

Preparing the next generation of science learners using e- learning: Key considerations

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My Genealogy

- I am a Zimbabwean
- Studying Industrial Psychology
- Focus areas:
 - e-learning
 - training and leadership development
 - learning and development

Above all **PROUDLY AFRICAN**

MOTIVATION FOR STUDY

- Had a chance to swap roles this year and be a lecturer for a semester.....
- **Subject:** Industrial Psychology
- **Students:** 110 from all walks of life
- **Location:** Vista Campus of the NMMU
- **Aim:** Exchange experiences & Learn



SOME THOUGHTS

“The medium is the message”

Marshall McLuhan

***“Education is the most powerful
weapon we have to shape the
world”***

Nelson Mandela

Problems with classroom learning

The researcher experienced some problems with traditional classroom learning:

- 1) Learner history**
- 2) Learning material**
- 3) Motivating students**
- 4) Learning environment**

Learner History



- **University campus is located in Missionvale, an extremely poor, informal, shackland.**
- **Most students come from this location & surrounding areas.**

Learner History



- Most of the students came from the informal settlements or from “poor families.”
- Because of the merger these students are now competing with their counterparts from other well established institutions.

Learner History



- Learner brought their history and situations to the classroom.
- This either affected the learning for good or bad.
 - attitude towards science & maths
 - “just tell me the chapters”
 - “Science & numbers suck and are too difficult.”

Common themes in the class

- The students did not like chapters that covered scientific information and use of numbers.
- **Research Methodology**
- **Ergonomics**

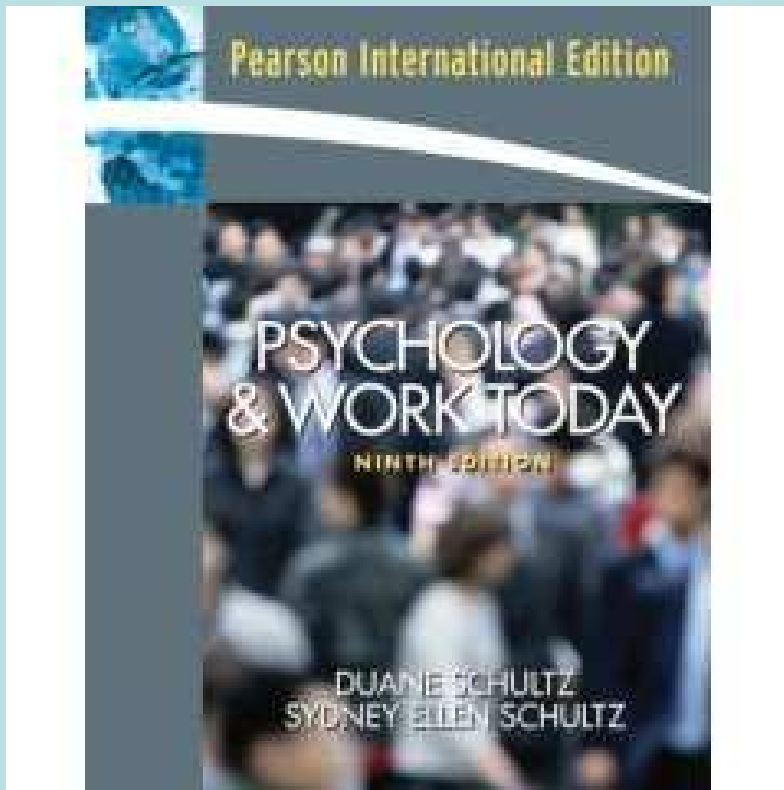


Themes from students

- attitude towards science & maths
- “just tell me the chapters”
- “Science is for the rich”
- “I had to balance between work and school, hence I failed the test.”

Problems with classroom learning

2) Learning material



- Foreign textbook
- At the beginning of the year book was not available with the publishers
- In a class with 110 students – only 20 students had the text book.
- A lot of western examples and few from our part of the world.

