Initiatives for New Learning: Sustainability, Integration, and Creativity

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Outline

- **International Lesson** on Initiatives for New Learning
- **A Study** of School-based Management & Paradigm Shift for Active & Sustainable Learning
- **An Integrated Learning Theory** for Multiple Thinking & Creativity
New Learning:
Multiple Thinking
Creativity
Integrated Learning
Life-long Learning
Sustainable Development
Initiatives for New Learning

A Painful International Lesson in the Last Decade
Ed Initiatives in Asia-Pacific & Beyond

Challenges in New Century:
- Globalization
- IT & High T
- Economic Transformation
- International Competitions
- Marketization
- Local demands for development

Changing Ed Contexts & Ed Reforms in AP:
- Paradigm Shifts in Policy Concerns & Practice
- Aims & Content
- Learning Process
- Teaching & Curriculum
- Ed T & Facilities
- Student Composition

Are the Initiatives really for Effective for Change in New Learning & Teaching?
Trends in Education Reforms in the Asia-Pacific Region

- Re-establishing National Vision & Ed Aims
- Restructuring School System
- Market-Driving, Privatizing, & Diversifying Ed
- Parental & Community Involvement
- Ensuring Ed Quality, Standards, & Accountability
- School-Based Management
- Prof Development of Teachers & Principals
- Paradigm Shift in T, L & Curriculum
- IT & New T in Education
Education Reform Syndrome

- Across the Asia-Pacific Region
- One country reforms, other countries also reform and reform more.
- In a very short time, implement many initiatives in parallel
- Follow the emerging trends as soon as possible. e.g. QA, SBM, Accountability, Marketization, Curriculum,..
- Ignore their own cultural and contextual conditions
- Result in too many reforms with chaos and painful failures
Reform Aims:
High Quality Ed, Change to New T&L

Bottle Neck:
high workload, large class size, too many lessons

Increase in difficulties

School-based initiative
Inclusive education
Increase student diversities

Mainly non-T&L Initiatives

On-line Sch Report
Extended Services
Sch Review & Self Evaluation
School Account-ability
Many meetings

Increased Extra-curricula Duties
Mandatory Staff Development
SBM

Self Evaluation

Extended Services

Many meetings

SBM

Ongoing

School-based initiative
Inclusive education
Increase student diversities

School Report

Increased Extra-curricula Duties
Mandatory Staff Development
SBM

SBM
Reform Aims:
High Quality Ed, Change to New T&L

Bottle Neck:
high workload, large class size, too many lessons

Increase in difficulties:
- School-based initiative
- Inclusive education
- Increase student diversities

Parental Participation:
Mandatory Staff Development
Increased Extra-curricula Duties

Mainly non-T&L Initiatives:
To Reduce Classes & Close Schools

Extended Services
On-line Sch Report
Sch Review & Self Evaluation
School Accountability
Many meetings

SBM

Extended Services
To Reduce Classes & Close Schools

Serious School Competitions

Teacher Burnt Out
Ed. Distortion

Marketization, Struggle for Survival

Reform Syndrome:
Bottle Neck Effects

Reform Aims:
High Quality Ed, Change to New T&L
Emerging Evidence of Negative Impacts in Some Countries

- Marketization
- Over competitions
- Over management control
- Close monitoring
- De-professionalization
- Increasing work pressure
- Full of ambiguities & inconsistencies in policies

- Damaging teachers’ well being & working conditions:
  - Depression
  - Burnt-out
  - Overburdened
  - Diverged from teaching

- Declining status of the teaching profession
- Losing competent teachers
- Damaging quality of teaching & learning
Emerging Evidence of Negative Impacts in Some Countries

- Marketization
- Over competition
- Over management control
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- Increasing work pressure
- Full of ambiguities & inconsistencies in policies

• Damaging teachers’ well being

- Declining status of the teaching profession
- Losing competent teachers
- Damaging quality of teaching & learning

Most Initiatives were not sustainable to achieve New Learning

Research Needed!
A Research Report
Cheng & Mok (2007, 2008)

- Tendency towards SBM
- Teachers’ Student-centered Teaching
- Students’ New Learning: Active, Sustainable

Paradigm Shift in Education
Samples

- 31 secondary schools in Hong Kong
- 30 principals, 1119 teachers and 7063 students of G9 & G16

