INCLUSIVE, ACCESSIBLE, ARCHAEOLOGY
(HEFCE FDTL5)

Phase 4a

FIELD TRIALS AT EAST HOLTON:

ARCHIVE REPORT

(December 2006)

Tim Phillips, Stephanie Le Scouiller,
Iain Hewitt, Sue Churchill,
Roberta Gilchrist & Geoff Cook

LAYOUT OF THE REPORT

INTRODUCTION

This archive report provides a summary of the Phase 4a Field Trials at Bournemouth University's East Holton training excavation for the 'Inclusive, Accessible, Archaeology' project, funded by the Higher Education Funding Council for England (HEFCE FDTL5) for developments in teaching and learning. The project is directed by Professor Roberta Gilchrist of the Department of Archaeology at the University of Reading in partnership with the School of Conservation Sciences at Bournemouth University and in collaboration with the Research Group for Inclusive Environments (School of Construction Management) at Reading. The Council for British Archaeology (CBA) is involved in the dissemination of the project's results and the project also has the active support of the HE Academy Subject Centre for History, Classics and Archaeology; the Institute of Field Archaeologists (IFA); Oxford Archaeology; and English Heritage.

A. PROJECT SUMMARY

GOALS

The project aims to address the dual issues of disability and transferable skills in the teaching of archaeological fieldwork. It will:

- Increase awareness of disability issues in archaeology.
- Improve the integration of disability in fieldwork teaching.
- Improve all students' awareness of their development of transferable skills for the transition to employability through participating in archaeological fieldwork.

B. PROJECT OUTCOMES

- The integration of disabled students into archaeological fieldwork training and related activities according to, and consistent with, the mandatory legal requirements of disability legislation.
- A change of emphasis from 'disability' to 'ability': rather than excluding or categorising individuals, all students will be engaged actively in evaluating their own skills. This will be achieved by developing a generic self-evaluation tool kit suitable for use by all students being taught fieldwork in archaeology and other fieldwork related subjects.
- Dissemination of the results through published guidelines, websites, workshops and conference presentations carried out in

association with the project's professional stakeholders (the Institute of Field Archaeologists, the Council for British Archaeology, English Heritage, and Oxford Archaeology).

C. PROGRAMME OF WORK

- Phase 1 – Assessment (February – July 2005, 6 months):

Evaluate through questionnaires the issues surrounding, and current practices relating to, disability and archaeological fieldwork.

- Phase 2 – Characterisation (August – December 2005, 5 months):

Develop a generic method of assessing physical and cognitive abilities of disabled/non-disabled people to participate in archaeological fieldwork training.

- Phase 3 – Controlled Testing (January – June 2006, 6 months):

Test and refine the characterisation of archaeological field activities and environments through real-world tests in controlled laboratory conditions; produce pro-forma of self-evaluation tool kit.

- Phase 4 – Field Trials (July – October 2006, 4 months):

Assess suitability of controlled tests and generic method of evaluation through field trials on archaeological excavations.

- Phase 5a – Evaluation (November 2006 – January 2007, 3 months):

Refine the project's deliverables.

- Phase 5b – Wider Dissemination (February – April 2007, 3 months):

Wider dissemination of project results.

- Phase 6 – Continuation After Funding Ends (May 2007 on):

Integrate awareness of disability into archaeological fieldwork in training, employment, and the development of transferable skills in conjunction with archaeology subject providers and professional bodies.

D. MODELS OF DISABILITY

Disability has been described and understood through a number of different models which attempt to define the experience of being disabled.

THE MEDICAL MODEL

This considers a disabled person as ‘ill’, a subject for treatment and cure. It does not address the social, economic and environmental experience of a disabled person.

THE CHARITABLE MODEL

This sees a disabled person as a tragic individual. They are an object of pity that needs to be cared for and protected from the rigours of everyday life.

THE SOCIAL MODEL

This shifts the emphasis of considering that there is something ‘wrong’ with the disabled person to the view that disabled people are often excluded from participating in everyday activities because of the physical, social, economic and attitudinal ‘barriers’ created by society.

This model is behind the spirit of the recent disability and access legislation (Disability and Discrimination Acts 1995 and 2005, Special Educational Needs and Disability Act 2001) and forms the basis for the ethos of inclusiveness.

In reality, it is unlikely that it will be possible to provide environments or develop activities where everyone can do everything, and this will certainly be the case with some tasks undertaken in archaeology. People, both disabled and non-disabled, will have different levels of ability to undertake tasks. For some, restrictions in their ability may preclude them from full participation. However, the criteria used to establish whether a person can take part in an activity should always be based on their individual abilities, not simply whether they are a ‘disabled’ or ‘non-disabled’ person.

Adopting the social model also requires us to examine the nature of the activity and determine if it is *how* the activity takes place that precludes involvement, and to ask whether the process be altered to facilitate greater inclusion. The fact that it has always been done in a particular way is not the answer, especially if the procedure could be altered so

that the number of people that can be included in the activity would be increased.

To determine the extent to which disabled and non-disabled people can effectively participate in the activities associated with archaeology, it is necessary to determine their individual abilities to undertake the typical tasks that comprise the ‘archaeology experience’. The self-evaluation tool kit that the project is developing will, therefore, be for use by all disabled and non-disabled students. In using it, all students will be able to evaluate their own developing archaeological and transferable skills.

Such self-evaluation by all students will ensure that the opportunity of full participation and inclusion is based on an ‘ability to do’ which is the driving force behind most disability and access legislation.

I METHODOLOGY

A. DEVISING THE METHODOLOGY

The purpose of the Field Trials carried out on the East Holton training excavation was to test the self-evaluation tool kit under real archaeological fieldwork conditions. The development of the tool kit relates directly to three previous reports produced by the project:

- Phase 1 – *Disability and Archaeological Fieldwork* (Phillips & Gilchrist 2005):
    - From the results of a questionnaire survey of the Archaeology subject providers, the skills and techniques being taught on archaeological fieldwork training were established.
- Phase 2 – *A Characterisation of Archaeological Field Techniques by Physical and Cognitive Demands* (Embleton et al 2006):
    - This provides a detailed analysis of the physical and cognitive abilities required to perform the archaeological fieldwork tasks identified in the Phase 1 Report; each task may require a number of different abilities to be used at the same time.
    - The report also provides details of the learning outcomes and the various skills (archaeological and transferable) that both the subject providers and the students themselves consider are acquired by participating in archaeological fieldwork training; gaining these skills is an integral part of archaeological fieldwork training.
    - It should be emphasised that, in many ways, the characterisation document is a theoretical piece of work, as it is based on observing a small number of able-bodied individuals performing certain tasks.
    - This does not mean that individuals with particular disabilities may not be able to accomplish these tasks; the same task could be satisfactorily completed, and the subsequent learning outcomes achieved, with varying degrees of adjustment and it may be that in some cases no adjustment at all will be necessary.

- Phase 3 – *Controlled Testing: Archive Report* (Phillips et al 2006):

    - The theory inherent in the Phase 2 Report needed to be tested under practical conditions with a variety of disabled and non-disabled subjects.
    - A series of everyday tasks was devised and tested to ensure that they replicated the actual archaeological activities.
    - From these, the pro forma of the self-evaluation tool kit was developed.

B. THE PHASE 4a METHODOLOGY

The draft self-evaluation tool kit used on the East Holton excavations was divided into four parts. The first three parts were the same as used in the Phase 3 controlled tests (Phillips et al 2006) as the East Holton excavations ran concurrently with the end of the testing. The Part 4 document was an additional section.

PART I – SELF-EVALUATION OF ABILITIES

This was to be completed before participating in fieldwork training. It consisted of a series of questions about everyday activities designed to identify an individual's abilities in relation to particular archaeological tasks and transferable skills. Each question was divided into several parts. If an individual replied negatively to the first part of a question, the other parts would help to identify if the activity could be successfully done in another way.

PART II – ABILITIES AND TASKS: PRE-TESTING CHECKLIST

This was completed before participating in fieldwork training. Through comparison with the questions successfully answered in Part I, the individual was given an idea of their 'potential' ability to participate in particular archaeological activities and their transferable skills.

PART III – ABILITIES AND TASKS: POST-TESTING CHECKLIST

This was completed after participating in fieldwork training. It provides a detailed summary of an individual's 'actual' abilities, in comparison to their 'potential' abilities identified in Part II.

PART 4 – SELF-EVALUATION OF SKILLS

This was completed after participating in fieldwork training. With this document the participants could evaluate how well they had performed at particular tasks and their gaining of transferable skills.

C. USING THE METHODOLOGY

1. THE SELF-EVALUATION TOOL KIT

The participants were asked to complete the Part 1 document (self-evaluation of abilities). From this information, the project team then completed the Part 2 document (pre-testing checklist). After they had completed their time on the training excavation, the participants were asked to complete the Part 3 and Part 4 documents in the light of their performance and experiences.

A. Part 1 Questionnaire:

This consisted of a series of questions about the ability to perform a number of everyday tasks that could be related to doing a particular archaeological activity, having a certain transferable skill or a physical or cognitive ability. For each numbered question there were two or three possible alternative questions that could be answered in declining order of difficulty (A, B, C or A, B). The subjects were instructed to attempt the 'A' question first and, if they answered 'yes', to move on to the next numbered question. If they answered 'no' to the 'A' question, they were instructed to move to the 'B' question and, if necessary, the 'C' question before moving on to the next numbered question (**Example 1**). To judge the ability to see colours and textures visual tests were included.