Problems with classroom learning

2) Learning material

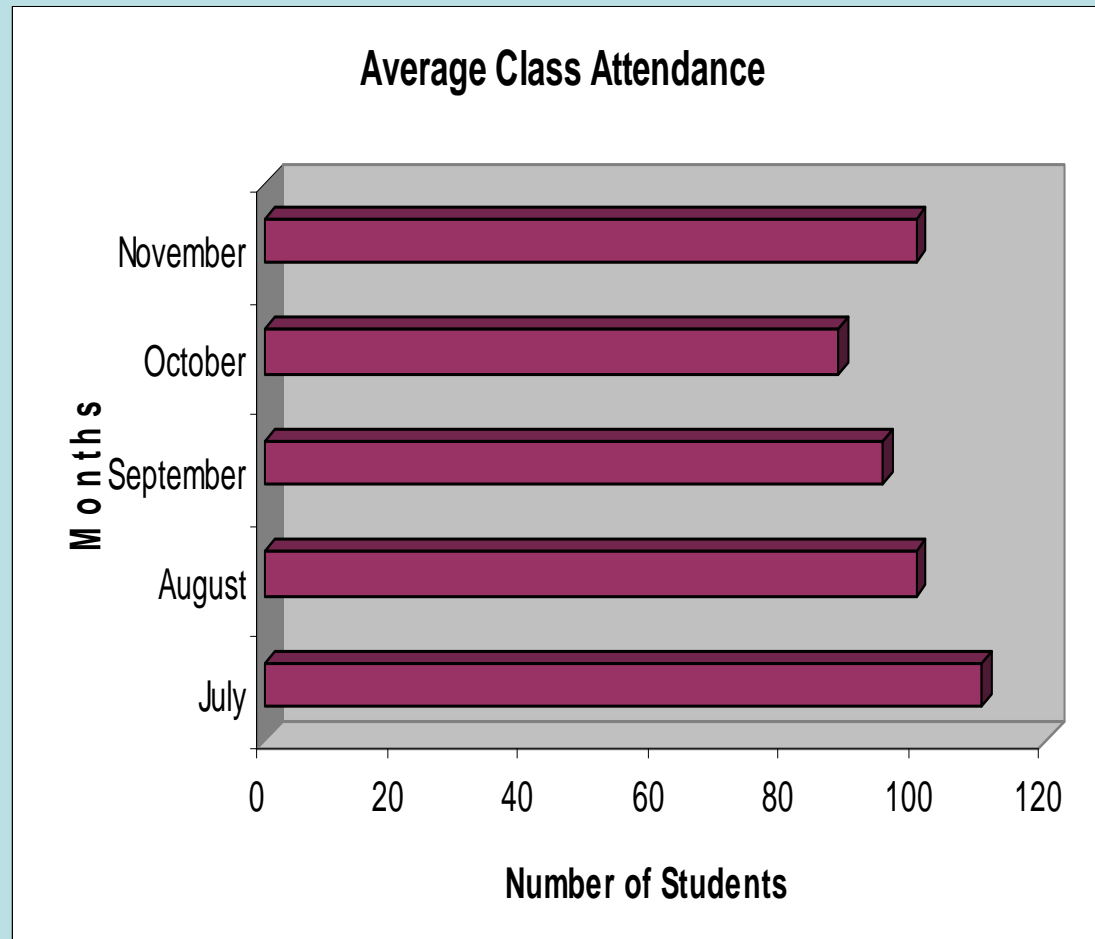


An overhead projector was used.

This limited the content to be used – no animation

At certain times the projector would not work

Problems with classroom learning



Motivating students

- Attendance dropped
- Why?
 - Pressure from other classes
 - other factors

Problems with classroom learning

- **Learning environment**



- Arena style
- Hard seats and backs
- Morning lecture (THURSDAY)
- Afternoon lecture (MONDAY)

SOLUTION

What can we use to help learners bearing in mind the following?

