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Daffodil International University
Department of Computing and Information System
Course Code: ENG 102
Quiz 01 Section:24A Set: A

ID: **Marks: 15**

Why we need to protect polar bears

Polar bears are being increasingly threatened by the effects of climate change, but their disappearance could have far-reaching consequences. They are uniquely adapted to the extreme conditions of the Arctic Circle, where temperatures can reach -40°C. One reason for this is that they have up to 11 centimetres of fat underneath their skin. Humans with comparative levels of adipose tissue would be considered obese and would be likely to suffer from diabetes and heart disease. Yet the polar bear experiences no such consequences.

A 2014 study by Shi Ping Liu and colleagues sheds light on this mystery. They compared the genetic structure of polar bears with that of their closest relatives from a warmer climate, the brown bears. This allowed them to determine the genes that have allowed polar bears to survive in one of the toughest environments on Earth. Liu and his colleagues found the polar bears had a gene known as APoB, which reduces levels of low-density lipoproteins (LDLs) – a form of 'bad' cholesterol. In humans, mutations of this gene are associated with increased risk of heart disease. Polar bears may therefore be an important study model to understand heart disease in humans.

The genome of the polar bear may also provide the solution for another condition, one that particularly affects our older generation: osteoporosis. This is a disease where bones show reduced density, usually caused by insufficient exercise, reduced calcium intake or food starvation. Bone tissue is constantly being remodelled, meaning that bone is added or removed, depending on nutrient availability and the stress that the bone is under. Female polar bears, however, undergo extreme conditions during every pregnancy. Once autumn comes around, these females will dig maternity dens in the snow and will remain there throughout the winter, both before and after the birth of their cubs. This process results in about six months of fasting, where the female bears have to keep themselves and their cubs alive, depleting their own calcium and calorie reserves. Despite this, their bones remain strong and dense.

Physiologists Alanda Lennox and Allen Goodship found an explanation for this paradox in 2008. They discovered that pregnant bears were able to increase the density of their bones before they started to build their dens. In addition, six months later, when they finally emerged from the den with their cubs, there was no evidence of significant loss of bone density. Hibernating brown bears do not have this capacity and must therefore resort to major bone reformation in the following spring. If the mechanism of bone remodelling in polar bears can be understood, many bedridden humans, and even astronauts, could potentially benefit.

The medical benefits of the polar bear for humanity certainly have their importance in our conservation efforts, but these should not be the only factors taken into consideration. We tend to want to protect animals we think are intelligent and possess emotions, such as elephants and primates. Bears, on the other hand, seem to be perceived as stupid and in many cases violent. And yet anecdotal evidence from the field challenges those assumptions, suggesting for example that polar bears have good problem-solving abilities. A male bear called GoGo in Tennoji Zoo, Osaka, has even been observed making use of a tool to manipulate his environment. The bear used a tree branch on multiple occasions to dislodge a piece of

meat hung out of his reach. Problem-solving ability has also been witnessed in wild polar bears, although not as obviously as with GoGo. A calculated move by a male bear involved running and jumping onto barrels in an attempt to get to a photographer standing on a platform four metres high.

In other studies, such as one by Alison Ames in 2008, polar bears showed deliberate and focused manipulation. For example, Ames observed bears putting objects in piles and then knocking them over in what appeared to be a game. The study demonstrates that bears are capable of agile and thought-out behaviours. These examples suggest bears have greater creativity and problem-solving abilities than previously thought.

As for emotions, while the evidence is once again anecdotal, many bears have been seen to hit out at ice and snow – seemingly out of frustration – when they have just missed out on a kill. Moreover, polar bears can form unusual relationships with other species, including playing with the dogs used to pull sleds in the Arctic. Remarkably, one hand-raised polar bear called Agee has formed a close relationship with her owner Mark Dumas to the point where they even swim together. This is even more astonishing since polar bears are known to actively hunt humans in the wild.

If climate change were to lead to their extinction, this would mean not only the loss of potential breakthroughs in human medicine, but more importantly, the disappearance of an intelligent, majestic animal.

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Questions 1-7

Do the following statements agree with the information given in Reading Passage 1?

TRUE if the statement agrees with the information
FALSE if the statement contradicts the information
NOT GIVEN if there is no information on this

1 Polar bears suffer from various health problems due to the build-up of fat under their skin.

2 The study done by Liu and his colleagues compared different groups of polar bears.

3 Liu and colleagues were the first researchers to compare polar bears and brown bears genetically.

4 Polar bears are able to control their levels of 'bad' cholesterol by genetic means.

5 Female polar bears are able to survive for about six months without food.

6 It was found that the bones of female polar bears were very weak when they came out of their dens in spring.

7 The polar bear's mechanism for increasing bone density could also be used by people one day.

Questions 8-15

Complete the table below.

Choose **ONE WORD ONLY** from the passage for each answer.

Reasons why polar bears should be protected

People think of bears as unintelligent and **8** ……. .

However, this may not be correct. For example:

- In Tennoji Zoo, a bear has been seen using a branch as a **9** ……..……. . This allowed him to knock down some **10** ……. .
- A wild polar bear worked out a method of reaching a platform where a **11** …….……. was located.
- Polar bears have displayed behaviour such as conscious manipulation of objects and activity similar to a **12** ……. .

Bears may also display **13**……... For example:

- They may make movements suggesting **14** ……..……. if disappointed when hunting.
- They may form relationships with other **15**…….

