

Tutorial for  
Business  
Modelling



# Tutorial for Business Modeling (TBM) Project

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## Usability Testing Report

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Tutorial for Business Modeling (TBM) Project  
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Report conducted: May 2004

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## 1 Introduction

Usability Tests were conducted with 8 users by Stephen Thorpe from the Usability Research Group and consultant Keong Wong in April, 2004 to evaluate the usability of the TBM prototype systems. This report outlines the usability findings and analysis of the testing.

### 1.1 TBM Project

The Tutorial for Business Modelling (TBM) is a computer-based tutorial for a range of IT business modelling skills and techniques. The focus of the usability study is on the data modeling components of the tutorial, specifically - two stand alone tutorials, several teaching videos and a web-based tutorial. The TBM components are outlined in the following figure 1.

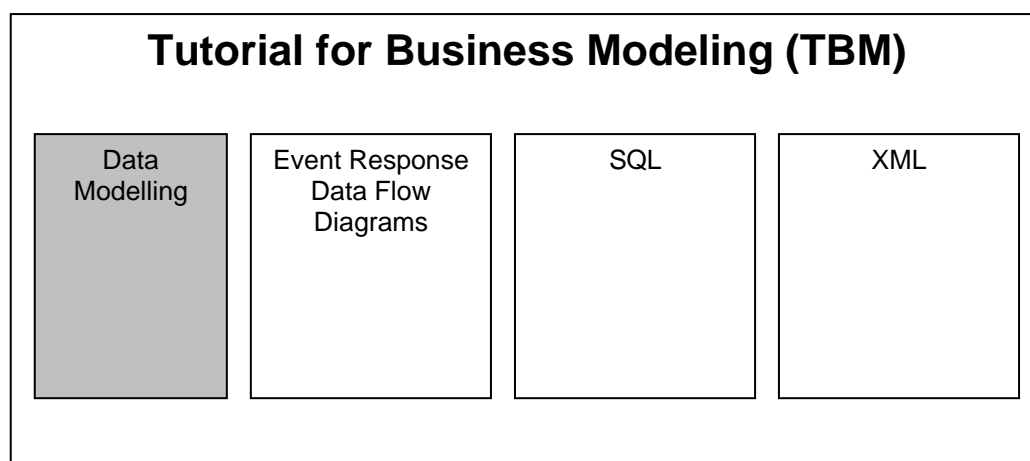


Figure 1. Components of the Tutorial for Business Modeling (TBM)

### 1.2 System Objectives

The overall learning objective of TBM is to enable students to develop an understanding and knowledge of how to investigate, analyse and document business systems in order to produce a requirements definition for a new system.

The main objectives of the TBM system are:

- The system is simple, user-friendly, clear, easy to use and understand
- The user is able to view automated demonstrations or examples

- The system enhances learning by letting the user try out exercises and providing step-by-step assistance, when needed
- The system enhances learning by making visible and explicit some of the underlying processes of the database

### **1.3 Testing Purpose and Objective**

The purpose of the usability testing is to identify how to best deliver the learning content for students. The objective of testing the interface design, information delivery and construction is to verify that the experiential learning environment we are aiming for is achieved. By knowing precisely where and what the student has learnt, or has not learnt, the tutorial can be further enhanced, designed and developed to leverage the accumulated and constructive knowledge of the student.

### **1.4 Intended Outcomes**

Testing outcomes are:

- To establish where improvements can be made to the system's interface
- To identify what aspects of the tutorial have most benefit for the student's learning
- To inform the tutorial's development based on evidence of the user's needs
- To validate the system's design

### **1.5 Evaluation Process**

Evaluation involved user profiling, pre-testing, usability testing and post-testing.

#### **Initial Profile**

An initial user profile was developed from enrolment information gathered from AUT's Arion enrolment system for the students of the BBus Information Engineering paper.

The user group is from a non-technical background. They have various experiences previously with IT. Although some have not worked in the IT industry before others have worked as an IT system specialist, helpdesk support, helpdesk operator, IT contractor, system analyst, computer operator, business and technical support. They are likely to have a close interest in databases and are aware of the importance that

a database has in an organisational context. They may have used a database before without being aware of the underlying mechanics involved.

This user profile was further developed through a profile questionnaire (Appendix A) undertaken by the eight usability participants on 13<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> of April 2004.

### **User Profile**

Our user group is in their 20's-early 30's. They like movies, pop music and have an interest in several sports. Their work experience includes computer networking, sales and service, computer service, book keeping, office administration and some have 1<sup>st</sup> line management experience. They are very familiar with computers and use them mostly for study and the internet. They have used Microsoft Access before and some have done some data modelling before. Many have English as a second language.

### **Testing Participants**

Participants were invited to participate in the usability testing through an advert placed on both physical and online notice boards at AUT (Appendix B). None of the participants had been involved in usability testing before. Two of the eight participants had experience or training with data modeling previously. Four were in week 7 of the BBus Information Engineering paper. Two had no previous experience with data modeling. Five of the eight participants have English as a second language.

### **Pre and Post-testing**

In order to establish each participant's understanding of data modeling they were given a four question test before looking at the tutorial prototypes (Appendix C). After testing, participants were given the same a four question test again. This was to see if any learning had occurred during use of the prototypes.

### **Testing**

Usability testing was then conducted on the two stand alone tutorials, several teaching videos and a web-based tutorial. The results of the testing are discussed next. The testing log is in Appendix D.