- 1) Learner history**
- 2) Learning material**
- 3) Motivating students**
- 4) Learning environment**

An e-learning solution

- Electronic learning (e-learning) is flexible learning using Information Communication Technology resources, tools and applications, focusing on interaction among teachers, learners, and the online environment, and on collaborative learning, and may involve the use of internet, CD-ROM, software, other media and telecommunications (DOE, 2003).
- The E-learning Mag (2002) defines e-learning as a grouping together of education, training and structured information through the internet or the World Wide Web (WWB). Education, training and structured information overlap and are all part of e-learning.
- Mullich (2004) defines e-learning as a technology that makes it possible to combine many formats and deliver them as integrated learning system that combines for example, computer – based quizzes, video, interactive simulations, and so on.

Benefits of e-learning

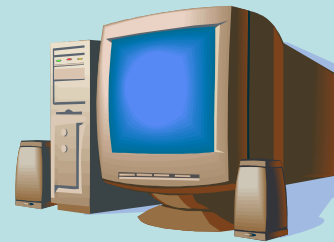
- Consistency of content delivery to large number of participants
- Around the clock accessibility
- Availability over a large geographic area
- Self-paced / increased accountability and control to learner
- Can simulate work-like scenarios / engaging
- Enhanced business responsiveness
- Speed of delivery (once developed)
- Reduction of overhead costs
- Ability to track progress and provide feedback
- Customizable, and relatively easy to update

E-learning vs. the teacher

- Is e-learning replacing the teacher.....**NO**
- **A blended approach would best suffice**



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5 key considerations

- 1. Address the digital divide**
- 2. Involve everyone**
- 3. Take learning styles in consideration**
- 4. Never Ignore the human touch**
- 5. Evaluate & monitor**

Address the digital divide

- **Address basic education issues first.**
- **The digital divide in South Africa is extremely pronounced in that only 4.5% of the total population are information haves and 95.5% are information have nots (South African Web Usage Behaviour 2000).**
- **Most of the poor live in rural areas: while 50% of the population of South Africa is rural, the rural areas contain 72% of those members of the total population who are poor (May 1998). These rural areas lack sound infrastructure and service delivery is a challenges.**

Address the digital divide

The Draft White Paper on e-Education (2003) reports on findings from a School Register of Needs Survey conducted in 2000, the results show that only 14.8% of the 27 000 schools in the country had computers for teaching and learning. The learner-computer ratio in South Africa is, therefore, *164:1*.

This learner-computer ratio gives learners, at most, 13 minutes of computer time per week - assuming that every computer is available for 36 hours every week.

THIS ISSUE NEEDS URGENT ADDRESSING

Involve everyone

- **Government**

- e.g Each public school in the province will be issued with a 25-workstation computer laboratory, with Internet and e-Mail, to be used for curriculum delivery (Gautengonline 2006).

- **Organizations**

e.g On the 20th April 2006 Microsoft ushered a new product that set the South Africa market by storm. For the very first time ever users of Information Communication Technology (ICT) could now access content in the local vernacular languages.

- **Universities**

- **Individuals**

Take learning styles into consideration

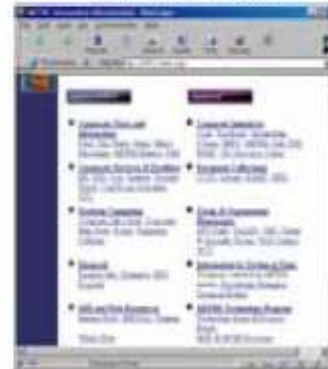
Email



Discussion Groups



Information sharing Intranets



Group Calendaring



Text Chat



Audio/Video Conferencing



Shared Whiteboard



Shared Application



Never Ignore the human touch

- **Bonk & Graham (2006) views blended learning as a combination of the positive aspects of the two learning environments, classroom-based learning and e-Learning.**
- **The humanness dimension addresses the ratio of human interaction and machine interaction.**

Evaluate and Monitor

- “If you cannot measure it – do not use it”
- Suggestions: Kirkpatrick Model
 - Reactions
 - Learning
 - Change in behaviour
 - Organizational Results

CONCLUSIONS

- **Though the study was only conducted by observing the behaviour of 110 students over 5 months – It provide useful insight which can help learners and teachers.**

“education is the most powerful weapon we have to shape the world.”

Nelson Mandela