Pedagogic Model and Educational Technology

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ITE Pedagogic Model for Competency-based Learning

Integration and Use of Educational Technology to Transform Learning Environment
A learner-centric pedagogic framework where learners go through a 4-phase process to learn how to perform job-related tasks to desired competencies (Skills Standard).
By specifying a set of performance criteria associated with competent performance, we define the **Skills Standard** for the competence.

**A Contextual View**
Competent performance is situated in contexts and social practices where personal and social competencies are used together with technical and methodological competencies to achieve job outcomes within organisational relationships and within broader relationships with industry and society.

**An Integrated View**
Competence is a complex combination of skills, knowledge, attitudes and values displayed in the context of task performance.

**Conceptions of Competence**

**Task Performance**

**Performance Criteria**

**Contexts and social practices**

**Competence**

- **Technical Competence**
- **Methodological Competence**
- **Sociological and Personal Competence**

**Knowledge**

**Skills**

**Attitudes, Values**
ITE Pedagogic Model

**PERFORM**
- Demonstrate mastery of learning

**PLAN**
- Identify what need to be learnt

**EXPLORE**
- Use various ways to learn

**PRACTISE**
- Gain mastery of learning

**60 – 70% Technical Competencies**

**10–20% Methodological Competencies**

**10-20% Personal & Sociological Competencies**
ITE Pedagogic Model

How it works

Students are given a Realistic WORK TASK (based on Competencies and Performance Criteria in Skills Standard)

1. **PLAN**
   out the knowledge & skills to be learnt for competent performance of the WORK TASK.

2. **EXPLORE**
   using various methods & materials to gradually gain full knowledge needed for competent performance of the WORK TASK.

3. **PRACTISE**
   using the knowledge to gradually acquire all the skills needed for competent performance of the WORK TASK.

4. **PERFORM**
   the whole WORK TASK to demonstrate mastery of the competencies by meeting performance criteria.

& **ENQUIRE** about the content and learning process

**REFLECT** on learning process and performance
ITE Pedagogic Model

Summary

• Ensure mastery of the competence (Competency-based Learning)

• Teach all skills & knowledge coherently in the context of performing the competency (Integrated Learning)

• Promote transfer of learning to real-life context/applications (Situated Learning)

• Approach learning holistically, including integration of e-learning (Flexible Learning)
Educational Technology – Transforming Learning Environment

New Educational Challenges

**Impetus**
- Global Economy
  - New Competencies
  - Lifelong Learning
  - e-technologies

**Impact**
- Flexible Curriculum
- Flexible Pedagogical Approaches
- Flexible Teaching & Learning Environment

**Innovation**
- Institutional Transformation with ICT
Transforming Learning Environment

Four Enabling Powers of ICT

1. Computing Power
2. Connecting Power
3. Communicating Power
4. Community-Building Power

with Tools, Contents & Platforms
Transforming Learning Environment

Goal: A Community of Connected Learning Colleges

>21,000 full-time students, >30,000 part-time students
Transforming Learning Environment

Goal: A Community of Connected Learning Colleges

Mission

Create opportunities to acquire skills, knowledge and values for lifelong learning in a global economy

Transformation

A Flexible Learning Environment with Increased Accessibility

Outcomes

• Skills-set to perform competently
• Mindset to be creative, adaptive and think independently,
• Hearts that value self, others and the community
Four Key Development Strategies

Mission

Create opportunities to acquire skills, knowledge and values for lifelong Learning in a global economy

Transformation

1. Learner-Centred Pedagogic Development
2. Curriculum-based Content Development

A Flexible Learning Environment with Increased Accessibility

Outcomes

- Skills-set to perform competently
- Mindset to be creative, adaptive and think independently,
- Hearts that value self, others and the community

3. Learning Platform Development
4. Staff Capability Development
1. Learner-Centred Pedagogic Development Strategy

ITE Pedagogic Model

PERFORM

PLAN

PRACTISE

EXPLORE

60 – 70% Technical Competencies

10-20% Sociological Competencies

10–20% Methodological Competencies

Thinking Hands

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2. Curriculum-based Content Development Strategy

Interactive Courseware for Self-Directed Learning
2. Curriculum-based Content Development Strategy

“Learning Objects” Approach to Content/Lesson Development

1. Content Analysis
   - Content Chunking & Classification

2. Learning Object Design
   - Instructional, Interaction, Feedback, Media, Screen Designs

3. Learning Object Development
   - Content, Practice & Assessment Authoring, Multimedia Objects Creation

4. Learning Object Implementation & Evaluation
   - eLearning Facilitation, Students & Teachers Evaluation

Specific Instructional Objective

Adapted from: CISCO Systems

Systematic Learning Object Development Methodology (ISO-based Quality Procedure)
2. Curriculum-based Content Development Strategy

“Learning Objects” Approach to Content/Lesson Development

Decomposing module contents into small meaningful pedagogic units (learning objects)
2. Curriculum-based Content Development Strategy

Create multimedia objects for the Learning Objects
2. Curriculum-based Content Development Strategy

Storing media objects in Digital Library System for reuse
2. Curriculum-based Content Development Strategy

