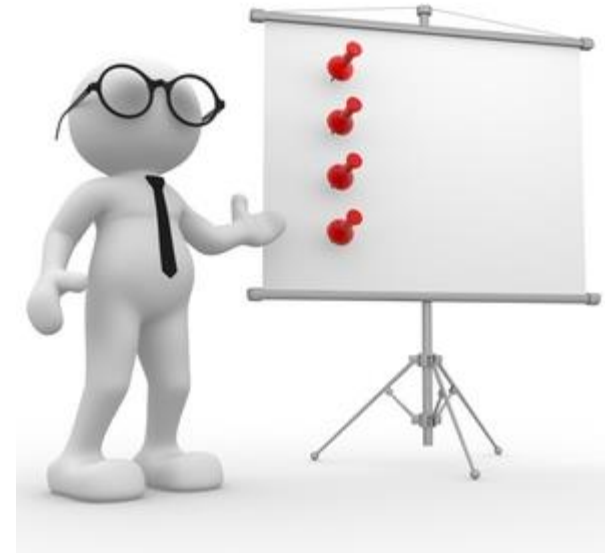


INTRODUCTION TO e-Assessment

**Jeff Ross,
Assessment
Tomorrow**



The aims of the presentation

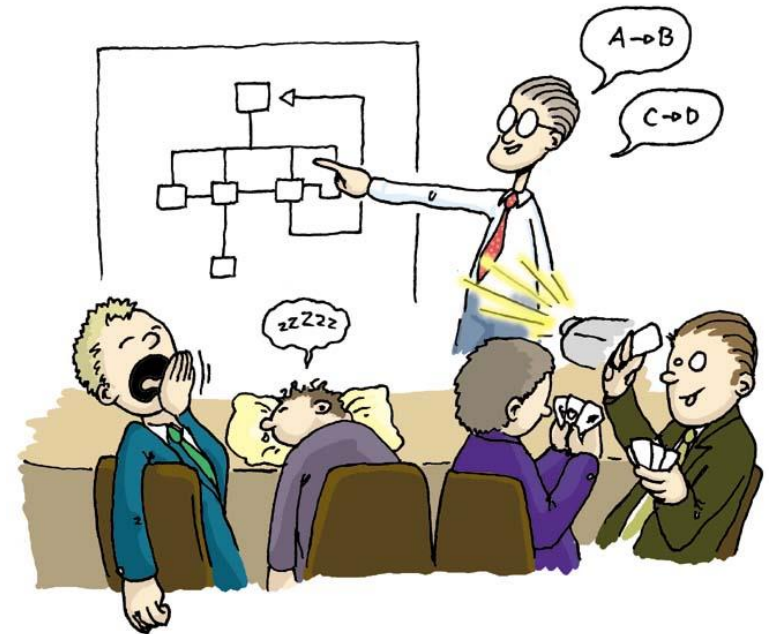
- ▶ To understand what is e-Assessment, computer based testing and assessment is – and what it is not
- ▶ To consider why and in what circumstances we would use it
- ▶ To raise awareness of an increasingly popular set of tools from a range of suppliers used in Schools, Colleges, Universities, Training and the Workplace.



Concentrate here on Computer Based Testing

Assessment Tomorrow

- ▶ UK Based
- ▶ Conference and Project Management Company
- ▶ Specialising in e-Assessment and related topics
- ▶ Conferences around the world
- ▶ Proud to be working with EEF
- ▶ Projects from e-publishing to qualification management
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Health Warning

- ▶ No hard and fast rules
 - a developing discipline
- ▶ Innovation led
- ▶ One size does not fit all
- ▶ Marriage of
 - Technology
 - Assessment
 - Practical requirements
- ▶ A set of Tools and Techniques – not about one product



e-Assessment

It is not computer-based multiple choice quizzes

It is the application of valid, reliable, robust, proven assessment methodology using the technology to

Control the process

Provide content rich assessment

With flexible delivery and

With faster more meaningful feedback to learner, teacher, institution and employer