Example 1 A sample question from the Part 1 Questionnaire

	Question	Y	N
A	I can push a spade into the ground		B
B	I can push a sharp pole into the ground		C
C	I can push a garden trowel into the ground		

B. Part 2 Pre-Testing Abilities

Each of the questions in the Part 1 Questionnaire related to one or more specific archaeological tasks, transferable skills or a physical/cognitive ability. If a subject answered 'yes' at any point in a numbered question

(A, B or C), they were deemed to be potentially able to do that activity. The archaeological tasks listed in the Part 2 document were those that the subject providers teach and assess in archaeological fieldwork training (Phillips and Gilchrist 2005) and the transferable skills those that they deem students gain through participating in archaeological fieldwork (Embleton et al 2006). To these were added the physical and cognitive abilities that the project's 'Characterisation of Archaeological Field Activities' (ibid) had suggested were necessary to participate in archaeological fieldwork. The tasks, skills and abilities in the Part 2 document are listed in **Table 1**.

Table 1 Archaeological tasks, transferable skills, and physical and cognitive abilities listed in the Part 2 document

- Site Records (all activities):
  - Comprehending site records
  - Completing site records – descriptions, numerical data
  - Reading and understanding maps and plans accurately
- Excavation:
  - Cutting turf
  - Lifting turf
  - Excavating – pick axe, mattock and draw hoe
  - Excavating – trowelling
  - Excavating – brushing
  - Excavating – secateurs
  - Disposing of waste material – on a spade, by hand, in a wheelbarrow, in a bucket
  - Disposing of waste material – empty wheelbarrow, empty bucket
  - Dry sieving
  - Using a sprayer
  - Discerning stratigraphy – tactile, vision, colour, texture
- Planning:
  - Laying a tape measure
  - Reading a tape measure accurately
  - Seeing area to be planned
  - Drawing – ability, use of graph paper
- Processing of Artefacts:
  - Handling finds – small-, medium-, large-sized
  - Washing finds – small-, medium-, large-sized
  - Sorting finds – small-, medium-, large-sized
  - Identifying finds – tactile, vision, colour, texture
  - Marking finds

- Environmental Sampling:
  - Taking bulk samples
  - Wet sieving
  - Sorting samples – small-, medium-, large-sized
  - Sorting samples – tactile, vision, colour, texture
  - Marking sample trays/boxes
- Surveying:
  - Laying a tape measure
  - Reading a tape measure accurately
  - Ranging poles – hold
  - Ranging poles – line up
- Instrument Survey:
  - Measuring staff – holding
  - Measuring staff – extending
  - Level/Total Station – setting up tripod
  - Level/Total Station – attaching instrument to tripod
  - Level/Total Station – seeing target and hairlines
  - Level/Total Station – manual focussing
  - Level – reading measurements
  - Total Station – attaching prism to staff
  - Total Station – reading measurements on digital display
  - Total Station – hearing audible signals
  - Prismatic compass – using
  - Optical square –using
- Surface Survey:
  - Field walking/survey – traversing
  - Field walking – identifying material
  - Field walking – picking up material
  - Field survey – identifying surface features
- Geophysical Survey:
  - Identifying walking line
  - Gradiometry – using instrument
  - Gradiometry – hearing audible signals
  - Resistivity – using instrument
- Carrying Equipment:
  - Carrying equipment on back
  - Carrying equipment in hands
- Physical Abilities:
  - Squatting
  - Kneeling
  - Sitting
  - Sitting with legs pulled up to chest
  - Sitting with legs to one side
  - Lying down
  - Strength – medium, high
  - Physical stamina – long, medium, short period

- Cognitive Abilities:
  - Vision – colour, texture, physical details, physical features, printed details, close and distant
  - Hearing
  - Touch
  - Balance
  - Spatial awareness
  - Hand/eye co-ordination
  - Comprehension – written material, drawings, verbal information
  - Organisation/categorisation
  - Short-, long-term memory
  - Recognition
  - Mental stamina – long, medium, short period
- Transferable Skills:
  - Communication – conveying, understanding information
  - Communication – at a distance
  - Independent working
  - Team working
  - Time management
  - Adapting to a new environment
  - Analysing qualitative data
  - Analysing quantitative data
  - Problem solving
  - Decision making
  - Social skills.

C. Part 3 Actual Abilities:

The Part 3 document comprised exactly the same list as Part 2, as well as boxes for ‘Able’ and ‘Unable’. Using this document, the participants could evaluate their abilities. This could then be compared with the Part 2 document and any future uses of the tool kit when participating in fieldwork training.

D. Part 4 Evaluation of Skills:

The Part 4 document listed the key archaeological and transferable skills to be gained through participation in fieldwork training, and a 3-point scale for self-evaluation:

H – High
A – Average
L – Low
N – Have not done this activity

The archaeological and transferable skills included in the document are listed in **Table 2**.

Table 2 Key archaeological and transferable skills in the Part 4 document

1. Archaeological Skills

- Site Records (all activities):
  - Comprehending site records
  - Completing site records – descriptions
  - Completing site records – numerical data
  - Reading and understanding maps and plans accurately
  - Understanding of what is involved in compiling site records and the overall outcomes
- Excavation:
  - Cutting turf
  - Lifting turf
  - Excavating with large tools
  - Excavating with small tools
  - Discerning stratigraphy
  - Using a sprayer
  - Disposing of spoil
  - Understanding of what is involved in the process of excavation and the overall outcomes
- Planning:
  - Drawing an archaeological plan
  - Section drawing
  - Taking off-sets
  - Understanding of what is involved in the process of site planning and the overall outcomes
- Processing of Artefacts:
  - Washing artefacts
  - Sorting artefacts
  - Identifying artefacts
  - Understanding of what is involved in the processing of artefacts and the overall outcomes
- Environmental Sampling:
  - Flotation and wet sieving
  - Sorting material
  - Understanding of what is involved in the process of environmental sampling and the overall outcomes

- Surveying:
  - Using tape measures
  - Using ranging poles
  - Accurate recording of measurements
  - Understanding of what is involved in the process of surveying and the overall outcomes
- Instrument Survey:
  - Using a level
  - Using a Total Station
  - Using a prismatic compass
  - Using an optical square
  - Accurate recording of measurements
  - Understanding of what is involved in the process of instrument survey and the overall outcomes
- Surface Survey:
  - Field walking
  - Field survey
  - Understanding of what is involved in the process of surface survey and the overall outcomes
- Geophysical Survey:
  - Using a gradiometer
  - Using a resistance meter
  - Understanding of what is involved in the process of geophysical survey and the overall outcomes.

2. Transferable Skills

- Communication
- Independent working
- Team working
- Time management
- Adapting to a new environment
- Problem solving
- Decision making
- Social skills
- Analysing qualitative data
- Analysing quantitative data
- Analysing digital data
- Physical stamina
- Mental stamina
- An appreciation of site Health and Safety
- Understanding of the importance and applications of transferable skills.

II THE EAST HOLTON TRAINING EXCAVATION

At Bournemouth University the School of Conservation Sciences has designed two research projects that provide opportunities for undergraduate training, one of these being at East Holton. The School has developed a multi-course approach to the teaching of archaeology, there being seven 'programmes' in all, most of which share some common elements. However, two of the programmes have different fieldwork requirements to the other five and for this reason training provision has to be flexible. This flexibility has determined that the administration of the self-evaluation package varies in detail and the period for reflection between Part 1 and Part 4 also differs.

East Holton is situated in Dorset on the west side of Poole Harbour, between the towns of Poole and Wareham. A two-week field programme takes place at the beginning of June and this is divided into two week long components: field survey and excavation. Second Year (Level I) students of BSc Marine Archaeology; BSc Heritage Conservation and FdSc Field Archaeology take part in the field survey but only BSc Heritage Conservation students are involved in the limited excavation programme during the week following. This allows the participants to experience basic manual excavation techniques such as setting out a baseline, digging a sample trench or test pit, measured drawing and familiarity with context records. There is a daily mini-bus service from and to the University.

However, the situation is more complicated than this because at the end of the first week Marine Archaeology students depart to take part in a three-week coastal survey at Salcombe (Devon). Hostel accommodation is arranged. The Heritage Conservation cohort then undertakes one week of heath land studies and a further week of buildings study. Site visits are organised on a daily basis. In this varied diet of field studies, it was necessary administer Parts 1 and 2 of the self-valuation tool kit at the end of the second week at East Holton. However, Parts 3 and 4 had to be held over until the start of the following term allowing for a reflective interlude of three months.

For Parts 1 and 2 of the tool kit the sample was 100 percent of BSc Heritage Conservation and BSc Marine Archaeology. FdSc students were not included in the East Holton sample because they were later to be involved in the other research project at Knowlton. By October, for a variety of reasons, cohort numbers had reduced slightly and this affected the sample size for the administration of Parts 3 and 4 (October).

Laying out and digging test pits at East Holton
(Courtesy of Brian James)

III THE SAMPLE OF PARTICIPANTS

All 18 students involved in the training excavation participated in the Phase 4a Field Trials. These included mainly non-disabled students and one disabled participant (**Table 3**).

