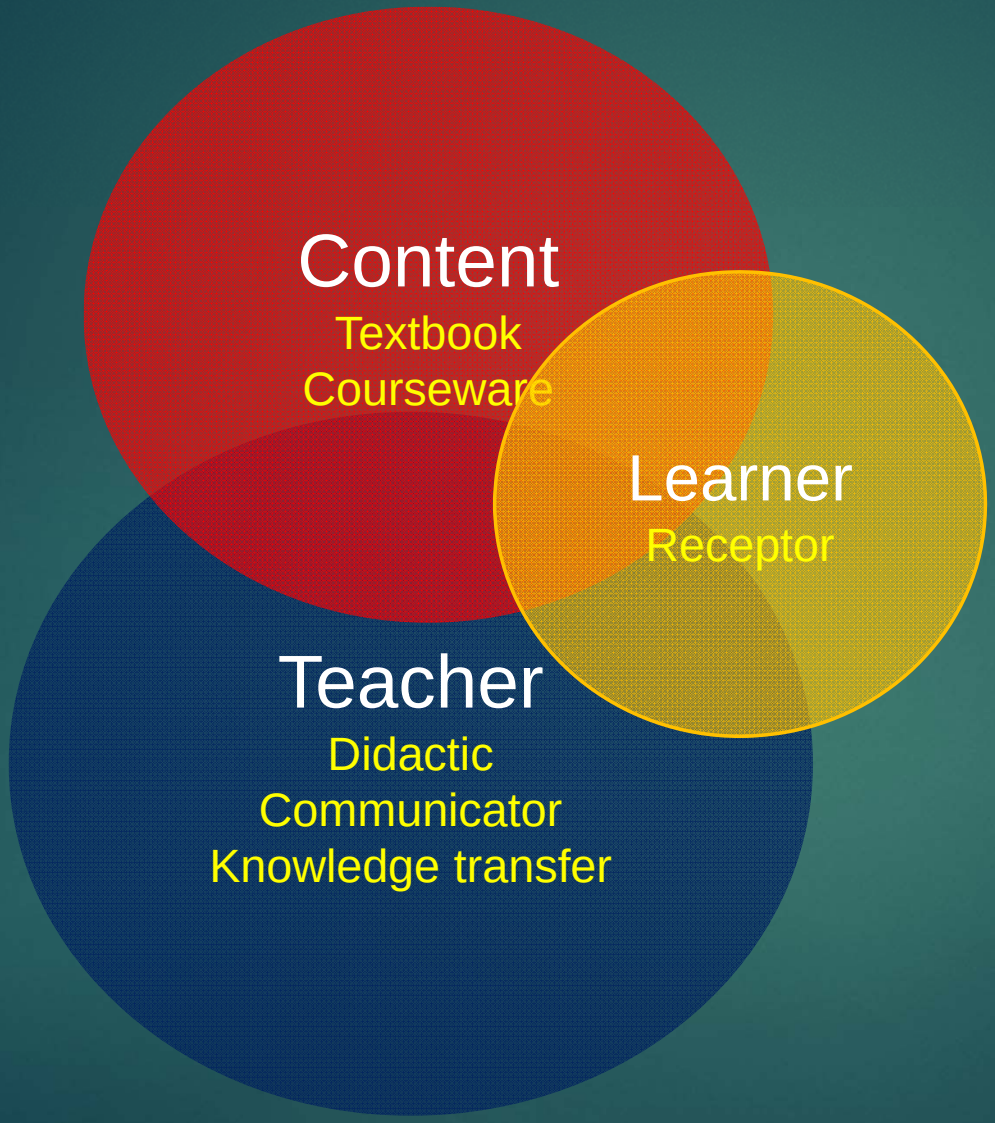
Flipped Classroom:



Source: Coursera.org; https://class.coursera.org/mooc/wiki/view?page=FlippedLectures

