

# Constructing, engaging and creating

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# Why we need Problem based learning and role modelling in schools

- ◆ Significant numbers of school students do not benefit from 'education'.
- ◆ The cram/dump model does not work for many students and is disempowering
- ◆ The system we are using sets too many students up to fail.
- ◆ We have been locked into using the same teaching methods for centuries without thinking about other methods
- ◆ Many students are not engaged
- ◆ Age segregation sets up false peer group pressures and alienates children from parents and other societal structures.

# Aim to change the way schools operate

- ◆ Introduce pbl as the primary mode of teaching and remove discipline boundaries ie. no subject boundaries. More holistic, more realistic.
- ◆ Benefits are that students learn how to think and solve problems.
- ◆ Students feel more valued and feel more motivated to learn.
- ◆ Students begin to take responsibility for their own learning
- ◆ Model society structures more closely with vertical grouping.
- ◆ More realistic role models needed.

# Why project or problem based learning?

- ◆ Current system disempowering
- ◆ Reductionist approach demotivating
- ◆ High percentage of students not served
- ◆ Academic students the major beneficiaries
- ◆ Education is NOT a competition

# Tertiary experience with PBL

- ◆ Medical , dentist and architecture courses using PBL- Australia wide.
- ◆ Assessment of reasoning ability
- ◆ Work in teams. Requires a well trained tutor.
- ◆ The cram/dump model vs build on knowledge base each year
- ◆ Use non-graded passes
- ◆ Much of first year spent overturning the competitive cram/dump culture to which many are inured.

# Medical course using problem based learning

- ◆ Students report a great deal of satisfaction with the course
- ◆ Hands on experience with real cases from the outset
- ◆ This is highly motivating and gives students a sense of why they are doing each 'subject'
- ◆ Only once the problem has been presented and the students have thought about it and discussed it are the supplementary materials introduced in the form of lectures
- ◆ Constructivism: students create their own knowledge in the context of experiences
- ◆ Focus on 'doing' not 'receiving'
- ◆ The depth of understanding is increased by an order of magnitude

# PBL further issues

- ◆ PBL is really a 'student-directed learning' process
- ◆ Development of multiple intelligences
- ◆ Development of hypotheses, testing, refining
- ◆ Aim-to produce self motivated learners
- ◆ Staff training is critical. Tutors can derail the process because most have come through the old system
- ◆ A residue of students who cannot adapt to the system
- ◆ A uniform national curriculum would be at risk
- ◆ Reactionary parents would be the hardest to convince

# Medical course experience: 'Prepare students for PBL'

- ◆ Since PBL has not been the educational method of choice in the majority of pre-medical education systems, suffice it to say that many students will lack these skills upon entering the medical school (and other faculties which are using pbl) curriculum.
- ◆ By training students (as well as faculty) in these skills prior to, or within existing medical courses which utilize PBL, learning can be enhanced.

# Characteristics of PBL

- ◆ Student choice of topic within limits
- ◆ Teacher becomes facilitator- designs activities and provides resources. Multiple sources of information.
- ◆ Context extends beyond the 'lesson'
- ◆ Cuts across several disciplines
- ◆ A team approach to develop a product, presentation or performance
- ◆ Covers a broad range of goals

# Engagement theory

- ◆ When students are remote and have a multitude of competing time pressures we need to find ways to engage them so that they give a higher priority to their studies.
- ◆ The techniques were developed for distance education students but are equally applicable to the classroom with sometimes stunning results.
- ◆ Think about the way your students' eyes light up when they are working together on real and meaningful learning tasks.

# How can we engage our students?

- ◆ To be truly engaging tasks should be project based, occur in collaborative teams and have an outside authentic focus.
- ◆ Learning should be structured as:  
Relate-Create-Donate
- ◆ Initially students in small groups relate to the problem, create a solution and donate this to the outside world.

# Becoming engaged

- ◆ Students become engaged when they see meaning and purpose in what they are doing
- ◆ Authenticity provides that meaning and purpose
- ◆ It is an authentic problem based learning

# Patterns of engagement

- ◆ Authentic activities have been used across a wide variety of discipline areas
- ◆ In order to fully engage with an authentic task students need to ‘suspend disbelief’
- ◆ This is the same process that occurs when going to a movie or play which uses fantasy as its theme.
- ◆ Students inured to the didactic, cram/dump model of ‘learning’ have the most trouble with this approach.

# 10 characteristics of authentic activities

- ◆ Real world relevance
- ◆ Require the students to define the tasks
- ◆ Complex tasks to be investigated over a sustained period of time
- ◆ Provide the opportunity for examination of the problem through different perspectives
- ◆ The opportunity to collaborate

# 10 Characteristics (contd)

6. Provide the opportunity to reflect
7. Applied and integrated across subject areas
8. Seamlessly integrated with assessment
9. Create polished products valuable in their own right
10. Allow competing solutions and diversity of outcomes

# Age segregation

- ◆ All students the same age in classes. Sets up trends of social dysfunction
- ◆ Sets up peer admiration of the toughest, the sports hero, the law of the jungle prevails.
- ◆ Peer groups then are inward focussed and ignore or disdain outside pressures eg parents, authority.
- ◆ The ones who do not fit in may turn to any one of drugs, eating disorders, bullying.
- ◆ Peer group not part of the community
- ◆ Role modelling dysfunctional, unrealistic.

# Vertical class grouping

- ◆ Vertical class grouping relaxes the expectation that students learn in a lock-step progression of classes of the same chronological age. Instead, students of different ages can be grouped together on other more appropriate factors (such as learning styles, learning rates, previous knowledge or interests).

## Unitised timetabling

Unitised timetabling involves splitting the normal curriculum subject areas into smaller units that can be taken separately.

Such a dissection could be on the basis of work components within the curriculum.

Problem based, or more creatively into subject core components and peripheral extension units, including into interdisciplinary areas (such as, for example, the mathematics of music) joining two or more curriculum areas together.

## This vertical unitised timetabling involves:

- unitising the curriculum into term or semester length units with some (say 50%) being core units that form a continuing course sequence in the curriculum area
- the development of optional extension and interdisciplinary units based on teacher and student interest and community resource availability
- the use of unit prerequisite (rather than age) requirements to ensure skills needed prior to a unit are held
- the use of pretesting to give prerequisite credits where sufficient competence is shown (including with newly enrolled students)
- the students choosing units they wish to enrol in subject to any "coherent course of study" requirement

To facilitate effective transition to such a structure the following factors have also been found to be important:

- allowing at the initial stages for a significant workload in preparation of unit materials and in achieving school community acceptance of the changes
- a vertical pastoral care system with regular meetings between a staff member and a small group of students from across all ages at the school, providing the immediate point of staff/student/parent contact and guidance
- an appropriate staff and school community participatory decision-making process to complement the more student directed and flexible curriculum strategies.

# Advantages of vertical grouping

- ◆ Role models can be older students ie. Like an extended family.
- ◆ Society modelled so that older generation become respected
- ◆ The brighter students actually do better because they get more opportunities to teach and therefore to learn more themselves
- ◆ Social experiments in safe environment
- ◆ Social networks extend beyond single age peer group

# Conclusions

- ◆ Problem based learning has proven benefits as an education system that delivers a higher quality outcome
- ◆ With adequate support the entire curriculum can be presented via appropriate 'problems'
- ◆ Engagement in learning will produce an outcome many times more beneficial than current methods
- ◆ The combined effects of problem based learning and vertical grouping could be used to correct the failure of the education system to serve all customers.

# Comments and questions welcome

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