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Creating Rich Environments for Active Learning

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CREATING RICH & ACTIVE LEARNING ENVIRONMENTS IN DISTANCE EDUCATION (DE)
Lucy Kamanja - University of South Africa

Aim of paper: explore the successes and challenges of creating REALs in science foundation courses in DE at UNISA
Distance learning & Open Distance learning (ODL)

- The university of South Africa (UNISA) is an ODL institution
- Distance learning refers to a learning process where the learner is removed in time and space from those conducting the learning.
- Open learning denotes flexibility in terms of access, of time and place, pace, method of study or any combination of these
ODL approaches to learning

“open learning is an approach which combines various principles like learner-centredness, life-long learning, flexibility of learning provision, Provision of learner support and removal of barriers to access learning”. South Africa Department of Education white paper (1995)
diversity of students in DE

- The adult in full time employment wishing to change jobs or move up the ladder
- The adult in part time employment
- The unemployed adult seeking a profession
- The young students who could not get admission into a regular university due to lack of tuition or not meeting the grade
Some as young as 18 & others in their 50s and 60s
Some admitted through the Recognition of prior learning method,
Others after passing access subjects
Others get automatic admission after age 45

[there is exemption to admission +23 years with conditions or +45 years without conditions]
Skills of learning in ODL/DE (very important)

- Time management
- Managing isolation/anxiety/tension/stress
- Exam preparation
- Meta-cognition – learning how one learns
- [these skills are crucial to success in a DE learning environment]
Isolation in DE learning environment

- Majority of DE students previously learnt in a face to face environment
- Biggest challenge is to learn without teacher support, institutional support and without interaction with other students.
- The role of distance learning institution is to address this isolation and provide support to enhance learning
Effects of isolation in ODL/DE

- Creates high drop out rates. Globally throughput rates are 40-50%. Govender (2004)
- In the University of South Africa (Unisa) the throughput rates are 6.1%
- Tinto (1975) says “the lower the degree of social and intellectual integration into the academic and social communities, the greater the likelihood of departure”.
Meeting the student needs in DE

- Offer multiple delivery options that are flexible and enhance the learners autonomy
- Provide opportunities to reflect and build their own understanding through interaction with their lecturers, other students and their study materials
- [hence the need to create “rich environments for active learning” [REALS]]
WHY create rich environments for active learning –

- Learning is “viewed as knowledge acquisition through cognitive processing of information acquired both from being part of society and from individual thought processes”. Bandura (1986)

- Interactivity improves performance – “When students themselves are actively involved in the learning process, their learning improves” Dunlap, J (1999)

- Purpose for REALs is to provide learner engagement
Contexualising REALs

- Promote study & investigation within authentic contexts
- Encourage growth of student responsibility, initiative, decision making, & intentional learning
- Cultivate collaboration among students & teachers
- Utilize dynamic, interdisciplinary generative learning activities that promote higher order thinking process to help students rich & complex knowledge structures
- Assess student progress in content and learning-to-learn within authentic contexts using realistic tasks and performances (Grabinger, RS & Dunlap, JC 1995)
Contextualising Unisa student needs

- Majority of students are black South Africans
- Previously disadvantaged education provision due to historical circumstances (apartheid-poor teachers and inadequate resources)
- English language is second or third language
- Students lack essential literacy skills to cope with higher education studies
- Students lack mathematical skills which are pre-requisite in a science discipline-most failed or got very low grades at matric level
Example of student profile at Unisa

In one course in the college of Agriculture and Environmental Science (2006):
Total registered 2106 – 53% male- 47% female students from South Africa 96%
Those who chose to study in English 90%
# of black students 77%
# who use English as home language 14%
Employed 39% - unemployed 39%
“full time students” 18%
Largest age brackets- 20-24 & 30-39 = 27% each
Current trends in DE at Unisa

- Throughput rates – global 40-50% at Unisa = 6.1%
- Cancellations & not turning up at examinations
- Repeaters up to 15 times
- Extremely low graduation rates especially in sciences
Rationale for introducing foundation programs in science disciplines

- Remodel the learning package that can address individual needs and cater for:
  - individual learning styles
  - Individual needs- e.g. *Only* for those who need foundation courses- target determined through a calculation of M score and diagnostic test that identifies the problem area for each student
  - Provide opportunities to develop critical understanding and seek independent solutions
Foundational programs - aim