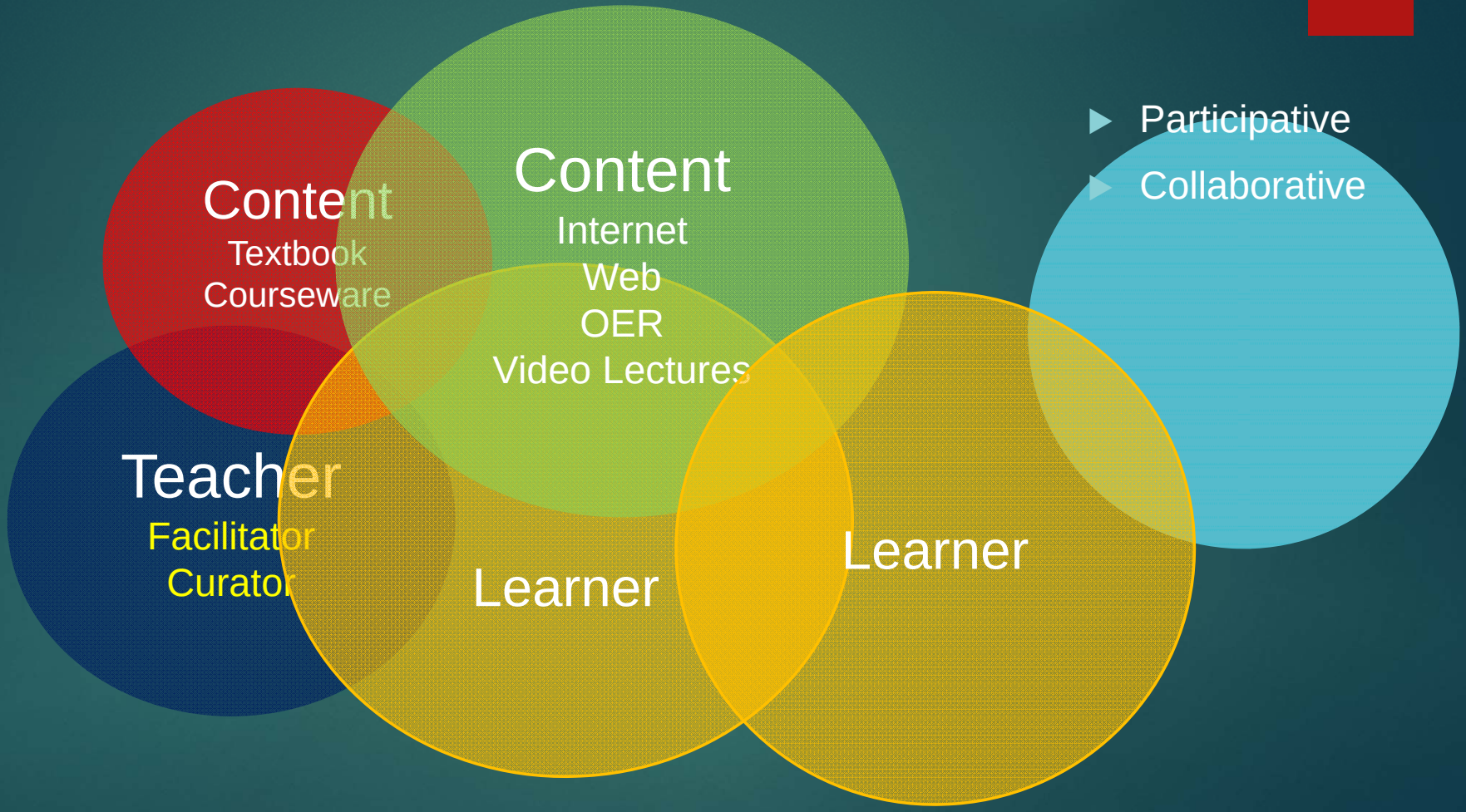
Flipped Classroom



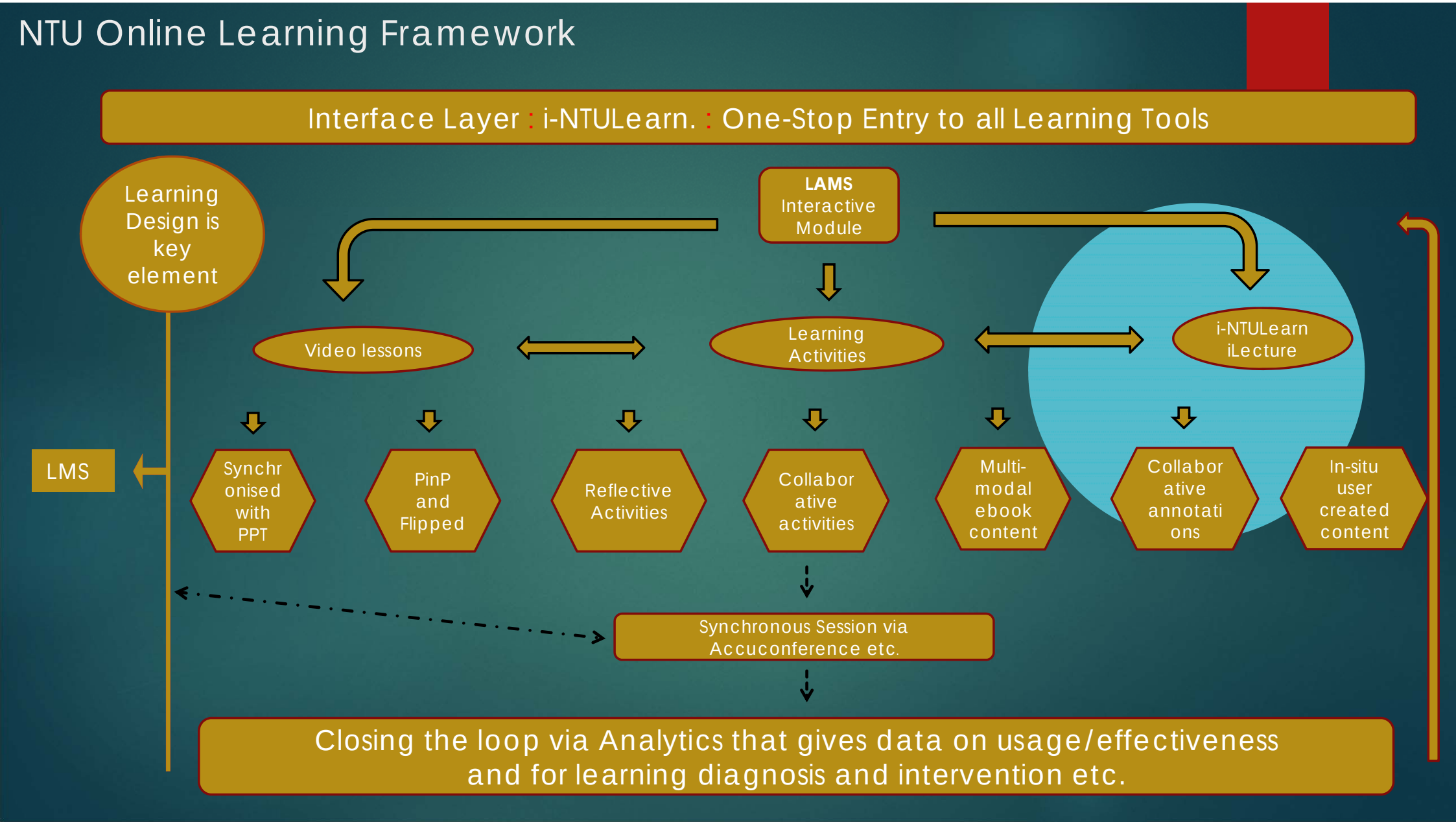


Current/ Previous Mode of Classroom Interactions

Emerging Model

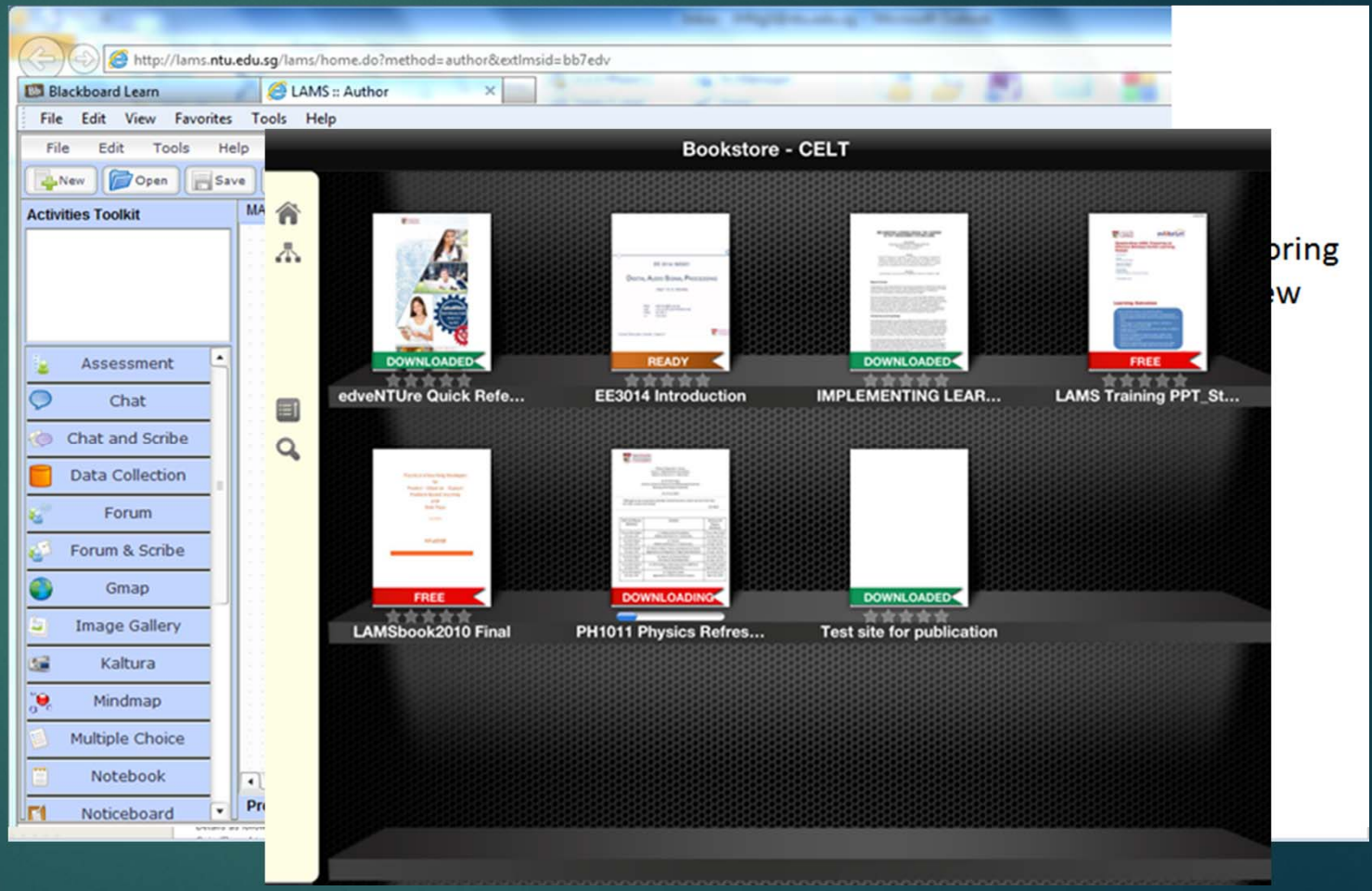


NTU Online Learning Framework



Key Learning Tools\Platform

- NTULearn
- LAMS
- iNgage
  - Mobile Platform
  - Offline viewing
  - Annotation



Current Numbers (Up to Now)

Front End

- From at least 15 different courses: (More than 500 enrollment)
  - Blended learning courses the Part-Time B.Eng. Degree Programme: MAE and EEE currently (SCE in the future)
  - Renaissance Engineering Programme
  - Full-Time Blended Engineering Courses from EEE and NBS

Current Numbers (Up to Now)

Front End

- Recently ran Large Class Courses: (Total: More than 3000 enrollment)
  - Core Course on Sustainability (More than 1700 learners)
  - Core Course on Career Basics (More than 1000 learners)
  - Full-Time MAE course converted from the Part-Time Course (More than 500 learners)

Increase of **more than 50% in enrollment numbers** and will continue to increase with 3 more Core Courses and Bridging Courses from Jan 2015**, adding at least another 3000 learners**

