

MIND THE GAP

The ethics of neuroscience

Preparatory pack



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Introduction

INTRODUCTION

Mind the Gap

Mind the Gap is a revival of the fourth in a series of Theatre of Debate® projects developed and produced by Y Touring and funded by Wellcome Trust and the Royal Albert Hall's learning and participation department and Central YMCA.

Aims

Mind the Gap aims, through theatre and debate, to:

1. Provide a starting point for learning about the importance of brain research for the enrichment of human life and for the understanding of diseases and disorders of the nervous system, which cause such unhappiness, and are costly to society.
2. To stimulate an informed debate on the ethical implications of brain research;
3. To challenge the stigma of mental and neurological illness.

***Mind the Gap* at the Royal Albert Hall**

The play will be followed by a workshop/debate involving the characters in which your students will be able to clarify and deepen their understanding of the issues raised by the play.

We are offering the following materials to prepare you and your students:

- Some basic information about the brain;
- A basic summary about neuroethics;
- The synopsis of the play by the playwright Abi Bown;
- An outline of some of the issues raised in the play;
- Suggested preparatory lessons.

Understanding neuroethics

Any Questions

If you have any questions after reading through the information, please don't hesitate to contact us on 020 7520 3090 or email info@ytouring.org.uk

Preparatory Lesson

The play and the characters stories' explore issues related to our brains, brain disorders and the potential uses and misuses of the fruits of brain research. In order to ensure that your students gain maximum benefit from the project, we suggest that you use at least two of the following preparatory lessons including the 'What do we think' activity.

Understanding the brain

The brain is the most complex organ in the human body. It produces our every thought, action, memory, feeling and experience of the world. This jelly-like mass of tissue, weighing in at around 1.4 kilograms, contains a staggering one hundred billion nerve cells, or neurones.

The complexity of the connectivity between these cells is mind-boggling. Each neurone can make contact with thousands or even tens of thousands of others, via tiny structures called synapses. Our brains form a million new connections for every second of our lives. The pattern and strength of the connections is constantly changing and no two brains are alike.

It is in these changing connections that memories are stored, habits learned and personalities shaped, by reinforcing certain patterns of brain activity, and losing others.

<http://www.newscientist.com/article/dn9969-introduction-the-human-brain.html?full=true>

Neuroethics

This play considers many ethical issues that surround brain science: The discipline of "neuroethics".

Neuroethics considers the effects of neuroscience and neurotechnologies, including the fruits of brain research, on various aspects of human life.

Mind the Gap: Synopsis

SYNOPSIS

What if we could treat Alzheimer's in the early stages?

Is growing old a disease?

What if we choose to selectively forget?

What if we could treat addiction at its origin in the brain?

What if we could predict behaviour through brain imaging?

Would we? Should we?

A young girl is pushed under a train at an East London tube station. The culprit, Dino, an 18 year old male with a history of substance abuse, is convicted of her murder and is due to be sentenced.

The girl's boyfriend, Vijay, standing next to her at the time of the murder is undergoing counselling for post-traumatic stress disorder. Six months on and Vijay leaves the security and comfort of his family home to go on a relatively short journey across London to the Law Courts where Dino is about to be sentenced.

For Vijay it is the ultimate test of his ability to cope with the aftermath of Tania's death. If he can get to the court by public transport, alone, under his own steam to see Dino sent down, then a spell will be broken and, he concludes, the tortuous six months of constant flash backs, panic attacks and blackouts will evaporate.

With Dino incarcerated, Vijay reasons, he can become a whole person again, his tortured psyche can be eased, he can forget what he was made to witness on that fateful day.

Armed with his coping mechanisms garnered through months of therapy, Vijay makes it onto the bus. At the entrance to the tube station, however, he has a vision of his girlfriend's killer, panic overrides him and he blacks out.

When Vijay comes to, only seconds later, he is alarmed to find himself underground on the station platform. Fearful that he is now indeed living his nightmare, he searches for a way out but all exits are blocked. There appears to be some sort of security alert, the next train is 58 minutes away - Vijay has to sit right there in the heart of his panic and fear.

