



**UJ Developmental study**  
Overcoming Newton's law of inertia  
in e-learning (An experiment)  
Colloquium 23 November 2009




## Overview

- Newton's law of inertia as applied to e-learning during the last decade at the University of Pretoria
- Unbalanced forces:
  - Previous and current pushing forces
  - Previous and current pulling forces
- What will future unbalanced forces be?



## Newton's law of inertia

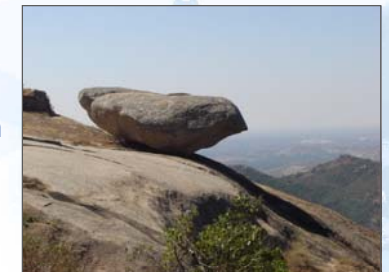
Newton's First Law  
of Motion  
(The Law of Inertia)



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## Newton's law of inertia

- An object at rest will stay at rest, forever, as long as nothing pushes or pulls on it.
- An object in motion will stay in motion, travelling in a straight line, forever, until something pushes or pulls on it.
- Force = mass x acceleration



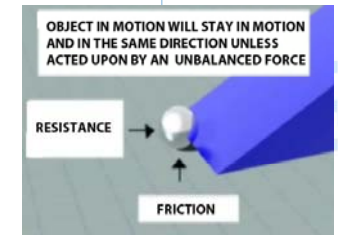
## Applying the law a decade ago

- Object = Higher Education (HE)
- Late 1990's HE landscape
- Unbalanced forces
  - Pushing:
    - Advent of the World Wide Web
    - Institutional Teaching and Learning strategies
    - Academic support units
  - Pulling:
    - Knowledge based economy & global economy
    - Knowledge management & learning management



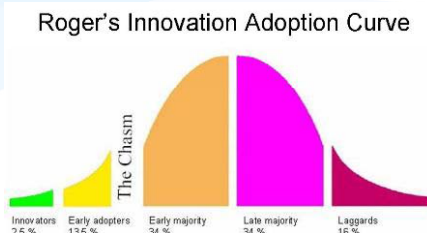
## Applying the law a decade ago

- Factors that influenced adoption
- Adoption reached plateau of productivity
- Resistance and friction
  - HE realities (focus on research, workload of lecturers)
  - Gap between students needs and lecturers IT proficiency
  - Constrains: support resources and infrastructure
  - Lack of funding



## Applying the law a decade ago

- One decade later: e-learning part of core business although questions asked about rate of adoption
- Questions also asked about return of investment
- How do you motivate late majority and laggards?



## Current application of the law: Pushing: Students

- Unbalanced pushing forces
  - Emergence of Web 2.0
  - Changing profile of students
  - Access to ICT
- UP survey on students use of ICT
  - Use 2008 ECAR survey instrument
  - Combined with traditional e-learning experience survey
- Aim
  - To inform ICT and Teaching and Learning (T&L) strategies