Table 3 Participants in the Phase 4a Field Trials

No	Name*	Sex	Disability	Degree Programme
1	Alison	F	Non-disabled	BSc Archaeology
2	Harry	M	Non-disabled	Marine Archaeology
3	Karen	F	Non-disabled	Marine Archaeology
4	Jane	F	Non-disabled	Marine Archaeology
5	Paul	M	Non-disabled	Marine Archaeology
6	Sarah	F	Non-disabled	Heritage Conservation
7	Linda	F	Non-disabled	Heritage Conservation
8	Steven	M	Non-disabled	Heritage Conservation
9	Rita	F	Non-disabled	Marine Archaeology
10	Janet	F	Non-disabled	Marine Archaeology
11	Elaine	F	Non-disabled	Marine Archaeology
12	Simon	M	Non-disabled	Marine Archaeology
13	Nigel	M	Non-disabled	Marine Archaeology
14	Matthew	M	Non-disabled	Heritage Conservation
15	Hannah	F	Restricted Mobility	Heritage Conservation
16	Charles	M	Non-disabled	Marine Archaeology
17	John	M	Non-disabled	Marine Archaeology
18	Alan	M	Non-disabled	Heritage Conservation

*Individual names have been changed to preserve anonymity

It should be emphasised that the group of students involved in the East Holton field trial were mostly non-disabled.

IV LIMITATIONS TO THE FIELD TRIALS

There were a number of limitations to the Field Trials. These were due to the scale and nature of the training excavation:

- Not all the archaeological activities listed in the self-evaluation tool kit were carried out by every participant on the site; this was because the nature of the fieldwork was limited in its extent.

- Another limitation related to the layout of the pro forma of the self-evaluation tool kit. The questions in Part 1 were ‘graded’ (A, B, C or A, B), but this grading was not reflected in Parts 2 and 3 which only recorded whether a subject was able to do a particular activity or not. In consequence, the pro forma could not reflect different levels of ability or track the development of abilities.

- Of the 18 students involved in the fieldwork, the Part 3 and Part 4 documents were only returned by half of the sample of participants.

- Despite these limitations, it was possible to give the draft self-evaluation tool kit a preliminary Field Trial on the East Holton excavations.

V STATISTICAL COMPARISON OF THE PART 2 AND PART 3 DOCUMENTS

A. METHOD

The Part 2 document as completed by the subjects lists the key archaeological tasks that they should be potentially ‘able’ or ‘unable’ to do as derived from the answers given to the Part 1 questionnaire. The Part 3 document corresponds to the same set of key archaeological tasks. Having two identical sets of data, a comparison of the binary answers ‘able’ or ‘unable’ was carried out between the data obtained by anticipation in Part 2 and the data in the Part 3 document.

The McNemar test was performed to compare the results between the Part 2 and Part 3 documents. This test is designed for non-parametric data when the 2 variables to compare (Task Ability in Part 2 and Task Ability in Part 3) are binary and related. This means that the answers obtained for each task in Part 2 and Part 3 come from the same individuals. In this test each task is considered as a variable. For two binary variables, four combinations of the categories (answers) are possible. The results for the task ‘Completing site records - description’ are shown in **Example 2**.

Example 2 Comparison between the Part 2 and Part 3 documents using the McNemar test

	Able	Unable
Able	6	3
Unable	0	0

The number in each cell corresponds to the number of participants. A perfect prediction of ‘Task Ability’ would find all the participants in the diagonal top left/bottom right of the table where all the participants who were ‘able’ to do a specific task in Part 2, would also be ‘able’ to do so in Part 3. Similarly, all the participants who were ‘unable’ to do a specific task in Part 2 would also be ‘unable’ to do so in Part 3. In **Example 2** there are 6 participants who were predicted to be able to ‘Complete site records-description’ in Part 2 and who were able to achieve the same task when asked to perform it in the controlled testing (Part 3). The top right/bottom left diagonal cells includes participants who gave a different response to the two variables. In this case, 3 participants who were predicted to be able to achieve this task were unable to do so under real fieldwork conditions.

The McNemar test determines if the proportion of participants in the first category ‘able’ of one variable (Task Ability in Part 2) equals the proportion of participants in the first category ‘able’ of another variable (Task Ability in Part 3).The test assumes these proportions are equal, computes expected frequencies, and uses a Chi-square statistic to compare the expected to the observed frequencies.

B. RESULTS

The binary comparison between the Part 2 and Part 3 documents only showed a significant difference between ‘able’ and ‘unable’ for one task:

- Mental stamina P-Value 0.125 (over-estimated).

This has a confidence level of less than 95%, but greater than 80%.

C. DISCUSSION

Although the statistical comparison appears to show that the draft tool kit used in the East Holton field trials worked extremely well, there is a serious limitation to the results. They are based on whether a participant was ‘able’ or ‘unable’ to do a particular task. Whether a subject needed adjustments or assistance to successfully complete a particular task is not reflected in this statistical analysis. This information can only be arrived at by considering each participant on an individual basis and investigating whether difficulties with particular tasks or abilities could be anticipated based on their replies to the questions in the Phase 1 document.

The full details of the results of statistical comparisons can be found in **Appendix I**.

VI PART 4 SELF-EVALUATION OF SKILLS

A. METHOD

The average rating for each task was calculated and the activities with the highest and lowest averages were noted. The results of this analysis can be found in **Appendix II**.

B. RESULTS

For most of the tasks, the majority of responses given by the students to measure their skill levels were rated as ‘average’ (2), and ‘high’ (3) on the 1 to 3 point scale. A few participants rated themselves as ‘low’ (1) for the following tasks:

- Comprehending site records
- Completing site records – descriptions
- Completing site records – numerical data
- Understanding site records
- Cutting
- Lifting turf
- Taking off-sets
- Understanding planning
- Identifying artefacts
- Understanding the processing of artefacts
- Flotation and wet sieving
- Understanding environmental sampling
- Using a magnetometer
- Time management
- Adapting to a new environment
- Decision making
- Analysing digital data
- An appreciation of site Health and Safety.

The tasks having the lowest average ratings (1.40 – 1.88) among the students were:

- Understanding environmental sampling 1.40
- Flotation and wet sieving 1.50
- Completing site records – numerical data 1.75
- Taking off-sets 1.75
- Understanding planning 1.75
- Understanding site records 1.88

The tasks having the highest average ratings (2.67 – 2.78) among the students were:

- Understanding surveying 2.67
- Independent working 2.67
- Excavation – large tools 2.75
- Disposal of spoil 2.75
- Using tape measures 2.78
- Using ranging poles 2.78

C. SECTION SUMMARY

The lowest ratings were given for:

- Aspects of site recording
- Planning
- Environmental sampling.

The highest ratings were given for:

- The heavier aspects of excavation
- Surveying
- Independent working.

VII THE INDIVIDUAL PARTICIPANTS

A. THE PARTICIPANTS

1. ALISON

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Alison would be able to participate successfully in all the activities. On the questionnaire Alison had qualified some of her answers:

- Hearing – ‘This question would depend on the type of deafness. I can hear a microwave but I can’t hear a doorbell or a telephone, so the answer might be misleading’.
- Squatting and kneeling – ‘I just can’t get back up again, may be useful to re-word this question’.
- Physical stamina – ‘Not sure what constitutes a light physical task’.
- Long-term memory – ‘This is an odd question. I can remember some events, but not many. The honest answer is yes to all three’.
- Problem-solving – ‘Have put yes, but not 100% sure what the question is asking’.

There were no Part 3 or Part 4 returns from Alison.

2. HARRY

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Harry may have difficulties with the following activities:

- Completing site records – descriptions
- Adapting to a new environment.

POST-FIELDWORK ABILITIES

In the fieldwork Harry had no difficulties with any of the activities that he carried out.

SELF-EVALUATION OF SKILLS

Harry rated himself as ‘high’ for surface and geophysical survey; between ‘average’ and ‘high’ for site records, excavation, planning, instrument survey and transferable skills; and ‘average’ for processing of artefacts and surveying. He only rated himself ‘low’ for adapting to a new environment.

SUMMARY

- It was expected that Harry would experience very few difficulties, and this proved to be the case.
- Difficulty was expected with adapting to a new environment and, although he did not state this on the Part 3 document, he rated himself as ‘low’ for this ability in the self-evaluation of skills.

3. KAREN

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Karen may have difficulties with the following activities:

- Comprehending site records
- Completing site records – descriptions
- Excavation – brushing
- Marking finds
- Seeing distant objects through a level and a Total Station.
- Short-term memory
- Mental stamina
- Analysing qualitative data
- Social skills.

There were no Part 3 or Part 4 returns from Karen.

4. JANE

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Jane may have difficulties with the following activities:

- Comprehending site records
- Completing site records – descriptions and numerical data
- Reading and understanding maps and plans
- Excavation – pick axe and mattock
- Excavation – trowelling
- Excavation – brushing
- Excavation – secateurs
- Using and emptying a wheelbarrow
- Dry sieving
- Using a sprayer
- Laying and reading a tape measure
- Washing finds
- Sorting finds
- Marking finds
- Pushing a ranging pole into the ground
- Lining up ranging poles
- Extending a measuring staff
- Erecting an instrument tripod and attaching an instrument to it
- Seeing close objects through a level and a Total Station
- Instrument focussing – manual adjustment
- Total Station – read digital display
- Hearing
- Field walking/survey – traverse in a straight line, pick up artefacts
- Field survey – identify surface features
- Use a gradiometer and a resistance meter
- Carry equipment on back
- Strength
- Physical stamina
- Spatial awareness
- Short-term memory
- Mental stamina
- Communication – conveying information, at a distance
- Independent working

- Team working
- Time management
- Analysing qualitative data
- Social skills.

The results also suggested that Jane would not be able to do the following activities:

- Level/Total Station – see hairlines and target
- Squat
- Kneel
- Long-term memory
- Recognition
- Communication – conveying information
- Analysing quantitative data
- Problem solving
- Decision making.

There were no Part 3 or Part 4 returns from Jane.