## 2 Evaluation Results

This section outlines the usability testing results. Results are categorised under each sub-application – Prototype 1, Prototype 2, Teaching videos and the Web-based tutorial.

Overall three participants preferred to learn using prototype 1, three preferred the web-based tutorial and two preferred the teaching videos. No participants chose prototype as their preferred learning tool.

### 2.1 Prototype 1

Users generally liked prototype 1 and found it straight forward, clear, and simple. Participants particularly liked the ability to navigate back and forward to see how each step was worked out. Participants liked that they could think about what they would do next and then click the next step to see if they were right. They could then go back to work out how it was done.

Participants with some data modelling experience saw the application as being better than the books they had used to learn data modelling.

The font size should be slightly larger and the option should be available to use the system in full screen mode.

A rollover cursor change would improve the visual feedback for navigation.

#### 2.1.1 Help Menu

Participants who were completely new to data modeling would benefit from a section in the help menu that focused on the functionality of the programme.

A few participants said that more was needed to explain the different terms in the help menu. Particularly things like 1NF, 2NF, primary and foreign keys. An expanded glossary was wanted by some.

One participant was unsure what an instance was another wanted a search option similar to MS Office or web applications.

Help windows should open in a separate window to the application so that when they are closed the user is returned to the application.

#### 2.1.2 Normalisation Example

In the normalisation example several participants clicked on the image of the order form user view. They said that they wanted to drag and drop the attributes into the attributes list. (This type of functionality is available in the normalisation exercise).

Learning would improve if it was possible for students to choose between having a go at dragging the attributes themselves and a “show me” option.

The order form user view is too small for some participants.

The **GoTo**: navigation system is not obvious to some users. This should be improved and include a rollover cursor change to indicate that it is clickable.

A couple of participants expected to see the end of a step when they selected it from the **GoTo:** menu. For example, when they selected 2NF from the menu – they expected to see it completed in the 2NF form.

The two participants who had not done any normalisation before were unsure what to do upon opening the normalisation example.

The foreign key concept, introduced in 2NF, was not understood well. This should be moved to the end of the process when the entity linkages become more obvious.

### 2.1.3 Normalisation Exercise

Participants enjoyed the interactivity of this part. One participant said “it is so interesting when I can drag it”. This function gave participants the opportunity to tryout their answer and then see if they were right.

The way in which the answers are displayed is difficult for users to see whether they had the right answers or not. It could be moved closer to the attribute list next to each participant's answer. The answers should stay onscreen until the users choose to close them.

An option should be given that explains the answers given in a little more detail.

More could be done to indicate the completion of each step. Most participants were unsure and asked the facilitator if it was the end of the exercise or not.

The normalisation exercise should be more similar to the normalisation example. Participants became confused as the sales product report is different to the order form. Several of the steps are different and it is unclear whether there should be a repeating group or not, as the product sales report is grouped by product.

Participants wanted to know why a particular answer was given, all of the participants who attempted to choose the primary key had different answers to the application.

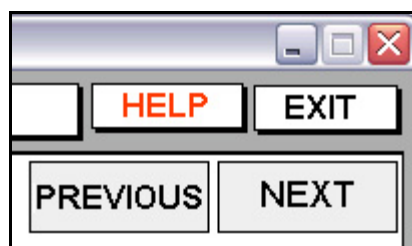
The 2NF is bunched up; this should be improved so that attributes do not appear squashed together.

### 2.1.4 ERD Creation

The left panel is only used initially to bring the entities into the working area. This could be removed allowing more space to be used for the working area.

Several participants wanted to be able to draw the lines between entities to see if they were “right or not”.

The **Exit** button was hit a few times by mistake when participants wanted the **Next** button. The exit button is very close to and similar to the next button (see screen 1). These buttons should be either differentiated or moved away from each other.



**Screen 1 – Next and Exit buttons**

The prototype would benefit from highlighting the keys as the relationships are drawn between entities. Similar to how attributes are highlighted in the normalisation example (see screen 2).

Customer Name: W.G. Smith		Customer No: 33333		
Address: 245 Queen St Onehunga Auckland		Customer Order No: 2576		
		Delivery Method: <input checked="" type="checkbox"/> Rail <input type="checkbox"/> Road <input type="checkbox"/> Sea		
Product Code	Description	Quantity	Selling Price	Amount
13425	Bedside Cabinet	4	150.00	600.00
10266	Coffee Table	3	60.00	180.00
54000	Kauri Chest	1	200.00	200.00
				Total Amount Due: 980.00
<b>UNNORMALISED FORM</b>		<b>FIRST NORMAL FORM</b>		
ORDER = Order Number Order Date Cust Order No. Cust Number				

**Screen 2 – Highlighting the customer attribute**

## 2.2 Prototype 2

Some of the participants enjoyed the exciting and novel aspects of prototype 2. However, none chose it as their preferred choice for learning data modelling. One participant said “looks very exciting, I feel that I can play around”.

Participants should be able to move the application to the centre of the screen and have an option to use it full screen.

One concern was that it could not be used in one of AUT's computer labs because there is no audio output at those workstations.

Transition is poor at the end of the exercise, example and ERD steps. Participants were left asking “is that it? Have I finished?” and were unsure what to do next. A conclusion on what has been covered and then an orientation towards what's available next would improve the learning experience.

The interactive exercises were seen as the strongest benefit of the prototype by most participants.

