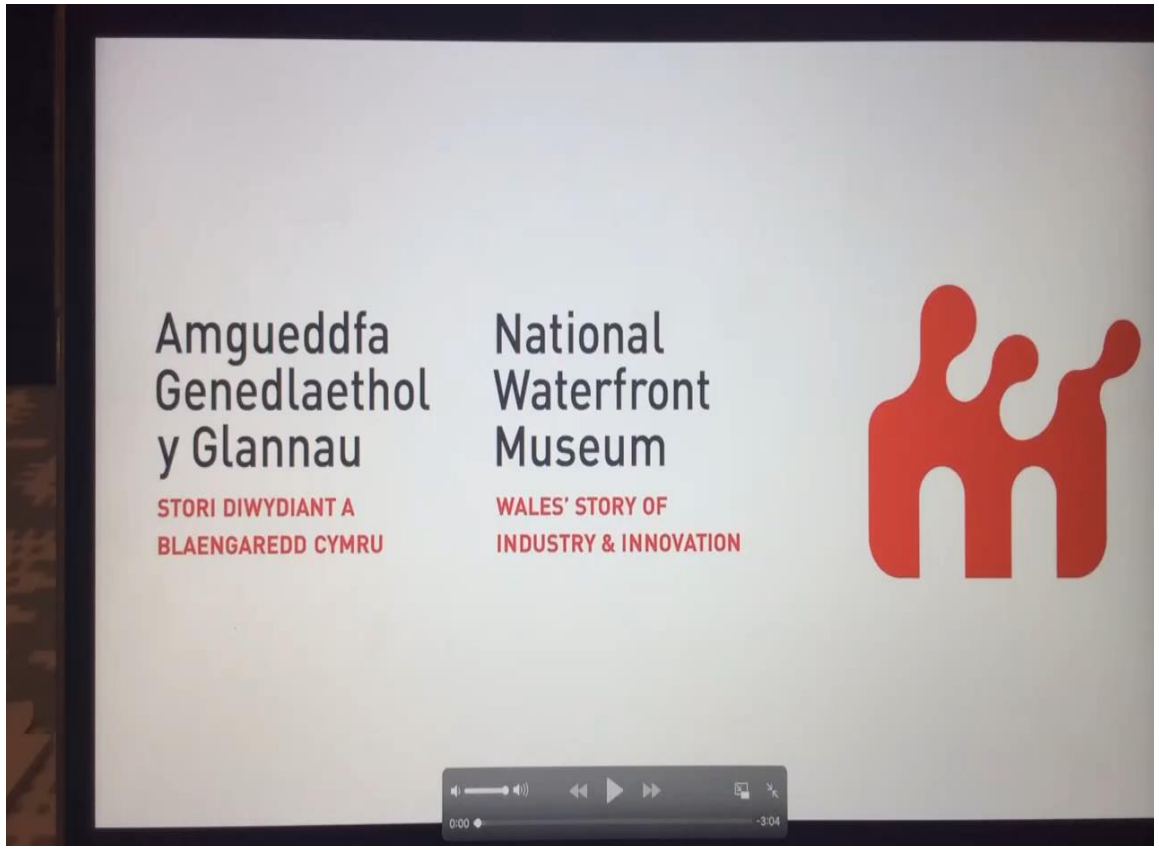
National Waterfront Museum.

PRESENTED BY: AMANDA, BOBBI, LESLEY AND RHIAN.

Introduction.

- The National Waterfront Museum is situated in the SA1 area of Swansea. The museum portrays the story of industrialisation in Wales, over the last three hundred years. It offers activities and workshops in fifteen different thwemed galleries, to compliment and support the National Curriculum, by developing core skills across all key stages of education. The museum alongside its other seven partner museums, is the largest provider of education outside of the classroom in Wales, recording over one hundred and eighty thousand formal learning visits each year (National Waterfront Museum, 2019). Children are offered experiences in the museum, which utilise their investigative senses to discover information about objects. The museum offers a bilingualism policy throughout. Leisa Bryant, a senior learning support officer, explains her role at the museum in the video opposite (National Waterfront Museum, 2019). With the purpose of intention being to educate its visitors, the Waterfront Museum has portrayed its stories interactively. As with education, the museum has adopted for use the work of several educational theorists, of which include; Jean Piaget, Jerome Bruner, Howard Gardner and Lev Vigotsky. Our intention today, is to look at the impact the aforementioned theorists have within the museum.



Jean Piaget (1896-1980).

- Jean Piaget pictured opposite (Britannica, 2019), was an influential figure in the field of cognitive thinking, acclaiming the title of being the first theorist to address the process. Piaget created a constructivist approach to understanding how children learn (Pritchard, 2010), recognising that children's thought processes differ to adults. He provided evidential research to substantiate his theories (Gray and Macblain, 2015). Piaget's theories were tested under laboratory conditions using his own children, as they progressed through childhood. The techniques used during the investigations, are today considered morally unacceptable and have attracted much criticism. Piaget referred to children as being busy little scientists, who actively participate in their learning, whilst building upon their knowledge. He noted how children interact with their surroundings, to learn about the environment in which they live in (Gray and Macblain, 2015). Piaget titled his theory 'constructivism'. It consists of four invariant stages; sensorimotor, pre-operational, concrete operational and formal operational stage (Arthur and Peterson, 2012).

The sensorimotor stage (0-2 years).