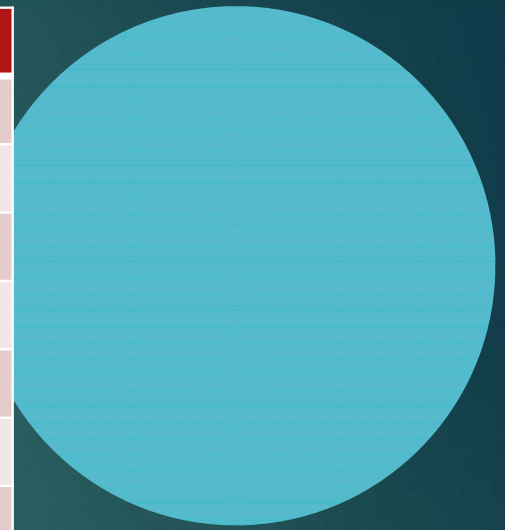
Numbers (Up to Now)

Back End

- Current LAMS setup : 4 server + 1 app server + 1 DB server + Load balancer
- Established workflow between LAMS Front end + Backend + LAMS International
- Contractual agreement between NTU and LAMS – 100 service hours
- Current capabilities – can handle up to 600 concurrent connections (10% of total 6000 learners)

Key Statistics:

Courses	Completion rate*
Part Time Module 1	71%
Part Time Module 2	80%
Part Time Module 3	57%
Part Time Module 4	35%
Full Time REP Module 1	89%
Full Time REP Module 2	92%
Full Time REP Module 3	83%



* Completion rate here is akin to finding out what percentage of students who attended lectures, actually completed listening to the lecture, go through the thinking process and did not walk out a quarter of the way, halfway or any parts thereafter.

Survey

Specific areas of learners experience	Percentage of respondents agree to the statement
The LAMS modules were easy to access through the LMS	75%
I felt I had enough support to learn to use the LAMS interface	70%
While working through the LAMS modules, the navigation was easy and the instructions were clear	70%
This course provided a flexible learning environment	75%
The lecture recordings were clear and loaded smoothly	70%

Feedback:

Kudos and Reinforcements

- “It allows me to **control** when I feel like learning, making it easy for me to learn as I am able to choose to learn in my **optimal mode**. It also enables me to **engage in questions immediately** after a lecture instead of having to finish the worksheets at home in reality. This makes us remember the content better as it reinforces the stuff twice in one go, so its much **effective** compared to doing the worksheets after reaching home.”

- “Online learning allows me to **better understand** the topics covered as I can easily return back to the previous module to **refresh** my knowledge and to think about questions raised in the other modules. It is also **flexible** as I can plan my time well to cope with the online learning as well as my other subjects.”

Feedback:

Kudos and Reinforcements

- “I liked the idea of **sharing my comment and thoughts** with my fellow course mate and at the same time **looking at their thoughts**. This allows me to have **diverse understanding of the topics discussed**.”
- “Through this way, we can listen to the teacher's class more carefully, as we can **choose** to listen as many times as possible.”
- “I like that the videos are short and direct to the points, with **reflecting questions** that allow me to **recall** what I have learnt.
- “Having it done completely online means that I can complete a week's worth of lectures **in less half the time** due to no time being wasted travelling or lecturers wasting time by starting late.”
- “While LAMS may allow us to have more flexible schedules, **it may also need more willpower and discipline on our part to ensure that we watch the lectures weekly.**”

Feedback:

Improvements and Suggestions

- “Although online learning allows me to learn at my own pace, I would still **prefer traditional classroom learning** as it allows for **more interaction and sharing between the students and the lecturer/tutor.”**
- “It would be more interesting if there is a session where **students can come together for an online "tutorial group"** to share their opinions with everyone.”
- “Also, the inability to adjust the **playback speed is very frustrating as many of us often watch the recorded lectures at faster speeds**. ”

Feedback:

Improvements and Suggestions

- "Also, this effectively increased the amount of time we need to spend on this topic to 5hours + per week up from 2hours (for lectures). **Perhaps, longer tutorials instead of lectures would be more effective when paired with LAMS, and each tutorial can start with a quick review of the chapter as you have suggested.**"

- **Lecturers sound unnatural during LAMS recordings** and it is noticeable by students, because speaking to a screen and speaking to a lecture theatre is vastly different

Large Class Implementation: Between 1000-6000 enrollment

- Core Course on Sustainability – Started in Aug 2014
- Core Course on Career Basics – Started in Aug 2014
- Core Course on Entrepeneurship – Starting in Jan 2015
- Core Course on Ethics – Starting in Jan 2015
- Core Course on Engineering Communication – Starting in March 2015
- Bridging Course for Physics – Starting in April 2015