### 2.2.1 Glossary/Help

There was a request for a help option rather than a glossary only. Use next page, previous page or forward, back rather than having “Page” as the glossary navigation text.

A help menu that provided both information on the functions of the prototype as well as information on the learning would be beneficial.

Expanded descriptions should be added of important ideas such as cardinality, optionality along with diagrams of the symbols used.

### **2.2.2 Main Menu**

Most participants found the music distracting and voluntarily chose to turn it off. One participant said “it sounded like a porno move when the music came up.” Most found it exciting and engaging at first and then distracting when they wanted to shift their focus to the learning. One participant could not find the music on/off button.

Several participants said that it was better looking in relation to Prototype 1.

The menu heading was hard to read.

Many participants were familiar with the menu structure with links on the left and content on the right. Clicking briefly through these gave them an overview of the system and helped contextualise the different steps.

A diagram of the steps was suggested to aid by giving an overview of the steps involved.

### **2.2.3 Normalisation Example**

This was easier to read than the main menu with a softer background and stronger contrast with the text.

The font size is too small; this needs to be larger especially for the participants who wore reading glasses.

The user view is too small for users to see what it is and what attributes are being discussed.

There is too much information in here for most participants. Several participants said that they would not read all of it. Many began ignoring the text and looked at the interaction that was taking place in the application. Clearer instructions are needed.

Participants liked the clear highlighting of attributes in red as they were moved to the attributes list and between the three normal forms.

Attributes in the attributes, 1NF, 2NF and 3NF lists should be left-justified and not centred. Remove the underlining of attributes. The underlined attributes were expected to be links by one participant.

### **2.2.3 Normalisation Exercise**

Clearer instructions are needed as some participants were confused as to what they should do.

Too much text to read, font size too small and text in lists should be centred.

The user view should be more similar to the one in the exercise with separate repeating groups and simpler keys. The user view should be larger.

Layout needs to be simpler.

### **2.2.4 ERD Creation**

Too much text. Many of the instructions could be shortened. The font is too small.

Remove cryptic acronyms such as 'db' (database) from the text.

It isn't clear how customer and booking are related through an old primary key that was deleted?

Use the term integration rather than combining i.e. integrating the data structures

Highlight the primary and foreign keys as the relationship is drawn between entities. This would help identify exactly which key attributes are making the links between the entities

Several participants were not reading the text but focusing on the interactive changes occurring on screen.

Optionality is explained well in customer-to-invoice and then skimmed over for the other relationship linkages

## **2.3 Teaching Videos**

Participants found the videos to be excellent for their learning about specific parts and the overall aspects of data modelling. The videos were seen to be especially good for students who had missed class or had not done data modeling before.

A few participants wanted an overview of what was going to be covered. Two wanted to speed up the video. One participant said "I want to skip through everything first, get an overview, and then go back to work it out". Both did this by clicking on time bar on the Microsoft Media Player.

Two participants tried clicking on the screen to get interaction with the on screen prototype that is used in the video.

One participant said that she now knew an answer to a question in the pre-test questionnaire.

Two participants compared the videos favourably to the IE book used in their class. "I prefer this from the book", "It saves me reading the book".

One participant said that it might be difficult to use in class as there is no audio output on the class PC's.

### **2.3.1 Intro.avi**

The biggest setback for the introduction video is the lack of visual action. The participants who had done some data modelling before tended to find it too long, boring, "droney" and that it contained information they could "get from the book". One participant who had no experience with data modelling said that "it worked very well as an introduction".

More vocal variety would improve the audio.

One participant asked “should I be reading the words or listening to the voice?” They were unsure what the connection was between what they were seeing and listening to. Another participant said “what’s onscreen is different from what he is saying”.

Further development on the (as yet undeveloped) visual aspects will improve this part of the tutorial.

### **2.3.2 firstNormal.avi**

The explanation is very helpful for most participants. They particularly liked the explanation of the primary key. One participant said “that was the best explanation of the primary key and foreign key I’ve ever had”.

The mouse movements on screen were sometimes too fast for participants to follow. One suggestion was to have items onscreen highlighted/identified in a similar way to prototype 1 with its attributes.

The Amber Taylor popup could be removed.

Some participants tried to read the textual information and it changed too quickly for them.

One participant wanted to click on help options while the video was running. Another wanted to have a practice after watching the first step.

### **3.2.3 secondNormal.avi**

Again the mouse movements on screen were sometimes too fast for participants to follow.

One participant who had little experience of data modelling wanted to know what was the link/difference between this normalisation process and Object Orientated programming.

## **2.4 Web-based Tutorial**

Students found the web-based tutorial to be a well known tool and one they liked using for their study. One participant said that he liked most the ability to have multiple screens open as he studied.

A Help menu is required that has both information on the use of the application and information on data modelling.

The first major problem arised at login. If a participant successfully logged in the only visual feedback from the system was some very small text in the top left of the login page [User authorised.]. Participants would then try logging in again thinking that they had not logged in correctly. If participants had not logged in correctly and tried using any of the navigation a rather large and unuseful error message would come up (see Appendix D, p. 21).

### **2.4.1 Introduction**

One participant found the introduction “well focused”.

### **2.4.2 Tutorial 1**

The diagram of the user view is too small and blurry to view and needs to be bigger. The highlighting of attributes is also not as clear as in the other prototypes, [possibly due to the small user view].

Participants were not aware that if they clicked on the user view it would open up larger in a new window.