- Piaget suggests that between birth and two years of age, children undergo cognitive development by participating in reflexive actions to develop schemas (Pritchard, 2010). Piaget further categorised this stage into six sub-categories; reflexive, primary circular, secondary circular, coordination of secondary schemes, tertiary circular and the beginning of representational thought. Throughout the museum, it is evident that aspects of Piaget's initial stage have been adopted for use within activities for children to explore and investigate using reflexive actions. However, the resources available within the museum for this age group, are limited and in need of updating. Where resources are offered, the child is not able to freely investigate due to the tiled flooring being considered as unsuitable from a health and safety perspective. The museum could address this issue, by utilising another area of the museum which has suitable soft flooring, actively encouraging the young children to freely move and explore the environment around them.

How the sensorimotor stage links to the museum.

The designated café area within the museum is utilised by persons of all ages, offering a universal menu (National Waterfront Museum, 2019). The café is a key area used to consume foodstuffs whilst engaging in social activities. Highchairs are provided to enable young children to pursue the opportunity to be independent and take an active role in the consumption of their own foodstuffs, developing their own self-feeding patterns using reflexive actions (Pritchard, 2010). This pattern of behaviour is typically seen in Piaget's sensorimotor stage.

Toys provided within the museum, even though they are limited, are intentionally placed within the learning area to encourage young children to participate in investigative learning. An example of which, would be the coloured wooden beads on a wire track in the picture opposite (Etec, 2019). As observed, the baby is displaying typical intentional behaviour (Pritchard, 2010), moving the different coloured beads along the wire, moving the orange bead first to allow the passage of the red bead to continue. This trait of behaviour is typically portrayed in Piaget's coordination of reaction stage for children aged between eight and twelve months.

The pre-operational stage (2-4 years).

- According to Piaget, children aged between two and four years of age, utilise their language skills to develop their imagination. Children at this stage of development, are said to be in the pre-operational stage of Piaget's theory. Piaget believed that children must engage in imaginative play to develop cognitive thinking (Gray and Macblain, 2015). The museum is fantastic at liaising with schools to provide experiences for children involving imaginative play, where children can have fun and play whilst investigating objects using their senses. The museum activities are aimed at covering; knowledge and understanding of the world, Welsh language development and literacy and numeracy framework areas within the Foundation Phase. However for external visitors, the museum offers very little hands on experiences for children of this age group. The museum could address this issue, by providing dressing up boxes complete with costumes to actively encourage children to engage within the era of the themed galleries.

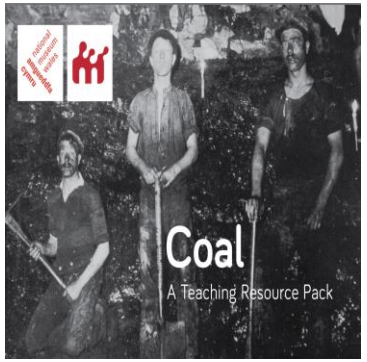
How the pre-operational stage links to the museum.

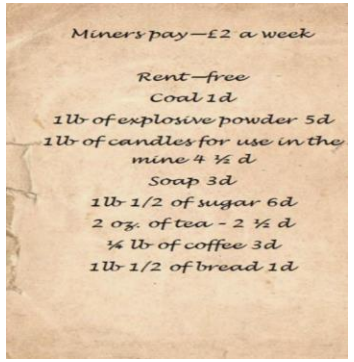
- Using imaginative play as visible in the photographs opposite (National Waterfront Museum, 2019), the museum in conjunction with schools, offers workshops to actively encourage role play. Children are offered experiences to explore the world around them using their senses to interact with three dimensional items and experience the real feel of things. Opportunities within the workshops arise for children to use questioning techniques such how, what, why, where and when to discover and enhance their knowledge. For example, what does it smell like? Has the hat been worn before? If so, when? All these strategies applied by the museum reinforce Piaget's second stage of his theory and the Foundation Phase.

The concrete operational stage (7-11 years).

- According to Piaget, children in this stage are aged between seven and eleven years of age, and are able to 'decentrate' using logical thought processes (Arthur and Peterson, 2012). Children approach their learning with flexibility, using prior knowledge as a source of information to enable problem solving. To solve simple mathematical operations, children perform internal mental operations using different strategies sourced from prior knowledge. The museum has clearly adopted many aspects of Piaget's theories for children in this age group. The museum's programme of education offered to teachers during learning visits, is well developed incorporating all aspects of the curriculum. To compliment public visits from children, the museum has also presented literature, to support learning through the medium of play using investigative techniques.

How the concrete operational stage links to the museum.





- The museum has developed a well structured programme of education for children in this age group during school visits, and titled it 'Coal' (National Waterfront Museum, 2019). The programme, supports history, geography, the Welsh curriculum, literacy and numeracy. One of the numeracy activities offered, involves using simple mathematical operations to compare modern day prices to that of Victorian times. To complete the activity, the child would need to recall on prior mathematical knowledge, in order to problem solve.
- To support children during public visits, the museum has worked with agencies to set up partnerships, offering interactive learning programmes through the medium of paper. An example of which, is their current exhibition in partnership with the HM Coastguard (HM Coastguard, 2019). The exhibition provides a detailed historical background into the role of the coastguard, whilst complimenting and highlighting the dangers of the coastline. To support interactive learning, HM Coastguard have provided an interactive booklet to complete during the visit to the museum.
- The interactive activities offered by the museum above compliment the concrete operational stage of Piaget's theory.

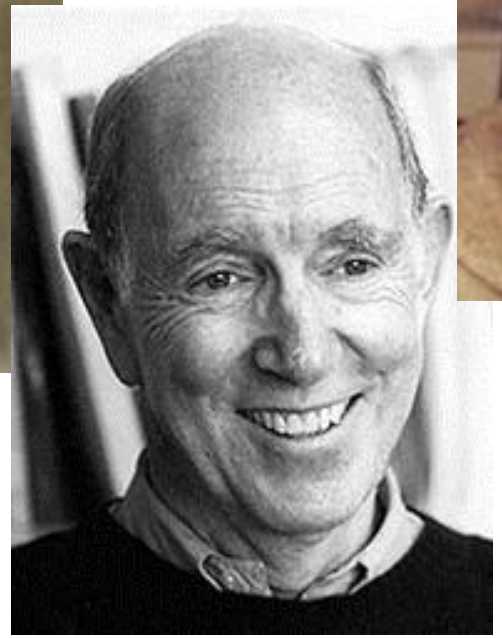
The formal operational stage (11-15 years).