5. PAUL

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Paul may have difficulties with the following activities:

- Completing site records – descriptions
- Drawing – ability
- Field walking/survey – traverse in a straight line
- Spatial awareness
- Short-term memory
- Mental stamina.

POST-FIELDWORK ABILITIES

In the fieldwork Paul had difficulties with the following activities:

- Discern stratigraphy – tactile, texture
- Sort environmental samples – tactile, colour, texture, vision

- Physical stamina – medium
- Short-term memory
- Recognition
- Mental stamina – medium.

SELF-EVALUATION OF SKILLS

Paul rated himself as ‘high’ for surveying and surface survey; between ‘average’ and ‘high’ for site records, excavation, planning, processing of artefacts, instrument survey and transferable skills; and ‘average’ for geophysical survey. He only rated himself ‘low’ for aspects of environmental sampling.

SUMMARY

- It was expected that Paul would have difficulties with a few of the activities. In the event, he experienced difficulties with a limited range of activities that were different from what was expected, apart from short-term memory and mental stamina.
- There was a direct correlation between difficulties experienced with environmental sampling and a ‘low’ rating in the self-evaluation of skills.

6. SARAH

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Sarah may have difficulties with the following activities:

- Completing site records – descriptions and numerical data
- *Excavation – pick axe
- Drawing – ability
- Squatting
- Kneeling
- Short-term memory
- Long-term memory
- Mental stamina.

* Did not do this activity

POST-FIELDWORK ABILITIES

In the fieldwork Sarah had difficulties with the following activities:

- Using and emptying a wheelbarrow
- Discern stratigraphy – tactile, vision, texture
- Physical stamina – medium
- Mental stamina – medium.

SELF-EVALUATION OF SKILLS

Sarah rated herself as ‘high’ for geophysical survey; between ‘average’ and ‘high’ for excavation, instrument survey and transferable skills; and ‘average’ for surface survey. She rated herself ‘low’ for site recording, planning and processing of artefacts.

SUMMARY

- It was expected that Sarah would have difficulties with a few of the activities. In the event, this proved to be the case but they were a limited range of different activities.
- There was no correlation between the activities that she experienced difficulties with and the activities she rated herself as ‘low’ for in the self-evaluation of skills.

7. LINDA

Non-disabled.

DETAILS OF DISABILITY

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Linda may have difficulties with the following activities:

- Completing site records – descriptions and numerical data
- *Excavation – pick axe
- Laying a tape measure
- Drawing – ability
- *Marking finds
- Level/Total Station – see hairlines and target
- Squatting
- Spatial awareness
- Hand/eye co-ordination

- Short-term memory
- Long-term memory
- Recognition
- Mental stamina
- Time management
- Analysing qualitative data
- Analysing quantitative data
- Problem solving.

* Did not do this activity

POST-FIELDWORK ABILITIES

In the fieldwork Linda had difficulties with the following activities:

- Carry equipment on back
- Strength – medium
- Physical stamina – medium
- Analysing qualitative data
- Analysing quantitative data.

SELF-EVALUATION OF SKILLS

Linda rated herself as ‘high’ for surveying; ‘average’ for excavation, planning, processing of artefacts, instrument survey, surface and geophysical survey, and transferable skills. She rated herself ‘low’ for site recording and time management.

SUMMARY

- It was expected that Linda could experience difficulties with a number of activities. In the event, her difficulties related to general physical aspects of excavation and the analysis of data.
- There was little relationship between the tasks and abilities where she experienced difficulties and her self-evaluation of skills.

8. STEVEN

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Steven may have difficulties with the following activities:

- Completing site records – descriptions
- *Excavation – pick axe
- Drawing – ability
- Field walking/survey – traverse in a straight line
- Long-term memory
- Mental stamina
- Independent working
- Time management
- Adapting to a new environment
- Analysing quantitative data
- Decision making.

* Did not do this activity

On the questionnaire Steven had qualified his answer to one question:

- Spatial awareness – ‘Don’t understand the question’.

POST-FIELDWORK ABILITIES

In the fieldwork Steven had difficulties with the following activities:

- Comprehending site records
- Complete site records – descriptions, numerical data
- Emptying a wheelbarrow
- Discern stratigraphy – tactile
- Drawing – use graph paper
- Carrying equipment on back
- Vision – close and distant.

SELF-EVALUATION OF SKILLS

Steven rated himself as between ‘average’ and ‘high’ for excavation, processing of artefacts, surveying and transferable skills; and ‘average’

for site recording, planning instrument and surface survey, and geophysical survey.

SUMMARY

- It was expected that Steven would have difficulties with a number of the activities. In the event, this proved to be the case but they were a limited range of different activities.
- Steven rated himself at a fairly high level in the self-evaluation of skills.

9. RITA

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Rita may have difficulties with the following activities:

- Long-term memory
- Mental stamina
- Time management.

POST-FIELDWORK ABILITIES

In the fieldwork Rita had difficulties with the following activities:

- Magnetometry – use an instrument, identify walking line
- Physical stamina – medium
- Mental stamina – medium.

SELF-EVALUATION OF SKILLS

Rita rated herself as ‘high’ for excavation and surface survey; between ‘average’ and ‘high’ for site recording, processing of artefacts, surveying and transferable skills; ‘average’ for instrument survey; and between ‘low’ and ‘average’ for site planning and geophysical survey.

SUMMARY

- It was expected that Rita would have difficulties with a few of the transferable skills and abilities. In the event she experienced difficulties with one archaeological task and the physical and psychological rigours of fieldwork.
- Her difficulties with geophysical survey were reflected in her self-evaluation of skills.

10. JANET

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Janet may have difficulties with the following activities:

- Drawing – ability
- Hand/eye co-ordination
- Short-term memory
- Long-term memory
- Mental stamina.

On the questionnaire Janet had qualified her answer to one question:

- Physical position – 'Occasionally my knees will stiffen and have to hobble for a few minutes afterwards'.

There were no Part 3 or Part 4 returns from Janet.

11. ELAINE

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Elaine may have difficulties with the following activities:

- Completing site records – descriptions

- Laying a tape measure
- Long-term memory
- Mental stamina
- Communication – conveying information
- Analysing quantitative data.

There were no Part 3 or Part 4 returns from Elaine.

12. SIMON

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Simon may have difficulties with the following activities:

- Using a sprayer
- Tactile skills
- Reading a tape measure
- Washing and sorting finds
- Extending a measuring staff
- Erecting an instrument tripod
- Level/Total Station – manual focussing
- Use level/Total Station – visually
- Total Station – read digital screen
- Use a gradiometer
- Short-term memory
- Long-term memory
- Time management
- Analysing quantitative data.

There were no Part 3 or Part 4 returns from Simon.

13. NIGEL

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Nigel may have difficulties with the following activities:

- Mental stamina
- Time management
- Analysing quantitative data.

There were no Part 3 or Part 4 returns from Nigel.

14. MATTHEW

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Matthew may have difficulties with the following activities:

- Decision making
- Social skills.

POST-FIELDWORK ABILITIES

Matthew had difficulties with the following activities:

- Comprehending site records
- Complete site records – descriptions, numerical data
- Using a wheelbarrow
- Discern stratigraphy – tactile, texture.

SELF-EVALUATION OF SKILLS

Matthew rated himself as ‘high’ for surveying; between ‘average’ and ‘high’ for excavation, planning, instrument survey and transferable skills; ‘average’ for processing of artefacts, and surface and geophysical

survey. He rated himself between ‘low’ and ‘average’ for site recording; and low for adapting to a new environment, decision making and analysing digital data.

SUMMARY

- It was expected that Matthew could have difficulties with a couple of the transferable skills. In the event, he experienced difficulties with a number of the archaeological activities.
- His ‘low’ rating for site recording in the self-evaluation of skills reflected some of the difficulties he experienced.

15. HANNAH

DETAILS OF DISABILITY

Restricted mobility.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Hannah may have difficulties with the following activities:

- Completing site records – descriptions and numerical data
- Cutting and lifting turf
- Excavation – trowelling
- Excavation – secateurs
- Disposal of waste material by hand
- Ranging poles – push into ground
- Extend a measuring staff
- Level/Total Station – erect tripod
- Attach instrument to tripod
- Use a gradiometer and resistance meter
- Sit
- Sit with legs out to one side
- Strength
- Physical stamina
- Spatial awareness
- Short-term memory
- Long-term memory
- Communication – conveying and understanding information
- Team working
- Time management
- Problem solving.

The results also suggested that Hannah would not be able to do the following activities:

- Lift turf
- Excavation – heavy tools
- Use and empty a wheelbarrow
- Use a sprayer
- Carry equipment on back
- Carry equipment in hands.

On the questionnaire Hannah had qualified her answer to one question:

- Physical stamina – ‘Depends on the task, whether both arms are required to move constantly’.

There were no Part 3 or Part 4 returns from Hannah.

16. CHARLES

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that Charles may have difficulties with the following activity:

- Long-term memory.

POST-FIELDWORK ABILITIES

In the fieldwork Charles had no difficulties with any of the activities that he carried out.

SELF-EVALUATION OF SKILLS

Charles rated himself as between ‘average’ and ‘high’ transferable skills; and ‘average’ for most of the other activities. He rated himself ‘low’ for cutting and lifting turf and an appreciation of site Health and Safety.

SUMMARY

- It was expected that Charles would not expect any real difficulties on the training excavation and this proved to be the case.
- In the self-evaluation of skills he rated himself at a fairly high level.

17. JOHN

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that John may have difficulties with the following activities:

- Drawing – ability
- Squatting
- Long-term memory
- Mental stamina.

There were no Part 3 or Part 4 returns from John.

