A Review of Problem-Based Learning at Covenant University

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Welcome!

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Presentation Outline:

This presentation will:

- provide a brief background to the introduction of PBL at Covenant University
- examine the progress that has been made in the implementation of PBL in the curriculum
- look at the challenges to effective implementation
- make some recommendations
Background to the Introduction of PBL at Covenant University:

At the PBL Workshop held in August 2014, we explored:

- The ‘what’s’, ‘why’s’ and the challenges of Problem-Based Learning and how to implement it into the curriculum
PBL at Maastricht University:

www.youtube.com/watch?v=cMtLXXf9Sk0
What is wrong with the way we teach today?

- Too much lecture-based teaching
- Requiring too much memorisation
- Testing too much for content
- Too much dependence on the lecturer
- Students are consumers of information and not contributors to knowledge
What is wrong with the way we teach today?

- Not developing skills needed in the workplace
  - Analytical and critical thinking skills
  - Teamwork skills
  - Communication skills
  - Problem-solving skills
  - Technology skills
  - etc
Covenant University:

VISION

➢ To be a ‘leading World-Class University, committed to raising a new generation of leaders in all fields of human endeavour’.

MISSION

➢ The creation of knowledge via ‘a...curriculum employing innovative, leading edge teaching and learning methods, ...that promote integrated, life-applicable, life-transforming education...’
Covenant University:

CORE VALUES

- Spirituality
- Possibility Mentality
- Capacity Building
- Integrity
- Responsibility
- Diligence
- Sacrifice
Covenant University:

ANTHEM

- Glorious foundation stone
  Leadership skills to show
  Departing from knowledge
  To empowerment
  Legalism to realism
  Wisdom’s call for change
  Inspired, on fire
  With courage marching on in Grace
Developments Demanding a Change in Teaching and Learning Strategies:

- Globalisation and the need for the internationalisation of the curriculum
- Developments in ICT
- Complexity of the business world and the need for RELEVANT skills
- Demands of, and competition in, the workplace
What are the Core Skills demanded from 21st Century graduates:

- Communication (Verbal/written)
- Problem-solving
- Teamwork
- Leadership
- Decision-making/creativity
- Organisational skills
- Independence/Self-motivation
- Time management
- Ability to work under pressure
- Numeracy/Computing, etc
Covenant University Theme for 2015/2016:

- INNOVATION, PRODUCT DEVELOPMENT AND NATION BUILDING: IMPETUS FOR THE ATTAINMENT OF VISION 10: 2022

- What is innovation?
  - **Innovation** is creating new value and/or capturing value in a new way.

- **Innovation** can be viewed as the application of better solutions that meet new requirements.
Covenant University Theme for 2015/2016:

- INNOVATION, PRODUCT DEVELOPMENT AND NATION BUILDING: IMPETUS FOR THE ATTAINMENT OF VISION 10: 2022

- It cannot be business as usual if we want to create new ‘products’

- That is, creating a new generation of leaders

- If we keep doing things the same way we’ve always done them, we will continue to have the same results and outcomes
What is Problem-Based Learning?

- One of the most significant innovations in education
- It is a way of constructing and teaching courses using problems as the stimulus and focus for student activity
What is Problem-Based Learning?

**Definitions**

- “A learning method based on using problems as a starting point for acquisition and integration of new knowledge”.
- A curriculum development and delivery system that recognises the need to develop problem solving skills as well as the necessity of helping students to acquire necessary knowledge and skills.
- Learning that results from working with problems
Characteristics of PBL

- Involves giving students a well structured problem to work through (usually as a team guided by a tutor).
- It’s more student centred rather then teacher (or institution centred)
- Learning is driven by open-ended problems
- Students work in small collaborative groups
- Teachers take on the role as ‘facilitators’ of learning, who can be approached for advice
Characteristics of PBL

- Students are encouraged to take responsibility for their group and organize and direct the learning process with support.

- Learning occurs as students collaboratively engage with concepts in meaningful problem solving.

- Working in self-directed groups, students take an active and systematic approach to defining and exploring a research problem.

- Involves the juxtaposition of individual and collective analytical work, combining team-based exploration and synthesis with individual research and analysis.
PBL ENVIRONMENT

TUTOR

GROUP MEMBERS

DISCUSSION LEADER

SCRIBE
Characteristics of PBL

- It takes account of how students learn - learning takes place when students are actively involved and learn in the context in which knowledge is to be used.

- The knowledge base of most professions is constantly expanding. PBL enables students to learn quickly, effectively and independently when they need it, than it is for them to have assimilated (at graduation) all the information which their teachers believe is desirable.

- PBL has high face validity for practitioners.