- According to Piaget, children aged between the ages of eleven and fifteen years of age, utilise their active imagination to create imagery for items they may never have seen (Bartlett and Burton, 2012). During this stage, children are able to develop methods to manage, control and organise their thoughts enabling them to thing abstractly and hypothetically. Piaget suggested that children are at their highest order of cognitive thinking in this stage. However, a limiting factor here, would be a lack of knowledge (Pritchard, 2010). The museum has adopted Piaget's fourth stage of thinking into many of its fifteen themed galleries. Alongside displays, interactive touch screens can be used incorporating the wonder of imagination through the vision of sound. The museum has also worked closely with the Welsh Government to support humanities, across key stages three and four, alongside the Welsh Baccalaureate programme. Both programmes are supplemented with additional learning resources for teachers (National Waterfront Museum, 2019).

How the formal operational stage links to the museum.

- The museum absolutely supports children in this last stage of Piaget's theory. Within the themed galleries, the museum have created 'the bigger picture' using different aesthetic materials to provide children with opportunities to organise, manage and control their thoughts. The museum has cleverly used a wide variety of source material, to display its information. With reference to the First World War period, the museum has used (as shown in the pictures opposite (National Waterfront Museum, 2019)) visual and interactive touchscreen sound effects, in conjunction with textiles and medal artefacts. To access the medals, the child must first interact with the onscreen activities and upon completion, a draw is opened to reveal a replica medal awarded to soldiers for bravery. All the artefacts used, help children in this age bracket to develop an image for the period of time in question, and thus develop their higher order thinking.
- The museum also supports the Welsh Baccalaureate programme by providing educational resources for use within visits to the museum as seen in the photograph opposite (National Waterfront Museum, 2019). The resources help students to both prepare and develop skills for use within the Global Citizenship Challenge. Again, these skills are key to Piaget's fourth stage of his theory, supporting his vision of children being busy little scientists (Gray and Macblain, 2015).

Jerome Bruner: 1/10/1915 - 5/6/2016



How Bruner's thinking developed

- **Cognitivism**

  The mental process by which we come to know and understand

- **Constructivism**

  The process of adjusting our mental images to accommodate new experiences

- **Culturalism**

  The grouping of socially transmitted behavioural patterns, beliefs and customs linked to human thought in its entirety

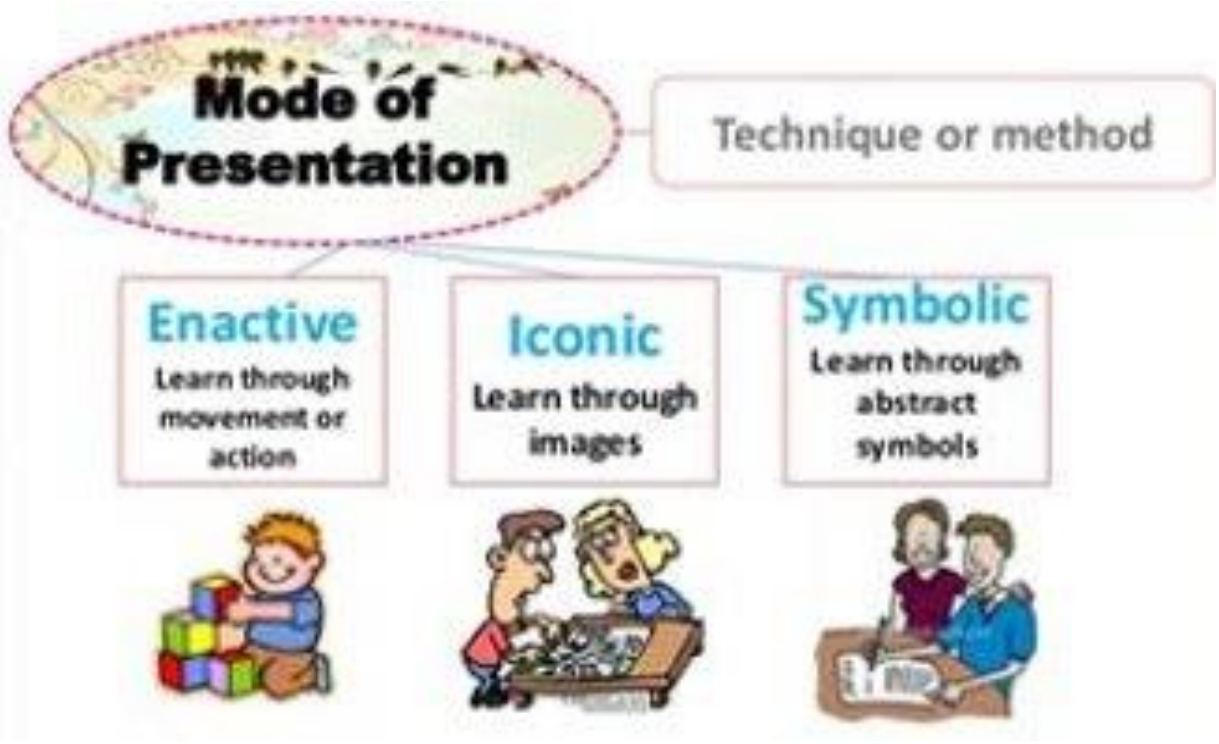
Bruner's Evolving Works & Theories

- The Process of Education (1960)
- Towards a Theory of Instruction (1966)
- The Relevance of Education (171)
- The Culture of Education (1996)

