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The Computing General Demographic Questionnaire

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Technical Report

The Computing General Demographic Questionnaire

By Kit Logan and Carina Paine

Abstract

The following report describes the construction of the Computing General Demographic Questionnaire. A short, web based, questionnaire developed as a support tool for studies carried out with AESOP (An Electronic Student Observatory Project), that can be used an independent assessment tool. The questionnaire gathers general demographic information, users' knowledge and experience of distance education and computers, the hardware specification of the users' machines and also measures users' levels of comfort with various computing related tasks. Uses of the questionnaire are also discussed.

Introduction

AESOP (An Electronic Student Observatory Project) (Thomas and Paine, 2000a, 2000b, 2000c) is a collection of software tools that allow the remote asynchronous, recording and replay of distance education students' behaviour as they study the online practical materials of the Open University's distance education course *M206 Computing: An Object-Oriented Approach (The Open University,* 1998, *The Open University,* 1998). AESOP is however restricted to recording information and events happening inside the LearningWorks (Ingalls, 1981, Goldberg et al., 1997) environment in which it operates, so a questionnaire (the Computing General Demographic Questionnaire (CGDQ)) was developed to collate the information identified as being of interest to the research which AESOP is unable to record.

The additional information identified as being of interest included: demographic data such as, age, gender, postal code and occupation; distance education and computer experience; participants comfort with computing tasks; and the computer hardware specification of the machine on which participants had installed AESOP

Demographic data was considered necessary as it would enable comparisons to be made between the sample of participants obtained and the demographic make-up of the course population. Previous studies have also shown age (Comber et al., 1997) and gender (Schulenberg et al., 1991, Shashaani, 1994, Busch, 1995, Comber et al., 1997, Stumpf and Stanley, 1998) to be factors that need to be considered.

The hardware specification of participants' machines was also requested to determine links between specific specifications and any problems found with the AESOP software. Hardware specification was also used to determine other factors of consideration, such as, whether those who use slower, less powerful machines did less well in comparison to individuals who had more modern machines.

A number of items related to factors previously noted to influence individuals' use of computers were also incorporated into the questionnaire these included measuring prior experience of using a computer both at work and at home participants' levels of comfort with various computing related tasks (Shashaani, 1994, Busch, 1995, Corston and Colman, 1996).

The questionnaire also incorporated a number of questions looking at issues that have already been noted or regarded as being able to influence participants' behaviour. These included prior experience of using a computer both at work and at home (Shashaani, 1994, Durndell et al., 2000),

prior experience of programming, prior experience of taking Open University courses and the individual's level of comfort with carrying out various computing related tasks (Busch, 1995).

Questionnaire Construction

A requirement of the Computing General Demographic Questionnaire (CGDQ) was for it to be accessible to all participants taking part in any of the AESOP studies. It was therefore developed to be completed online via a web-page as it is necessary for students taking the M206 course, and therefore any AESOP participants, to have access to the internet. The overall number of questions in the CGDQ was kept small, so that the questionnaire did not appear daunting to participants and help improve response rates (Courtenay, 1978, Labaw, 1982). A users' view of how the questionnaire would look is given in Appendix A and details of the HTML code of the questionnaire are in Appendix B.

Personal Information

Name, Open University username and email address were requested as ways of uniquely identifying participants and being able to match questionnaire data with data returned from AESOP.

Demographic Data

Demographic data was limited to four questions relating to gender, age, current occupation and postcode. Radio type, single choice formats were used to elicit participants' gender and age, with participants being given the choice of eleven pre-defined age ranges. The use of categorical data for age, although less accurate, was considered less obtrusive and therefore more likely to be answered than using a text box to elicit participants' ages directly. However, text boxes, allowing open ended answers, were used for questions relating to occupation and postcode because of the potential variety of answers. Participants' occupations were asked for to determine relationships between occupation and online behaviour. Postcode data was obtained to analyse geographic variances in the data.

Distance Education and Computer Experience

Six questions were used to determine the level of experience that participants already had of distance education courses and computers. Participants' use of computers at work or in any capacity was determined using a Likert like scale of five items ranging from "Daily" to "Never" presented as a drop down list (Table 1). A subsequent question was used to ask those participants that used a computer on a weekly basis or more, to estimate how much time they spent in hours per week carrying out each of the following computer based activities: work, study, playing games, home affairs (such as finance keeping), communication and internet access.