18. ALAN

DETAILS OF DISABILITY

Non-disabled.

PRE-FIELDWORK ABILITIES

After completing the Part 1 questionnaire, the results suggested that John may have difficulties with the following activities:

- Completing site records – descriptions and numerical data
- Excavation – pick axe
- Drawing – ability
- Short-term memory
- Mental stamina
- Analysing qualitative data
- Decision making.

POST-FIELDWORK ABILITIES

In the fieldwork Alan had difficulties with the following activities:

- Comprehending site records
- Using a wheelbarrow
- Discern stratigraphy – tactile
- Identifying finds – tactile
- Total Station – audible signals
- Strength – medium
- Physical stamina – medium
- Mental stamina – medium
- Communication – conveying information.

SELF-EVALUATION OF SKILLS

Alan rated himself as ‘average’ for planning and processing of artefacts; and between ‘average’ and high for the other activities.

SUMMARY

- It was expected that Alan would have difficulties with a few of the activities and abilities. In the event he experienced difficulties with some of the archaeological tasks and the physical and mental demands of fieldwork.
- Despite some difficulties, Alan rated himself at a fairly high level in the self-evaluation of skills.

B. DISCUSSION OF THE RESULTS

Taking the sample of participants who completed both the Part 2 and Part 3 documents as a whole, a comparison between the tasks they could potentially have difficulties with and what they actually had difficulties with is given in **Table 4**.

Table 4 Anticipated difficulties with tasks and abilities as suggested in the Part 2 document compared with actual difficulties experienced (Part 3); numbers of occurrences for each task/ability

ARCHAEOLOGICAL TASKS

Task	Part 2	Part 3
Comprehending site records		3
Completing site records – descriptions	6	2
Completing site records – numerical data	3	2
Excavation – pick axe	1	
Use a wheelbarrow		3
Empty a wheelbarrow		2
Discern stratigraphy – vision		1
Discern stratigraphy – texture		3
Discern stratigraphy – tactile		5
Lay a tape measure	1	
Drawing – ability	5	
Drawing – use graph paper		1
Identifying finds – tactile		1
Sorting environmental samples – vision		1
Sorting environmental samples – texture		1
Sorting environmental samples – tactile		1
Sorting environmental samples – colour		1
Level/Total Station – see target and hairlines	1	
Total Station – audible signals		1
Field walking/survey – traverse	2	
Gradiometry – use an instrument	1	
Gradiometry – identify walking line	1	

PHYSICAL ABILITIES

Ability	Part 2	Part 3
Carry equipment on back		2
Squatting	2	
Kneeling	1	
Strength		2
Physical stamina		5

COGNITIVE ABILITIES

Ability	Part 2	Part 3
Vision – close and distant		1
Spatial awareness	2	
Hand/eye co-ordination	1	
Short-term memory	4	1
Long-term memory	5	
Recognition	1	1
Mental stamina	6	4

TRANSFERABLE SKILLS

Skill	Part 2	Part 3
Communication – conveying information		1
Independent working	1	
Time management	3	
Adapting to a new environment	2	
Analysing qualitative data	2	1
Analysing quantitative data	2	1
Problem solving	1	
Decision making	3	
Social skills	1	

The tasks/abilities with the highest differences between Part 2 (anticipated) and Part 3 (actual) are listed in **Tables 5** and **6**.

Table 5 Tasks/abilities where the ability was over-estimated

- Archaeological Tasks:
  - Comprehending site records
  - Using a wheelbarrow
  - Discern stratigraphy – texture, tactile
- Physical Abilities:
  - Physical stamina.

Table 6 Tasks/abilities where the ability was under-estimated

- Archaeological Tasks:
  - Complete site records - descriptions
  - Drawing – ability
- Cognitive Abilities:
  - Short-term memory
  - Long-term memory
- Transferable Skills:
  - Time management
  - Decision making.

It was mostly the ability to do a few archaeological tasks that was over-estimated, as well as physical stamina. The under-estimated factors were a couple of archaeological tasks, memory and two of the transferable skills.

These results can be compared to the results of the Phase 3 controlled tests where there was a numerical difference between the anticipated ability (Part 2) and actual ability (Part 3). These are listed in **Table 7**.

Table 7 Activities where the ability level was over-or under-estimated in the Phase 3 Controlled Tests and the Phase 4a Field Trials

Activity/Ability	Ph 3	Ph 4a
Comprehending site records	U	O
Completing site records – descriptions	U	U
Using a wheelbarrow	U	O
Drawing – ability	U	U
Short-term memory	U	U
Long-term-memory	U	U

O – over-estimated ability
U – under-estimated ability

The tasks and abilities that show the highest differences between anticipated and actual difficulties in Phase 3 and Phase 4a, as listed in **Table 7**, can be used as an aid in refining the tool kit. This especially relates to the questions about everyday activities in the Part 1 document.

C. SECTION SUMMARY

- The main archaeological activities where difficulties were experienced included:

    - Site recording
    - Discerning stratigraphy
    - The physical nature of archaeological fieldwork
    - The mental stamina required for archaeological fieldwork.

- Very few difficulties relating to transferable and cognitive abilities were recorded.

- In the self-evaluation of skills (Part 4) the participants tended to give themselves average to high ratings for the archaeological tasks, and generally higher ratings for the transferable skills.

- A range of difficulties with aspects of archaeological fieldwork were recorded amongst a group of non-disabled students. This suggests that there can be a wide range of differing abilities amongst a group of people.

VIII REPORT SUMMARY

- The binary comparison between the Part 2 and Part 3 returns revealed very few statistical differences between the results. This is mainly due to the simplistic able/unable format of the two documents. This does not allow for the identification of differing levels of ability, nor can it be used subsequent changes or the development of abilities.

- A detailed comparison of the individual replies to the Part 1 questionnaire and the Part 3 self-evaluation of ability revealed a number of differences between the anticipated and actual abilities of the participants. Comparing these to the anomalies identified in the Phase 3 controlled testing suggests these are areas where the wording of the questions in the Part 1 document may need to be re-worded to eliminate misunderstandings and ambiguities. The major activities and abilities concerned are:

    - Comprehending site records
    - Completing site records – descriptions
    - Using a wheelbarrow
    - Drawing – ability
    - Short-term
    - Long-term memory.

- To this information the feedback given by individual participants on the Part 1 questionnaire will help in refining the questions.

- The analysis of the Part 4 document enabled the skills that the students rated as highest and lowest to be identified.

- There was often a relationship between a difficulty with a particular task and a low self-evaluation of skill level for the same activity.

- The field trial at East Holton has helped significantly in identifying the aspects of the pro forma of the self-evaluation tool kit that may need refining. It has also demonstrated that non-disabled students can have difficulties with aspects of archaeological fieldwork. This indicates that there will be a wide range of differing abilities amongst any group of individuals, whether they are disabled or non-disabled.

REFERENCES

Embleton, J, Phillips, T, Le Scouiller, S & Gilchrist, R 2006 *A Characterisation of Archaeological Field Techniques Assessed by Physical and Cognitive Demands: Inclusive, Accessible, Archaeology Phase 2 Report*. Available at: http://www.hca.heacademy/access-archaeology/inclusive_accessible

Phillips, T. & Gilchrist, R. 2005, *Disability and Archaeological Fieldwork: Inclusive, Accessible, Archaeology Phase 1 Report*. University of Reading, Archaeology Department. Available at: http://www.hca. heacademy/access-archaeology/inclusive_accessible

Phillips, T., Le Scouiller, S., Booy, D., Gillham, S., Gilchrist, R. & Cook, G. 2006, *Controlled Tests: Archive Report: Inclusive, Accessible, Archaeology Phase 3 Report*. Available at: http://www.hca.heacademy /access-archaeology/inclusive_accessible

APPENDIX I:

RESULTS OF THE STATISTICAL COMPARISON BETWEEN THE PART 2 AND PART 3 DOCUMENTS

1. SITE RECORDS

1.1 Comprehending site records

Part 2: Comprehending site records	Part 3: Comprehending site records	
	Able	Unable
Able	6	3
Unable	0	0

Test Statistics(b)

	Part2: Comprehending site records & Part3: Comprehending site records
N	9
Exact Sig. (2-tailed)	.250(a)

a Binomial distribution used.
b McNemar Test

1.2 Completing site records – descriptions

Part 2: Completing site records – descriptions	Part 3: Completing site records – descriptions	
	Able	Unable
Able	6	2
Unable	0	0

1 participant did not attempt this task

Test Statistics(b)

	Part2: Completing site records - descriptions & Part3: Completing site records - descriptions
N	8
Exact Sig. (2-tailed)	.500(a)

a Binomial distribution used.
b McNemar Test

1.3 Completing site records – numerical data

Part 2: Completing site records – numerical data	Part 3: Completing site records – numerical data	
	Able	Unable
Able	7	2
Unable	0	0

Test Statistics(b)

	Part2: Completing site records - numerical data & Part3: Completing site records - numerical data
N	9
Exact Sig. (2-tailed)	.500(a)

a Binomial distribution used.
b McNemar Test

1.4 Read and understand maps and plans accurately

Part 2: Read and understand maps and plans accurately	Part 3: Read and understand maps and plans accurately	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Reading and understanding maps and plans accurately

2. EXCAVATION

2.1 Cutting turf

Part 2: Cutting turf	Part 3: Cutting turf	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Cutting turf

2.2 Lifting turf

Part 2: Lifting turf	Part 3: Lifting turf	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Lifting turf

2.3 Excavation - Pick axe

Part 2: Excavation - Pick axe	Part 3: Excavation - Pick axe	
	Able	Unable
Able	4	0
Unable	0	0