Repeated pages caused confusion - participants were required to click on next twice to go to the next page.

Some of the text content had errors in it and the font was too small for some participants. It was suggested that the text could be shortened.

One participant suggested that some pages could be combined.

### **2.4.3 Video**

Most users missed the link to the video files which was located under the normal form panel.

The introduction of voice was appreciated. "It [the video] is great with the voice". The volume needed to be increased in order to hear the clip.

A few thought the clips were too slow and preferred to read the text. However, one participant said they would go straight to the video clips.

Some participants wanted to fast-forward and suggested that a time bar along the bottom [Seek slider in MS Media Player] that they could click. This time bar would also give visual feedback as to how long the clip would last. "Needs a scrollbar along the bottom, the scrollbar tells me how long the video will be."

Participants did not like how the clip scrolled up and down. "It's good but more work needed on the layout".

### **2.4.4 Glossary**

The glossary is good, although it assumes that the user has some prior knowledge. Good use of white space.

One participant said that it was good to have clear definitions and that she would use the glossary to prepare for any tests [or quizzes] that were part of the tutorial.

Another participant wanted an alphabetical guide near the top of the screen and a search option.

### **2.4.5 Tutorial 2**

Both tutorial 1 and 2 need a transition page at the end of the stage to let participants know what they have covered and what is next.

### **2.4.6 Forum**

An ability to rate participant's responses was asked for. Participants also wanted an online expert, such as a lecturer, to be able to give accurate responses to questions raised. An option to contact lecturers was also asked for.

Overall they thought the forum was a good idea, that they would use it and that it added to the potential for learning. Many liked the idea that they could use it online from home.

One participant indicated that it would help with her shyness to speak out in class. "I like to be able to share with others. Sometimes I chicken out asking questions in

class, it would be good to see the questions and answers from others in the forum and I can learn from others”.

#### **2.4.7 Quizzes**

Participants enjoyed the quizzes and thought they supported their learning by giving them feedback on how well they had learnt the content.

Many liked the multiple choice approach. “I like it, it’s fun and I learn something from it”.

One participant said that she would start with the quiz and then return to the quiz afterwards to see if she had improved. She suggested that it was important that the questions changed.

The 2/6 bit is too small. It indicates that the user is on question 2 of 6. Larger font would improve the readability of this.

There was no option to pass or skip questions and no option to go back and change an answer.

#### **2.4.8 Menu**

Good, clean, simple, the menu is hard to see as the font is too small.

One participant expected to see each section completed when using the links to 1NF, 2NF and 3NF. For example, when they selected 2NF from the menu – they expected to see it completed in the 2NF form.

#### **2.4.9 Bookmark**

The bookmark option was a little confusing for some participants. Some thought it would put a bookmark in their favourites, another thought a reference in the browser’s History. Two others thought it would remember where they were up to and that there would be an option to come back to that spot in the application.

### 3 Summary

The usability tests have identified aspects of the four prototype systems that, if addressed, should enhance user satisfaction, ease of use and enhance the potential learning aspects of the tutorial. To further improve the TBM system we recommend that future development focus on expanding the web-based tutorial to include prototype 1 and include the teaching videos as an embedded option, especially recommended for novice users.

### 4 Recommendations

Maintain the clean simplicity of both the web-based tutorial and prototype 1's interfaces. Font sizes and images of the user views need to be larger.

The teaching videos are well received and provide a reassuring human connection and expert learning that appeals to many users.

Build for a minimum resolution of 1024x768 and maximise the available screen space rather than the smaller 640x480 or 800x600 sizes.

Use a modular embedded web-based approach that uses static html for navigation, help, glossary and overviews. Prototype 1, teaching videos and quizzes linked as embedded shockwave applications. With a link to an open TBM discussion forum located in the AUT Online [Blackboard] system.

Improve the help/glossary features to include mini-tutorials on particularly important aspects such as primary/foreign keys and cardinality. Add help on how to use the application itself.

Embedded videos should provide navigation functions such as the ability to use a seek bar and adjust volume.

The exercises should be similar to the initial

## Appendix A Profile Questionnaire

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Mobile Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Vehicle Registration (If you are likely to need parking): \_\_\_\_\_

1) What programme are you currently studying?

\_\_\_\_\_

2) Please list any qualifications?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3) Age range? (Please circle one or place a \* alongside):

a) 18 - 24

b) 25 - 33

c) 35 - 45

d) over 45

4) Sex (please circle one or place a \* alongside):

a) Male

b) Female

5) What sports/ hobbies/ music/ activities do you like most?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

6) What kinds of work experience have you had?

\_\_\_\_\_

\_\_\_\_\_

7) How long have you used computers? (Please circle one or place a \* alongside):

- a) less than 1 year
- b) 1 to 3 years
- c) 3 to 5 years
- d) 5 years or more

8) Which are the most common computer applications that you use?

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9) Have you ever participated in any Usability Testing before? (Please circle one or place a \* alongside):

- a) Yes
- b) No

10) Is English your first spoken language? (Please circle one or place a \* alongside):

- a) Yes
- b) No

11) If you answered No in question 11 above, what languages do you speak?

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12) In a typical week, you use a computer for (please circle one or place a \* alongside):

- a) less than 2 hours
- b) 2 - 10 hours
- c) 10 - 30 hours
- d) 30 hours plus

13) What do you use computers mostly for?