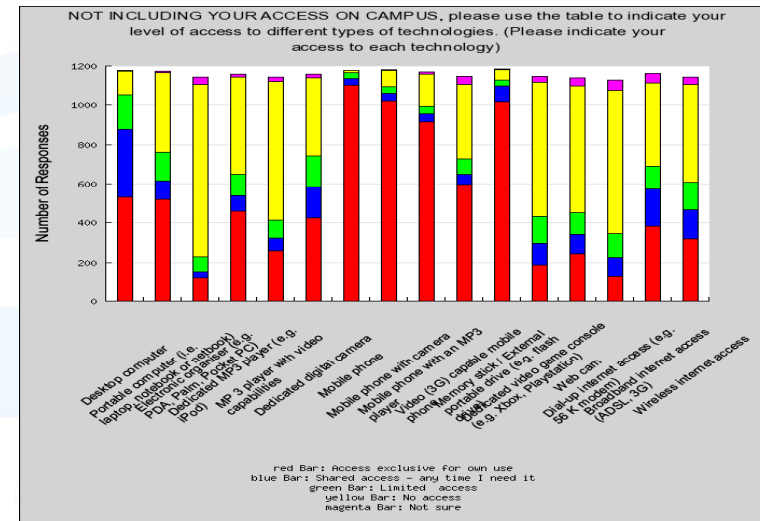


## Current application of the law: Pushing: Students

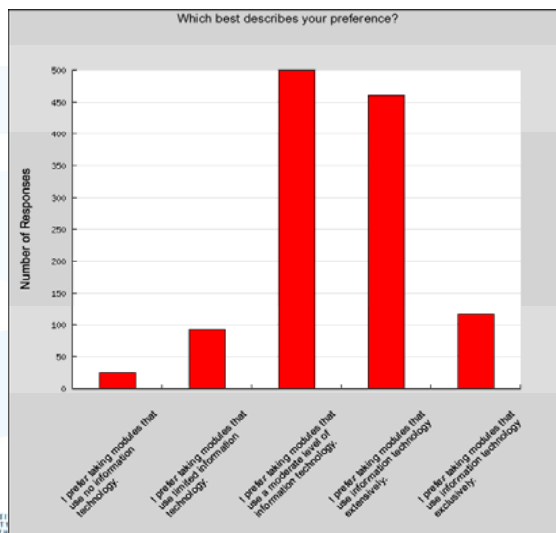


- Students own and use a variety of ICT's and use it for various purposes including studies
- Students want a “moderate” amount of ICT to be use in their courses
- Students are positive towards the use of LMS but they want consistent (24/7) availability and use by lecturers
- The percentage of cell phone access needs to indicate importance for T&L strategists to focus on the integration of mobile learning in their T& L strategies
- Access to the internet has evolved

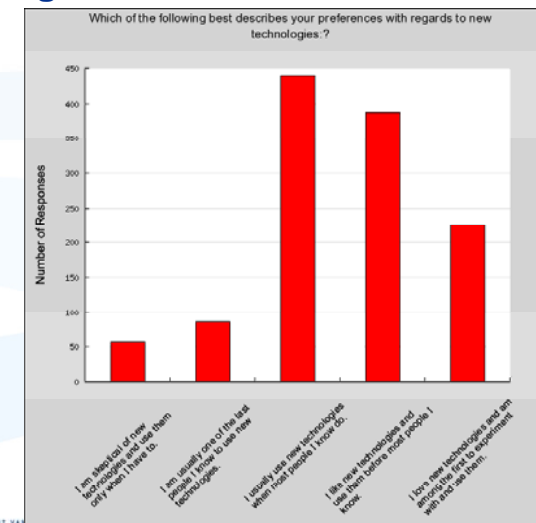
## Current application of the law: Pushing: Students



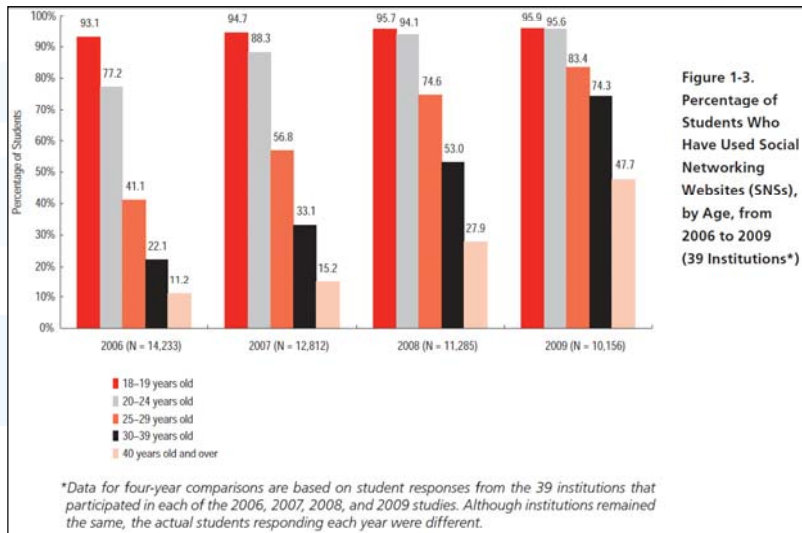
## Current application of the law: Pushing: Students



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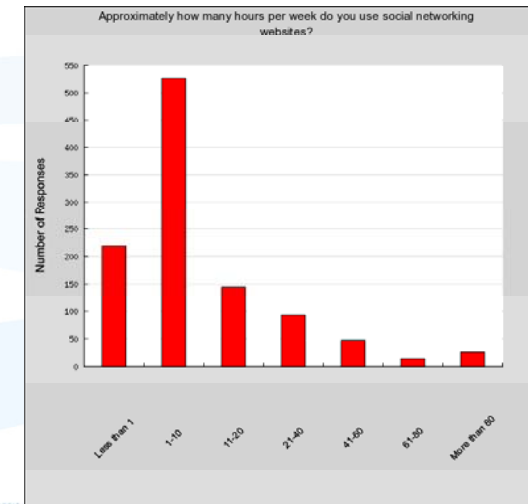


## Current application of the law: Pushing: Students



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## Current application of the law: Pushing: Students



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## Current application of the law: Pushing: Students