Quantitative & Case Studies
1. Positive Learning Attitudes

2. Application of Various Learning Methods

3. Learning Effectiveness:
   - Learning Facilitation
   - Self Reflection
   - Self-directed Learning
   - Learning Opportunity

4. Multiple Thinking in Learning:
   - Technological, Economical, Social, Political, Cultural & Learning

5. Satisfaction with School Life:
   - Intrinsic, Extrinsic Social, Overall

Student Active & Sustainable Learning
3ab. Learning Effectiveness

- B1: I gain various learning experience to meet my learning needs
- B2: Teachers explain the contents through different ways to facilitate my understanding
- B3: Teachers use appropriate teaching methods to assist my learning
- B4: Teachers use technology to prompt my learning
- B5: Teachers change teaching methods to more actively involve me in learning
- B6: Teachers clarify classmates' and my ideas through questioning or discussion
- B7: I have opportunities to study independently
- B8: Classmates and I have group discussion and exchange
- B9: In learning process, I can arrange the learning pace by myself
- B10: I have opportunities to discuss, reflect, and review the learning contents
- B22: Teachers would demonstrate the methods of assessing learning to classmates and me
- B25: I have opportunities to discuss my homework with classmates

LO Mean
3cd. Learning Effectiveness

<table>
<thead>
<tr>
<th></th>
<th>I critically explore related learning topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>B11</td>
<td></td>
</tr>
<tr>
<td>B12</td>
<td>I think about and solve problems from multiple perspectives</td>
</tr>
<tr>
<td>B13</td>
<td>I consider the learning contents from multiple prospective</td>
</tr>
<tr>
<td>B24</td>
<td>Teachers facilitate me to acquire skills of self-reflection</td>
</tr>
<tr>
<td>SR</td>
<td>Mean</td>
</tr>
<tr>
<td>B14</td>
<td>I take initiative to study</td>
</tr>
<tr>
<td>B15</td>
<td>I make effort towards challenging goals</td>
</tr>
<tr>
<td>B16</td>
<td>I can describe clearly the process and progress of my learning</td>
</tr>
<tr>
<td>B17</td>
<td>I know the learning goals of each classroom activity</td>
</tr>
<tr>
<td>B18</td>
<td>I have opportunities to learn from peers</td>
</tr>
<tr>
<td>B19</td>
<td>I know how to monitor my learning progress</td>
</tr>
<tr>
<td>B20</td>
<td>I know how to gain new knowledge and information</td>
</tr>
<tr>
<td>B21</td>
<td>I would assess the outcomes of my learning</td>
</tr>
<tr>
<td>B23</td>
<td>I have opportunities to assess my own homework</td>
</tr>
<tr>
<td>B26</td>
<td>I understand and monitor my progress towards learning goals</td>
</tr>
<tr>
<td>SDL</td>
<td>Mean</td>
</tr>
<tr>
<td>EFFECT</td>
<td>Total Mean</td>
</tr>
</tbody>
</table>

Seldom (3)  Occasionally (4)  Often (5)
T’s Student-centered Teaching

- Facilitating Student Learning
- Facilitating Student Thinking
- Facilitating Student Self Reflection & Assessment
Student-centered Teaching

| B1/C1 | Let students gain various learning experiences and match their learning styles. |
| B2/C2 | Explain subject concepts with various methods to ensure all students understand better. |
| B3/C3 | Change teaching materials and use appropriate teaching approaches to ensure each student fully engaged in learning. |
| B4/C4 | Use technology to prompt students’ learning. |
| B5/C5 | Change strategies to ensure students more actively participating in learning. |
| FL | Sub-scale |
| B6/C6 | Use enquiry or discussion to clarify students’ ideas and widen their thought. |
| B14/C14 | Provide all students opportunities of thinking, discussing, communicating, reflecting, and reviewing learning contents. |
| B15/C15 | Facilitate all students to critically explore the related concepts and issues. |
| B16/C16 | Facilitate all students to participate in problem solving, think from multiple perspectives, and find various solutions. |
| B17/C17 | Encourage all students to raise critical questions and consider the learning contents from multiple perspectives. |
| B18/C18 | Facilitate all students to analyze learning contents and draw conclusions. |
| FT | Sub-scale |
| B20/C20 | Encourage all students to describe their own learning process and progress. |
| B23/C23 | Facilitate all students to understand, reflect, and monitor their own learning with appropriate methods. |
| B25/C25 | Integrate assessment into students’ learning process. |
| B26/C26 | Demonstrate the methods of assessment for learning to all students. |
| B27/C27 | Set up appropriate guidelines to facilitate students to assess their own homework. |
| B28/C28 | Facilitate all students to gain skills of self-reflection. |
| B29/C29 | Provide opportunities to students to discuss their homework with peers. |
| B30/C30 | Facilitate all students to understand and monitor their own learning goals. |
| B31/C31 | Provide opportunities to students to demonstrate and reflect their learning activities inside and outside class. |
| FSRA | Sub-scale |
| SCT2 | Scale |