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## Appendix B Usability Testing Questionnaire

Are you interested in **databases**?  
Are you interested in improving the **quality** of  
**computer systems**?  
Are you interested in becoming a software **test  
driver** for the AUT Usability Research Group?

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We are looking for AUT students to be involved in the usability testing of a prototype system designed to teach you relational database design.

- We need to know if it is any good
- We need to know if you like it
- We need to know if you are likely to learn from it

If you are interested in participating in the research the kinds of tasks we will ask you to do are to use a prototype tutorial, preview some computer-based teaching videos, a web-based prototype and possibly look at paper mock-ups of a computer screen.

There may be an observer taking notes, the session will be videotaped, and the computer itself will record what happens. You will be interviewed during the process which takes about an hour.

In recognition of your time we offer you a gift voucher of \$20 (your preference of either a book, movie or music voucher).

If you are interested email [stephen.thorpe@aut.ac.nz](mailto:stephen.thorpe@aut.ac.nz) or call on ext 8953

## Appendix C Questionnaire

<b>Employee Payslip</b>		<b>Week ending 28</b>		
		<b>Feb 1996</b> <b>Employee number: 124320</b> <b>Employee name: Brent Stevens</b> <b>Address: 245 Grey Street</b> <b>Onehunga</b> <b>Auckland</b>  <b>Bank code: 04-101</b> <b>Bank Name: BNZ</b> <b>Employee bank account number: 024673.000</b>		
<b>Transaction Code</b>	<b>Description</b>	<b>Quantity</b>	<b>Amount</b>	<b>Trans Total</b>
10255	Ordinary time	40	10.00	400.00
10266	Overtime	3	12.00	36.00
33333	Meal allowance	1	10.00	10.00
33334	Travel allowance	5	5.00	25.00
40000	Southern Cross Deduction	1	10.00	10.00
			<b>Total Wages</b>	<b>\$471.00</b>
			<b>Tax</b>	<b>\$101.00</b>
			<b>NET Wages</b>	<b>\$370.00</b>

Looking at the above employee payslip can you identify the repeating group?

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Looking at the above employee payslip, what attributes would uniquely identify each employee? Or in other words what data would distinguish between one employee and another?

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Again looking at the above employee payslip, what would be the primary key for each transaction?

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Can you identify the data that is drivable from other attributes (and may be redundant)?

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What is an Entity Relationship Diagram and how would you use it?

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## Appendix D TBM Usability Testing Log

**Title:** Usability Testing the Tutorial for Business Modelling (TBM)

**Date:** 13 April 2004

**Start time:** 9:32 am

**Name:** Amber Taylor

**Profile:** Some top-down ERD, no normalisation

**Software used:** prototype 1, prototype 2, teaching videos, and web tutorial

**Comments:**

### Prototype 1

The screen

Clear but I understand

Normalisation example

Customer order form

User nexts

Can you click on the order form? [Attempts to click on the user view]

This is good where I can see the normal form [panels along the bottom]

Better if it can be drag and drop [Attempts to drag attributes from user view]

If it can be drag and drop people can answer the question

Are dependants useful? Yes

Font to be bigger

Very good nice and clear

Try and do it yourself

Guess the use "show me" and gives the answer

Interface is clear, I like the interface

### Teaching videos

User sits and watches introduction, sat on hands (not interactive / or afraid to interrupt / bored)

Himm it's got...It saves me reading the book but the guy's voice needs to be less monotonous

I would listen to it, saves me reading the book

Good for people who have not done it before

Good companion to the IE text book

Watches customer order form video, that one is good, but more detail from the list

### Prototype 2

Colours – yes

Music is a bit distracting, Could not find mute button

Does it start speaking to you? Clicks on un-mute button, no speech?

Background is a bit busy, that's better in the normalisation screen

Interface is interesting but text needs to be bigger, liked the glossary tab

Needs the font to be bigger

I like the other one better [prototype 1] it's a lot clearer

ERD – I make sense

### Web tutorial

The invoice is a bit blurry

Font needs to be bigger

Example needs to be bigger

How to get back?

Not busy

Likes the discussion forum

Liked the multi-choice question

## Guide tutorial

I liked the first tutorial and the red boxes  
Need summaries

**Title:** Usability Testing the Tutorial for Business Modelling (TBM)

**Date:** 13 April 2004

**Start time:** 11:12 am

**Name:** Jeremy Barrett

**Profile:** Some top-down, ERD and normalisation, used prototype 1 in class

**Software used:** prototype 1, prototype 2, teaching videos, and web tutorial

**Comments:**

## Prototype 2

### Menu

A bit much – I'm waiting for a movie to come on  
Hard for me to read - distracted by music  
Heading is a bit hard to read - intro heading  
Good having a practical

### Normalisation screen

Easier to read with the background  
Would like somebody to talk me through it  
Enlarge the font  
Straight forward – quite a bit of information in there  
Quite a bit of writing, a lot to read, a lot to read  
I would not normally read it; I would quickly go through it  
This is what I like it identifies attributes [red highlighting on the invoice]  
The left margin for the attributes list is centred [prefer left justified]  
Would like the steps in boxes to split up information  
Explain it rather than read it

### In the menu

It makes it easier for me the links  
Would like to use the other one [prototype 1 used in class] because it had bigger writing  
Diagram to tranere back the information and illustrate the minim on the tutorials  
Sounded like a porn movie when the music came up

### ERD example

Nice and clean  
Use [term] integration rather than combining  
Takes them away and combines them, but brings them back in the same fashion  
Flash up the key attributes when the links are up [highlight the primary or foreign keys in each entity when drawing the line between two entities]  
What doe “db” mean? [Database]  
Glossary – I'd probably like the relationship and the cardinality explanation expanded  
Understanding the symbols is important [symbols currently not addressed in the prototype or glossary]

Overall - Liked the video explaining it the best, invoice all the attribute listed out, have the repeating groups  
Some scenarios move through the normal forms and keys  
Glossary is good

## Too much info on the page

### **Prototype 1**

I really like this one, it's really nice and plain, tell you what you need to do.