Theory of Cognitive Development

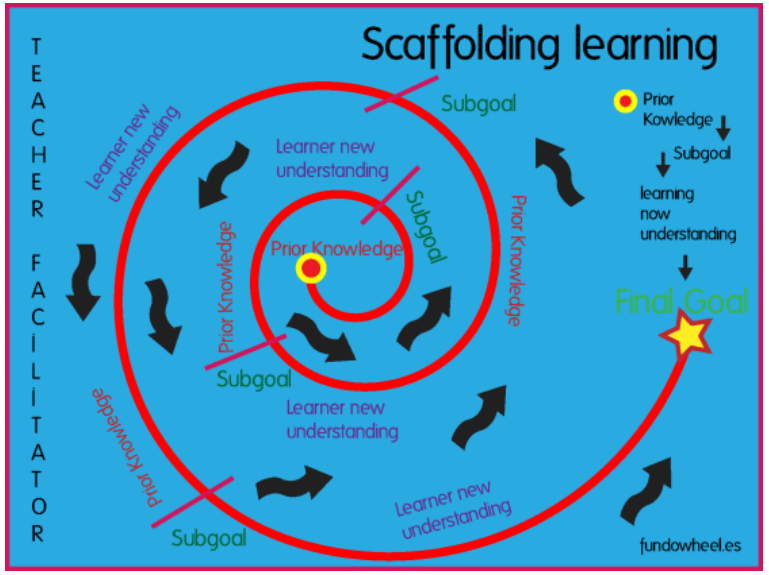
5 Stages:

- **Intellectual Development**
- **Discovery Learning**
- **Formation of Concept**
- **Development of Language**
- **Generic Learning**



The Scaffolding of Learning

- A metaphor used to describe the support adults provide when offering a child help
- Step by step support
- Dependent to independent



Bruner's Spiral Curriculum

4 Key aspects:

- Structure of learning
- Readiness for learning
- Intuitive and analytical thinking
- Motives for learning

Bruner's more recent works

The 5 E's

- Engage
- Explore
- Explain
- Elaborate
- Evaluate

Waterfront Museum

(Free WIFI)

Getting Around

Cafe

Reception

Click to add text

Gift Shop

Disabled Parking / Facilities

Meeting Rooms

Indoor / Outdoor Picnic Areas

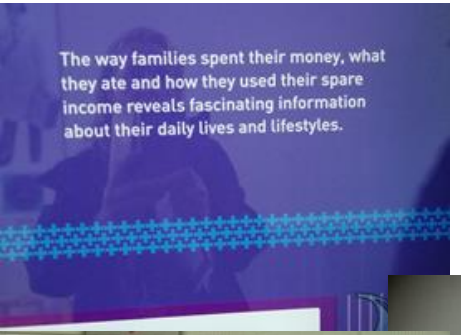
Toilets and Baby Changing

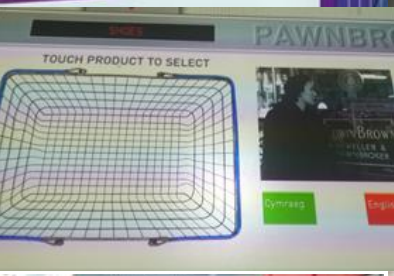
Public Lockers

Waterfront Museum - Links

A child is an active problem solver, who can be taught something at any age provided the method of teaching and support corresponds to the child's capabilities at the time. Bruner

Waterfront Museum

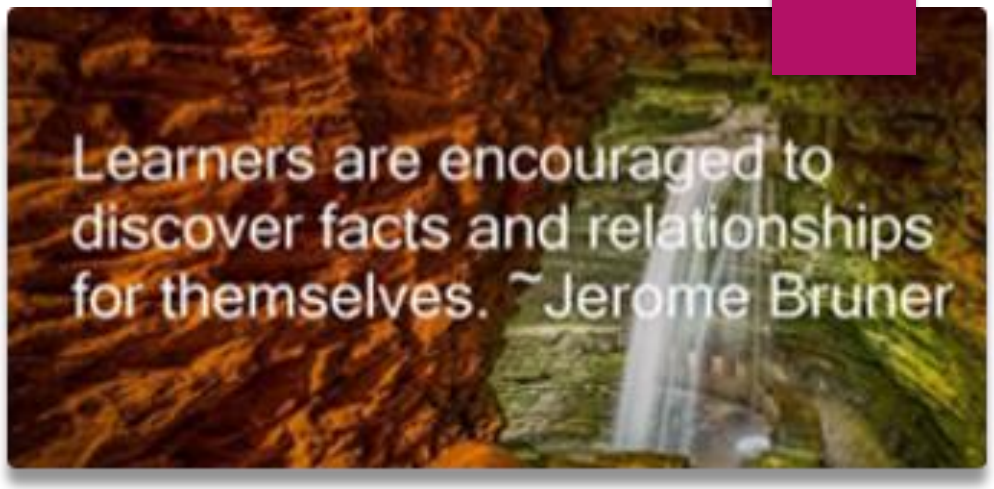




Organised structure

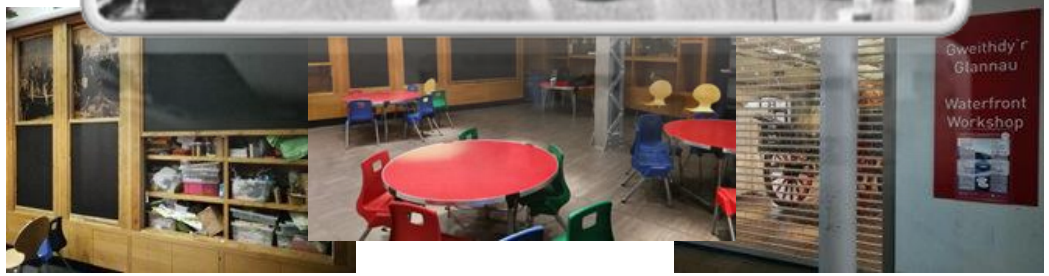
Waterfront

- Organised Structure
- Support staff – provide appropriate instructions
- Children left to work independently
- Create object/item
- Children increase their knowledge
- Reflect on practice
- Evaluate
- Positive outcome – helps with self-esteem and learning
- New knowledge based on previous knowledge



