

# Open-Book Testing

*Using an exam paradigm to cultivate testing skill*

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# What is OBT?

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The act of assigning testers and students open-ended questions such that...

Testers	Instructors and managers
...are immersed in the product right away, building a model or mind map.	...create test “charters”, or missions that seek to reveal many bugs instead of one (akin to using scenarios and personas).
...learn how they are provoked into critical thinking by being exposed to many types of questions (test ideas).	...learn how their students are provoked to know if they can perform critical thinking.
... quickly find bugs and raise issues in answering the questions they are given	...evaluate tester skill and test coverage.

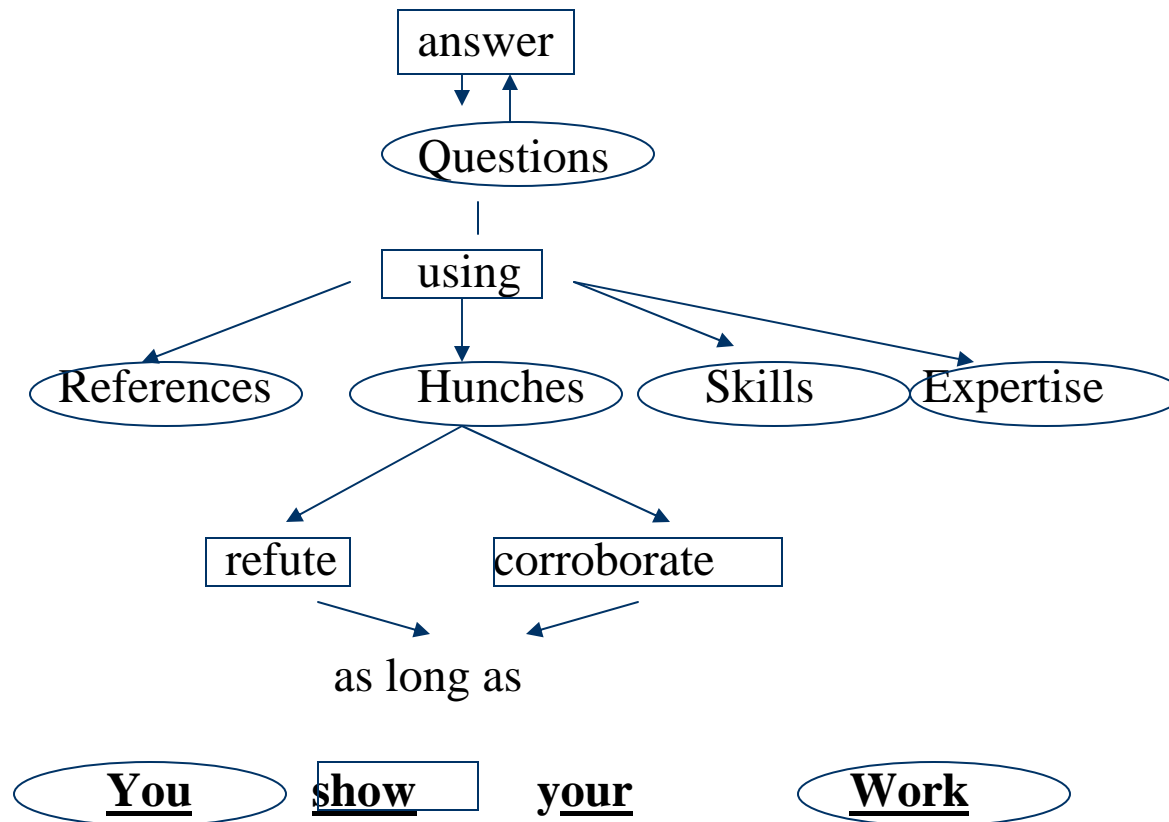
# The Backstory

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Excerpts from Flight Sim Ground School exam:

- Which airplanes are equipped with slotted flaps?
- Describe the steps needed to start the engine of the DC3.
- If the vacuum system failed in the 172, what instruments would no longer function?
- Joe, an aviation history fanatic, buys Combat FS and complains to tech support that the P-51 flight model is “all wrong” because in a dogfight, “the airplane stalls at 200 MPH.” Joe flies with the Realism Settings set to Hard and he knows that the P-51 should stall at about 100 MPH. Explain to Joe how it is possible for an airplane to stall at twice its published stalling speed.

