SUMMER INDEPENDENT LEARNING

Subject/Group	BTEC Extended Diploma in Health and Social Care (Year 12 – 13)
Topic	Unit 3 – Anatomy and Physiology Unit 4 - Enquiries into Current Research in Health and Social Care
Hours	15 - 24 hours
To be completed by	This work must be completed and handed in to your subject teacher on the first day of term.

SECTION 1: ANATOMY AND PHYSIOLOGY

Background/Context

A clear understanding of anatomy and physiology is essential for most health care professions and this unit lays the groundwork for your studies in careers such as nursing, midwifery or the allied health professions. Equally, if you are looking to enter the workforce, knowledge of anatomy and physiology is beneficial to those working in supportive roles in the health and social care sector.

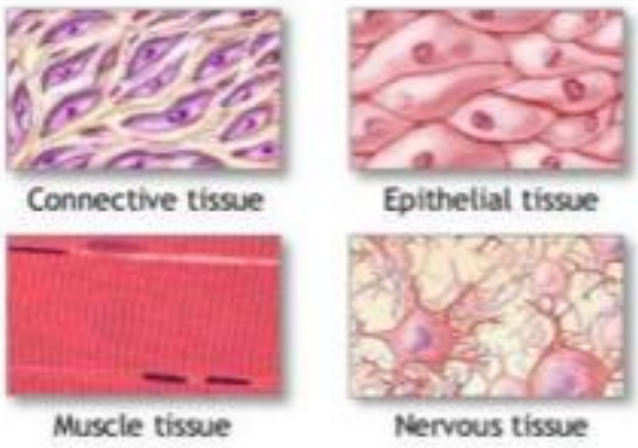
TASK 1 (A1 CELLS):

A1 How cells work

- The function and structure of cells, including membrane, nucleus, ribosomes, rough and smooth endoplasmic reticulum, mitochondria, centrioles, lysosomes and Golgi apparatus.

Create an A4 poster, labelling all parts of the cell (shown above). Make sure you explain the function and structure of each part of the cell.

TASK 2 (A2 TISSUES): Tissues are groups of similar cells carrying out specific functions. In this unit, we will look at:

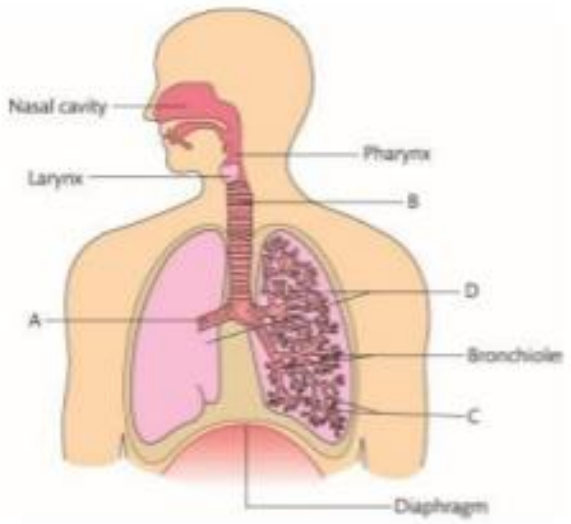


For each type of tissue, you need to explain the function and structure, then identify where it is located in the body. You can present this in a table or as a report.

TASK 3 (A3 BODY ORGANS): Produce an A3 mind map, identifying all the following body organs: Heart, lungs, brain, stomach, liver, pancreas, duodenum, ileum, colon, kidneys, bladder, ovaries/testes, uterus and skin.

You need to include a picture of the organ, the structure and function of each.

TASK 4 (B3 RESPIRATORY SYSTEM): The respiratory system allows oxygen in the air to enter the body, and to be taken up by cells and tissues. The respiratory system also eliminates carbon dioxide from the body.



PART 1: Which letters on the diagram show the following parts of the body?