Luckily he has company - Maya an old woman who surfs the tubes, travelling from stop to stop, and Silas, the kiosk owner on whose platform Maya invariably finds herself. Silas and Maya take it upon themselves to come to Vijay's aid, slowly drawing out from him the story of his girlfriend's death. What they don't know is that the party is soon to be gate crashed by a 4th mind, who has followed Vijay into the underground and is set to haunt him. Dino, Tania's killer, is now on the platform and Vijay must confront him and his own ambivalent feelings towards the boy who snuffed out his girlfriend's life. Maya's story weaves in and out of Vijay's own. She revisits her past and contemplates her future whilst the present, like her memory can elude her. She has a diagnosis of suspected Alzheimer's disease. The terminal neurological decline is in its early stages but Maya has taken to wandering away from her family to find solace in the tubes of the underground system. She is insightful of her condition but is easily disorientated and can no longer decipher what is past or present with any great confidence.

Did she or didn't she keep the appointment she made with the son who had travelled across the world to be reunited with her? Tragically, she can't remember, but as the story of Vijay's pain is played out before her on the platform, the others are able to help her piece her story together and she gets an answer.

Silas, the great listener who counsels the sad and the bad, the lost and the wasted, plays ringmaster and Devil's Advocate. In the underground time in which the characters find themselves, until the trains are running again and a good service is restored, Silas organises mind games and party tricks, ever expanding the themes of memory, forgetting and remembering.

He embraces the challenge of keeping everyone talking and encourages Vijay to take his story to its ultimate conclusion. Vijay is at last alone on a deserted platform with Dino; the tube train is about to come in - what will he do?



Abi Bown, August 2010

The issues raised in the play

THE ISSUES

Mind the Gap deals with a number of issues that can affect anyone at any point in their lives. It asks questions about the basis of our character – our brains, our minds – how advances in neuroscience can help the characters overcome the problems they face, and poses ethical questions associated with these advances.

Vijay is struggling to come to terms with life after the death of his girlfriend Tania. The symptoms he is experiencing are similar to those of Post Traumatic Stress Disorder. Silas suggests: “If there was a ‘forget it pill’ would you take it?” Vijay replies: “Damn right, I’d take it now.” Currently, there are no ‘forget it pills’ available, but it is not beyond the realms of possibility. However, one issue raised in the play is whether everyone should be allowed to forget something if they want to.

Dino is desperate to forget the fact that he pushed Tania under a train. However, Silas and Vijay are of the opinion that Dino must “atone for his sins” because “He must remember.” But are Dino’s problems his fault? Over the course of the play we discover that Dino is a chronic substance abuser, trying to come off drugs. There is also mention that he could be suffering from schizophrenia. However, Dino is definitely suffering from depression, which may or may not be related to his drug abuse. “I want to be somewhere safe... I want someone to hold on to me.” The question is raised: If Dino had received treatment for his depression, could things have worked out differently?

Between Vijay, Silas and Dino they come up with a number of people who would benefit from a ‘forget it pill’: abuse victims, war veterans, victims of war crimes.

However, Maya again poses the question: “What good comes of forgetting genocide?” If you extrapolate that out; What good comes of forgetting? Indeed, what good would come of remembering everything?

Maya is suffering from Alzheimer’s disease. The disease slowly causes patients to find even the most simple of tasks more and more complicated. Currently, drugs are being developed to slow down the progress of the disease. The argument the play raises is one of how much do you want to remember?

Silas: *Wait...you haven’t remembered all the people in the supermarket yet, the vast range of tinned peas, the colour of the checkout girl’s hair, the pimple on her arm, the hair next to the pimple, the smell of the change in your hand, every groove on every edge of every pound coin...*

Maya: *Stop it! That's too much.*

There is no doubt that Alzheimer's is a terrible disease and the suffering of those it affects, including the family and friends is tremendous, and should be eased if at all possible. However, one issue raised in the play is: How far should we go? What would happen if we lost all our memories of one person, because we blocked out a specific event relating to that person? Or what would happen if we remembered everything?