And is used for

High Stakes Qualifications

Diagnostic Testing

Formative Assessment to support learning

Recruitment and entry testing

Vocational and evidential assessment

And is used in

Schools

Universities

Recruitment/Entry

Training

Workplace

Overview- What is e-testing / e-Assessment? SIX STAGES

Where questions or tasks are delivered to candidate via computer terminal

- develop
 - author, develop and store questions in an item bank or repository
- produce
 - assist the selection of a subset of questions, and gather together in an electronic 'paper'
- deliver
 - display of computer stored questions in secure method
- process
 - collect responses from candidates in a controlled and authenticated manner
- mark
 - by computer or support human marking of responses
- feedback
 - return results to candidates and administration systems

Overview: Perspective and context

- ▶ Fits into a range of digital areas :
- ▶ High stakes and low stakes
- ▶ Vocational and Academic qualifications
- ▶ You must extract appropriateness of solution
- ▶ Subject and Candidate independent - but

Must Be : Fit for purpose and appropriate like all
ASSESSMENTS



Overview - History and hype

- ▶ Late 80's, driven by USA
- ▶ Mostly multiple-choice/objective item
- ▶ Lots of suppliers
 - authoring and systems development
 - question writing
 - test delivery
 - test centre management
 - combinations of the above
- ▶ Usage was mainly low stakes - that is changing rapidly
- ▶ Big H.E. growth and within training providers and professional/work assessment (HR)
- ▶ Progress is fast moving. New options arising

Overview - Why do it?

- ▶ Add flexibility
 - Move towards on demand delivery, frequency
 - New educative and motivational experience for the learner
 - Mocks, re-takes
 - Adaptive testing
- ▶ Link to e-learning
- ▶ Gain added value
 - diagnostics
 - detailed analysis of performance
 - Professional feedback (current and historical)
- ▶ Improve testing 'experience'/reward
- ▶ Reduce costs and Automate administration



Fit for Purpose?

▶ Validity

- The content of the test samples the subject matter
- The inferences made from the test scores are meaningful and useful
- Accumulated evidence and theory support specific interpretations of the test scores

▶ Reliability

- Scores are inferred to be dependable
- Scores are repeatable for an individual test taker
- Scores are free from error

▶ Fairness

- Accessibility
- Technology
- Practice

▶ Feasibility

- Will it work
- Business Case
- Practical



Computer are good at running tests - I

- ▶ Computers are un-biased
- ▶ Computers repeat the same task endlessly and at the same level of quality
- ▶ Computers can do lots of things in the background whilst the user is 'thinking'
- ▶ Computers can present data, information or even intelligence in lots of interesting and stimulating ways
- ▶ Computers can store vast amounts of data

Computer are good at running tests -II

- ▶ Computers can analyse data in almost endless configurations
- ▶ Computers can present relatively difficult processes as simple form-filling such as question-writing or authentication
- ▶ Computers can measure many (not all) cognitive skills and knowledge, and many basic skills as well.
- ▶ Computers can generate test items/assessment material to suite a users learning needs.
- ▶ Computers can provide fun or at least rewarding experiences
- ▶ Computers can do it at a distance, anywhere, anytime

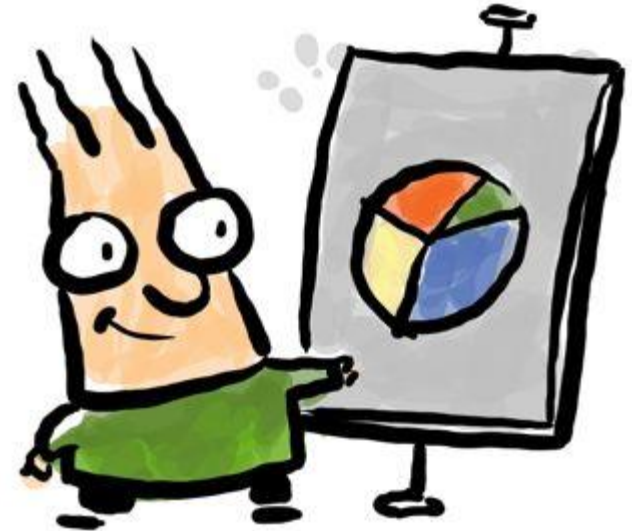
Anywhere



Slide
13

Pedagogic/Teaching Advantages

- ▶ More stimulating, rewarding for student
- ▶ Wide range of knowledge can be tested
- ▶ Allows flexible self-assessment and diagnostic testing
- ▶ Monitoring progress - more frequent testing, speed of generation of test
- ▶ Powerful feedback available
- ▶ Adaptive testing to match students ability
- ▶ New media, variety of question types, link to e-learning
- ▶ Improve ICT skills?