Large Class Implementation: Key Considerations

- In lieu of many Faculty/SME being involved, the authoring tool must be easy to use and flexible:
  - Support of various pedagogical strategies – branching of activities, POE, Problem based etc
  - Ease of use for faculty developing the course
  - Workflow and processes established – Customized ADDIE process
- Ease of use for students
  - Orientation briefing
  - Lams introduction guide and video

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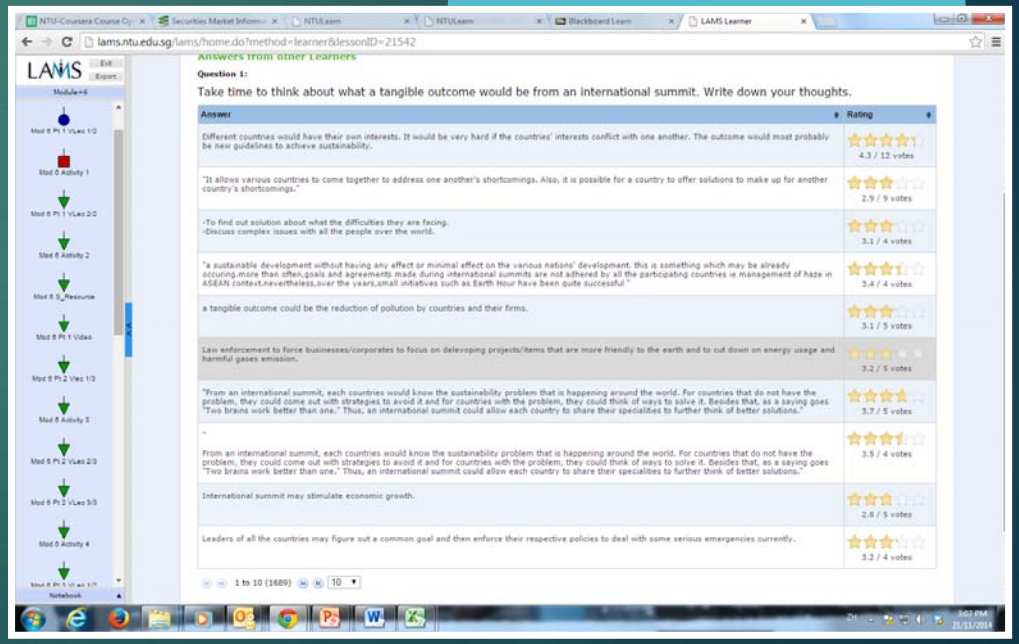
Large Class Implementation: Key Considerations

- Readily available front end and back end support
  - LAMS Ticket through the service desk gets routed correctly and accurately
  - Dedicated backend support team
  - Fast support from LAMS International
- Ease of monitoring by faculty
  - **LAMS monitor**
  - Diagnosis and Learning Intervention
  - Status of Learners
  - Export of Learning Portfolio
- Recyclability of content
  - LAMS Templates



Large Class Implementation: Learning Moments

- Scalability and Stability – load testing and stress test (RAS)
  - Load Testing was done for 600 concurrent users
  - Business logic for specific LAMS sequence must be tested too
  - Q&A issue for Core Course
- Adoption by faculty
  - Facilitation Strategies during the face to face sessions are important
  - Linking online and offline activities are key
  - Mindset change – bad teaching practice brought along to any learning tool will result in similar things

Large Class Implementation: Learning Moments

- Students' Load
  - Manage expectations of students re what's expected when going through the LAMS sequence
  - Majority are ok but some will question the different way they need to learn now
  - Students must see the value and belief from Faculty too.
- More Flexibility in terms of other tools integrated into LAMS
  - Such as video streaming playback capability and download

Future Plans: The NTU 5-Year Roadmap

- NTU's 5 year roadmap (Learning Environment plans)
  - 1500 courses over 5 years: 60 courses in house and remaining outsource per year.
  - NTU LE seamless integration with LAMS and other tools
  - More DIY wizards and self-help guide within a user-centric eco-system:
  - i-NTULearn
- LAMS Merger exercise (NTU, LKC, REP)
  - Merging all LAMS instances into one instance for consistency and also scalability
- **LAMS templates on current Interface Layer**
  - More than 10 different templates which Faculty can make use of
  - Interface Layer version 1.0

Thank U

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