Bronchi:

Lungs:

Trachea:

Alveoli:

PART 2: Produce a table to explain the structure and function of the following parts of the respiratory system: Trachea, bronchi, lungs, bronchial tree and alveoli.

PART 3: Explain the role of the intercostal muscles and diaphragm in the process of inspiration and expiration:

PART 4: Watch the following video: https://www.youtube.com/watch?v=57byXpOUpSU

Using the space provided below, draw a diagram showing the process of 'Gaseous exchange' and 'Diffusion'.

SECTION 2: RESEARCH METHODS

Background/Context

There are many reasons why research is carried out into contemporary health and social care issues, for example to explore the effect of diet on health and wellbeing or the provision and impact of addiction centres in the local community.

As a health and social care professional you will need to understand the purpose of research, how it is carried out and the importance of research for improving the wellbeing of those using health and social care services.

This is an externally assessed unit made up of Types of issues where research is carried out in the health and social care sector, Research methods in health and social care and Carrying out and reviewing relevant secondary research into a contemporary health and social care issues.

Don't forget to use your Health and Social Care textbooks and other resources to help you complete this work.

Unit 4 is found in the BTEC Health and Social Care Student Book 2.

There are TWO parts to this work. BOTH parts are mandatory.

1. A variety of activities aimed at developing your understanding of enquiries into research.
2. Research document to read and analyse.

PART ONE

A1 – Purpose of Research

The purpose of research is to find out information or gain knowledge. Research is a systematic or orderly procedure that explores issues to establish facts or reach new conclusions.

Activity 1

There are FOUR key purposes of research in health and social care. **What are they?**

1	
2	
3	
4	

Activity 2

Using reputable websites, identify TWO examples of research that have been carried out in health and social care within the last five years.

	Name of research projects, the web links and a summary of the research conducted
Health	**Research article 1** Title of research project: URL link: Summary of the research that has been conducted:

	Research article 2 Title of research project: URL link: Summary of the research that has been conducted:
Social Care	**Research article 1** Title of research project: URL link: Summary of the research that has been conducted: **Research article 2** Title of research project: URL link: Summary of the research that has been conducted:

Activity 3

As part of your learning, you need to have a clear understanding of the key terms used within this Unit.

Define the following key terms used in research:

Command verb/key terms	Definition/Explanation
Article	
Issue	
Health and social care practice	
Research methods	
Qualitative research	
Quantitative research	
Primary research	
Secondary research	
Ethical issue	
Literature review	

Activity 4

Research involves the collection of data. Data can be numerical, or it can be descriptive. Numerical data can be statistically analysed whereas descriptive data cannot be measured. There are several methods used to collect the data. In the table below are examples of the commonly used research methods.

There are several research methods which you need to know about.

Below is a table which includes most the research methods you will come across in Unit 4.

- Define each research method
- Identify ONE strength and ONE weakness for EACH research method

Research methods	Strengths	Weakness
Observations **Definition:**		
Interviews **Definition:**		
Focus Groups **Definition:**		
Experiments **Definition:**		
Surveys **Definition:**		
Questionnaires **Definition:**		
Case studies **Definition:**		

PART TWO

Read the two articles and complete a SQ3R worksheet:

- Article 1 - https://www.wypartnership.co.uk/application/files/4316/0284/3010/bame-review-report-summary.pdf
- Article 2 - https://workforce.wypartnership.co.uk/application/files/5316/4555/4180/WYHCP_-_People_Plan_-_Workforce_Strategy_2021-2025_Public_summary.pdf

Article 1: Health Research

Video game-based 'brain training' may help people with schizophrenia

Monday 12 February 2018

"People with schizophrenia can be trained by playing a video game to control the part of the brain linked to verbal hallucinations," BBC News reports. Verbal or auditory hallucinations, which typically take the form of "hearing voices", can be one of the most distressing aspects of schizophrenia. The voices are often abusive, rude or critical, and around 1 in 3 people's symptoms don't respond to conventional drug treatment.