Facilitation Student Learning

Facilitation Student Thinking

Facilitation Student Reflection & Assessment
Towards School-based Management vs Paradigm Shift in Education

Schools scatter-plot
“High SBM & High PS” Schools vs “Low SBM & Low PS” Schools
Profiles of “High SBM & High PS” Schools & “Low SBM & Low PS” Schools

All scores are Z-scores;
SBM: Towards School-based Management; PS: Paradigm Shift in Education;
No. of schools in High PS & High SBM Group = 8,
No. of schools in Low PS & Low SBM Group = 12
Profiles of Effective, Mediocre & Ineffective Classes

- Towards School-based Management
- Paradigm Shift in Curriculum
- Paradigm Shift in Learning
- Paradigm Shift in Teaching
- Facilitating Student Learning
- Facilitating Student Self Reflection & Assessment
- Positive Learning Attitudes
- Application of Various Learning Methods
- Learning Facilitation
- Self-reflection
- Self-directed Learning
- Learning Opportunity
- Technological Thinking
- Economic Thinking
- Social Thinking
- Political Thinking
- Cultural Thinking
- Learning Thinking
- Intrinsic Satisfaction
- Extrinsic Satisfaction
- Social Satisfaction
- Overall Satisfaction

SBM, PS - SC Teaching - Learning Effectiveness - M. Thinking - Satisfaction

Class Mean (z-scores)

Effective (n=76/94) - Mediocre (n=80/90) - Ineffective (n=15/17)
What implications for facilitating active and sustainable learning?
## 1. Paradigm Shift in Management

<table>
<thead>
<tr>
<th>E1</th>
<th>The school’s mission is given by senior management. Members do not need to develop and accept it and may be not responsible for it.</th>
<th>The school’s mission is developed and shared by all members who are willing and committed to realize it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2</td>
<td>The content and methods of management and education are determined by external factors.</td>
<td>Management and education are based on the school’s own characteristics and needs.</td>
</tr>
<tr>
<td>E3</td>
<td>School is a career place. The staff members are employees whose stay depends on their usefulness.</td>
<td>School is a place for growth where the staff members have opportunities to develop.</td>
</tr>
<tr>
<td>E4</td>
<td>Centralization of authority: Decisions are made by administrative staff.</td>
<td>Teachers (even parents &amp; students) participate in decision making.</td>
</tr>
<tr>
<td>E5</td>
<td>The government regulates strictly how to use resources. It is hard to meet the school needs, solve problems in time, and find new resources.</td>
<td>The school has its autonomy to use resources according to its needs, solve problems in time, and find new resources for education.</td>
</tr>
<tr>
<td>E6</td>
<td>The school executes the tasks assigned by government according to administrative procedures and avoids mistakes.</td>
<td>The key role of school is to develop its unique conditions, students, teachers, and the school itself.</td>
</tr>
<tr>
<td>E7</td>
<td>The roles of administrative staff are goal keepers, personnel monitors, and resources controllers.</td>
<td>The roles of administrative staff are goal developers and leaders, human resources drivers and coordinators, and resources developers.</td>
</tr>
<tr>
<td>E8</td>
<td>The roles of teachers are employees and passive executers.</td>
<td>The roles of teachers are partners and active developers.</td>
</tr>
<tr>
<td>E9</td>
<td>The roles of parents are passive, and they can not participate in and cooperate with the school.</td>
<td>The roles of parents are partners and supporters, and they actively cooperate with the school.</td>
</tr>
<tr>
<td>E10</td>
<td>In school, there is a hierarchical climate and inevitable disagreements between staff members because of diversity in interests.</td>
<td>In school, staff members have team spirit, cooperate openly, and share responsibilities.</td>
</tr>
<tr>
<td>E11</td>
<td>The school emphasizes the achievements from the final examinations, and ignores process and development in education. Evaluation is a means for administrative monitoring.</td>
<td>The school evaluation emphasizes multi-aspects and multi-indicators. Academic achievements are just one of indicators. Evaluation is a learning process and a means for improvement.</td>
</tr>
</tbody>
</table>