Using Activity Strategies Templates with media objects to build Learning Objects

- Recall Activity Templates
- Comprehension Activity Templates
- Application Activity Templates
- Evaluation Activity Templates
- Synthesis Activity Templates
- Analysis Activity Templates
3. Learning Platform Development Strategy

ITE-wide Learning Platform – eTutor Learning System
3. Learning Platform Development Strategy

Tagging Learning Objects with metadata in eTutor learning system for ITE-wide reuse
3. Learning Platform Development Strategy

Organising Learning Objects into meaningful lessons/topics for a module of study

Module A

- Topic 1
- Topic ...
- Topic ...
- Topic 10

Lesson A
- Lesson F
- Lesson N
- Lesson S

Resources

Learning Object 1
- Tag
Learning Object 2
- Tag
Learning Object..
- Tag
Learning Object..
- Tag
Learning Object..
- Tag
Learning Object..
- Tag
Learning Object..
- Tag
Learning Object..
- Tag
Learning Object..
- Tag

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3. Learning Platform Development Strategy

Organising Learning Objects into meaningful lessons/topics for a module of study
3. Learning Platform Development Strategy

Organising Learning Objects into meaningful lessons/topics for a module of study

This topic explains the working principle of distillation process.

Objectives
The objectives of the topic are:

1. Explain the working principle of distillation.
2. Introduce the process equipment required to support the operation of distillation unit.
3. Illustrate the working principle of a distillation process.
4. Describe selection and features of column internals, packing and other auxiliaries.
5. Describe operational problems in distillation system.
6. Introduce atmospheric and vacuum distillation.
3. Learning Platform Development Strategy

Organising Learning Objects into meaningful lessons/topics for a module of study
3. Learning Platform Development Strategy

Pedagogically Facilitated Learning Environment

- Learning Reports
- Progress/Performance
- Modules/Learning Plans
- Learning Library

- Tests/Quizzes
- Content Resources/Learning Objects

- Lessons/Activities
- Learning Resource Repository

- Personal/Shared Workspace
- Community Space

- Discussions/Chats/Ask Experts
- External Links/FAQs

1. PLAN
2. EXPLORE
3. PRACTISE
4. PERFORM

Pedagogic Model & Educational Technology
3. Learning Platform Development Strategy

Flexible Learning Places at Colleges

- Smart Classrooms
- Self-accessed learning rooms
- Staff Desktop
- Multimedia Development Centre
## IT Training Programme

<table>
<thead>
<tr>
<th>Staff Capability Development Strategy</th>
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<tbody>
<tr>
<td><strong>Advance IT Users</strong></td>
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<tr>
<td>Educational Technology (ET) Champions Development Programme (1 year) 5% Staff</td>
</tr>
<tr>
<td><strong>Intermediate IT Users</strong></td>
</tr>
<tr>
<td>Web Design (3 days) 30% Staff</td>
</tr>
<tr>
<td>Interactive CW Development (5 days) 30% Staff</td>
</tr>
<tr>
<td>Digital Media Development (3 days) Optional</td>
</tr>
<tr>
<td><strong>Beginning IT Users</strong></td>
</tr>
<tr>
<td>Powerpoint Content Dev (3 days) 100% Staff</td>
</tr>
<tr>
<td><strong>Baseline</strong></td>
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<tr>
<td>Educational Technology Appreciation (2 days) 100% Staff</td>
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4. Staff Capability Development Strategy

Educational Technology Champions Programme

• **Goal**
  – Sustain the Online learning initiative at campus level
  – 75 ET Champions (5-6 per campus)

• **Role of ET Champions**
  – Spearhead online learning at campus
  – Lead courseware development efforts
  – Coach/guide colleagues in embracing online learning practices
  – Evaluate courseware developed by colleagues

• **Intensive Training (12 months of enculturation)**
  – 3 months training in instructional design & technology
  – 9 months mentored practice
Four Key Development Strategies

**Mission**

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**Transformation**

1. Learner-Centred Pedagogic Development
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3. Learning Platform Development
4. Staff Capability Development

**Outcomes**

A Flexible Learning Environment with Increased Accessibility

- **Skills-set** to perform competently
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- **Hearts** that value self, others and the community
Implementation

- **Change Management – Staff Conference, Seminars, Briefings, Roadshows**
  - Jul 1999 to Jun 2004

- **Staff Training and Development**
  - Jul 1999 to Dec 2001

- **ET Champions Development**
  - Jul 2000 to Dec 2005

- **Courseware Development**
  - Jul 2000

- **Upload Learning Objects/Setup Lessons/Module**
  - Mar 2001 to Jan 2002

- **Connected Colleges - Learning Infrastructure**
  - Jul 1999
Implementation
Lessons Learnt

- **Pedagogy should drive the use of technology**
  - Effective learning happens only when pedagogy is appropriately mixed with the use of technology.
  - Ensure use of technology for learning is supported by pedagogy

- **Faculty-led Courseware development**
  - Seen as integral part of teaching
  - Promote sense of ownership
  - More effective Courseware

- **Capability development**
  - Provide appropriate and comprehensive Staff Training and Development
  - Develop Champions to spearhead eLearning initiative and ensure long-term sustainability

- **Learning from Best Practices**
  - Study Trips (IBM, University of Minnesota)
  - Learning Objects to Lesson/Module Development (CISCO)
  - Pilot Project