Waterfront Museum: Activites

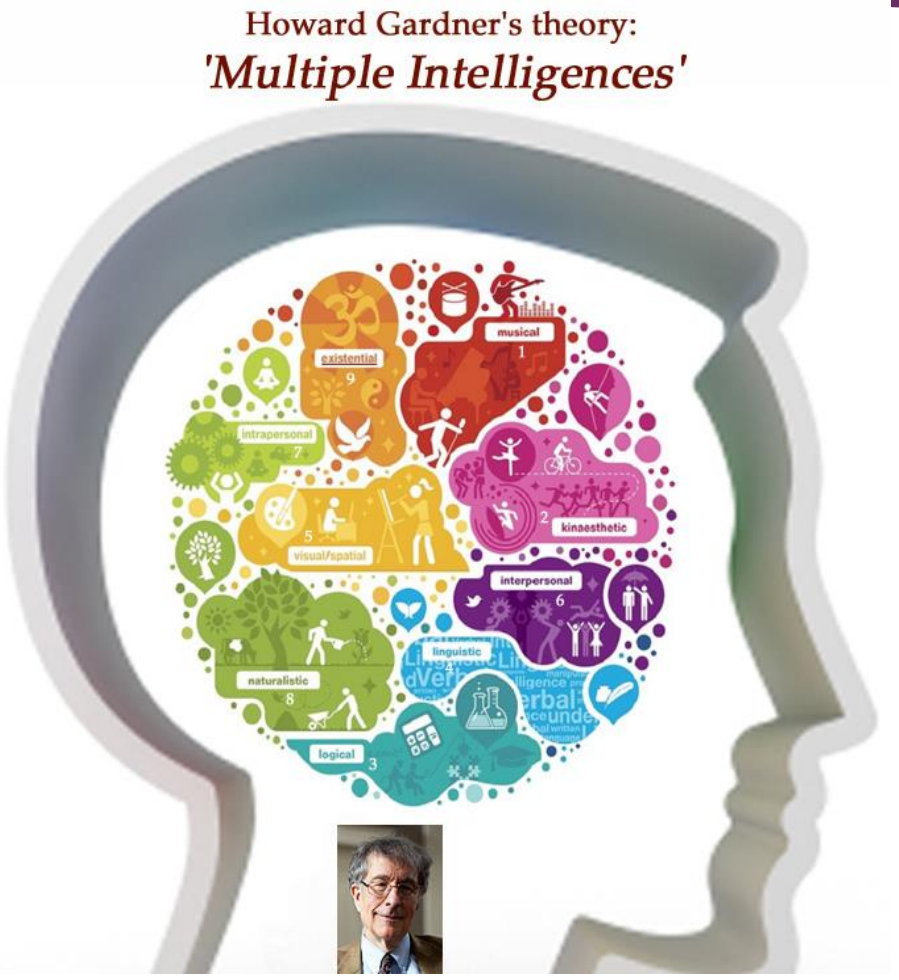
Swansea Science Festival



Workshops

Chinese New year

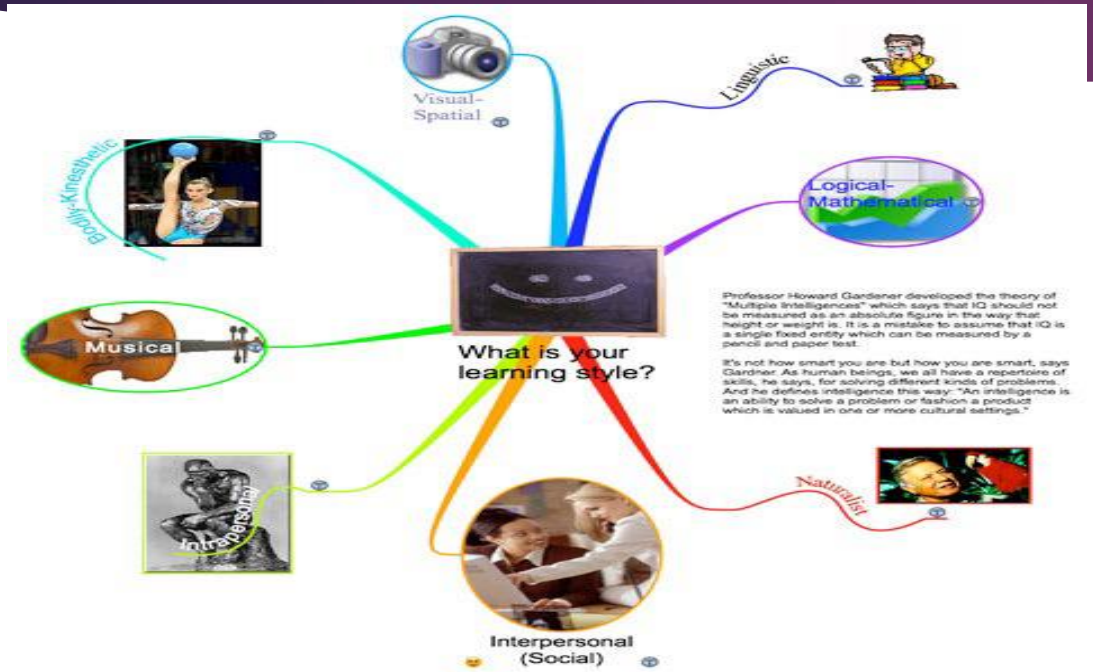
Howard Gardner



Howard Gardner theory

- Howard Gardner always had an interest in education from an early age he often daydreamed as a child about teaching different ages of schooling from kindergarten age through to high school age. In 1969 having graduated as a student in psychology he spent a term teaching as an experimental open classroom. (Gardner, 2011). It was from the early 1980s that he had an active role in educational research and practice. His theory of multiple intelligences was developed in 1983. He is a professor of education at Harvard University and proposes that there are eight intelligences these are, Linguistic, Logical/mathematical, Spacial, Bodily/kinaesthetic, Musical, Interpersonal, Intrapersonal and Naturalist. Later in his theory he developed a ninth which is Existential, further research is needed to develop more on this last intelligence. (Gardner, 2008). To qualify as an intelligence Gardner mentions that all human beings develop at least the first seven intelligences and some develop more than others in various areas. The human species have evolved to think in language and in spatial terms to also use logical and mathematical tools etc. The intelligences gives everyone their individuality as the possession of them are different in every person. (Gardner, 2011). Notes that people all look different and exhibit different personalities, and possess different kinds of minds. An education built on multiple intelligences would be more effective than one built on just two intelligences. There are possibilities of developing a broader range of talents, therefore making the standard curriculum easier to access for a wider range of students. By the age of six or seven each of Gardners intelligences has already developed to a high degree in any normal child.

Gardner's Intelligences Two examples



- With the bodily/kinaesthetic intelligence it represents expression through movement. Dance acting playing sports etc. The control of bodily movement is in the cortex area of the brain, individuals who are right handed the dominance for that body movement is found In the left hemisphere of the brain. The ability to express ones emotion whether it be through dance or sport or create something is evidence of the cognitive features of body usage. (Gardner, 2008).

- Interpersonal intelligence is the capability to detect and respond to the mood of others to communicate and be empathetic towards others. (Gardner, 2008). Mentions that brain research suggest that the frontal lobes play an important part in interpersonal knowledge. Biological evidence for this Intelligence includes two additional reasons often known as unique to humans. One reason is the length of childhood years in primates which includes the natural attachment to the mother. If for some reason the mother is not available or not engaged then the normality of interpersonal development would be a serious issue. The second factor says Gardner is the importance in the human race for social interaction, skills of leadership organisation etc would naturally follow from this. (Gardner, 2008).