Just as much writing [as prototype 2], easier to read [than prototype 2]

Black on white

Text is bigger

The information was set out properly

Is there some way I can go back? I like to go back

What is an instance?

It makes sense but what is the link [normalisation] for?

Good that it splits out the obvious stuff

I'd prefer text on because of the plain unitttry

Did not like going back

### **Teaching videos**

It's good, I like it

That was the best explanation for the primary key and the foreign key

That what exactly what I liked

### **Web tutorial**

A bit unclear the diagram

A bit slow

I would go straight to the videos

Discussion forum – I'd use it to for certain topics that I didn't know much about

Pictures would work for me

Quizzes would be really useful for me

### **Overall**

I liked the 3<sup>rd</sup> example [teaching videos] with Philip telling me what to do, giving explanations, and the second online version

Having things explained are really good, especially why is really good

**Title:** Usability Testing the Tutorial for Business Modelling (TBM)

**Date:** 13 April 2004

**Start time:** 1:04 pm

**Name:** Troy Nickles

**Profile:** Some top-down, ERD and normalisation, used prototype 1 in class

**Software used:** prototype 1, prototype 2, teaching videos, and web tutorial

**Comments:**

### **Teaching videos**

intro.avi

It's pretty dronely, I could get it from the book, not having the screen it is a bit disruptive, too long for the intro

A face would help

Should I be reading the words or listening?

firstNormal.avi

First I was confused

It was good when the things interactive of the screens

The explanation was helpful with the interaction

secondNormal.avi

This steps the user through

Cursor moves around the screen too quickly  
You can read everything

### **Prototype 1**

Creating the ERD menu

It would be great if I could draw the links

Use the circles to highlight the points, like in the video [firstNormal.avi]

Delay for the user to think about tit and then show them

Gives a chance for me to think then the answer comes, this is good

A glossary or dictionary would be useful

Looking at the words it seems that there is a right and wrong answer

Some text is a bit small

Defiantly liked the show me boxes

It [prototype 1] was really great when I was doing the [IE] assessment

### **Prototype 2**

Loud, looks very exciting, looks like I could play around, like the rollovers

Wanted to resize the menu but unable to, at rollover font not displayed

Unexpected that it beeps even when the sound is muted

Mouse rollover indicates interactive software

It's quite good to have the glossary

Feels a bit more cluttered, less busy

"Next all" to get to the end

Font to be bigger and red font makes it harder to read

The margin of the font not to be centred in the columns

Initially it was a bit jazzy but it takes a lot of work to get the information

Expected underlined words to be hyperlinks

Inconsistent explanation when infunction moves from one column to another

### **Web tutorial**

Tutorial 1

Easier to try and use

The font size is good

2\_1 Phase 1 List all the Attributes.swf

Can't fast-forward in the video, give a length bar

Would like it to go a little quicker

Like having things to be dragged

Would be better if planned better or layout better

Tutorial 2

Scrolling to get the information

Forums

Forums need to have experts to use it, some rating of the users on forums

Quizzes

Quizzes are good but you have to judge the level of the users, good feedback

### **Overall**

Better than the text book

Prefer prototype 1 the best

The video is good but more work

**Title:** Usability Testing the Tutorial for Business Modelling (TBM)

**Date:** 13 April 2004

**Start time:** 3:13 pm

**Name:** Kim Trang Bui

**Profile:** Has completed the IE paper before

**Software used:** prototype 1, prototype 2, teaching videos, and web tutorial

**Comments:**

### Web tutorial

User clicked on tutorial 1 but error screen appeared [due to user not being logged in]

**Error Occurred While Processing Request**

Errors reported by Java compiler: Found 1 semantic error compiling "C:/CFusionMX/wwwroot/WEB-INF/cfclasses/cfIndex2ecfm1499629240.java": 1. public final class cfIndex2ecfm1499629240 extends coldfusion.runtime.CFPage{ <-----> \*\*\* Error: Cannot write class file "cfIndex2ecfm1499629240.class" because that name conflicts with the name of the class file "cfindex2ecfm1499629240.class" in directory "cfclasses". This is illegal because file names are case-insensitive in this system. .

Please Try The Following:

- Check the [CFML Reference Manual](#) to verify that you are using the correct syntax.
- Search the [Knowledge Base](#) to find a solution to your problem.

