The challenges of distance learning for GIS in South Africa

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Outline

- Introduction
- GIS education at the University of Pretoria (UP)
- Evaluation
- Critical success factors
- Discussion

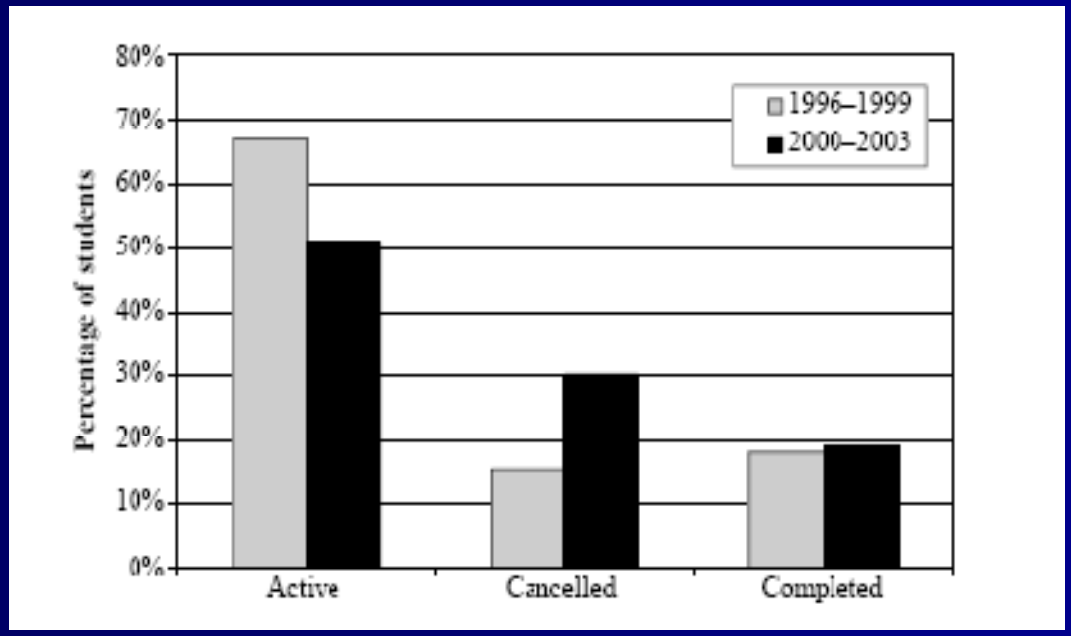
Introduction

- Distance education is important in South Africa. Why?
  1) Increases educational access to commonly excluded groups
  2) It can relieve the financial burden on students
  3) Universities benefit from economies of scale
- Distance learning in South Africa has increased by 40% per annum since 1986
- One third of Full Time enrolments at South African universities are distance-based
- University of South Africa (UNISA) – 150 000 students

GIS and distance education

- University of Pretoria – Centre for GeoInformation Sciences (1996)
- Most curriculum adapted from the US and Europe
- Ten module (2-yr) GIS post-graduate degree including...
  - Database management
  - Spatial Operations
  - GIS Project
  - Spatial Analysis
  - Data Quality
  - Visualisation
- Evaluation

GIS and distance education



1996 - 1999

- 170 enrollments
  - 18% within 2yr limit
  - 15% cancelled
  - 67% still active after 4 yrs

2000 - 2003

- 254 enrollments
  - 47% within 2yr limit
  - 30% cancelled
  - 51% still active after 4yrs

2004 – 2008 ?

GIS and distance education

- Survey of 215 students
- Why the stagnation? I.e. ‘Active’ students
  - Lack of time
  - Lack of motivation and discipline problems
  - Biggest obstacle is software specific modules
- Why the drop-outs? I.e. ‘Cancelled’ students
  - Lack of time
  - Financial problems
- Identification of 6 critical success factors for future

Critical success factors

1. Student-Faculty Communication

- Lots of communication through email, message and notice boards
- …else perceived faculty don't care or aren't maintaining the course adequately
- GIS modules that deal with using software, programming, database issues need to be especially addressed quickly

Critical success factors

2. Student Interaction

- Should be encouraged
- Interactive mechanisms: Message boards and chat rooms
- Real mechanisms: Workshops
- Interaction should however be limited to the rules and regulations governing the course
- Else collusion, plagiarism

Critical success factors

3. Accessibility of Library and/or Research Materials

- Governed by principle of least effort
- Students should be given access to both physical and virtual facilities
- University libraries (physical and virtual) and computer laboratories
- Need to improve accessibility to especially in remote locations

Critical success factors

4. Computer Skills

- Computer literacy is *sine qua non* for GIS competency
- Doesn't matter the quality of the on-line learning environment I.e. online quizzes, chat rooms, e-books etc
- Especially important when dealing with software specific modules. I.e. using GIS software, or database software
- Screen for computer literacy? Introduction course?

Critical success factors

5. Computer Requirements

- Computer hardware and software requirements are important
- E.g. PC, modem, service provider
- Do South African students have access to these requirements?
- Latest South African Census:
  - 42% households have telephone
  - 8.6% households have computer
  - 98.2% of black households have no computer

Critical success factors

Computer Requirements

- Secondary problems:
  - Inadequate bandwidth (speed of Internet connection)
  - Unreliability of telephone lines and telecommunication companies
  - Accessibility to and in rural areas
  - Costs for telephone and provider fees
- Basic information and telecommunications technology needs to be improved

Critical success factors

6. Student training

- Involves the training of students in the method of distance learning usually in the software to be used
- Also workshops periodically throughout the year to address further problems
- Should be optional to avoid financial burden of student: cost to the venue, accommodation, living fees
- Need online training courses before and during the year

Conclusion

- Developing countries experience different challenges from developed world in terms of establishing a distance-learning environment
- 3 Main challenges:
  - A lack of resources
  - A lack of infrastructure
  - A lack of recurrence funding
- Often tends to reinforce the problems of inequality

Conclusion

- Critical success factors can be used as a guideline to establish a more secure and successful distance-learning environment
- Future success revolves around the ability of GIS educators (i.e. schools, universities), government and the broader GIS community (e.g. GISSA) to overcome the root problems regarding lack of funding and infrastructure before widespread GIS dissemination through education can be achieved

Discussion?

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