Three further questions were used to determine whether or not participants' had previous experience of programming, Open University distance education courses or other computing courses. Further details were requested from those who gave an affirmative reply to any of these questions.

	Verbal description.
Leve	_
1	
1	Never
2	Occasionally
3	Monthly
4	Weekly

5	Daily

Table 1: Five point Likert like scale used to rate participants' use of computers.

Comfort with Computing Tasks

To gauge participants' levels of confidence with using computers, participants' were asked to rate on a five point Likert like scale (Table 2) how comfortable they were carrying out each of the computing related tasks given in Table 3. Each computing task in Table 2, was selected on the basis of relevancy to tasks students taking the M206 course would be required to undertake.

	Verbal description.
Leve	
1	
1	Not at all comfortable
2	Uncomfortable
3	Fairly comfortable
4	Comfortable
5	Very comfortable

Table 2: Five point Likert like scale used to rate participants' level of comfort with carrying out computing related tasks.

Using computer applications
Using programming languages
Using the internet
Using electronic conferencing or email
Installing software.

Table 3: Computing related tasks used to assess participants' levels of comfort with using computers.

Computer Hardware Specification

An essential part of the CGDQ was to evaluate the hardware specification of the machines that students were using to study the M206 course on. Although AESOP was designed to work as a bolton application to the LearningWorks environment and therefore have the same minimum system requirements as set out for LearningWorks, it could not be ruled out that AESOP would not work well with certain specifications. Hardware specifications were therefore desired as a future diagnostic tool in determining any possible minimum specification for the AESOP software. In addition we wished to explore the possibility that system specifications could act as usability factors influencing participants' use of the practical material.

The relevant specifications were main processor, the processor clock speed, amount of system RAM memory installed, monitor size, resolution being used on the monitor and operating system.

In all cases participants were offered a drop down list of the then most common values for each specification and the option to enter an alternative value.

Application of Questionnaire Data

Application to AESOP data

In the studies using AESOP, a set of software tools are used to record and replay the interactions that distance education students have with online practical work. This allows students' behaviour with the online practical work to be observed and analysed.

One application of the data from the CGDQ is to use the demographic data to analyse how representative students who complete the questionnaire and taking part in the AESOP studies are of the total population of students who take M206.

Additional information is hoped to be gathered as by combining the data from the CGDQ with the AESOP data and analysing factors that could influence or correlate with individuals' observed behaviour. Research questions include:

- Is there a difference between the genders in the level of comfort carrying out computing related tasks?
- Is there a difference between different ages in the level of comfort carrying out computing related tasks?
- Does the type of machine used as defined by the hardware specifications obtained, influence online behaviour?

References.

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Appendix A

The Computing General Demographic Questionnaire showing basic layout as would be seen from the users' point of view.

AESOP Computing General Demographic Questionnaire

Thank you for participating in this research project, by completing the following questionnaire and providing a little

information about yourself you will be helping build up our knowledge of distance education students and the ways that students learn to program.					
If you are using a dial-up connection, you may disconnect your computer from the Internet as soon as this form had loaded. You can then complete the questionnaire at your leisure. When you are ready to send the completed form to the OU, reconnect to the Internet. When connected, click the Submit button at the bottom of this page.					
All a	nswers will be anonymised.				
Than	ık you again for your help.				
Kit Rese The	arch Open University			Loga Studer	
k.log	an@open.ac.uk				
1.	Name				
2.	Username			(e.g. abc12)	
3.	E-mail Address			_(6.9. abo12)	
4.	Gender	Male		_	
_		Female			
5.	Age		Under 20 21-25 26-30 31-35 36-40 41-45 46-50 51-55 56-60 61-65 Over 65		
			0 0 0		