- foundational programs [are] to be recurrent additional provision (over and above what is included in standard programs) whose primary purpose is that of improving success and graduation rates of students from disadvantaged backgrounds (DOE:2007)
Foundation programs

- formal course/module forming an integral part of an extended curriculum or program & at least 50% is foundational in nature (Pandor-2006)
- 50% of 1st year modules in science degree/diploma in UNISA to be foundational
- If it includes academic literacy = fully foundational
- Or regular course is extended with additions for foundational work [added time]
- More tuition on the regular course – more time needed and less modules taken per year
“Learners are provided with a range of opportunities for real two-way communication through the use of various forms of technology for tutoring at a distance, contact tutoring, assignment tutoring, mentoring where appropriate, counselling (both remote and face-to-face), and the simulation of peer support structures. The need of learners for physical facilities and study resources and participation in decision making is also taken into account” Nadeosa 2004)
The DOE 3 specific focus of foundation courses implementation

1. Identification of student focus – diagnostic test – post registration
   - Tutorial letter
   - Assignment consisting of MCQ with computerized mark sheets
   - Feedback letter by bureau for career counselling & academic development – recommends tutoring for specific weakness per student
2. Teaching mode focus - integrated tutor support system
   - Tutoring 30 hrs tutoring – 30 hrs additional assessment & home exercises - 1 tutor to 25 students
   - Peer collaborative learning facilitation – small group learning
   - Academic literacy - reading, writing & IT facilitation
   - Feedback to lecturer

3. Informed decision focus - piloting and research
   - Linkage to tracking system (HEMIS)
   - Part-time research assistance pilot materials delivery and statistically track interventions
Design of foundational courses in UNISA-by

academic, ICT, instructional designers, tutors
counselling and careers departments, etc

- Academics identified core modules shared by many qualifications that are pre requisites for progress in science disciplines
- These core modules represented that knowledge that is already assumed to be in place = acquired in high school – but observed as lacking in previous learning groups
- Identification of difficult concepts/competencies in each module
Core modules identified in:

- All engineering, mechanical, civil, chemical
- Chemistry
- Physics,
- In agriculture
- Environmental sciences
- Mathematics
- Information technology
- Life sciences
- statistics
Foundation prog implementation

- Training of tutors -> manual, DVD and Video-conference, satellite - targeting difficult scientific concepts - (1st yr only)
- Training of peer collaborative learning (PCL) facilitators & academic literacy facilitators
- Tutors & PCL facilitators refer students for academic literacy [AL] skills training
Foundation prog implementation-cont

- Each course takes twice the number of hours for learning
- Students only allowed to take 6/7 modules per year
- 1st year of study (level 1) to take 2 years to complete
- No repeaters- failures lose DOE funding
- Tutorial attendance for students compulsory
- Monthly reports by tutors, PCL & AL facilitators
Successes in pilot phase—2006

- Using timeframe guidelines ensure active learning-> students present questions at tutorials for discussion from allocated reading chapters
- Tutors and students discuss subject matter of allocated chapters
Successes in pilot phase—2006-cont

- Textbooks and study guides provide authentic contexts for students through scenarios & problem-solving activities. NB there is no work integrated learning in foundation courses but tutors share practical experience with students.

- Academic literacy content is scientifically based. Hence interdisciplinarity in design of study materials.
## Pass rates in pilot study- 2006

<table>
<thead>
<tr>
<th># of students</th>
<th>passed</th>
<th>cancellations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-foundational - 7297</td>
<td>34.7%</td>
<td>7.3</td>
</tr>
<tr>
<td>Foundational - 1407</td>
<td>44.6%</td>
<td>2.1</td>
</tr>
</tbody>
</table>

- Note that the non-foundational students were the better qualified to study at university.
- The period covered by this pilot study is less than 4 months-end of 2006- when the project was implemented.
Challenges & further questions

- In DE difficult to track peer collaborative learning activities – their effectiveness not yet established

- Research shows contacts between the teachers and tutors too few - how does this affect the implementation?
Challenges & further questions-cont.

- Data not yet used to improve program as it is in progress. Eg
  - 10 research papers on project presented at conferences –
  - Research data from tutors and facilitators reports - hence difficult to establish the success areas
- What would be the success rate if monitoring evaluation and quality assurance processes were in place?
TO HERE [SUCCESS] ??
“Research shows that deep and lasting learning is strengthened when students are actively engaged with the concepts they are learning and construct their own understanding (Boyle et al. 2003).

Thank you for listening.