**Scale**

- **Low PS/SBM Sch**
- **All Schs**
- **High PS/SBM Sch**
## 2. Paradigm Shift in Learning

<table>
<thead>
<tr>
<th>Site-bounded Paradigm (1)</th>
<th>CMI-Triplization Paradigm (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 Students are teachers’ apprentices.</td>
<td>Students are the center of education.</td>
</tr>
<tr>
<td>C2 Students study in the same way and by the same pace. The ability differences are ignored and individualized curriculum is not feasible.</td>
<td>Students have their own potentials and can learn in different ways. Individualized curriculum is necessary and feasible.</td>
</tr>
<tr>
<td>C3 Students are teachers’ “students” who learn from teachers and absorb knowledge.</td>
<td>Students are self-directed and independent learners who just need appropriate guidance and help.</td>
</tr>
<tr>
<td>C4 Learning is a process of disciplining, receiving, and socializing, that needs strict monitoring and control.</td>
<td>Learning is a process of self actualizing, experiencing and reflecting and needs systematic help and support.</td>
</tr>
<tr>
<td>C5 The focus of learning is to learn how to acquire knowledge and skills.</td>
<td>The focus of learning is to learn how to learn, think and create.</td>
</tr>
<tr>
<td>C6 Learning is trying to get external return and avoiding penalty.</td>
<td>Learning is interesting and self rewarding.</td>
</tr>
<tr>
<td>C7 Teachers are the main source of knowledge and learning.</td>
<td>Students can learn from many sources, inside and outside school, locally and globally.</td>
</tr>
<tr>
<td>C8 Students are arranged to learn separately, be responsible for themselves, and have few opportunities to support and learn from each other.</td>
<td>Through group and networked learning and mutual sharing and inspiring, the learning climate can be sustained and the learning effect can be multiplied.</td>
</tr>
<tr>
<td>C9 Learning only occurs at specific time in school. Graduation is regarded as the termination of learning.</td>
<td>School education is the beginning of learning but not the whole learning. Learning can occur at any place and any time.</td>
</tr>
<tr>
<td>C10 Students learn a standard curriculum from textbooks and materials specified by teachers.</td>
<td>Students access to local and global information and learn openly through internet, video-conferencing, cross-cultural activity, and multimedia materials.</td>
</tr>
<tr>
<td>C11 The targets of students’ learning are teachers and the materials prepared by teachers.</td>
<td>The targets of students’ learning include world class teachers, experts, peers and learning materials in different parts of the world.</td>
</tr>
<tr>
<td>C12 Learning is separated from the fast changing society.</td>
<td>Students participate in local and international learning programs to acquire view and experience beyond their school.</td>
</tr>
</tbody>
</table>