Preparatory lesson 1: What does it mean?

OBJECTIVE	A discussion exercise to ensure that your students are familiar with the key terms and phrases referred to in the play.		
PROCESS	<ol style="list-style-type: none">1. Explain that you are going to say a word or phrase and that when you call out their name, you want each of your students to say the first word that comes into their head.2. Explain that if they can't think of a word or if their mind goes blank, they can say 'Pass'.3. After each round clarify the actual meaning of the word or phrase if appropriate and discuss as a class some of the associations that have been shared.		
WORDS AND PHRASES	Anxiety Neuroscientist Depression Trauma Schizophrenia	Brain Brain disorder Neurone Alzheimer's disease Post-traumatic stress	Genetics Memory loss Cognitive enhancer Brain scan Neuroethics

Preparatory lesson 2: What do we feel?

OBJECTIVE	To explore the emotions associated with some of the key phrases associated with the Brain and neuroethics.		
PROCESS	<ol style="list-style-type: none">1. Explain that you are going to say a word or phrase and that when you call out their name, you want each of your students to say the emotion that they associate with that word.2. Explain that if they can't think of a word or if their mind goes blank, they can say 'Pass'.3. Discuss as a class some of the associations that have been shared.		
WORDS AND PHRASES	Depression Drugs Mental illness	Genetics Science	Neurological Alzheimer's disease

Preparatory lesson 3: Sculpture

OBJECTIVE	To enable a non-verbal student exploration of pre-conceptions about electronic patient records.
RESOURCES	A large empty classroom or drama studio
PROCESS	<ol style="list-style-type: none">1. Split the class into groups of three - A, B and C (the odd group of four is fine).2. A's, are the sculptor, B and C (+ D's if required) are the sculptor's 'clay'. Ask the sculptor to guide the clay into a picture that you will describe.3. After each one, invite the whole group to look at each other's sculptures and comment on what they see.4. Ask them why did they respond the way they did to each phrase?5. Ask them where does their knowledge come from? E.g. science lessons, personal experience, media etc.6. Ask them what did they feel after hearing other people's responses?7. ask them do they think it is important to know about each subject and why?
SCULPTURES	<p>Sculpture one: Trauma Sculpture two: Brain Sculpture three: Anxiety Sculpture four: Post-traumatic stress Sculpture five: Depression Sculpture six: Neuroscientist Sculpture seven: Memory loss Sculpture eight: Schizophrenia Sculpture nine: Alzheimer's disease</p>

Preparatory lesson 4: What do we think?

OBJECTIVE	To prepare your students for the debate that will follow the play. The debate will explore what your students think about neuroethics
RESOURCES	A large empty classroom or drama studio
PROCESS	<ol style="list-style-type: none">1. Ask your students to stand in the centre of the space.2. Explain that there is an imaginary line running down the centre of the space, one end of the line represents 'Agree' and the opposite end of the line represents 'Disagree'. The middle of the line is 'Don't Know'.3. Explain that you are going to read out a series of statements. If they agree with the statement they should go and stand at the end of the line that is 'Agree'. If they disagree they should go and stand at the end of the line that is 'Disagree'. If they are not sure or don't know what they think they should stay in the middle.4. After they have taken up their positions, ask your students to explain why they have chosen their position. After hearing from several students give your group the opportunity of changing their position.5. Repeat the process for each statement.
STATEMENTS	<ol style="list-style-type: none">1. We should develop vaccines to prevent illnesses such as Alzheimer's disease, even though it will alter the age balance in our society.2. War veterans should be allowed to take drugs to help them forget the traumatic events of war.3. You should be allowed the option of taking a drug to enhance your memory before a test.4. It should be compulsory for potential parents to take tests to find out if their child is likely to be pre-disposed to mental illness.5. Children should be put on a register if they carry the genes that pre-dispose them to mental illness.6. Brain scanners should be used in school to monitor children for behavioural problems.