- HEIs need to respond to changes in professional practice, to update both content and method in the light of changing learning environments. PBL fits well into this.
A Problem-solving framework: the Seven Jump

- Step 1: Clarification of terms
- Step 2: Problem definition
- Step 3: Problem analysis
- Step 4: Systematic inventory
- Step 5: Formulate learning objectives
- Step 6: Self-study
- Step 7: Report and synthesize
Practical Examples:

NIGERIA NEWS: (4th August 2015)

- No Dollar Access Imperils Nigerian Retailers, Spurs Prices (Mojeed Jamiu is cutting jobs and raising prices to prevent his furniture and clothing store in Lagos from closing after Central Bank of Nigeria Governor Godwin Emefiele restricted foreign currency supply for some imports)

- Nigeria investors rattled by Buhari delays on economic plans
ANOTHER EXAMPLE:
Davina is a private shareholder of Dantex plc. She recently received the annual report and accounts of the company for the year ended 31 March 2015, including the notice of the annual general meeting, which took place on Thursday, 30th July 2015. Since acquiring shares in Dantex plc in 2010, Davina had never attended any AGM, but decided to do so this time because she had some burning issues on her mind, requiring clarification. Having browsed through the annual report she had received, Davina noticed that although the performance of the company in 2015 was worse than it was in 2014, the remuneration of the directors and their bonuses increased substantially. At the AGM, Davina could not contain her curiosity as to why this was the case, evident from the questions she threw at the finance director. She also observed that the institutional shareholders were not present at the AGM.
Other interesting Examples:
The PUNCH – Wednesday, August 20, 2014

➤ ‘Data for 4.5 million patients stolen from hospital’
➤ ‘Russian import ban fuels food price rises’
➤ ‘Trader pleads guilty to rate rigging’
WHY PBL?

Research provides evidence of a number of reasons for using PBL:

- Students retain little of what they learn when taught in a traditional lecture format (Bok 1989)

- Students do not appropriately use the knowledge they have learned (Schmidt 1983)

- Since students forget much of what is learned nor use their knowledge appropriately, instructors should create conditions that optimise retrieval and appropriate use of the knowledge in future professional practice.
WHY PBL?

- Creates the three conditions that information theory links to subsequent retrieval and appropriate use of new information (Schmidt 1983):
  - Activation of prior knowledge
    - Students apply knowledge to understand new information
  - Similarity of contexts in which information is learned and later applied
    - PBL provides problems within context that closely resemble future professional problems.
WHY PBL?

- **Opportunity to elaborate on information that is learned during the problem-solving process**

- Elaboration occurs in discussion with peers, peer-teaching, exchanging views, and preparing essays about what students have learned during the problem-solving process.

(From Bridges, Edwin M., *Problem Based Learning for Administrators*, 1992)
WHY PBL?

- *It teaches students essential ‘soft skills’ as well as domain specific content and skills.* Through PBL students learn:
  - Problem solving skills
  - Self-directed learning skills
  - Ability to find and use appropriate resources
  - Critical thinking
  - Measureable knowledge base
  - Performance ability
  - Social and ethical skills
  - To be self-sufficient and self-motivated
  - ICT skills
  - Leadership skills
WHY PBL?

- Ability to work in a team
- Communication skills
- Proactive thinking
- Congruence with workplace skills

(From Samford Problem based Learning Initiative)
What PBL is not

- Whilst there has been an increase in the number of HEIs adopting PBL, there have also been misapplications and misconceptions of the approach:
  - confusing PBL as an approach to curriculum design with teaching of problem-solving

- It does not involve the addition of problem-solving activities to otherwise discipline-centred curricula
What PBL is not

- Problem-based courses start with problems rather than with exposition of disciplinary knowledge.

- They move students towards the acquisition of knowledge and skills through a staged sequence of problems presented in context, together with associated learning materials and support from teachers.
Which Institutions have adopted Problem-Based Learning?

- University of Delaware
- Samford University
- University of Maastricht
- Stanford University
- University of Harvard
- Republic Polytechnic Singapore,

etc,etc. – too many to list here!!!
Implementation of PBL into the Curriculum at Covenant University

Questionnaire Distributed to Faculty

- Responses received: **133**
- FOUR SECTIONS: A, B, C, D

SECTION A – Attendance at the Workshop in August

- YES – 110 – 84.6%
- NO – 20 – 15.4%
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‘No’ Group: (20)

Heard of PBL before Workshop
  YES – 16 – 64%
  NO – 9 – 36%  - ???

