



Dino Jaws  
Formative evaluation of interactive exhibit  
Kate Pontin

April 2006

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## 1.0 Introduction

This document reports on one aspect of the formative evaluation undertaken for Dino Jaws, a temporary exhibition on dinosaurs and their diet to be held at the Natural History Museum in the summer of 2006. A number of interactive elements will be used in the Dino Jaws temporary exhibition timetabled for July 2006. To help develop appropriately designed activities, formative evaluation has been undertaken for one such exhibit: T-Rex Bite Force. Its objectives are to:

- Experience the huge difference between our own force and *T Rex's* bite force
- Be challenged to measure their own force against that of other visitors and be inspired to go online to access their score at home/school

## 2.0 Methodology

The approach taken was as follows:

- A mock up of the computer activity was developed and used with family and school groups
- Two days of evaluation were undertaken on the 5<sup>th</sup> and 6<sup>th</sup> April, 2006
- The two evaluators used were Kate Pontin and Helen O'Riain.

Children were invited to try out the activity and were observed by the evaluator. At the end of the activity an informal interview was undertaken with key questions about use and understanding of the exhibit.

The formative evaluation aims were to find out:

- Testing the interface – do the visitors understand that they need to press the pad?
- Do visitors understand the interactive design and relate their actions to the bite force?
- Do visitors get what the exhibit is about?

### Sample

- 6 school groups were interviewed – 1 group of 15/16 year olds and five groups 11-12 year olds
- 22 children were also interviewed as part of family groups
  - seven aged 6 and 7
  - five aged 8 and 9
  - five aged 10-12

### 3.0 Findings

Evaluation objective	Summary of results
Testing the interface – do the participants understand that they need to press the pad?	<p>Nearly all participants understood that they needed to press the pad. Those that were confused were distracted by the computer keyboard (which will not be visible in the display). Subsequently a piece of paper was used to cover this up.</p> <p>At an appropriate height for the children.</p> <p>Some were a little reluctant to really push with 2 hands as strongly as they could</p> <p>Younger children also copied their older siblings and managed to do the activity on their own</p>
Do participants understand the interactive design and relate their actions to the bite force?	<p>All participants, when questioned linked the activity to the strength of T-Rex. Most children were able to link the strength specifically to the Jaw, teeth etc. Some younger participants of 8 or less were unable to say what specific aspect of strength was referred to. This may well have related to lower reading ability or not understanding the labels as they were read to them. Even so some 6 year olds were able to make some sort of link to biting.</p> <p><i>It tells you how strong you are compared to other animals</i></p> <p><i>How do you measure the bite of an animal? What is the highest score (animal) so far?</i></p> <p><i>How strong his teeth are</i></p>
Do visitors get what the exhibit is about?	<p>Most participants were able to describe how much stronger T-Rex must have been.</p> <p>One child referred to the Caiman he had matched in the game when he chose his postcard to take away and found an alligator - <i>like my Caiman</i></p> <p>Another 2 boys were amazed by the strength of T-Rex in comparison and went “<i>corrrr</i>” when reading the last label.</p>

### 3.1 General findings

#### 3.11 Positive aspects

- All participants really enjoyed the interactive as did many of their families and teachers:  
*This is really cool*  
*This is having fun while learning*  
*You learn about other animals too*
- All participants wanted to do it again and some wanted more than 2 goes
- They liked the competitive element
- Some were more imaginative and joined forces to test the activity further
- Older children (above 8) know what to do and what the activity is about. They have no problems reading the text
- It is a good group or family activity
- It is relatively short and simple to do
- Parents suggested various amendments such as making the pad look like a jaw or mouth to make the link more obvious. One father suggested sounds to go with the animals and other participants asked for more animals . One parent also suggested the *press the pad* text is not very obvious.