Linking theory to the museum

Within the museum there is full access for all to experience the various workshops they have. With school visits the idea is the same and have an in depth learning experience. The workshops give a real incite into history with real actors, this keeps the engagement of the class children and leads to open questions during the learning session. The children have a visual learning experience and there is a great potential of activities to follow when they return to the classroom. The image is that of a baker so the possibility of the children following on from this workshop is baking bread back at school, questioning and finding out the cost of ingredients years ago. This could be learnt through the linguistic intelligence asking questions of that nature during the workshop. Depending on age of children there could be a shopping trip to purchase the ingredients first, so therefore logical/mathematics would be used also. These link in with (Gardner, 2008). Multiple intelligences theory. The image is property of the waterfront museum.

Linking intelligences to museum

The museum has 300 years of industrial revolution, to look at whole history through the objects. To learn through experience and use sensory skills. The actors that are hired in for various workshops give a real experience and ignites the imagination of viewers/visitors. Excitement that will trigger additional learning and another visit. Improve social skills and freedom to learn outside of the classroom, One of the workshops as shown in the image opposite was to learn about weapons and war of years ago the actor shows the class real artefacts giving a visual learning experience and opportunities to ask questions about what war was like and possibly to hear the gun being used as an example. Showing the children how much can be learned from handling objects to explore using their senses. Learning this way could develop Spacial intelligence when handling the objects. The children using the clipboard are using their interpersonal intelligence to walk around the museum working together to look for clues/items etc. Theory on intelligences link to (Gardner, 2008).

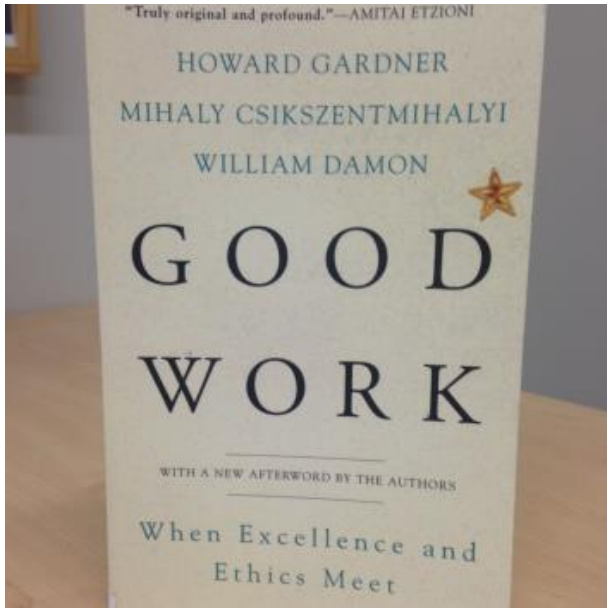
Classroom ideas using multiple intelligences

The story of the very hungry caterpillar being read to the class using materials such as sock puppets to keep the engagement of the children. A follow up activity is giving the children opportunities to create what they remember about the story, that could be making sock puppets of the caterpillar or the butterfly. Also carrying out a p.e session enacting out the movement of the caterpillar or butterfly.