**PSL Sub-scale**
### 3. Paradigm Shift in Teaching

<table>
<thead>
<tr>
<th>D1</th>
<th>Site-bounded Paradigm (1)</th>
<th>CMI-Triplization Paradigm (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers are the center of teaching.</td>
<td>Teachers provide assistance and guidance to support students’ learning.</td>
<td></td>
</tr>
<tr>
<td>D2</td>
<td>Teachers possess professional capacity of teaching knowledge and skills.</td>
<td>Teachers have multiple perspectives and capacity to facilitate students developing multiple intelligence.</td>
</tr>
<tr>
<td>D3</td>
<td>Teachers must teach in a standard way and ensure students acquire a fixed amount of standardized knowledge.</td>
<td>Teachers have their own potentials and styles. They can contribute to students’ development in different ways.</td>
</tr>
<tr>
<td>D4</td>
<td>The main job of teachers is to teach some knowledge and skills.</td>
<td>The key of teaching is to arouse students’ curiosity and motivation to think, and learn.</td>
</tr>
<tr>
<td>D5</td>
<td>Teaching is a process of disciplining, teaching, training and socialization.</td>
<td>Learning is a process of stimulating, facilitating, and sustaining students’ self learning and self fulfillment.</td>
</tr>
<tr>
<td>D6</td>
<td>Teaching is to try to help students and the school reaching some external standards.</td>
<td>Teaching is to share the joy of learning process and outcomes with students.</td>
</tr>
<tr>
<td>D7</td>
<td>Teaching is for teachers to practice, apply, or disseminate knowledge.</td>
<td>Teaching is a process of lifelong learning, including sustainable discovering, experiment, self-fulfillment, reflection, and professional development.</td>
</tr>
<tr>
<td>D8</td>
<td>School is the main site of teaching, and teachers are the main source of knowledge.</td>
<td>There are many sources of teaching, inside and outside school, locally and globally.</td>
</tr>
<tr>
<td>D9</td>
<td>Teachers teach separately and are responsible individually. They have few opportunities to support and learn from each other.</td>
<td>Through various ways and mutual sharing and inspiring, teachers have team cooperation to multiply the teaching effect.</td>
</tr>
<tr>
<td>D10</td>
<td>What teachers need to teach are textbooks and materials assigned by the school and government authority.</td>
<td>Teachers can provide world class materials and learning opportunities for students through internet, cross-cultural activities and multiple information.</td>
</tr>
<tr>
<td>D11</td>
<td>Teachers and teaching contents are disjointed with the changing local and global communities.</td>
<td>Teachers participate in local and international teaching activities to acquire views and experiences beyond school.</td>
</tr>
</tbody>
</table>

**PST** Sub-scale

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**Note:**

- **Low PS/SBM Sch**: Represents lower performance scale in PS/SBM Sch.
- **All Schs**: Represents all schools.
- **High PS/SBM Sch**: Represents higher performance scale in PS/SBM Sch.

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**Diagram:**

- D1: Teachers are the center of teaching.
- D2: Teachers possess professional capacity of teaching knowledge and skills.
- D3: Teachers must teach in a standard way and ensure students acquire a fixed amount of standardized knowledge.
- D4: The main job of teachers is to teach some knowledge and skills.
- D5: Teaching is a process of disciplining, teaching, training and socialization.
- D6: Teaching is to try to help students and the school reaching some external standards.
- D7: Teaching is for teachers to practice, apply, or disseminate knowledge.
- D8: School is the main site of teaching, and teachers are the main source of knowledge.
- D9: Teachers teach separately and are responsible individually. They have few opportunities to support and learn from each other.
- D10: What teachers need to teach are textbooks and materials assigned by the school and government authority.
- D11: Teachers and teaching contents are disjointed with the changing local and global communities.

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**Sub-scale:**

- **PST**: Represents potential scale.
4. Student-centered Teaching

Let students gain various learning experiences and match their learning styles.

Explain subject concepts with various methods to ensure all students understand better.

Change teaching materials and use appropriate teaching approaches to ensure each student fully engaged in learning.

Use technology to prompt students’ learning.

Change strategies to ensure students more actively participating in learning.

Provide all students opportunities of thinking, discussing, communicating, reflecting, and reviewing learning contents.

Encourage all students to raise critical questions and consider the learning contents from multiple perspectives.

Facilitate all students to analyze learning contents and draw conclusions.

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Encourage all students to describe their own learning process and progress.

Facilitate all students to understand, reflect, and monitor their own learning with appropriate methods.

Integrate assessment into students’ learning process.

Demonstrate the methods of assessment for learning to all students.

Set up appropriate guidelines to facilitate students to assess their own homework.

Facilitate all students to gain skills of self-reflection.

Provide opportunities to students to discuss their homework with peers.

Facilitate all students to understand and monitor their own learning goals.

Provide opportunities to students to demonstrate and reflect their learning activities inside and outside class.
Further Challenges

In addition to promote active & sustainable learning,

How can our initiatives really facilitate student’s new learning to

- Develop **Multiple Thinking**?
- Perform **Creativity**?
Currently, many New Initiatives in Curriculum and Pedagogy to promote Integrated Learning locally & internationally.