5 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Excavating with a pick axe

2.4 Excavation - Mattock

Part 2: Excavation - Mattock	Part 3: Excavation - Mattock	
	Able	Unable
Able	4	0
Unable	0	0

5 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Excavating with a mattock

2.5 Excavation – Draw hoe

Part 2: Excavation – Draw hoe	Part 3: Excavation – Draw hoe	
	Able	Unable
Able	4	0
Unable	0	0

5 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Excavating with a draw hoe

2.6 Excavation - Trowelling

Part 2: Excavation - Trowelling	Part 3: Excavation - Trowelling	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Excavating with a trowel

2.7 Excavation - Brushing

Part 2: Excavation - Brushing	Part 3: Excavation - Brushing	
	Able	Unable
Able	6	0
Unable	0	0

3 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Excavating with a brush

2.8 Excavation - Secateurs

Part 2: Excavation - Secateurs	Part 3: Excavation - Secateurs	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Excavating with a secateur

2.9 Disposal of waste material – on a spade

Part 2: Disposal of waste material – on a spade	Part 3: Disposal of waste material – on a spade	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Disposing waste material on a spade

2.10 Disposal of waste material – by hand

Part 2: Disposal of waste material – by hand	Part 3: Disposal of waste material – by hand	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Disposing waste material by hand

2.11 Disposal of waste material – in a wheelbarrow

Part 2: Disposal of waste material – in a wheelbarrow	Part 3: Disposal of waste material – in a wheelbarrow	
	Able	Unable
Able	6	3
Unable	0	0

Test Statistics(b)

	Part2: Disposal of waste material - in a wheelbarrow & Part3: Disposal of waste material - in a wheelbarrow
N	9
Exact Sig. (2-tailed)	.250(a)

a Binomial distribution used.
b McNemar Test

2.12 Disposal of waste material – in a bucket

Part 2: Disposal of waste material – in a bucket	Part 3: Disposal of waste material – in a bucket	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Disposing waste material in a bucket

2.13 Disposal of waste material – empty wheelbarrow

Part 2: Disposal of waste material – empty wheelbarrow	Part 3: Disposal of waste material – empty wheelbarrow	
	Able	Unable
Able	6	3
Unable	0	0

Test Statistics(b)

	Part2: Disposal of waste material - empty wheelbarrow & Part3: Disposal of waste material - empty wheelbarrow
N	9
Exact Sig. (2-tailed)	.250(a)

a Binomial distribution used.
b McNemar Test

2.14 Disposal of waste material– empty bucket

Part 2: Disposal of waste material – empty bucket	Part 3: Disposal of waste material – empty bucket	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Disposing waste material – emptying bucket

2.15 Dry sieving

Part 2: Dry sieving	Part 3: Dry sieving	
	Able	Unable
Able	2	0
Unable	0	0

7 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Dry sieving although there is only 2 participants who gave a response

2.16 Use a sprayer

Part 2: Use a sprayer	Part 3: Use a sprayer	
	Able	Unable
Able	3	0
Unable	0	0

6 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Using a sprayer although there are only 3 participants who gave a response

2.17 Discern stratigraphy - tactile

Part 2: Discern stratigraphy - tactile	Part 3: Discern stratigraphy - tactile	
	Able	Unable
Able	4	5
Unable	0	0

Test Statistics(b)

	Part2: Discern stratigraphy - tactile & Part3: Discern stratigraphy - tactile
N	9
Exact Sig. (2-tailed)	.063(a)

a Binomial distribution used.
b McNemar Test

2.18 Discern stratigraphy - vision

Part 2: Discern stratigraphy - vision	Part 3: Discern stratigraphy - vision	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Discern stratigraphy - vision & Part3: Discern stratigraphy - vision
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

2.19 Discern stratigraphy – colour

Part 2: Discern stratigraphy – colour	Part 3: Discern stratigraphy – colour	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Discerning stratigraphy – colour

2.20 Discern stratigraphy - texture

Part 2: Discern stratigraphy - texture	Part 3: Discern stratigraphy - texture	
	Able	Unable
Able	6	3
Unable	0	0

Test Statistics(b)

	Part2: Discern stratigraphy - texture & Part3: Discern stratigraphy - texture
N	9
Exact Sig. (2-tailed)	.250(a)

a Binomial distribution used.
b McNemar Test

3. PLANNING

3.1 Lay a tape measure

Part 2: Lay a tape measure	Part 3: Lay a tape measure	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Laying a tape measure

3.2 Read a tape measure accurately

Part 2: Read a tape measure accurately	Part 3: Read a tape measure accurately	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Reading a tape measure accurately

3.3 See area to be planned

Part 2: See area to be planned	Part 3: See area to be planned	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Seeing area to be planned

3.4 Drawing – ability

Part 2: Drawing - ability	Part 3: Drawing - ability	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Drawing ability

3.5 Drawing – use graph paper

Part 2: Drawing – use graph paper	Part 3: Drawing – use graph paper	
	Able	Unable
Able	7	1
Unable	0	0

1 participant did not attempt this task

Test Statistics(b)

	Part2: Drawing - use graph paper & Part3: Drawing - use graph paper
N	8
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

4. PROCESSING OF ARTEFACTS

4.1 Handling finds – small-sized

Part 2: Handling finds – small-sized	Part 3: Handling finds – small-sized	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Handling finds – small-sized

4.2 Handling finds – medium/large-sized

Part 2: Handling finds – medium/large-sized	Part 3: Handling finds – medium/large-sized	
	Able	Unable
Able	6	0
Unable	0	0

3 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Handling finds – medium/large-sized

4.3 Washing finds – small-sized

Part 2: Washing finds – small-sized	Part 3: Washing finds – small-sized	
	Able	Unable
Able	3	0
Unable	0	0

6 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Washing finds – small-sized although there are only 3 participants who gave a response

4.4 Washing finds – medium-sized

Part 2: Washing finds – medium-sized	Part 3: Washing finds – medium-sized	
	Able	Unable
Able	3	0
Unable	0	0

6 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Washing finds – medium-sized although there is only 3 participants who gave a response

4.5 Washing finds – large-sized

Part 2: Washing finds – large-sized	Part 3: Washing finds – large-sized	
	Able	Unable
Able	3	0
Unable	0	0

6 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Washing finds – large-sized although there are only 3 participants who gave a response

4.6 Sorting finds – small-sized

Part 2: Sorting finds – small-sized	Part 3: Sorting finds – small-sized	
	Able	Unable
Able	5	0
Unable	0	0

4 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Sorting finds – small-sized although there is only 5 participants who gave a response

4.7 Sorting finds – medium-sized

Part 2: Sorting finds – medium-sized	Part 3: Sorting finds – medium-sized	
	Able	Unable
Able	4	0
Unable	0	0

5 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Sorting finds – medium-sized although there are only 4 participants who gave a response

4.8 Sorting finds – large-sized

Part 2: Sorting finds – large-sized	Part 3: Sorting finds – large-sized	
	Able	Unable
Able	3	0
Unable	0	0

6 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Sorting finds – large-sized although there are only 3 participants who gave a response

4.9 Identifying finds – tactile

Part 2: Identifying finds – tactile	Part 3: Identifying finds – tactile	
	Able	Unable
Able	7	1
Unable	0	0

1 participant did not attempt this task

Test Statistics(b)

	Part2: Identifying finds - tactile & Part3: Identifying finds - tactile
N	8
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

4.10 Identifying finds – colour

Part 2: Identifying finds – colour	Part 3: Identifying finds – colour	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Identifying finds – colour

4.11 Identifying finds – texture

Part 2: Identifying finds – texture	Part 3: Identifying finds – texture	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Identifying finds – texture

4.12 Identifying finds – vision

Part 2: Identifying finds – vision	Part 3: Identifying finds – vision	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Identifying finds – vision

4.13 Marking finds

Part 2: Marking finds	Part 3: Marking finds	
	Able	Unable
Able	5	0
Unable	0	0

4 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Marking finds although there are only 5 participants who gave a response

5. ENVIRONMENTAL SAMPLING

5.1 Take bulk samples

Part 2: Take bulk samples	Part 3: Take bulk samples	
	Able	Unable
Able	1	0
Unable	0	0

8 participants did not attempt this task

Only 1 participant gave an answer to taking bulk samples

5.2 Wet sieving

Part 2: Wet sieving	Part 3: Wet sieving	
	Able	Unable
Able	2	0
Unable	0	0

7 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in proceeding to wet sieving although there are only 2 participants who gave a response

5.3 Sorting samples – small-sized materiel

Part 2: Sorting samples – small-sized materiel	Part 3: Sorting samples – small-sized materiel	
	Able	Unable
Able	3	0
Unable	0	0

6 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Sorting samples – small-sized materiel although there are only 3 participants who gave a response

5.4 Sorting samples – medium-sized materiel

Part 2: Sorting samples – medium-sized materiel	Part 3: Sorting samples – medium-sized materiel	
	Able	Unable
Able	3	0
Unable	0	0

6 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Sorting samples – medium-sized materiel although there are only 3 participants who gave a response

5.5 Sorting samples – large-sized materiel

Part 2: Sorting samples – large-sized materiel	Part 3: Sorting samples – large-sized materiel	
	Able	Unable
Able	3	0
Unable	0	0

6 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Sorting samples – large-sized materiel although there are only 3 participants who gave a response

5.6 Sorting samples – tactile

Part 2: Sorting samples – tactile	Part 3: Sorting samples – tactile	
	Able	Unable
Able	2	1
Unable	0	0