#### 3.12 Issues raised

Some issues raised early on, on the first morning of formative evaluation, were corrected by IT (Marcus) during lunch. These included:

- The need for a longer time to read the second page especially if reading it out loud to a younger child (as parents often do in galleries)
- The game jumped through the results very quickly when users continued to press beyond the count down zero
- There were some issues with the game and the starting of the second go

#### **Other issues raised subsequent to changes are:**

- There is an issue if the user doesn't touch the pad when requested to do so – it whizzes through all the different animals and doesn't stop – there needs to be a cut out
- The count down which comes into play when pushing on the pad is a little too long or is ignored
- The user needs to push again after the second attempt at the game to get the page on how many times T-Rex's strength is to theirs - it would be better if this came up automatically as it is the key learning element and is often much more meaningful to participants than lots of kilograms of strength#
- It also seems to take a while for this last page on T-Rex's comparative strength to come up and thus participants often push again and then of course it goes away!

- Also on this last page on some occasions no text comes up at all – just a picture of T-Rex’s head!
- Slower readers may not be able to keep up with screen movement but this is probably inevitable as if it were any slower most children would lose interest
- Before the second go the game goes back to “Are you as powerful as T-Rex?” first – is this really necessary?

## **5.0 Conclusions and Recommendations**

**The interactive game is successful and is very popular with all ages. In general children understood what to do. The competitive element makes the activity particularly enjoyable. The main learning objective (about the strength of T-Rex’s Jaw) is usually successful, particularly with older children**

**There are a number of aspects that were highlighted by the formative evaluation that need to be altered or discussed by the design team.**

### 5.1 The TEXT

- Need to change 18.300 to 18,300 (Boys misread this)
- Julie had already spotted the ‘it’s’ on one of the printout sheets – it didn’t feature on the screen anyway

### 5.2 GENERAL

- Participants suggested more animals were needed, as there were too many ending up with opossums. (this may well be in the pipeline)
- Participants also suggested the addition of humans (also in the pipeline)
- Three or four school children weren’t happy about the girl featured on the screen (What is she doing there?), but seemed completely reassured when told she would have a lab coat on.

### 5.3 SPECIFICS

#### The Countdown

- The Countdown is too slow. It can be confusing for some and many ignored it completely. A suggestion may be to show the hand of a clock ticking away the seconds, so that it was more instantly accessible

### 5.4 The SCALE

- The scale - one suggestion was that it would be good to see the whole scale at the end so you could see how far along it you had got. (This could look like a timeline, but be a ‘bite line’.)

### 5.5 The PAD

- There is an issue if a user doesn’t touch the pad when requested to do so – it whizzes through all the different animals and doesn’t stop – there needs to be a cut out.
- The user needs to push again after the second attempt at the game to get the page on how many times T-Rex’s strength is to theirs - it would be better if this came up automatically as it is the key learning element and is often much more meaningful to participants than lots of kilograms of strength

- It also seems to take a while for this last page on T-Rex's comparative strength to come up and thus participants often push again and then of course it goes away!
- Also on this last page on some occasions no text comes up at all – just a picture of T-Rex's head!
- Before the second go the game goes back to “Are you as powerful as T-Rex?” first – is this really necessary?

**Appendix 1**  
Notes from G-Gina Koutsika re Evaluation

Dino Jaws Interactive exhibits specification	
Exhibition Area	Introduction
Exhibit Name	T-Rex Bite force ( IN-ani1.1 )
Drawing No.	0304-IN-304
Budget allocation	£#####
Target Age Range	7-11
Supplier	NHM

**Key Aims / Learning Outcome**

- Experience the huge difference between our own force and *T Rex's* bite force
- Be challenged to measure their own force against that of other visitors and be inspired to go online to access their score at home/school.

**Description**

This exhibit is housed within the barrier structure (supplied by main contractor) in front of the T Rex animatronic. Two identical interactives sit side by side to cope with visitor demand. Visitors use their bar-coded ticket to activate the exhibit.