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THE IMPORTANCE OF CHILDREN'S PLAY

Brick by brick, six-year-old Alice is building a magical kingdom. Imagining fairy-tale turrets and fire-breathing dragons, wicked witches and gallant heroes, she's creating an enchanting world. Although she isn't aware of it, this fantasy is helping her take her first steps towards her capacity for creativity and so it will have important repercussions in her adult life.

Minutes later, Alice has abandoned the kingdom in favour of playing schools with her younger brother. When she bosses him around as his 'teacher', she's practising how to regulate her emotions through pretence. Later on, when they tire of this and settle down with a board game, she's learning about the need to follow rules and take turns with a partner.

'Play in all its rich variety is one of the highest achievements of the human species,' says Dr David Whitebread from the Faculty of Education at the University of Cambridge, UK. 'It underpins how we develop as intellectual, problem-solving adults and is crucial to our success as a highly adaptable species.'

Recognizing the importance of play is not new: over two millennia ago, the Greek philosopher Plato extolled its virtues as a means of developing skills for adult life, and ideas about play-based learning have been developing since the 19th century.

But we live in changing times, and Whitebread is mindful of a worldwide decline in play, pointing out that over half the people in the world now live in cities. 'The opportunities for free play, which I experienced almost every day of my childhood, are becoming increasingly scarce,' he says. Outdoor play is curtailed by perceptions of risk to do with traffic, as well as parents' increased wish to protect their children from being the victims of crime, and by the emphasis on 'earlier is better' which is leading to greater competition in academic learning and schools.

International bodies like the United Nations and the European Union have begun to develop policies concerned with children's right to play, and to consider implications for leisure facilities and educational programmes. But what they often lack is the evidence to base policies on.

'The type of play we are interested in is child-initiated, spontaneous and unpredictable – but, as soon as you ask a five-year-old "to play", then you as the researcher have intervened,' explains Dr Sara Baker. 'And we want to know what the long-term impact of play is. It's a real challenge.'

Dr Jenny Gibson agrees, pointing out that although some of the steps in the puzzle of how and why play is important have been looked at, there is very little data on the impact it has on the child's later life.

Now, thanks to the university's new Centre for Research on Play in Education, Development and Learning (PEDAL), Whitebread, Baker, Gibson and a team of researchers hope to provide evidence on the role played by play in how a child develops.

'A strong possibility is that play supports the early development of children's self-control,' explains Baker. 'This is our ability to develop awareness of our own thinking progresses – it influences how effectively we go about undertaking challenging activities.'

In a study carried out by Baker with toddlers and young pre-schoolers, she found that children with greater self-control solved problems more quickly when exploring an unfamiliar set-up requiring scientific reasoning. 'This sort of evidence makes up think that giving children the chance to play will make them more successful problem-solvers in the long run.'
If playful experiences do facilitate this aspect of development, say the researchers, it could be extremely significant for educational practices, because the ability to self-regulate has been shown to be a key predictor of academic performance.

Gibson adds: 'Playful behavior is also an important indicator of healthy social and emotional development. In my previous research, I investigated how observing children at play can give us important clues about their well-being and can even be useful in the diagnosis of neurodevelopmental disorders like autism.'

Whitebread's recent research has involved developing a play-based approach to supporting children's writing. 'Many primary school children find writing difficult, but we showed in a previous study that a playful stimulus was far more effective than an instructional one.' Children wrote longer and better-structured stories when they first played with dolls representing characters in the story. In the latest study, children first created their story with Lego*, with similar results. 'Many teachers commented that they had always previously had children saying they didn't know what to write about. With the Lego building, however, not a single child said this through the whole year of the project.'

Whitebread, who directs PEDAL, trained as a primary school teacher in the early 1970s, when, as he describes, 'the teaching of young children was largely a quiet backwater, untroubled by any serious intellectual debate or controversy.' Now, the landscape is very different, with hotly debated topics such as school starting age.
'Somehow the importance of play has been lost in recent decades. It's regarded as something trivial, or even as something negative that contrasts with "work". Let's not lose sight of its benefits, and the fundamental contributions it makes to human achievements in the arts, sciences and technology. Let's make sure children have a rich diet of play experiences.'

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* Lego: coloured plastic building blocks and other pieces that can be joined together

Questions 1-8

Choose **ONE WORD ONLY** from the passage for each answer.

Children's play

Uses of children's play

- building a 'magical kingdom' may help develop **1**……
- board games involve **2** ……. and turn-taking

Recent changes affecting children's play

- population of **3** …… have grown
- opportunities for free play are limited due to

– fear of **4** ……

– fear of **5** ……

– increased **6** …… in schools

International policies on children's play

- it is difficult to find 7 …… to support new policies
- research needs to study the impact of play on the rest of the child's 8 ……..

Questions 9-15

Do the following statements agree with the information given in Reading Passage 1?
TRUE if the statement agrees with the information
FALSE if the statement contradicts the information
NOT GIVEN if there is no information on this

9. Children with good self-control are known to be likely to do well at school later on.

10. The way a child plays may provide information about possible medical problems.

11. Playing with dolls was found to benefit girls' writing more than boys' writing.

12. Children had problems thinking up ideas when they first created the story with Lego.

13. People nowadays regard children's play as less significant than they did in the past.

14. Researchers find it difficult to study play because observing it can change children's natural behavior.

15. Whitebread believes that play contributes to achievements in fields such as science and technology.

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