Administrative Advantages

- ▶ Once established, easier to generate tests
- ▶ Automatic storage of results
- ▶ More consistent marking
- ▶ Randomisation of questions can to reduce cheating
- ▶ Costs?
- ▶ Speed?



Professional Issues

- ▶ Test development and evaluation
- ▶ Skills
- ▶ The test 'experience'
- ▶ Timing of response
- ▶ Learning plans
- ▶ Test performance
- ▶ Candidate indicative data (too quickly, got stuck, too much switching etc.)



Limitations

- ▶ Challenging to the item writer, editor, test-compiler
- ▶ New sets of skills required
- ▶ IT resource, network and hardware challenges to the institution
- ▶ Costly, timely to implement
- ▶ Requires planning and organisation



Technical Considerations

- ▶ Design of questions and Authoring process
- ▶ Assessment model and marking
- ▶ Training
- ▶ How it is to be managed/communicated
- ▶ Instructions for candidates, practise
- ▶ Technical delivery, software support, hardware support
- ▶ PC's, number, position, layout, capability
- ▶ Configurations
- ▶ Timing, Inputs and Outputs
- ▶ COSTS
- ▶ Integrate to CMIS and Data exchange with external systems



Does the computer itself make a difference?

- ▶ The evidence says no
- ▶ Look and feel
- ▶ Keyboard skills
- ▶ Mouse skills
- ▶ Ticking clock
- ▶ Navigation around questions
- ▶ Screen size, colours, pictures
- ▶ New media capabilities
- ▶ Modelling/Scenarios
- ▶ PC/network resources



Overview - How to do it

- ▶ One size does not fit all
- ▶ Approaches :
 - develop for yourself
 - mix and match
 - buy-in the whole thing
 - examining body/external agency
- ▶ Work out the requirements
 - objectives
 - scope and constraints
 - time scales
 - why are you doing it, what you hope to achieve
- ▶ Think about development/pilots



Fitting in to the digital world

- ▶ e-learning = chunks of material
- ▶ at the pace of the learner
- ▶ lots of routes through
- ▶ decision points about how and when and where to progress
- ▶ dependent on the learners' own appreciation of progress/requirements or their tutor's
- ▶ e-assessment fits well in to this environment both in technique and 'look and feel'
- ▶ e-assessment provides a regular, reliable, consistent method of monitoring and progress-checking



How is e-Assessment used - some models

- ▶ Summative - formal assessment contributing to module/programme performance grade
- ▶ Formative - feedback progress on knowledge, skills and understanding of a subject
- ▶ Diagnostic - tests to determine candidates knowledge
- ▶ Self-assessment - tests taken by candidate to check their understanding
- ▶ Adaptive - question selection determined by candidates' earlier responses

Objectives and Goals of Testing

Why do organisations world wide do it?

Some subjective feedbacks

When asked 'what do you want to get out of it' - they reply

- Information, selection, bench marking
 - Individuals
 - Teams
 - Organisations
- Discipline of validity, reliability - reproduction
- The concept of fairness – the anonymous candidate
- Image
- Consistency, Demonstrable (open, transparent)
- Technology and skills independent
- Logistics and dealing with numbers/volumes
- Please clients, customers, regulators
- Reduce costs

What is Good Practice?