# The Mission



# Epiphany!

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Closed-book exams test knowledge.

Open-book exams test *resourcefulness*.

“Imagination is more important than knowledge”

-- Einstein

# In other words ...

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**The answer may matter less than how it was derived.**

For example,

**Which airplanes are equipped with slotted flaps?**

...can lead to the following strategies to find the answer:

- Select aircraft / spot plane view should show me the type
- Aircraft details: should tell me the type of flaps
- Flap function (shortcut key, panel icon, keyboard) can be tested to verify the flap animation is consistent with model
- Flight model affect (whether the flaps *behave* as slotted) can be tested in flight

# Epiphany #2

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## Questions



- test ideas
- test cases
- test scenarios
- test plans
- test scripts
- test designs
- test strategies
- test heuristics



# Back at my desk, I reframe...

OBT question	The spirit of the test
Which airplanes are equipped with slotted flaps?	Confirm or refute a rumor that the texture maps for slotted flap animations weren't ready, but were dropped into the build anyway
Describe the steps needed to start the engine of the DC3.	Investigate a claim from the Developer, a DC3 pilot, that omissions in the "pilot checklist" feature are now fixed
If the vacuum system failed in the 172, what instruments would no longer function?	When enabled, does the "system failures" feature show that the altimeter and airspeed indicators are incorrect?
Can a 737 stall at a speed that's twice as fast as its published stalling speed?	Any plane should stall at any speed if the attitude of the angle of attack is too steep.

## Epiphany #3 (déjà vu?)

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test ideas  
test cases  
test scenarios  
test plans  
test scripts  
test designs  
test strategies  
test heuristics



**Questions**

These comprise the exam to which software will either pass or fail.

# Open-Book Resources

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Both Questions and the Answers can originate from the same sources:

- Documentation / Specifications
- Web forums
- Previous products
- Team members
- Competing products
- PSS data / KB articles
- Your expertise
- Heuristics
- Help files
- Manuals

# Testing ourselves

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**OBT is an opportunity for testers, instructors, and managers to cultivate and improve testing skill:**

How did you arrive at that answer?

What did you see along the way?

Was there anything confusing about the questions?

Any riffs off of questions?

What test ideas did others have with the same question?

# Experience Report

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A 2-day experiment

*Day 1: No OBT*

I assigned five testers to explore the MSDN website in any way they chose. Their mission was to “familiarize” themselves with the site.

# The Team

Tester	Bio
Mr. Red	Reliable, humble, mild-mannered “hero” / ex-Ferry worker / he’d be our shop steward if we had a union / is tough on himself so needs coaching because he’s not nearly as bad as he thinks he is / defers to me as “the guru”
Mr. White	Introverted powerhouse / says little but finds great bugs / leaves at 3:30 every day to catch the bus home/ very technically skilled with all-things-Microsoft
Mr. Green	Underage “programmer geek” / Devry graduate / uses a bright green setting on his monitor / compliant worker / rigorous note-taker
Mr. Yellow	Extrovert trivia buff / ex-Product Support guy for Adobe / customer advocate / up with every pop culture reference / life of the team / quotes lines from obscure movies
Mr. Blue	“The Regular” / been with Quardev from Day One / writer and editor of our internal newsletter / does as he’s told and respects authority to the letter, but thrives on respect

# End-of-Day Debrief

Tester	Demeanor at debrief
Reliable, humble, mild-mannered “hero”	Uninspired, spoke in heavy sighs – says he was “overwhelmed” with site content
Introvert powerhouse / says little but finds great bugs	Said site was “straightforward”, read some articles, reported no problems
Under-age “programmer geek” / Devry graduate	Found three minor cosmetic bugs, spent most of the day “reading articles” on the site, found some cool info
Extrovert trivia buff / ex-Product Support guy for Adobe	Found 2 breadcrumb bugs and 5 suggestion “bugs”, had the most energy as he used the site like a customer
“The Regular” / been with Quardev from Day One	Seemed the most complacent, did not know where to start or where to go so he just clicked links and “surfed”

# Day Two

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*A 4-hour Open-Book Testing exercise*