Browser Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; .NET CLR 1.0.3705; .NET CLR 1.1.4322)  
Remote Address 127.0.0.1  
Referer <http://localhost:8500/TutorialSite/login.cfm>  
Date/Time 27-Apr-04 10:49 AM  
[Stack Trace \(click to expand\)](#)

The intro is pretty focused, user commented on orange colour

The diagram or user view needs to be bigger

Circle the information so that people can see it better

Inconsistent and small text

Repeating pages causes confusion

Some pages can be combined

Prefer the reading [reading the text]

The video [2\_1 Phase 1 List all the Attributes.swf] is too slow

It is great with the voice

If the user is using it for the first time she would look for a Help function

Glossary is good, white space for the paragraphs

It assumes that the user has prior knowledge

User clicks on image [invoice user view] to enlarge it, although it was not obvious that it would open a popup with a larger image in it

Shorten the text to match the diagram

### Teaching videos

firstNormal.avi

Yeah that's great

Yeah I like it; I think it is really good  
User holds the mouse clicking on the time bar  
User seems confused on how to control the Microsoft Media Player  
User wants to link the information with lines  
This helps, shows the information properly  
Highlight information with the mouse  
What is the show me button do?  
User wants to use the Help but gets the full screen view, but would like it to be activated as part of the video [so she can click on help, pause the video and open Help screen and restart when she closes the help]

### **Prototype 1**

Clearer


Yeah that's great, user likes the red circles and lines help to identify where the information came from

Normalisation exercise menu

User was confused on where to go and how to drag attributes down to the list

User was confused on how to drag the PK's down to the list

Help

Not what she expected for a Help menu clicked on the windows  button, which closed the whole application rather than just the help

User wants a search option similar to MS Office applications

ERD creation menu

don't like red, too bright, font size is too bright

Actions could be faster [lines being drawn]

Just use *next* button and no *show me*?

User suggested that the grey background could be used as the highlight colour rather than the use of white

Can the screen be bigger? Full screen

Better than MS Visio

### **Prototype 2**

Surprised

The noise is funny

If we are in a computer lab we can't use it

Would like to move the screen

Glossary instead of using *page* used *next page* or *previous page*

ERD example

What is the bar on the left for? But finds out as she clicks through

Some of these messages can be shortened

Normalisation example

Bigger screen is needed

This version is a bit more informal, inconsistent colour

Feel excited

### **Overall**

Like Prototype 1 best

**Title:** Usability Testing the Tutorial for Business Modelling (TBM)

**Date:** 19 April 2004

**Start time:** 9:04 am

**Name:** Susan Wang

**Profile:** Some top-down, ERD, no normalisation

**Software used:** prototype 1, prototype 2, teaching videos, and web tutorial

**Comments:**

### **Prototype 2**

Don't need the music

Confusion about the links

Text is too small

Glossary is ok

Explanation is good as the user drags the attributes down

Still shows and highlights the attributes when it was dragged across

I can understand it, I can learn from it

More clear instructions

ERD example

It's not clear where to click

Text is fine, good amount of information

To have two names

### **Prototype 1**

Normalisation example

It's good, simple text layout

Liked the highlighting

Normalisation exercise

Order form not clear [customer order form user view]

Answer was displayed till the cursor is moved out of the box [answer disappeared when the mouse exits the answer box]

There was no reasoning given for the answer

Easy to understand, it explains a lot

### **Teaching videos**

Intro.avi

Use a different application, just the form and without the text

firstNormal.avi

Good for students who miss the class, or do not understand

### **Web tutorial**

Font's sizes change [larger]

Bookmark does not create a link in the favourites folder as expected

Small files [invoice user view]

Don't like highlighting style, would prefer using circles [as in prototype 1]

All the info can be on one screen

No controls

Would like to have a lecturer to help students in the forum

Glossary needs an alphabetical guide [with hyperlinked alphabet letters across the top]

Quizzes - different test for different parts, different questions for events

Go back button to see the question again

**Title:** Usability Testing the Tutorial for Business Modelling (TBM)

**Date:** 19 April 2004

**Start time:** 11:14 am

**Name:** Sunghe Lee

**Profile:** Some top-down, ERD, no normalisation

**Software used:** prototype 1, prototype 2, teaching videos, and web tutorial

**Comments:**

### Teaching videos

intro.avi

Found an answer to the pre-test questionnaire

It talks too slow

Clicks on the video, would like to click through the buttons [buttons on screen from prototype 1 menu used as backdrop for the intro.avi]

Would like it to change

Finds it dragging her down, too long

Kind-of boring

firstNormal.avi

It's good; you know what is actually going on

Would like to fast-forward it

Clicks on [MS Media Player] scroll bar to speed it up

Want to see what will happen next

I would skip through everything first (get an overview) and then go back to work it out

### Prototype 2

Very exciting, is this done in Director? [Macromedia authoring software]

I like it 'cause I know what I'm getting here

Turned music off – I liked the music

Font too small on invoice and instructions

Prefer *just simple* layout

Very creative

Would like better examples in the glossary and index especially on the primary key

ERD creation

Font too small

Like layout better than normalisation section

Wanted to see how customer and booking are related

Not really reading text, looking to see what will happen at the end

The colour could be changed to see better view [red relationship lines]

Optionality explanations needed – like [text in] customer to invoice

It's not obvious it's finished

### Prototype 1

Prototype 2 is more entertaining, this on [prototype 1] is more straightforward to learning

No rollover cursor change?

Button moves

Would like to skip forward to [completion of] 1<sup>st</sup> normal form, 2<sup>nd</sup> normal form and 3<sup>rd</sup> normal form

I want to go through the big headings first

User didn't find the **Goto:** list, when using the links there wanted to see the completed parts [i.e. 2nf completed, 3nf completed etc] not from the beginning of each section

Integration

Is ok, can understand quite a bit of this

ERD

Its ok, is there any exercises here?