6 participants did not attempt this task

Test Statistics(b)

	Part2: Sorting samples - tactile & Part3: Sorting samples - tactile
N	3
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

5.7 Sorting samples – colour

Part 2: Sorting samples – colour	Part 3: Sorting samples – colour	
	Able	Unable
Able	2	1
Unable	0	0

6 participants did not attempt this task

Test Statistics(b)

	Part2: Sorting samples - colour & Part3: Sorting samples - colour
N	3
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

5.8 Sorting samples – texture

Part 2: Sorting samples – texture	Part 3: Sorting samples – texture	
	Able	Unable
Able	2	1
Unable	0	0

6 participants did not attempt this task

Test Statistics(b)

	Part2: Sorting samples - texture & Part3: Sorting samples - texture
N	3
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

5.9 Sorting samples – vision

Part 2: Sorting samples – vision	Part 3: Sorting samples – vision	
	Able	Unable
Able	2	1
Unable	0	0

6 participants did not attempt this task

5.10 Marking sample trays/boxes

Part 2: Marking sample trays/boxes	Part 3: Marking sample trays/boxes	
	Able	Unable
Able	4	0
Unable	0	0

5 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in Marking sample trays/boxes although there are only 4 participants who gave a response

6. SURVEYING

6.1 Lay a tape measure

Part 2: Lay a tape measure	Part 3: Lay a tape measure	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Laying a tape measure

6.2 Read a tape measure accurately

Part 2: Read a tape measure accurately	Part 3: Read a tape measure accurately	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Reading a tape measure accurately

6.3 Ranging poles – hold

Part 2: Ranging poles – hold	Part 3: Ranging poles – hold	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Ranging poles – hold

6.4 Ranging poles – line up

Part 2: Ranging poles – line up	Part 3: Ranging poles – line up	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Ranging poles – line up

7. INSTRUMENT SURVEY

7.1 Measuring staff – hold

Part 2: Measuring staff – hold	Part 3: Measuring staff – hold	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Measuring staff – hold

7.2 Measuring staff – extend

Part 2: Measuring staff – extend	Part 3: Measuring staff – extend	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Measuring staff – extend

7.3 Level – set up tripod

Part 2: Level – set up tripod	Part 3: Level – set up tripod	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in setting up tripod for level

7.4 Level – attach to tripod

Part 2: Level – attach to tripod	Part 3: Level – attach to tripod	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in attaching level to tripod

7.5 Level – use

Part 2: Level – use	Part 3: Level – use	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in using a level

7.6 Level – manual focussing

Part 2: Level – manual focussing	Part 3: Level – manual focussing	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in focussing manually a level

7.7 Level – read measurements

Part 2: Level – read measurements	Part 3: Level – read measurements	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in reading measurements using a level

7.8 Total Station – set up tripod

Part 2: Total Station – set up tripod	Part 3: Total Station – set up tripod	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in setting up tripod for Total Station

7.9 Total Station – attach to tripod

Part 2: Total Station – attach to tripod	Part 3: Total Station – attach to tripod	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in attaching Total Station to tripod

7.10 Total Station – use

Part 2: Total Station – use	Part 3: Total Station – use	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in using an Total Station

7.11 Total Station – manual focussing

Part 2: Total Station – manual focussing	Part 3: Total Station – manual focussing	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in focussing manually an Total Station

7.12 Total Station – read measurements

Part 2: Total Station – read measurements	Part 3: Total Station – read measurements	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in reading measurements using an Total Station

7.13 Total Station – record readings on screen

Part 2: Total Station – record readings on screen	Part 3: Total Station – record readings on screen	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in reading record on screen

7.14 Total Station – audible signals

Part 2: Total Station – audible signals	Part 3: Total Station – audible signals	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Total Station - audible signals & Part3: Total Station - audible signals
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

7.15 Total Station – attach crystal to staff

Part 2: Total Station – attach crystal to staff	Part 3: Total Station – attach crystal to staff	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in attaching crystal to staff

7.16 Prismatic compass – use

Part 2: Prismatic compass – use	Part 3: Prismatic compass – use	
	Able	Unable
Able	6	0
Unable	0	0

3 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in using a prismatic compass

7.17 Optical square – use

Part 2: Optical square – use	Part 3: Optical square – use	
	Able	Unable
Able	5	0
Unable	0	0

4 participants did not attempt this task

No significant differences of ability between part 2 and part 3 in using an optical square although there are only 5 participants who gave an answer

8. SURFACE SURVEY

8.1 Field walking – traverse

Part 2: Field walking – traverse	Part 3: Field walking – traverse	
	Able	Unable
Able	6	0
Unable	0	0

3 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Traversing field

8.2 Field walking – identifying material

Part 2: Field walking – identifying material	Part 3: Field walking – identifying material	
	Able	Unable
Able	5	0
Unable	0	0

4 participants did not attempt this task

There are no significant differences of ability between part 2 and part 3 in Identifying material when walking on a field although there are only 5 participants who gave an answer

8.3 Field walking – pick up material

Part 2: Field walking – pick up material	Part 3: Field walking – pick up material	
	Able	Unable
Able	5	0
Unable	0	0

4 participants did not attempt this task

There are no significant differences of ability between part 2 and part 3 in Picking up material when walking on a field although there are only 5 participants who gave an answer

8.4 Field survey – traverse

Part 2: Field survey – traverse	Part 3: Field survey – traverse	
	Able	Unable
Able	7	0
Unable	0	0

2 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Traversing for field survey

8.5 Field survey – identifying surface features

Part 2: Field survey – identifying surface feature	Part 3: Field survey – identifying surface feature	
	Able	Unable
Able	7	0
Unable	0	0

2 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Identifying surface features for field survey

9. GEOPHYSICAL SURVEY

9.1 Magnetometry – use an instrument

Part 2: Magnetometry – use an instrument	Part 3: Magnetometry – use an instrument	
	Able	Unable
Able	7	1
Unable	0	0

1 participant did not attempt this task

Test Statistics(b)

	Part2: Magnetometry - use an instrument & Part3: Magnetometry - use an instrument
N	8
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

9.2 Magnetometry – identify walking line

Part 2: Magnetometry – identify walking line	Part 3: Magnetometry – identify walking line	
	Able	Unable
Able	7	1
Unable	0	0

1 participant did not attempt this task

Test Statistics(b)

	Part2: Magnetometry - identify walking line & Part3: Magnetometry - identify walking line
N	8
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

9.3 Magnetometry – audible signals

Part 2: Magnetometry – audible signals	Part 3: Magnetometry – audible signals	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Discerning audible signals using a magnetometer

9.4 Resistivity– use an instrument

Part 2: Resistivity– use an instrument	Part 3: Resistivity– use an instrument	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Resistivity - use an instrument & Part3: Resistivity - use an instrument
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

9.5 Resistivity – identify walking line

Part 2: Resistivity – identify walking line	Part 3: Resistivity – identify walking line	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Resistivity - identify walking line & Part3: Resistivity - identify walking line
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

10. CARRYING EQUIPMENT

10.1 Carrying equipment on back

Part 2: Carrying equipment on back	Part 3: Carrying equipment on back	
	Able	Unable
Able	7	2
Unable	0	0

Test Statistics(b)

	Part2: Carry equipment on back & Part3: Carry equipment on back
N	9
Exact Sig. (2-tailed)	.500(a)

a Binomial distribution used.
b McNemar Test

10.2 Carrying equipment in hands

Part 2: Carrying equipment in hands	Part 3: Carrying equipment in hands	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Carrying equipment in hands

11. PHYSICAL ABILITIES

11.1 Squatting

Part 2: Squatting	Part 3: Squatting	
	Able	Unable
Able	7	0
Unable	2	0

Test Statistics(b)

	Part2: Squatting & Part3: Squatting
N	9
Exact Sig. (2-tailed)	.500(a)

a Binomial distribution used.
b McNemar Test

11.2 Kneeling

Part 2: Kneeling	Part 3: Kneeling	
	Able	Unable
Able	8	0
Unable	1	0

Test Statistics(b)

	Part2: Kneeling & Part3: Kneeling
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

11.3 Sitting with knees pulled up to chest

Part 2: Sitting with knees pulled up to chest	Part 3: Sitting with knees pulled up to chest	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Sitting with knees pulled up to chest

11.4 Sitting

Part 2: Sitting	Part 3: Sitting	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Sitting

11.5 Sitting with legs to one side

Part 2: Sitting with legs to one side	Part 3: Sitting with legs to one side	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Sitting with legs to one side

11.6 Lying down

Part 2: Lying down	Part 3: Lying down	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Lying down

11.7 Strength – high

Part 2: Strength – high	Part 3: Strength – high	
	Able	Unable
Able	7	0
Unable	0	0

2 participants did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Using strength - high

11.8 Strength – medium

Part 2: Strength – medium	Part 3: Strength – medium	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Strength - medium & Part3: Strength - medium
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

11.9 Physical stamina – long period

Part 2: Physical stamina – long period	Part 3: Physical stamina – long period	
	Able	Unable
Able	5	1
Unable	0	0

3 participants did not attempt this task

Test Statistics(b)

	Part2: Physical stamina - long period & Part3: Physical stamina - long period
N	6
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

11.10 Physical stamina – medium period

Part 2: Physical stamina – medium period	Part 3: Physical stamina – medium period	
	Able	Unable
Able	6	3
Unable	0	0

Test Statistics(b)