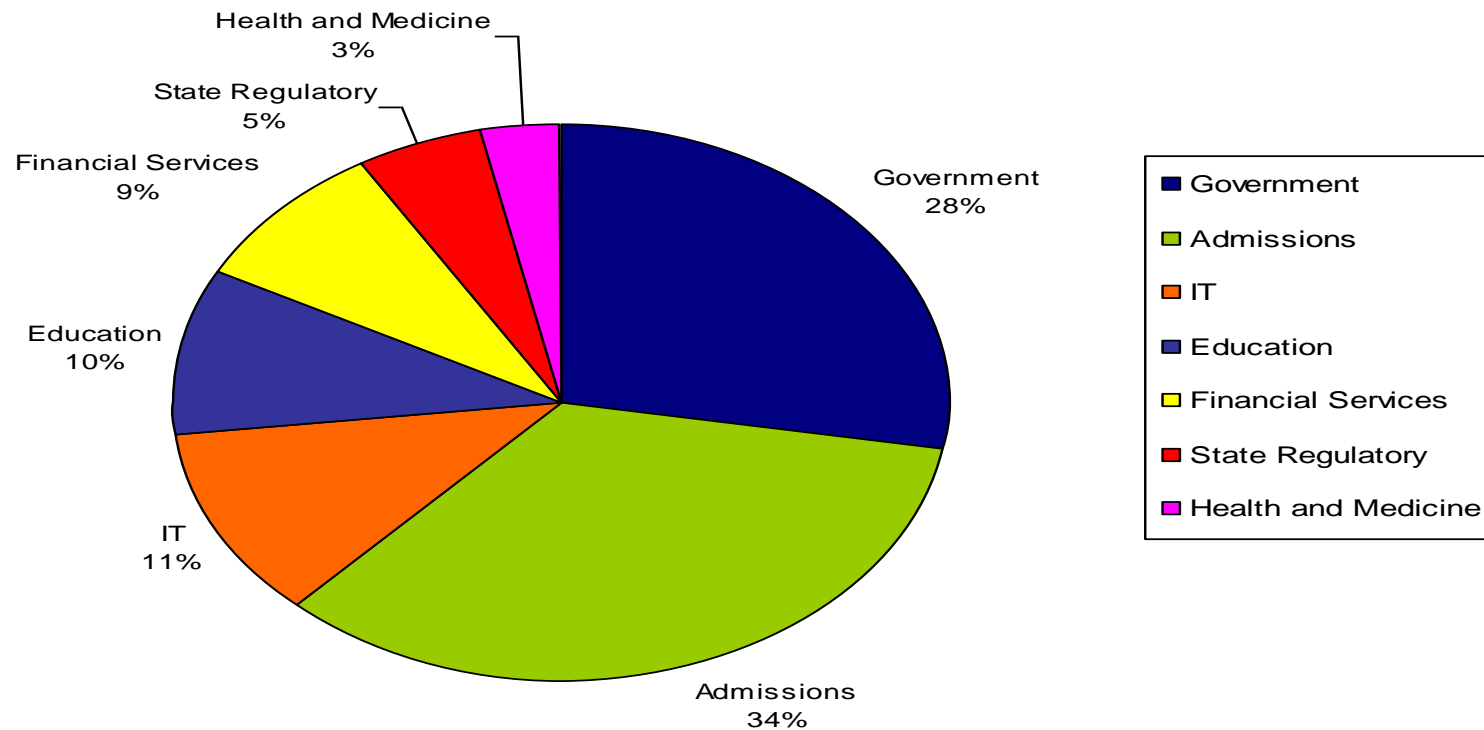
Best Practice/Good Practice concentrates on

- Realistic test delivery
- Range of item types
- Clear defined objectives
- Working with proven partners
- Using data underlying test for review and revision
- Communication, awareness, training for users
- Use of Invigilation, security, confidentiality matters
- Volumes and plan for scale-ability
- Costs, invest up front for later savings

Best or current practice – ongoing improvement

The e-Assessment Landscape

n.b. Admissions – entry to education and workplace



The Pie Chart is based on the top 10 volume high-stakes tests worldwide in 2005

Source: Pearson VUE

Introducing e-Assessment

... and growing ...

Considerable growth over the last five to ten years.

Driver (more than one choice in survey)	Last five years	Next five Years
Industry Growth	52%	43%
New qualifications	25%	28%
Certification needs	18%	16%
Regulation	13%	10%
Industry demands	10%	8%
Others include expansion in assessment centres	18%	20%

Source Freshminds, US, 2007

Benefits reported by Freshminds Survey 2007 US

Costs	47%
Flexibility	40%
Formative (classroom and on the job)	20%
Speed	20%
Geographical	20%
Cost benefit to candidate	13%
Security	7%
Accuracy	7%
Control	7%

Case Study

- ▶ UK Primary School
- ▶ <https://www.youtube.com/watch?v=oGOxmHjpJRo>
- ▶ South African university
- ▶ <https://www.youtube.com/watch?v=cTcOlqfgsbQ>
- ▶ ALEKS Advertising intro.
- ▶ <https://www.youtube.com/watch?v=vMILFubPPmg>

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