A G.A.T.E.WAYS JOURNEYS PROGRAM

for Year 3 and 4 children

with a love of science

'The Science of Hogwarts'

G.A.T.E.WAYS is an independent organisation offering challenging and enriching activities and experiences to develop and extend highly able children. This *JOURNEY* will run over four sessions**.**

"You are here to learn the subtle science and exact art of potion-making. As there is little foolish wand-waving here, many of you will hardly believe this is magic. I don't expect you will really understand the beauty of the softly simmering cauldron with its shimmering fumes, the delicate power of liquids that creep through human veins, bewitching the mind, ensnaring the senses. . . I can teach you how to bottle fame, brew glory, even stopper death — if you aren't as big a bunch of dunderheads as I usually have to teach." JK Rowling, *Harry Potter and the Sorcerer's Stone.*
JK Rowling's acclaimed Harry Potter series has captured the imaginations of millions of young readers worldwide with its mind-boggling magic. Behind the magic in these masterful pages are potions and spells bubbling and bursting with chemistry. Throughout this Science of Hogwarts Journey, we will explore the most intriguing wizardly effects and reproduce some Hogwarts magic of our own – no wands or incantations required!

Session One: Harry Potter and the Chamber of Potions

"Ron, you're making it snow," said Hermione patiently, grabbing his wrist and redirecting his wand away from the ceiling from which, sure enough, large white flakes had started to fall. — J.K. Rowling, *Harry Potter and the Half-Blood Prince*
They had Potions that afternoon, which was an unqualified disaster. Try as Harry might, he couldn't get his Confusing Concoction to thicken… — J.K. Rowling, *Harry Potter and the Prisoner of Azkaban*

In this session, our muggle chemists will begin to understand how some of the Harry Potter magic is created. We shall investigate polymers and their properties and explore why these properties can make them bouncy, stretchy, sticky, breakable, mouldable, hard or soft, and assist in creating such dramatic reaction like the exploding juice potion. Have you ever wanted to know what elephants use to brush their teeth? Yes, we have a potion for that too! We will also investigate acids and alkalis, everyday uses of these and why they are important in creating chemical reactions. Will we manage to create snow, just like Ron?

Session Two: Harry Potter and the Goblet of Ice

"I don't expect you will really understand the beauty of the softly simmering cauldron with its shimmering fumes, the delicate power of liquids that creep through human veins, bewitching the mind, ensnaring the senses..."
— J.K. Rowling*, Harry Potter and the Sorcerer's Stone*
Together they climbed the ladder into the dim, stifling tower room. Glowing on every little table was a crystal ball full of pearly white mist.
— J.K. Rowling*, Harry Potter and the Prisoner of Azkaban*

Professor Hay will take the muggles on a quest to create their own crystal ball. Will she use it to fight the death eaters? We will look at the properties of dry ice and how it sublimates in air and makes the transition to carbon dioxide gas. We will investigate the reactions of solids, liquids and gases and how the state a chemical is in can determine consequent reactions. Can we create a solution with a solid, liquid and a gas all at once? That sounds a bit magical… Doesn't it?!

Session Three: Harry Potter and the Prisoner of Glenmore

They stopped to buy parchment and quills. Harry cheered up a bit when he found a bottle of ink that changed colour as you wrote.
— J.K. Rowling*, Harry Potter and the Philosopher's Stone*
'That's a brilliant theory Hermione," said Ron, "with just one tiny little flaw. There's nothing written in his diary." But Hermione was pulling her wand out of her bag. "It might be invisible ink." she whispered. She tapped the diary three times and said, "Aparecium!"
— J.K. Rowling*, Harry Potter and the Chamber of Secrets*

The Harry Potter books contain many references to curious inks with a range of magical properties – from the moving ink dots on the Marauder's Map to colour-changing or invisible inks. In this session, we will test three different methods to create the greatest invisible ink known to wizard or muggle. Muggles will investigate the ideas of inks and developers and discuss the chemistry behind the reactions. The children will create maps and secret coded messages to enable them to find their way to the centre of the Triwizard Maze, and be the first to touch the Triwizard Cup.

Session Four: Harry Potter and the Order of the Flame

They stepped over the threshold and immediately a fire sprang up behind them in the doorway. It wasn't ordinary fire either; it was purple.
— J.K. Rowling*, Harry Potter and the Philosopher's Stone*
Reaching Snape, she crouched down, pulled out her wand and whispered a few, well-chosen words. Bright blue flames shot from her wand on to the hem of Snape's robes.
— J.K. Rowling*, Harry Potter and the Philosopher's Stone*

In this session we will investigate how flames and fire can be used to create the dramatic effects seen on films. Use Caution! Basilisks are one of the most dangerous creatures in the magical world. Their venom is poison, one of only three things capable of destroying an evil horcrux. We shall make our own burning basilisk and then use our chemistry know-how to even make a tea bag fly! We will look into a variety of special effects used in the Harry Potter films from the biggest explosion to figuring out whether we can we use the Tergeo spell for clearing up a bleeding wound.

Assessment and Reporting: Assessment will be based on an evaluation of each student's participation in the lesson activities. A self-assessment will also be completed. At the end of the program a short, written report will be completed on each student and mailed to parents.

Requirements:
Please bring an A4 notebook and a well-stocked pencil case each week. A snack will also be needed each week (no nut products please). Also bring a stamped, self-addressed DL envelope (for the report) and a small photograph of yourself to the first session.

About the presenter:
Sandy Wong is a chemist and science communicator with a keen interest in making science accessible and interesting to a diverse range of audience. She has a degree in Medicinal Chemistry and recently completed a Doctor in Philosophy (PhD) in Chemistry. Sandy has enjoyed eight years of teaching science and curriculum development at both secondary and tertiary levels, bringing how things work in labs and everyday life into the classroom.