	Part2: Physical stamina - medium period & Part3: Physical stamina - medium period
N	9
Exact Sig. (2-tailed)	.250(a)

a Binomial distribution used.
b McNemar Test

11.11 Physical stamina – short period

Part 2: Physical stamina – short period	Part 3: Physical stamina – short period	
	Able	Unable
Able	7	1
Unable	0	0

1 participant did not attempt this task

Test Statistics(b)

	Part2: Physical stamina - short period & Part3: Physical stamina - short period
N	8
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

12. COGNITIVE ABILITIES

12.1 Vision – colour

Part 2: Vision – colour	Part 3: Vision – colour	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Vision – colour

12.2 Vision – texture

Part 2: Vision – texture	Part 3: Vision – texture	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Vision – texture

12.3 Vision – physical details

Part 2: Vision – physical details	Part 3: Vision – physical details	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Vision – physical details

12.4 Vision – physical features

Part 2: Vision – physical features	Part 3: Vision – physical features	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Vision – physical features

12.5 Vision – printed details

Part 2: Vision – printed details	Part 3: Vision – printed details	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Vision – printed details

12.6 Vision – close and distant

Part 2: Vision – close and distant	Part 3: Vision – close and distant	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Vision - close and distant & Part3: Vision - close and distant
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

12.7 Hearing

Part 2: Hearing	Part 3: Hearing	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Hearing

12.8 Touch

Part 2: Touch	Part 3: Touch	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Touch

12.9 Balance

Part 2: Balance	Part 3: Balance	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Balance

12.10 Spatial awareness

Part 2: Spatial awareness	Part 3: Spatial awareness	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Spatial awareness

12.11 Hand/eye co-ordination

Part 2: Hand/eye co-ordination	Part 3: Hand/eye co-ordination	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Hand/eye co-ordination

12.12 Comprehension – written material

Part 2: Comprehension – written material	Part 3: Comprehension – written material	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Comprehension – written material

12.13 Comprehension – drawings

Part 2: Comprehension – drawings	Part 3: Comprehension – drawings	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Comprehension – drawings

12.14 Comprehension – verbal information

Part 2: Comprehension – verbal information	Part 3: Comprehension – verbal information	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Comprehension – verbal information

12.15 Organisation/categorisation

Part 2: Organisation/categorisation	Part 3: Organisation/categorisation	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Organisation/ categorisation

12.16 Short-term memory

Part 2: Short-term memory	Part 3: Short-term memory	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Short-term memory & Part3: Short-term memory
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

12.17 Long-term memory

Part 2: Long-term memory	Part 3: Long-term memory	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Long-term memory

12.18 Recognition

Part 2: Recognition	Part 3: Recognition	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Recognition & Part3: Recognition
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

12.19 Mental stamina – long period

Part 2: Mental stamina – long period	Part 3: Mental stamina – long period	
	Able	Unable
Able	3	0
Unable	2	2

2 participants did not attempt this task

Test Statistics(b)

	Part2: Mental stamina - long period & Part3: Mental stamina - long period
N	7
Exact Sig. (2-tailed)	.500(a)

a Binomial distribution used.
b McNemar Test

12.20 Mental stamina – medium period

Part 2: Mental stamina – medium period	Part 3: Mental stamina – medium period	
	Able	Unable
Able	5	4
Unable	0	0

Test Statistics(b)

	Part2: Mental stamina - medium period & Part3: Mental stamina - medium period
N	9
Exact Sig. (2-tailed)	.125(a)

a Binomial distribution used.
b McNemar Test

12.21 Mental stamina – short period

Part 2: Mental stamina – short period	Part 3: Mental stamina – short period	
	Able	Unable
Able	8	0
Unable	0	0

1 participant did not attempt this task

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Mental stamina – short period

13. TRANSFERABLE SKILLS

13.1 Communication – conveying information

Part 2: Communication – conveying information	Part 3: Communication – conveying information	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Communication - conveying information & Part3: Communication - conveying information
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

13.2 Communication – understanding information

Part 2: Communication – understanding information	Part 3: Communication – understanding information	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Communication – understanding information

13.3 Communication – at a distance

Part 2: Communication – at a distance	Part 3: Communication – at a distance	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Communication – at a distance

13.4 Independent working

Part 2: Independent working	Part 3: Independent working	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Independent working

13.5 Team working

Part 2: Team working	Part 3: Team working	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Team working

13.6 Time management

Part 2: Time management	Part 3: Time management	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Time management

13.7 Adapting to a new environment

Part 2: Adapting to a new environment	Part 3: Adapting to a new environment	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Adapting to a new environment

13.8 Analysing qualitative data

Part 2: Analysing qualitative data	Part 3: Analysing qualitative data	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Analysing qualitative data & Part3: Analysing qualitative data
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

13.9 Analysing quantitative data

Part 2: Analysing quantitative data	Part 3: Analysing quantitative data	
	Able	Unable
Able	8	1
Unable	0	0

Test Statistics(b)

	Part2: Analysing quantitative data & Part3: Analysing quantitative data
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

13.10 Problem solving

Part 2: Problem solving	Part 3: Problem solving	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Problem solving

2.13.11 Decision making

Part 2: Decision making	Part 3: Decision making	
	Able	Unable
Able	8	0
Unable	1	0

Test Statistics(b)

	Part2: Decision making & Part3: Decision making
N	9
Exact Sig. (2-tailed)	1.000(a)

a Binomial distribution used.
b McNemar Test

13.12 Social skills

Part 2: Social skills	Part 3: Social skills	
	Able	Unable
Able	9	0
Unable	0	0

Mc Nemar test: there are no significant differences of ability between part 2 and part 3 in Social skills

APPENDIX II:

RESULTS OF THE ANALYSIS OF THE PART 4 DOCUMENT

Category	Tasks	Students who performed task	Students who did not perform task	Students Rating High	Students Rating Average	Students Rating Low	Student Average Rating
Site records	Comprehending site records	9	0	2	6	1	2.11
	Completing site records-descriptions	8	1	2	4	2	2.00
	Completing site records-numerical data	8	1	1	4	3	1.75
	Read and understand maps & plans accurately	8	1	4	4	0	2.50
	Understanding of what is involved in putting together site records	8	1	1	5	2	1.88
Excavation	Cutting turf	9	0	5	3	1	2.44
	Lifting turf	9	0	5	3	1	2.44
	Excavation – large tools (pick, mattock, draw hoe)	4	5	3	1	0	2.75
	Excavation – small tools (trowelling)	9	0	3	6	0	2.33
	Discerning stratigraphy	9	0	1	8	0	2.11
	Using a sprayer	2	7	0	2	0	2.00
	Dry sieving	2	7	0	2	0	2.00
	Disposal of spoil	8	1	6	2	0	2.75
	Understanding of what is involved in the process of excavation	9	0	4	5	0	2.44
Planning	Drawing an archaeological plan	6	3	1	5	0	2.17
	Section drawing	9	0	3	6	0	2.33
	Taking off-sets	4	5	0	3	1	1.75
	Understanding of what is involved in the process of planning	8	1	1	4	3	1.75

Category	Tasks	Students who performed task	Students who did not perform task	Students Rating High	Students Rating Average	Students Rating Low	Student Average Rating
Artefacts	Washing artefacts	5	4	2	3	0	2.40
	Sorting artefacts	5	4	2	3	0	2.40
	Identifying artefacts	9	0	0	8	1	1.89
	Understanding of what is involved in the processing of artefacts	9	0	1	7	1	2.00
Sampling	Flotation and wet sieving	2	7	0	1	1	1.50
	Sorting material	4	5	0	4	0	2.00
	Understanding of what is involved in the process of environmental sampling	5	4	0	2	3	1.40
Surveying	Using tape measures	9	0	7	2	0	2.78
	Using ranging poles	9	0	7	2	0	2.78
	Accurate recording of measurements	9	0	4	5	0	2.44
	Understanding of what is involved in the process of surveying	9	0	6	3	0	2.67
Instrument Survey	Using a level	9	0	5	4	0	2.56
	Using a total station	9	0	4	5	0	2.44
	Using a prismatic compass	7	2	2	5	0	2.29
	Using an optical square	5	4	2	3	0	2.40
	Accurate recording of measurements	9	0	3	6	0	2.33
	Understanding of what is involved in the process of instrument survey	9	0	1	8	0	2.11
Survey	Field walking	6	3	3	3	0	2.50
	Field survey	8	1	3	5	0	2.38
	Understanding of what is involved in the process of field survey	8	1	3	5	0	2.38

Category	Tasks	Students who performed task	Students who did not perform task	Students Rating High	Students Rating Average	Students Rating Low	Student Average Rating
Geophysics	Using a magnetometer	8	1	3	4	1	2.25
	Using a resistance meter	9	0	3	6	0	2.33
	Understanding of what is involved in the process of geophysical survey	9	0	3	6	0	2.33
Transferable skills	Communication	9	0	5	4	0	2.56
	Independent working	9	0	6	3	0	2.67
	Team working	9	0	5	4	0	2.56
	Time management	9	0	2	6	1	2.11
	Adapting to a new environment	9	0	4	3	2	2.22
	Problem solving	9	0	1	8	0	2.11
	Decision making	9	0	4	4	1	2.33
	Social skills	9	0	5	4	0	2.56
	Analysing qualitative data	8	1	0	8	0	2.00
	Analysing quantitative data	8	1	0	8	0	2.00
	Analysing digital data	8	1	2	5	1	2.13
	Physical stamina	9	0	4	5	0	2.44
	Mental stamina	9	0	2	7	0	2.22
	An appreciation of site Health and Safety	9	0	5	3	1	2.44
	Understanding of the importance and applications of transferable skills	9	0	4	5	0	2.44