This small proof-of-concept study involved 12 people. Researchers used a functional MRI scanner (fMRI) to provide a real-time analysis of brain activity based on changes in blood flow inside the brain. In turn, the fMRI output was linked to a simple computer game that involved landing a rocket.

Participants were asked to try to land the rocket using their own mental strategies. They weren't given any explicit instructions on how to do this. Successfully landing the rocket involved reducing activity in the part of their brain associated with speech perception (the superior temporal gyrus). The researchers thought this would also reduce verbal hallucinations.

Participants' mental health was monitored using questionnaires and two different scales to measure the severity of their hallucinations. After playing the game, people showed no worsening of symptoms on one scale, and an improvement on the other. There was also a detectable decrease in brain activity in the speech-perceiving regions during the training process.

The findings suggest this is a worthy area for continued investigation in a larger group of people. But at this stage it's far too soon, and too small a sample of people, to say whether or not this treatment will ever be suitable for use in clinical practice.

Where did the story come from?
The study was carried out by researchers from King's College London and the University of Roehampton, and was funded by the UK's Medical Research Council. It was published in the peer-reviewed journal Translational Psychiatry. The research was described well by BBC and Sky News, although the headlines overstated the findings – it's not possible to draw any firm conclusions from the results of a study of this size and type.

What kind of research was this?
This was a proof-of-concept study, which means that the researchers invited a small number of people to take part to see if their study design was feasible before they started a full-sized study. This is a very sensible approach as it means that, if there are any problems, these can be identified and fixed early on. But any results that come out of a study like this are usually limited, as only a small number of people take part. In this case, the researchers didn't use a control group, which would be needed in subsequent studies to see if the treatment really was effective.

What did the research involve?
The 12 people invited to participate in the study all had diagnosed schizophrenia, which had been treated with stable doses of antipsychotic medicine for at least months. They all experienced auditory hallucinations as defined by a standard tool called the Positive and Negative Syndrome Scale (PANSS). Those who'd misused alcohol or substances in the previous 6 months were excluded from the study.

People attended the research centre for 5 appointments. The first was for their condition to be assessed, and the next 4 sessions were for the intervention over the course of a 2 week period. At each visit, their mental health was monitored using questionnaires and tools designed to look at the severity of hallucinations, including the PANSS and the Psychotic Rating Symptom Scale (PsyRats). PsyRats is similar to PANSS, but takes a more focused look at the impact of hallucinations and delusions on quality of life.

Their brain activity was monitored by fMRI, which detected the part of the person's brain that's active during perception of speech (the superior temporal gyrus, or STG). By process of a feedback loop, activity in the STG was outputted to the computer game program. This meant that if the person was able to somehow reduce activity in that part of their brain, the game would respond with a visual representation of this (an image of a rocket landing on the ground). There was no long-term follow-up to see if any changes lasted over time.

What were the basic results?

One person moved around too much in the MRI scanner and couldn't be included in the analysis, so the final results were based on 11 people. There was no worsening of auditory hallucinations before and after the intervention as assessed using the PANSS. But improvements in symptoms were detected by the PsyRats tool. Total scores decreased on average after the intervention compared with what they were before. Further analysis suggested this was a reduction on scales measuring the intensity of patients' distress and their beliefs about the origin of the voices they heard. The researchers also noted that levels of activity in the speech perception regions of the brain decreased after playing the game.

How did the researchers interpret the results?

The researchers noted that their initial findings were consistent with previous research on reduced brain activity in the speech-sensitive regions of the brain, leading to an improvement in auditory hallucinations in some cases. But the way the study was designed meant that the placebo effect couldn't be ruled out, as there was no control group or dummy intervention to compare the treatment with. They now plan to carry out a larger randomised controlled trial to investigate this treatment further. They also speculated that, if successful, this could be part of a wider range of novel therapies that could help people with schizophrenia.