6.	Current occupation	
	Postcode	
	How often do you use a con	nouter in your current job?
0.	now often do you use a con	<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>
9.	How often have used a com	<u> </u>
		<pre><ple><ple><ple><ple><ple></ple></ple></ple></ple></ple></pre>
10.	If you use a computer on a spend on the following com a) Work related	weekly basis or more often, please estimate the num puter based activities:
	b) Study related	
	c) Playing games	
	d) Home affairs (finance, record keeping etc.)e) Communication (e-mail etc.)f) Accessing the internet	
11.	How comfortable are you wi	th:
	a) Using different kinds of computing applications?	Please Select ▼
	b) Using programming	Please Select
	languages? c) Using the internet?	Please Select
	d) Using electronic	Please Select
	conferencing or e-mail? e) the process of software installation?	Please Select
12.	Have you had any previous	EST.
		Yes
		© _{No}
		If Yes, please detail your experience in the box below.
13	Have you studied any other	Open University courses before M206?
. ••	The second of th	C Yes
		res
		No If Yes, please detail your experience in the box below.
		Tes, please detail your experience in the box below.
14	Have you studied and still	acuracy that are commuting related?
14.	nave you studied any other	courses that are computing related?
		Yes
		No.
		If Yes, please detail your experience in the box below



15. Because the way we use computers is greatly influenced by the computer itself, we would be very grateful for the following information about your computer system (if known).

ioi and ionoming innomiation	about your compater cyclom (
The main processor	Please Select
If 'Other' please state	
The processor clock speed (MHz) e.g. 233	Please Select
If 'Other' please state	
The amount of system memory / RAM (in MB)	Please Select ▼
If 'Other' please state	
Monitor or screen size	Please Select
If 'Other' please state	
Screen resolution (if you	
don't know the answer, click on Start>Settings>Control	Please Select
panel>Display>Settings tab)	
If 'Other' please state	
Operating system.	Please Select
If 'Other' please state	

Thankyou for taking the time to assist us in our research.

Please press the SUBMIT button to send us your answers.