**Hour 1:** assigned list of questions

**Hour 2:** group debrief

**Hour 3:** assigned list #2

**Hour 4:** group debrief



# The Questions

OBT question	Answer compilation
1) List the major MS products or apps that can be downloaded from the MSDN site.	Security Tools, Drivers, Service Packs DirectX 9, SQL Server 2005 Express Edition, Tablet PC 2005 SDK, Virtual Server 2005, SQL Server 2005 Beta 2, Server 2003 SP1 beta, Longhorn Alpha, Visual Studio 2005 Beta, Exchange Server, Windows scripts (?), SDK (general)
2) What's the difference between TechNet and MSDN?	One definition: TechNet geared toward IT (business, admins) -- MSDN toward Developers (has beta testing component)
3) For what purpose do you think the MSDN and TechNet sites were built? (1 paragraph)	Self-help -- somewhere to go to get all their answers; marketing for Microsoft, generating buzz, portal for dev, official word from MS (fixes and patches, beta releases, control content), chat function, newsgroup, wiki -- way to mitigate customer support calls and frustration -- helps tech support and build community. TECHNET -- more of a knowledge base and downloads.

# End-of-Day-Two Debrief

Tester	Demeanor at debrief
Reliable, humble, mild-mannered “hero”	Inspired, spoke confidently – says having a mission made all the difference; testing was more fun
Introvert powerhouse / says little but finds great bugs	Got all the answers, but said just barely because of time constraints; nodded when asked if testing went better
Under-age “programmer geek” / Devry graduate	Diligent and not afraid to speak up, readily offered his notes and was eager to share other ways of getting the answer when everyone was done talking
Extrovert trivia buff / ex-Product Support guy for Adobe	The most eager to share his answers, always seemed first to respond in the debrief, having mission reminded him of his tech support days. Inspired the idea to add personas as frameworks for testing
“The Regular” / been with Quardev from Day One	The most improved. Energetic and engaged as if he had found an outlet for his ideas. Spoke the most during the debriefs

# Lessons Learned: Pro

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- Testers worked better when they had context.
- Questions produced memories
- Testers got engaged the first minute of the project.
- Debriefs provoked great ideas. (e.g. personas)
- Testers wanted to make their own exams.
- Testers say they had more fun.
- A question can be misunderstood such that it leads to interesting explorations.

# Lessons Learned: Con

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- The debrief took time away from exploring.
- A few testers worried whether or not the answers would be “graded”
- Some testers did not say much in the debrief
- Different note-taking styles made it hard to know what was truly explored in pursuit of answers
- Some testers did not take notes
- Many ways to interpret a question
- Did not explain to them where I got my questions

# 3 Key Ideas for Instructors

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**Teach**

**Guide**

**Evaluate**

# What to Teach

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- Where do questions come from? What are the domains of questions?
- How to pay attention to the questions you have, second by second
- Questioning as a way to learn product modeling and test planning
- Paired testing exercises: teach collaboration and test technique
- Class-wide debriefing: teaches testers what test managers expect
- Students writing open-book exams for each other to take

# Ways to Guide

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- Types of Open-Book tests – using several types of questions to demonstrate different paths or contexts through a product
- OBT as an exercise in critical thinking when a question is vague or has several answers
- Using personas as a frame for OBT
- Acquainting students with both an intellectual “workspace” where certain answers are expected, and a “playspace” where initiative, creativity, and exploration is encouraged
- OBT as a way to orient students with a piece of software used in class

# Evaluation Criteria

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- How do they approach the questions?
- How detailed are their answers?
- What initiative have they taken?
- What energy do they bring to the tasks?
- What kinds of abilities are emerging for them?
- What resourcefulness is demonstrated (i.e. what kinds of literal resources are they consulting)?
- Are their notes and narratives sufficient to convey the answer(s)?



# Proposed process

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- Interrogate: The test manager or tester develops a list of questions to answer.
- Manipulate: The testers execute actions to answer the question.
- Observe: Testers take notes on what they find.
- Plan: Testers determine any follow-up questions (tests) that occur to them, in preparation to debrief their results.
- Evaluate: Testers and test manager meet to compare answers (test results).
- Negotiate: After the debrief, testers and test managers talk about the appropriate next steps in mission or coverage

## Next steps (planned follow-up experiments)

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- Who creates the questions?
- How do you prevent cheating?
- What time limit do you set?
- How are they different than SBTM charters?
- Isn't this just Scenario Testing?
- Where do I find time to debrief?
- When is the tester's model complete?
- Should you measure coverage?

# Final slide

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Where can / will / do we go?

[..\..\Microsoft Flight Simulator 2004.Ink](#)