- Can integrated learning really create optimal opportunity to promote MT & Creativity?
- What kind of integrated learning would be effective?
A Theory of Integrated Learning for Multiple Thinking and Creativity
Vertical Thinking in Learning

Within One Domain

- Intelligence (e.g. technological)
  - Meta-understanding
- Knowledge (e.g. technological)
  - Conceptualizing
  - Synthesizing
- Information (e.g. technological)
  - Analyzing
  - Describing
  - Classifying
- Data (e.g. technological)
  - Measuring
  - Observing

Learning Process

Higher Order Learning

- Theorizing
- Predicting
- Applying
- Planning
- Experimenting
- Informing
- Discovering

Thinking Downward

Lower Order Learning

Thinking Upward
Levels of Thinking in Multiple Contexts

Multiple Data
(Technological, Economic, Social, Political, Cultural, Learning)

Multiple Information

Multiple Knowledge

Multiple Intelligence

Deep Learning & Thinking in Action
- To convert knowledge as internalized meta-recognition & mindset
- To draw out higher consistent & reliable understanding from linked information
- To draw out meaning from analysis of data of action
- To monitor & assess

Learning in Contexts

Application of Intelligence & Knowledge in Action
- To provide a rationale
- To predict & explain relationship
- To make sense from reality
- To inform & plan

To draw out higher consistent & reliable understanding from linked information

To inform & plan

Learning in Contexts

To draw out meaning from analysis of data of action

To monitor & assess

To provide a rationale

To predict & explain relationship

To make sense from reality

To inform & plan
Levels of Thinking in Multiple Contexts

Are our existing designs of "integrated learning" effective to such students’ high-level learning & thinking?

What is integrated learning?
Basic Types of Integrated Learning

A. Content Types of Integration
   1. Subject Integration
   2. Domain Integration

B. Pedagogical Types of Integration
   3. Method Integration
   4. Cognitive Integration
1. Subject Integration Type
Integrating the subject/ disciplinary content in learning

- **Integrated Sciences** (integrating Physics, Chemistry, Biology, etc.)

- **Integrated Social Sciences** (integrating Geography, Sociology, Economics, Political Science, etc.)

- **Integrated Humanities** (integrating Arts, Philosophy, History, Anthropology, etc...)
2. **Domain Integration Type**

Integrating domains of knowledge or disciplines in learning

- Liberal Studies
- Multi-domain Studies
3. Method Integration Type
Integrating various methods in learning

e.g. Learning by

- Reading
- Listening
- Performing
- Discussing

Integration of some forms
- Experiencing
- Questioning
- etc.

Integration of Some forms
- Project Learning
- Group Learning
- Self-regulated Learning

- Online Learning
- Hybrid Learning
- Face-face Learning, etc.
4. Cognitive Integration Type

Integrating different cognitive activities in learning

- Observing
- Measuring
- Classifying
- Describing
- Analyzing
- Synthesizing
- Conceptualizing
- Meta-understanding
- Etc.

- Theorizing
- Predicting
- Applying
- Planning
- Experimenting
- Informing
- Discovering
- Etc.

Integration of cognitive activities
Theory of Integrated Learning

**Principle 1:**

- More integration in content or pedagogy →
- More exposure & more complexity in learning
Theory of Integrated Learning

Principle 2:

- More exposure & more complexity in learning
- More demanding for & challenging to students’ limited ability, effort & time
- May not result in learning more and deeper, depending on various factors
Traditional Learning: Vertical Cognitive Integration in Separated Subject Learning

Cognitive Activities:
- Meta-understanding
- Conceptualizing
- Synthesizing
- Analyzing
- Describing
- Classifying
- Measuring
- Observing

Intelligence
- Knowledge
- Information
- Data

Geography
- Economics
- Mathematics
Traditional Learning: Vertical Cognitive Integration in Separated Subject Learning

**Strength:**
- Good to promote vertical cognitive integration or vertical thinking in each subject area

**Weakness:**
- Lack of opportunity to benefit from knowledge transfer from one subject to other
High Level vs Low Level
Horizontal Subject Integration

- Meta-understanding
- Conceptualizing
- Synthesizing
- Analyzing
- Describing
- Classifying
- Measuring
- Observing

Intelligence
Knowledge
Information
Data

Geography
Economics
Mathematics

High Level Integration
Low Level Integration
Theory of Integrated Learning

**Principle 3:**

Given the complexity & difficulty in subject integration & the limited time & ability,

- There is a tendency that both students and teachers adopt **low level of cognitive integration** involving mainly data & information
- Result in low level learning and thinking
- **Education Bubbles** in integrated learning
Given the complexity in subject integration,

In fact, it is not easy to raise the cognitive integration from the lower level to the higher level of knowledge and intelligence.