- Willingness to participate in a survey may be closely associated with interest in the topic.
- Importance of social networking / Web 2.0 and interactive communication tools. Implications for interface and functionalities embedded in institutional e-learning systems such as LMS
- Consistent request for increase use of current LMS by lecturers
- Complaints about limited internet access
- Student adoption of ICT and view of skills aligned with international findings
- Results may indicate a Mobile revolution

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## Current application of the law: Reasons for experiment

COMBINED UNBALANCED FORCES OF FRICTION AND AIR RESISTANCE SLOWED THE OBJECT TO STOP



- Lecturers (Laggards) who do not integrate e-learning in T&L will keep using current T&L strategies as long as nothing pushes or pulls them to change their T&L strategies.
- Lecturers ( Early majority) who integrate e-learning to **support** T&L, will continue to implement a web supported model, until they are push or pulls to **enhance** their T&L.
- Push /+ pull = resistance of lecturer x other factors
  - Resistance (Laggards: comfort zone of current traditional teaching practice / lack of IT skills)
  - Other factors (infrastructure, lack of departmental support, research, work load)

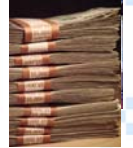


## Current application of the law: Pulling: Funding



- Background: Grant, focus, principles
- Importance of LMS (clickUP) at UP:
  - priority objective in the strategic plan
  - proportion of courses supported by ClickUP is one of the performance indicators use to measure the impact of Teaching and Learning.
- 2008: Qualitative audit of 2007 modules: during 2008
  - “Inadequate” uptake of LMS (ROI questions).
    - Large percentage use LMS for administrative purposes and as content repository
    - Limited web-enhanced & web-dependent modules.

## Current application of the law: Pulling: Funding



- UP executive: increase the use of clickUP to support T&L at UP.
- **Experiment:** Use of funds by means of a grant to increase use of clickUP
- Principles:
  - No capital expenses
  - Sustainable
  - Within human and financial resources constraints
  - Sustain investment of funds not incurring recurring expenses on operational budgets

## Current application of the law: Pulling: Funding



- Increase Training 10x
- **Pull = resistance of lecturer x other factors**
- Training = (time available to lecturers, do not know how) x (lack of space in labs & departmental support)
  - Synchronous software (Lack of time & space)
  - Online help (Lack of time & space)
  - Assistant for training team (Increase Pull)
  - New clickUP Assist course (Increase Pull, lack of departmental support)
  - New Grade book course (Increase Pull)
  - Trainers: (Bb Certified Trainer Course) (Increase Pull)

## Current application of the law: Pulling: Funding



- Marketing
- **Pull = resistance of lecturer x other factors**
- Marketing = (e-learning will not work in my subject, my way is the best) x (research, work load)
- Booklet:
  - T&L Principles
  - Practices that demonstrate
  - Possible activities to consider
  - Research

## Current application of the law: Pulling: Funding



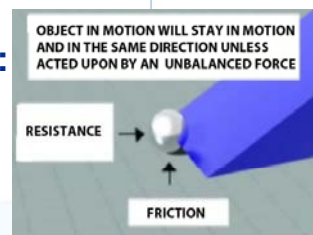
- Research
- **Pull = resistance of lecturer x other factors**
- Research questions:
  - What are the factors that prevent lecturers from using clickUP?
  - What will enable lecturers to make use of clickUP?
  - Why do lecturers who use the system, make use of the system?
  - What will enable users of clickUP to take advantage of more features within the system?

## Current application of the law: Pulling: Funding



- External researcher – contract
- Ethical clearance x2
- Focus groups in all faculties, users & non- users separately
- Questionnaire (Jan 2010)

## Current application of the law: Pulling: Funding



- Result of experiment
- Early results: Lecturers move to clickUP due to
  - Push from students & colleagues
  - Pull by EI through training

Are forces big enough to cause object to accelerate?

One more variable necessary : time to full implementation & measure impact

## Future unbalanced forces?



- Increased access to more bandwidth
- Ubiquitous nature of new technologies and its effective integration into the curriculum.
- Personal virtual presence and interaction through software as a service technologies.
- Role of globalization and impact on HE.
- Higher education is facing a growing expectation to be relevant for a changing globalised world and workforce. Will HE in SA embrace ICT by allocating needed resources?

## Future unbalanced forces?



- Will it be necessary for HE in the future to provide e-learning infrastructure?
- Will e-learning become so embedded in T&L that learning in HE refers by default to enhanced learning through integrating technology?
- To what extent will international trends in developed countries be applicable to developing countries?
- Focus on student retention and success in HE implies need for access to students' T&L data