### **Web tutorial**

Good, simple, clean

Menu hard to see (might need my glasses to read)

When using the links to 1nf, 2nf and 3nf expected to see the completed parts [i.e. 2nf completed, 3nf completed etc] not from the beginning of each section

Bookmark

I think it means that I could come back

Didn't expect it to put a link in history or favourites

2\_1 Phase 1 List all the Attributes.swf

User would not have found the link to the short video

Needed to turn the volume up

Can I fast forward it?

Needs a scrollbar along the bottom, the scrollbar tells me how long the video will be

Forum

Simple, clear

Like to be able to share with others

Sometimes I chicken out asking questions in class, it would be good to see the questions and answers from others in the forum and I can learn from others

Glossary - I would use it, Especially if we have a test, it's good to know the definitions

Quizzes

I do like multiple choices

Would use it

I'd do it first to see and then do it again after the learning so would like the questions to change

The 2/6 bit is too small, wanted to see what it was

I can't skip or pass questions

User is humming whilst taking the quiz, Oh 3 right and one wrong!

I like it, it's fun and I learn something from it

Feedback

Could have option to contact lecturers as well

### **Overall**

Overall like the web one best as I could use it from home

**Title:** Usability Testing the Tutorial for Business Modelling (TBM)

**Date:** 20 April 2004

**Start time:** 9:17 am

**Name:** Weipu Huang

**Profile:** has reads books on ERD, no data modeling

**Software used:** prototype 1, prototype 2, teaching videos, and web tutorial

**Comments:**

### **Teaching videos**

intro.avi

It's good, intently listens to Philip's voice  
I read books about ERD get more information  
About how ERD creation is important  
It gives a few examples, works as an introduction  
I understood about 80% of the voice

firstNormal.avi  
I can understand, clearly about the relationship between different...  
Database information  
Practice is important

secondNormal.avi  
Is this part of 1nf? I think, confused about this modeling and Object Orientated programming [currently studying Java]  
I got it about 60-70% on that one  
Give them more practice

### **Prototype 1**

I want the Help to learn the functions of this programme  
Wanted to click on the user view [customer order form]  
Icons would be better for navigation as they're easier to use  
Possibly use a browser metaphor  
Clicked on **Goto**: text, not clear that the links are next to it  
More information is needed in Help about 1nf, 2nf  
It is confusing, user clicked on next and then got it [up to then was unsure how to proceed]  
Clicked back to read again because 2nf is more difficult to understand  
Wanting to compare 1nf and 2nf to see what is different  
Should mention the difference between 1nf and 2nf and 3nf at the end of the exercise for completion  
Confident to do the exercise step next

### Exercise

The example is different here [product sales report], should be like the first one [simple]  
Good to have the answer. Like an exercise book  
The first thing is to understand what the *PK* means  
Why is date the primary key? [Had chosen supplier]  
Explanation is needed  
Would use it by self to learn, the example and the exercise  
In comparison to a book it is a different way to learn  
I would pay \$20-\$30 for the tutorial  
Foreign key – learn it by doing it by myself  
2nf – looked bunched up a bit  
*Qty* not known as representing the word *quantity* [has Month Qty Sold on the user view]  
ERD creation – the book uses different symbols [talks about what sound like flow chart symbols and not ERD ones]  
Very in the flow of learning, concentrating hard  
When explaining cardinality – could have 4 types – i.e. 1:1, 1:many, many:1, many:many  
Could lose left panel [now empty and not used again] and give more space to whole screen work  
I like doing the exercises  
It attracts me to doing the exercises

For me it's easy to understand

### **Prototype 2**

Music's nice

Just make it easy for the student to understand, easy words and shortened text

It's ok

It is similar to programme I used before [prototype 1]

Its better looking

Music loop pauses and then starts from beginning

It doesn't have the Help function

I want some definitions and some function about the programme

I would 1<sup>st</sup> use the help and then second call the programmer up

Could link the steps and then go straight to it

In the book there is plenty of information in it

Some papers would help them

Exercises are the benefit of the application

### **Web tutorial**

Login screen needs fixing

Internet is better as students use it and can have multiple screens open while they study

Forum - I have used Newsgroups and BBS [bulletin board systems] before

Like the quiz

### **Overall**

I prefer to use the internet version

The video is good for foresight

Internet one is better for use

**Title:** Usability Testing the Tutorial for Business Modelling (TBM)

**Date:** 20 April 2004

**Start time:** 11:13 am

**Name:** Yuan Liu

**Profile:** none

**Software used:** prototype 1, prototype 2, teaching videos, and web tutorial

**Comments:**

### **Teaching videos**

intro.avi

This is just an introduction

What's on the screen is different from what he is saying

firstNormal.avi

Language could be a bit structured

More humour

Understood how to get from unnormalised to first normal form

secondNormal.avi

Prefer this from a book, this shows the steps and to show the steps

Different colour, there is sound like in class you can play back

### **Prototype 1**

Didn't see it clearly

I didn't like reading all this, I like the video

I don't really like it, the first one the teacher explains it

Too much reading I get bored  
It is so interesting when I can drag it  
I can't really understand, need an example to explain why you have understand this  
I don't understand what is a foreign key  
I would like to draw the lines to see if I was right or not  
Exit button was hit twice and the application closed [very close to the next button and of similar shape and size]

**Prototype 2**

I want to drag and make it bigger  
Self-paced learning

**Web tutorial**

Convenient for self study at home  
Glossary might be useful

Overall

If I must learn I would prefer the teaching video