Appendix B

HTML code of the Computing General Demographic Questionnaire.

```
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=windows-1252">
<meta name="GENERATOR" content="Microsoft FrontPage 5.0">
<meta name="ProgId" content="FrontPage.Editor.Document">
<title>Computing General Demographic Questionnaire</title>
</head>
<body bgcolor="#CCFFFF">
<b><font size="6">AESOP<br>
Computing General Demographic Questionnaire</font></b>
Thank you for participating in this research project, by
completing the following questionnaire and providing a little information about
yourself you will be helping build up our
knowledge of distance education students
<span style="font-family: Times New Roman">and the ways that students learn to
program.</span>
If you are using a dial-up connection, you may
disconnect your computer from the Internet as soon as this form has loaded. You
can then complete the questionnaire at your leisure. When you are ready to send
the completed form to the OU, reconnect to the Internet. When connected, click
the <b>Submit</b> button at the bottom of this page.
All answers will be anonymised.
Thank you again for your help.
Kit Logan<br>
Research Student<br>
The Open University
<a href="mailto:k.logan@open.ac.uk">k.logan@open.ac.uk</a>&nbsp;
<form method="post" action="mailto:k.logan@open.ac.uk" enctype="text/plain">
   <strong>1.</strong>
      <strong>Name</strong>
      <strong> <input type="text" name="pquid1"
size="33"></strong>
    5%" align="right" valign="top"><strong>2.</strong>
      <strong>Username</strong>
      <strong> <input type="text" name="pquid" size="33">
      (e.g. abc12)</strong>
    <strong>3.</strong>
      <strong>E-mail Address</strong>
      <strong> <input type="text" name="pquid2"
size="33"></strong>
    <strong>4.</strong>
      <strong>Gender</strong>
      <input type="radio" name="gen" value="V1">Male<br>
      <input type="radio" name="gen" value="V2">Female
    <strong>5.</strong>
      <strong>Age</strong>
```

```
 
    <i>>
  Under 20
  21-25
  26-30 
  31-35
  36-40 
  41-45
  46-50
  51-55
  56-60 
  61-65
  Over 65
</i>
 <b>
<1>
  <input type="radio" name="Age" value="al">
  <i><b><input type="radio" name="Age"</pre>
value="a2"></b></i>
  <i><b><input type="radio" name="Age"
value="a3"></b></i>
  <i><b><input type="radio" name="Age"</pre>
value="a4"></b></i>
  <i><b><input type="radio" name="Age"</pre>
value="a5"></b></i>
  <i><b><input type="radio" name="Age"</pre>
value="a6"></b></i>
  <i><b><input type="radio" name="Age"</pre>
value="a7"></b></i>
  <i><b><input type="radio" name="Age"</pre>
value="a8"></b></i>
  <i><b><input type="radio" name="Age"</pre>
value="a9"></b></i>
  <i><b><input type="radio" name="Age"</pre>
value="a10"></b></i>
  <i><b><input type="radio" name="Age"</pre>
value="a11"></b></i>
</i></b>
 <strong>6.</strong>
    <strong>Current occupation</strong>
    <strong> <input type="text" name="pquid3"
size="33"></strong>
   <strong>7.</strong>
    <strong>Postcode</strong>
    <strong> <input type="text" name="pquid4"
size="33"></strong>
   <strong>8.</strong>
    <strong>How often do you use a computer
</strong><font size="3"><strong>in
  your </strong></font><b>current j</b><font
  size="3"><strong>ob</strong></font><strong>?</strong>
    
     
     <select size="1" name="pq4">
   <option selected value="&lt;please select&gt;">&lt;please select&gt;</option>
```

```
<option value="1">Never</option>
 <option value="2">Occasionally</option>
 <option value="3">Monthly</option>
 <option value="4">Weekly</option>
 <option value="5">Daily</option>
</select>
 <strong>9.</strong>
  <strong>How often have used a computer in
  any capacity?</strong>
  
   
   <select size="1" name="pq4">
 <option selected value="&lt;please select&gt;">&lt;please select&gt;</option>
 <option value="1">Never</option>
 <option value="2">Occasionally</option>
 <option value="3">Monthly</option>
 <option value="4">Weekly</option>
 <option value="5">Daily</option>
</select>
 <strong>10.</strong>
  <strong>If you use a computer on a weekly
  basis or more often, please estimate the number of hours per week you
  spend on the following computer based activities:</strong>
  
  a) Work related
   <input type="text"
size="6" name="pq5a">
  
  b) Study related
   <input type="text"
size="6" name="pq5a1">
  
  c) Playing games 
   <input type="text"
size="6" name="pq5a2">
  
  d) Home affairs (finance, record keeping etc.)
   <input type="text"
size="6" name="pq5a3">
  
  e) Communication (e-mail etc.)
   <input type="text"
size="6" name="pq5a4">
  
  f)  Accessing the internet
   <input type="text'
size="6" name="pq5a5">
 <strong>11.</strong>
  <strong>How comfortable are you with:</strong>
  
  a) Using different kinds of computing applications?
```

```
<select name="pq6a" size="1">
  <option selected value="Please Select...">Please Select...</option>
  <option value="5">Very Comfortable</option>
  <option value="4">Comfortable</option>
  <option value="3">Fairly Comfortable</option>
  <option value="2">Uncomfortable</option>
  <option value="1">Not at all comfortable</option>
</select>
  
  b) Using programming languages?
  <select name="D1" size="1">
  <option selected value="Please Select...">Please Select...</option>
  <option value="5">Very Comfortable</option>
  <option value="4">Comfortable</option>
  <option value="3">Fairly Comfortable</option>
  <option value="2">Uncomfortable</option>
  <option value="1">Not at all comfortable</option>
</select>
  
  c) Using the internet?
  <select name="D2" size="1">
  <option selected value="Please Select...">Please Select...
  <option value="5">Very Comfortable</option>
  <option value="4">Comfortable</option>
  <option value="3">Fairly Comfortable</option>
  <option value="2">Uncomfortable</option>
  <option value="1">Not at all comfortable</option>