Howard Gardner. Triple helix three strands of good work 3 E's

The good project

In 1996 the GoodWork Project was founded Howard Gardner and two other colleagues it promotes excellence engagement and ethics in education. Preparing students to contribute to society by becoming good workers and good citizens. The project has been used in a wide range of classrooms not only in the US but abroad too. There is a multiple intelligence international school in the Philippines that also use the good work project within their everyday learning.



Excellence Ethics Engagement

Bulb buddies

Welcome back Bulb Buddies

Penny Tomkins, 14 January 2019

I hope you all had a lovely break over Christmas and New Year. Thank you to everyone who has sent weather data in. I'm enjoying hearing how your plants are doing and what the weather is like where you are! Remember, there are schools taking part from all over the UK. You can use the website to compare your results with schools in other countries. In the report at the end of the project we will compare the weather and flowering dates for Wales, England, Scotland and Northern Ireland. Which country do you think will be warmer and which do you think will have the most rain?

Lots of schools have reported that their bulbs have started to grow. Can you tell which of the plants are daffodil and which are crocus? The pictures on the right might help you to identify your plants. The pictures show plants on the same day, in the same park, but growing in different places. Some of the plants have grown less than others. Why do you think this is? The descriptions with the photos might help you to think of reasons why the plants are developing differently.

I look forward to your next data entries and comments. Remember, you can share photos by email and over Twitter.

Keep up the good work Bulb Buddies,

Professor Plant

In open areas, daffodils have already grown quite tall.

Bulb buddies is a blog that schools all over the uk take part in. They either get involved with the planting or take photos of outdoor environments where natural flowers/plants are growing. There are regular updates on the blog and also. Weather updates in different locations where the growth would be different. The outdoor activity is linked to the naturalist intelligence as it is in the natural environment and involves outdoor spaces to be explored by the children taking part. This links to Gardners theory.

Multiple intelligence international school

A class or preschool children learning how to apply for jobs and how to present themselves in interviews. Events at the school like this give the children great opportunities to experience real life scenarios, and to learn outside their classroom.

Children from the school learning about farming culture and produce. Getting hands on to experience the lifestyle and work that farming entails.

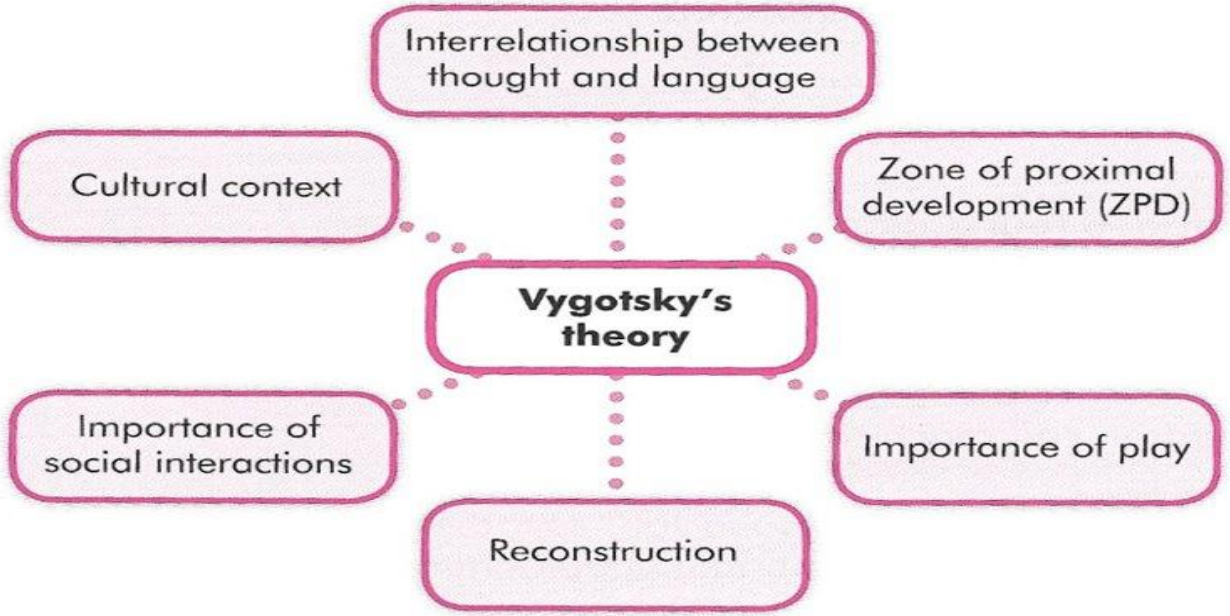
Vygotsky

- Lev Vygotsky was a Russian psychologist that developed a cognitive development theory. He was 1 in 8 children in his family which meant he grew up inside of a social group which showed him the importance of learning from being around other people. His years at the Institute of Psychology in Moscow was where he developed his research into cognitive development with his main focus being on the link between language and thinking. *(Turuk, 2008)*

- This theory was not available in the western world until the 1970s, after his death in 1934.

- The basic assumption of his theory is that a child's learning is fundamentally from the language used during social interaction, which is then internalised.

- He was influenced by the early work of Piaget , the sociological ideas of Durkheim and the psychological theories of Wundt *(Barlett and Burton, 2016).*



Meggit. t, C. (2000)

- The basic assumption of this cognitive development theory is that language used by adults is the foundational basis of learning. Vygotsky believed that thought is internalised language. It is common to see a young child commentating on their observations, yet as they mature this turns into thought and is no longer verbalised.

- The zone of proximal development: is the difference between a child's ability to solve problems on their own or with help. The in-between stage is where maturation and development are happening. This in between stage will show how far the child can be challenged to learn new things without taking it too far that they won't be able to understand *(Turuk, 2008)*.