Would like to implement PBL into the curriculum
  YES – 44 – 97.8%
  NO – 20 – 2.2%  - ???
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SECTION B – ‘YES’ GROUP (110) –
Attended Workshop in August but did not implement PBL

Was Workshop useful?
YES – 69 – 98.6%
NO – 1 – 1.4% - ???
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‘YES’ Group: (110)

Reason for not implementing PBL
- Not enough time – 11 – 28.2%
- Students not adequately prepared – 4 – 10.3%
- Inadequate infrastructure – 14 – 35.9%
- Not sure how to implement PBL – 4 – 10.3%
- Not confident enough to implement PBL – 0
- Further training needed – 12 – 30.8%
- Other reasons – 16 – 41%
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SECTION C – ‘YES’ GROUP (110) – Attended Workshop in August and implemented PBL

Experienced challenges in implementation?

YES – 47 – 44.8%
NO – 60 – 57.1% - ???
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‘YES’ Group: (47)

Challenges experienced:

- Not enough time for effective implementn – 34 – 68%
- Students not adequately prepared – 13 – 26%
- Inadequate infrastructure – 33 – 66%
- Identifying right types of problems -8 – 16%
- Organising students into groups – 18 – 36%
- Class sizes too large – 25 – 50.%
- Extra support in classroom – 5 – 10%
- Other reasons – 2 – 4%
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‘YES’ Group: (47)

Additional Support/Resource Required:
- More training for staff – 43 – 58.9%
- Re-orientation of Students/paradigm shift – 55 – 75.3%
- Additional Personnel in the classroom – 14 – 19.2%
- Better classroom infrastructure – 47 – 64.4%
- Data bank of problems - 28 – 38.4%
- Other support – 3 – 4.1%

‘NO’ Group: (60) – No challenge in implementation

PBL Experience:

Great learning opp. for staff & students – 51 – 78.5%
Encouraged active students participation – 59 – 90.8%
Enabled students to think more critically – 52 – 80%
Self-directed learning for students 49 – 75.4%
Improved students’ analytical skills – 53 – 81.5%
Knowledge of approp. use of resources – 37 – 56.9%
Less dependence on tutor – 36 – 55.4%
Students worked collaboratively – 44 – 67.7%
Improved students’ performance ability – 46 – 70.8%
Other – 7 – 10.8
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SECTION D – Background & Profile (127) –

Period of employment at CU

Under 1 year – 10 – 7.6%
1 to under 3 years – 43 – 32.6%
3 to under 5 years – 11 – 8.3%
5 to under 7 years – 13 – 9.8%
7 to under 10 years – 35 – 26.5%
10 to 13 years – 20 – 15.2%
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SECTION D – Background & Profile (132) –

Colleges to which Respondents belong

College of Business & Social Sciences – 42 – 32.1%
College of Engineering – 21 – 16%
College of Leadership Development – 19 – 14.5%
College of Science & Technology 50 – 38.2%

(Covering a range of Programmes)
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SECTION D – Current Academic Position at CU (131) –

Professor – 10 – 7.6%
Associate Professor/Reader – 9 – 6.9%
Senior Lecturer – 24 – 18.3%
Lecturer I – 19 – 14.5%
Lecturer II – 28 – 21.4%
Asst. Lecturer - 41 – 31.3%
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SECTION D – Gender of Respondents (133) –

Male – 76 – 57.1%
Female – 57 – 42.9%

Done further reading/training in PBL (133) –

Yes – 70 – 52.6%
No – 63 – 47.4%
The Challenges/and the Future of PBL

- adoption of a PBL proposal without sufficient commitment of staff at all levels
- lack of research and development on the nature and type of problems to be used
- insufficient investment in the design, preparation and on going renewal of learning resources
- establishing small elements of PBL in a context which rewards students for the kind of behaviour favoured in a traditional lecture-plus-examination environment
The Challenges/and the Future of PBL

- insufficient concern with staff induction and development, particularly for those staff who were not part of the original team which developed the programme

- inappropriate assessment methods which do not match the learning outcomes sought in problem-based programmes; and

- Evaluation strategies which do not focus on the key learning issues and which are implemented and acted upon far too late.

(Boud and Feletti 2008)
Recommendations for Implementation of PBL at Covenant University

- Staff must see that Senior Management are serious about implementation and willing to commit needed resources.

- A complete paradigm shift and re-orientation of students about the change in pedagogical approach to teaching and learning.

- Management must decide the model of PBL to adopt – individual courses or entire programmes?

- Will there be a time frame for implementation and what would it be?
What principles of curriculum design and implementation are non-negotiable or unchangeable if curriculum is to sustain its PBL status?

How can we best measure problem-solving processes and outcomes before and after graduation?

What difference can we confidently say it makes to the learners, the faculty, the institution and/or the profession in the short- and longer term?
However, through critical appraisal of many forms of PBL now in use, it is possible to design courses which equip students well for the world of practice.
A CAVEAT

- PBL is not the solution to all curriculum design problems in professional education. However, at the present time, it is the most fully articulated and trialled alternative to traditional practices and it can provide a means of tackling some of the challenges of professional education, which have appeared to date to be quite intractable.
END