Visitors are invited to push down on a pressure pad in order to recreate the bite force of a *T Rex*. The result is displayed in real-time at an adjacent monitor. Software to be developed to compare their force to that of other dinosaurs/animals. Their force is measured and they find out that they are much weaker than a *T Rex's* bite.

At the beginning of each turn there will be shown pre-existing footage of a *T Rex* skull model crushing a car (with sound effects).

Digital trail link - At the end of their turn a clue will be delivered to the visitor based on the bite force ( and diet) of their mystery dinosaur.

NOTE: Pressure pads, Barcode readers, screens and PC's will be provided by NHM.

**DDA requirements**

- Pressure Pad and Barcode reader should be accessible by wheelchair users.
- Screens should be easily viewed by all ages.
- Sound effects linked to software during play are beneficial.
- Software should be intuitive and fun. Text clearly readable.

**Performance Specification**

- Access to the pressure pads for maintenance should be considered. In case of failure these should be easily replaced.
- All mechanisms must be durable, reliable and suitable to be used in a non supervised museum environment.

**Prototyping requirement**

- 1st phase testing – Demonstration of suitable pressure pad and ability to link to software.
- 2nd phase testing – Working proto-type of pressure pad and on-screen response.
- 3rd phase testing – Intellectual evaluation of interactivity/ instructions/interpretation of near to finished interactive.

**Contractor to cost for:**

- Initial concept development with RAAUK and NHM including proposed storyboard of physical and screen based activity.
- Shop drawings as required.
- Proto-typing. See above.
- Supply of interactive in its entirety.
- Liaison with main contractor as required.
- Installation.
- Supply of O+M manuals.

## Appendix 2

### Notes from Data collection by Helen O'Riain

Natural History Museum

#### Dinojaws Interactive - Observations

**Group: Year 7 Secondary School from Southend – 5 groups, or 17 pupils in all (5,3,3,3,3) aged 11 – 12. All boys and ethnically the majority were white.**

Good things:

- They all enjoyed it and were immediately or quickly engaged e.g.
  - This is really cool
  - This is having fun while learning
  - You learn about other animals too
  - It tells you how strong you are compared to other animals
- Some were more imaginative and joined forces to test the activity further.
- They understood the point of the activity and it made some of them ask further questions (eg. How do you measure the bite of an animal? How does it (the pressure pad) work? What is the highest score (animal) so far?)
- The scale and the idea of trying strength against the animals and each other was competitive and extremely attractive. There was no difficulty in understanding the scale at this age.
- They all said they'd like to come back to the museum to see the exhibition when it opens, even though they live 2 hrs journey away.

Additional comments/ suggestions/ possibilities:

- The main one was about the number of attempts allowed
  - a) that it would be good to know how many pushes you could make in advance, and
  - b) that it would be good to have three goes as it's easy to waste the first one. (One boy did, and got an animal with almost no bite power). Could use a phrase like 'Try once last time' for the third go, to make it clear. This could be feasible if the countdown period was shorter, as Kate suggested, without adding too much to the overall time envelope.
- *Need to change 18.300 to 18,300 (Boys misread this).*
- *Julie had already spotted the 'it's' on one of the printout sheets – it didn't feature on the screen anyway*
- *Boys and teacher suggested more animals were needed as there were too many ending up with opossums. (I believe this is in the pipeline)*
- *They also suggested the addition of humans (also in the pipeline).*
- *The Countdown numbers were confusing for some. (Some ignored them completely). Suggestion was that it should show the hand of a clock ticking away the seconds, so that it was more instantly accessible.*
- *Three or four weren't happy about the girl featured on the screen (What is she doing there?), but seemed completely reassured when told she would have a lab coat on.*
- *The scale - one suggestion was that it would be good to see the whole scale at the end so you could see how far along it you had got. (This could look like a timeline, but be a 'bite line'.)*

Helen O'Riain

6 April 2006