Conclusion

This study showed some promising initial findings for a new way of managing auditory hallucinations in people with schizophrenia. It may be possible for people to be able to learn how to better control and cope with the sounds they hear by using a process of computer feedback. But this was only a pilot study and wasn't designed to fully evaluate the effectiveness of the treatment.

To do this would require:

- A much larger number of participants to see whether the effects could be consistently detected and not down to chance.
- A control group. It may be helpful to compare the results with a sham fMRI scan-computer intervention to see whether this wasn't just a placebo effect. It would then be helpful to move on to compare the findings with a control group of patients who received a more conventional range of support and treatment.
- Longer follow-up of the participants to see whether the effects of undertaking this training could be maintained over time.
- Whether the effects of the intervention make a meaningful difference to the person's daily life and functioning.

- Whether the effects vary by the type of symptoms the person has – for example, whether it's different in people who get other types of hallucinations, not just hearing voices.
- Making sure the intervention didn't have any potential harms.

This study is a good starting point for the researchers to continue their investigations. But it's far too early to be able to tell whether this intervention will ever be introduced into clinical practice in the future.

Analysis by Bazian
Edited by NHS Choices

Links to the science
Orlov ND, Giampietro V, O'Daly O, et al. Real-time fMRI neurofeedback to down-regulate superior temporal gyrus activity in patients with schizophrenia and auditory hallucinations: a proof-of-concept study. Translational Psychiatry. Published online 12 February 2018

Name: ____________________

Date: ____________

SQ3R SURVEY • QUESTION • READ • RECITE • REVIEW

1. SURVEY

Answer the following questions before reading the text.

-What is topic of the text?

____

-What is the title of the text?

____

-Notice any subtitles, headings, or chapters. How is the text organized?

____

-Describe a picture or graphic included in the text.

____

2. QUESTION

Before you start reading, write three questions you have about the text.

1. ____________________
2. ____________________
3. ____________________

3. READ

Look for the answers to your three questions as you actively read the text. It is important to take the time to re-read any sections or portions of the text that are unclear.

4. RECITE

Write a short summary of the text in your own words.

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____

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5. REVIEW

Answer each question you generated before reading the text.

1. ____________________
2. ____________________
3. ____________________

Name: ____________________

Date: ____________

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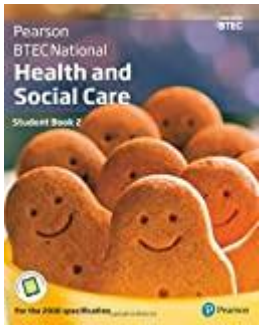
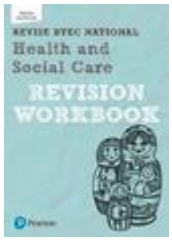
Learning Resources

BTEC Pearson's have produced a several learning resources which will be useful for you. They have textbooks, revision guides and study guides designed to help you complete the course and do well in the relevant exams. The resources include:

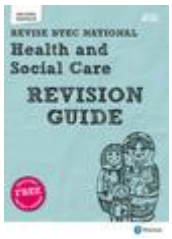
BTEC National Health and Social Care Student Book 1
Publisher: Pearson ISBN: 9781292126012
Author: Marilyn Billingham, Pamela Davenport, Hilary Talman, Nicola Matthews, Beryl Stretch, Elizabeth Haworth



BTEC National Health and Social Care Student Book 2
Publisher: Pearson ISBN: 9781292126029
Author: Carolyn Aldworth, Nicola Matthews, Sue Hocking, Pete Lawrence, Marjorie Snaith, Mary Whitehouse, Elizabeth Haworth



Revise BTEC National Health and Social Care Revision Workbook
Publisher: Pearson ISBN: 9781292299082
Author: Georgina Shaw, James O'Leary, Elizabeth Haworth, Brenda Baker



BTEC National Health and Social Care Revision Guide
Publisher: Pearson ISBN: 9781292230443
Author: Brenda Baker, James O'Leary, Marie Whitehouse, Georgina Shaw