</select>
  
  d) Using electronic conferencing or e-mail?
  <select name="D3" size="1">
  <option selected value="Please Select...">Please Select...</option>
  <option value="5">Very Comfortable</option>
  <option value="4">Comfortable</option>
  <option value="3">Fairly Comfortable</option>
  <option value="2">Uncomfortable</option>
  <option value="1">Not at all comfortable</option>
</select>
  
  e) the process of software installation?
  <select name="D4" size="1">
  <option selected value="Please Select...">Please Select...</option>
  <option value="5">Very Comfortable</option>
  <option value="4">Comfortable</option>
  <option value="3">Fairly Comfortable</option>
  <option value="2">Uncomfortable</option>
  <option value="1">Not at all comfortable</option>
</select>
 <strong>12.</strong>
  <b>Have you had any previous programming
  experience?</b>
  
   
  <input type="radio" name="gen" value="V3">Yes<br>
  <input type="radio" name="gen" value="V4" checked>No
  
   
  If Yes, please detail your experience in the box below.
```

```
 
     
    <textarea name="S1" rows="6" cols="53"></textarea>
   <strong>13.</strong>
    <b>Have you studied any other
    Open University courses before M206?</b>
    
     
    <input type="radio" name="gen" value="V3">Yes<br>
    <input type="radio" name="gen" value="V4" checked>No
    
     
    If Yes, please detail your experience in the box below.
    
     
    <textarea name="S1" rows="6" cols="53"></textarea>
   <strong>14.</strong>
    <b>Have you studied any other courses that
    are computing related?</b>
    
     
    <input type="radio" name="gen" value="V3">Yes<br>
    <input type="radio" name="gen" value="V4" checked>No
    
     
    If Yes, please detail your experience in the box below.
    
     
    <textarea name="S1" rows="6" cols="53"></textarea>
   <strong>15.</strong>
    <b>Because the way we use computers is
    greatly influenced by the computer itself, we would be very grateful for
    the following information about your computer system (if known).</b>
    
    The main processor
    <select name="D5" size="1">
    <option selected value="Please Select...">Please Select...</option>
    <option value="5">Very Comfortable</option>
    <option value="4">Comfortable</option>
    <option value="3">Fairly Comfortable</option>
    <option value="2">Uncomfortable</option>
    <option value="1">Not at all comfortable</option>
  </select>
    
    If 'Other...' please state
    <strong> <input type="text" name="pquid5"
size="33"></strong>
```

```
 
     The processor clock speed (MHz) e.g. 233
     <select name="D6" size="1">
     <option selected value="Please Select...">Please Select...</option>
     <option value="5">Very Comfortable</option>
     <option value="4">Comfortable</option>
     <option value="3">Fairly Comfortable</option>
     <option value="2">Uncomfortable</option>
     <option value="1">Not at all comfortable</option>
  </select>
     
     If 'Other...' please state
     <strong> <input type="text" name="pquid6"
size="33"></strong>
     
     The amount of system memory / RAM (in MB)
     <select name="D7" size="1">
     <option selected value="Please Select...">Please Select...</option>
     <option value="5">Very Comfortable</option>
     <option value="4">Comfortable</option>
     <option value="3">Fairly Comfortable</option>
     <option value="2">Uncomfortable</option>
     <option value="1">Not at all comfortable</option>
  </select>
     
     If 'Other...' please state
     <strong> <input type="text" name="pquid7"
size="33"></strong>
     
     Monitor or screen size
     <select name="D8" size="1">
     <option selected value="Please Select...">Please Select...
     <option value="5">Very Comfortable</option>
     <option value="4">Comfortable</option>
     <option value="3">Fairly Comfortable</option>
     <option value="2">Uncomfortable</option>
     <option value="1">Not at all comfortable</option>
  </select>
     
     If 'Other...' please state
     <strong> <input type="text" name="pquid8"
size="33"></strong>
     
     Screen resolution (if you don't know the answer, click
     on Start>Settings>Control panel>Display>Settings tab)
     <select name="D9" size="1">
     <option selected value="Please Select...">Please Select...
     <option value="5">Very Comfortable</option>
     <option value="4">Comfortable</option>
     <option value="3">Fairly Comfortable</option>
     <option value="2">Uncomfortable</option>
     <option value="1">Not at all comfortable</option>
  </select>
     
     If 'Other...' please state
```

```
<strong> <input type="text" name="pquid9"
size="33"></strong>
      
       Operating system.
       <select name="D10" size="1">
       <option selected value="Please Select...">Please Select...</option>
       <option value="5">Very Comfortable</option>
       <option value="4">Comfortable</option>
       <option value="3">Fairly Comfortable</option>
       <option value="2">Uncomfortable</option>
       <option value="1">Not at all comfortable</option>
   </select>
      
       If 'Other...' please state
       <strong> <input type="text" name="pquid10"
size="33"></strong>
     <b>
</b>
    
   <i><b>Thankyou for
   taking the time to assist us in our research.</b></i>
   <i>Please press
   the SUBMIT button to send us your answers</i>.
   <input type="submit" name="Submit"</pre>
value="Submit">                                                                                                                                                                                                                                                                                                                                                  &nb
bsp;   
   <input type="reset" name="Clear" value="Clear">
    
</form>
 
</body>
</html>
```