How can we do that?
How to maximize both Vertical Cognitive Integration & Horizontal Subject Integration?

Integrated projects

- To integrate subject content & benefit from transfer of thinking and knowledge from one domain to others

- Meta-understanding
- Conceptualizing
- Synthesizing
- Analyzing
- Describing
- Classifying
- Measuring
- Observing

Geography
Economics
Mathematics
What implications for development of integrated learning in local & international communities?
4 Models of Integration in Learning

Model I: Total Integration
- High integration in content
- High integration in pedagogy
- Maximized exposure in content and pedagogy
- Highest complexity in learning

Model II: Content Integration-Pedagogy Separation
- High integration in content
- Low integration in pedagogy
- Maximized exposure in content
- High complexity in content but low complexity in pedagogy

Model III: Content Separation-Pedagogy Integration (Traditional)
- Low integration in content
- High integration in pedagogy
- Limited exposure in content & pedagogy
- Separated & fragmented learning
- Lowest complexity in learning

Model IV: Total Separation (Traditional)
- Low integration in content
- Low integration in pedagogy
- Limited exposure in content & pedagogy
- Separated & fragmented learning
- Lowest complexity in learning
4 Models of Integration in Learning

Content Integration
(Subject/Domin Domain Types)

Pedagogical Integration
(Method/Cognitive Types)

Model I: Total Integration
- High integration in content and pedagogy
- Maximized exposure in content and pedagogy
- Highest complexity in learning

Model II: Content Integration - Pedagogy Separation
- High integration in content
- Low integration in pedagogy
- High complexity in content but low complexity in pedagogy

Model III: Content Separation - Pedagogy Integration
- Low integration in content
- High integration in pedagogy
- Low complexity in content but high complexity in pedagogy

Model IV: Total Separation
(Traditional)
- Low integration in content and pedagogy
- Limited exposure in content and pedagogy
- Separated & fragmented learning
- Lowest complexity in learning

- Each Model has its own strengths, weaknesses, & significance.
- Its effectiveness depends on the purposes, time frames & contexts of learning.

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- Low integration in pedagogy
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- Separated & fragmented learning
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**Situation of Traditional Learning**
What implications for understanding the relationship between Integrated Learning and Development of Creativity?
Creativity in Integrated Learning

• as ability to create new data, new information, new knowledge or/and new intelligence in integrated learning
Hierarchy of Creativity in Integrated Learning

- Create New Intelligence
- Create New Knowledge
- Create New Information
- Create New Data

Creativity in Thinking

Integrated Learning

Orders:
- 1st Order
- 2nd Order
- 3rd Order
- 4th Order
Ways to enhancing creativity in integrated learning?
1. Creativity in Integrated Subject Learning

Integrated Learning across two subject domains

(e.g. Social)

Intelligence
Knowledge
Information
Data

(e.g. Technology)

Intelligence
Knowledge
Information
Data

Creativity in Thinking
2. Creativity in Integrated Project Learning
(e.g. aims at development of social thinking and intelligence)

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<td>Data</td>
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Integrated Learning across 4 Subject domains
3. Creativity by Transfer in Integrated Learning

(e.g. Technology)

Intelligence
Knowledge
Information
Data

Intelligence Transfer
Knowledge Transfer
Information Transfer
Data Transfer

(e.g. Economics)

New Intelligence
New Knowledge
New Information
New Data

Integrated Learning
Thinking Transfer Results in Creative Achievements
Research Implications

1. **Theory of Integrated Learning** provides a new direction for research on initiatives in curriculum, pedagogical methods, and T&L environment that can facilitate development of multiple thinking and creativity.

2. **Comprehensive research** is needed to ensure the ongoing and future initiatives sustainable, relevant and effective to new learning and new teaching.

3. **Research on paradigm shift** in management, teaching, and learning in schools is still one of top priorities if new learning is to achieve.
I hope, our new initiatives can really facilitate schools and their students successfully in sustainable, integrated & creative learning.

All our students can become high-order active learners to pursue life-long developments in future.