- Vygotsky asserted that there are many benefits when children play as it is an opportunity to develop their social and personal skills as well as using their imagination *(Meggit, 2000)*

- Reconstruction is repeating a childs exposure to environments and learning to develop a flexible approach.

Social interactions create the foundations of how an individual responds to the external world and to cultures different to their own.

How the museum support Vygotsky's theory

Zone of proximal development and scaffolding

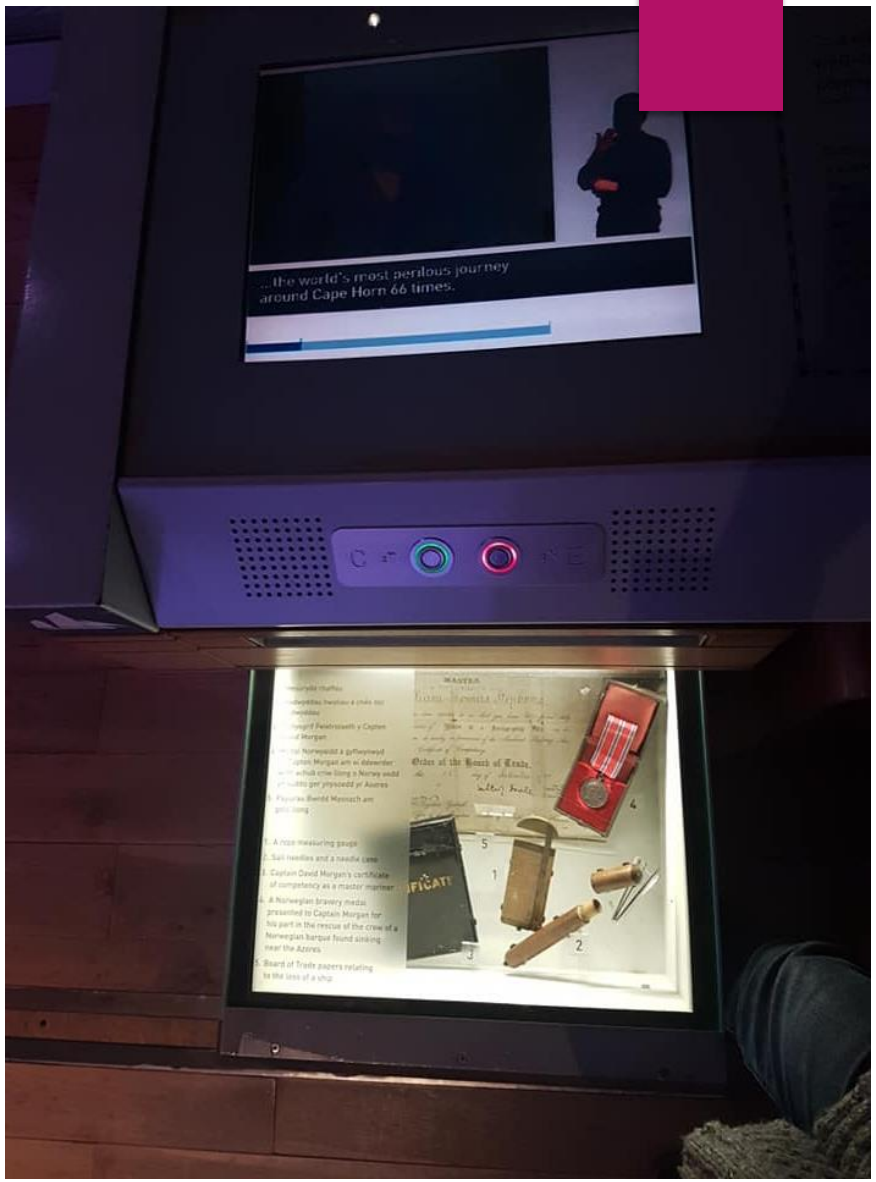
The museum provides group workshops where children are presented with artefacts. The educator asks open questions as to what they think the object is, or was used for or by. The staff at the museum upon knowing what the class thinks about each artefact can then provide suitable guidelines for them to continue their research on the topic at school or in the home.

The museum can also support each learners needs by providing suitable games and interactive activities. This links to Vygotsky's importance of children learning through play. As the museum regularly updates their exhibits they are able to support the child's on going learning needs with a variety of topics available.

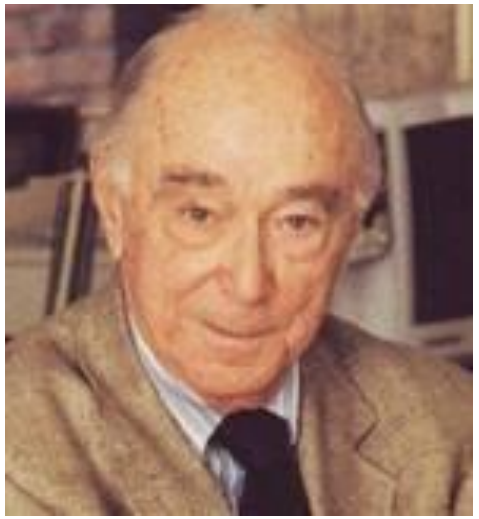
(National Waterfront Museum, 2019)

To conclude.

The museum liases closely with the Welsh Government to offer activities and workshops that link to the current curriculum in Wales. The museum visits from classes of education have a great insight into the history it encases. The workshops give a great learning experience and opportunities of freedom to learn outside the classroom and enhance the senses of seeing real objects and artefacts. These theories clearly link in to modern education and the learning continues back to the classroom with follow on activities and eagerness to return.



Great Theorists



Helped construct and continue to influence education and the curriculum as we know it today

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