INFO5992 Introduction to IT Innovations

Week 2

Tutorial 2: Importance of IT innovations in the Education sector

In the lecture (week 2), we discussed several innovative IT solutions that are reshaping the education and training sectors. We will further investigate these technologies and their impact. We will explore two enabling technologies: Massive open online courses (MOOCS) and Personalised Learning Plan (PLP).

Discuss the following points:

a) Identify the key enabling IT (software, hardware, etc) used in MOOCS.

Internet, big data, web-browser, PC, WiFi, smartphone, webcam, finger / retina scanner (for identification), high-spec server/clouds, smart search engine for students to search for desired information, e.g., subject lists, personalized advertisement, AI for automated assessment, new programme languages, online assessment tools, online proctoring tools (typing and speeding), data analysis tools, recording device, feedback system, tracking system, online chat and discussion forum systems.

b) Discuss the evolution of the education industry due to the introduction of MOOCS. You may apply 'Innovation System' concept, where you consider all the stakeholders involved in innovation, into your discussion.

- **Student** – location independent (No Longer restricted to a classroom), wide variety of courses available (Not have to strictly follow a curriculum), personalised learning, upskill themselves based on professional requirements, no age restriction, reduced cost for students
- **Investors** – cost savings (teachers and infrastructure – No need of building massive infrastructure), direct assessments on students' skills, based on their course performance.
- **Teachers** – flexibility (time, location), software can do the work (grading), better collaboration between students and teachers, MOOCS helps in developing basic technology literacy (navigating the internet, using a computer of a software etc.)
- **Institutions –** MOOCS is widely recognised and therefore its important to be a part of it e.g., all major Universities support MOOCS including USyd

c) Following from b., Micromasters is a new program with three-way arrangement between educator, student and employer. What is the innovation in this new program, and how does it differentiate itself? Why is such a model only available via MOOCS?

- **Innovations**:
  - Better relationships between students, educators and industry
  - Get full degree online
  - Fast training and education for specific profession/industry that is guided by the academic as well as industry

    - Specific / targeted topics for learning
- **Differences to traditional master degrees**
    - Organisation/training is bound to specific profession or skills
    - Additional industry support
    - Fewer number of coursework
- **Difference to ther MOOCS competitors**
    - There are many MOOCS alternatives and its important to innovate to stay ahead
    - Moving MOOCS from online learning to online accrediation!
- **Exclusive to MOOCS**
    - Industry acknowledges the qualification
    - MOOCS courses are designed to satisfy industrial needs for specific profession/tasks

d) Peer-assessment for MOOCS is an area which needs further development – what are its challenges and emerging/existing solutions?

Challenges:

- Trust issue – how to make students trust their assessment results, authentication might be an issue, system abuse might be another issue
- Ineffective feedback system – including communication issues between content provider and students, students might give a higher grade than the instructor leading to inconsistencies.
- Plagiarism issue – in both exams and assessments
- Difficulties in arranging group assignments – each student has their own time management
- Identity verification
- Lack of participation, or low participation might be a problem. Students dropping off in the middle of the course is another issue with respect to attendance.

Emerging / existing solutions:

- Materials to guide students how to assess assignments – tutorials, videos, FAQ, clear concise instructions for grading, training for marking assessments, providing clear rubrics is important
- AI-based assessment support system – help pinpoint where assessors need to focus on in assignments, automated grading should be done.
- More constructive feedback system – strict marking rubric etc.
- Collaborative notebook/communication channels, strict regulations around the marking system

e) [Optional/Homework] Now look at the PLP. Similarly, identify the key enabling IT innovations for PLP, and how the technologies are used to enable a different style of learning.

- Use AI/data mining techniques to identify personalized information, e.g., identify strength or weakness of individual students, and to make a curriculum optimized for them.
- Use virtual reality/augmented reality/mixed reality to provide personalized learning experience
- Allows tailoring instruction to each student's strengths and weaknesses, interests and preferences, and optimal pace of learning. Promotes self-learning amongst students.
- Use of tablets such as Chromebook and IPAD for individual learning rather than having fixed textbook.
- Learning analytics that tracks student knowledge and recommends next steps: Adaptive learning systems: DreamBox, ALEKS, Knewton, Game-based learning: ST math, Mangahigh
- Matching teachers and schools
- KPI measuring system that helps students and teachers updated how far they are to achieve their goals. This unlike traditional systems gives students and teachers a visual of their progress which in turn keeps them motivated.
- More personalised learning, students study at their own pace.