

PROJECT REPORT

CHEETAHS, WILD DOGS and CLIMATE CHANGE: Use of a DVD to present a lesson to increase the awareness of high school students (aged 16 -20) in Zimbabwe to climate change and related cheetah and wild dog conservation issues (Pilot project)

Stage 1: Proof of concept and increase in knowledge

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INTRODUCTION

Cheetah and wild dog are unique species, restricted essentially to the African continent. Populations of both species are in decline and as such the IUCN Red Data List lists Cheetah as “vulnerable” and Wild dogs as “endangered”. Both species have experienced enormous range contraction over the last 100 years – for example in Southern Africa Cheetah are now only resident in 21% of their historical range and Wild dogs resident in 12% of their historical range on the continent.

To begin to enable countries in the region to address the threats to the conservation of these two species, a regional strategy was developed through a fully participatory process in 2007 (IUCN, 2007). Inherent in this conservation strategy, are recognized similarities in the biology and ecology of the two species. This means that conservation action for one species will have a positive effect on the other.

The vision of the regional strategy is **“secure, viable Cheetah and Wild dog populations across a range of ecosystems that successfully coexist with and are valued by the people of Southern Africa”** with an achievable goal to **“improve the status of Cheetah and Wild dogs and secure additional viable populations across their range in Southern Africa”**. This goal will be met by a number of stated objectives of the conservation strategy, one of which is to **“develop and implement mechanisms for the transfer of information relevant to cheetah and wild dog conservation and ensure active commitment of stakeholders”**.

Concurrently with the implementation of the regional conservation strategy, The British Council has identified climate change as an important target learning area, especially for high school students (ages 16 – 20 years). The International Climate Champions programme under the British Council is operating in a number of countries. The Zimbabwe office of the British Council agreed to collaborate with the regional cheetah and wild dog project to develop a DVD containing a short lesson highlighting the potential impacts of climate change on Africa and the conservation of cheetah and wild dog. It was agreed that the DVD project was an opportunity to raise awareness of the impacts of climate change and how these can be mitigated (the mandate of the British Council) as well as the importance of cheetah and wild dog to the wildlife resource of

Africa, threats to their survival and how these can be alleviated. Both partners are mandated to raise awareness in as many schools as possible in the country, and it was agreed that a lesson on a DVD could be delivered “remotely” in schools throughout Zimbabwe, increasing the awareness of the next generation to the issues of climate change and conservation. The lesson was designed to be given without an expert to explain it (i.e. remotely), to facilitate a wide distribution throughout the country at minimal cost. However, proof of this concept would be required before the DVD was widely distributed throughout the country. It was proposed that the concept of using a DVD lesson to increase awareness of high school students of the impacts of climate change on Africa, and the conservation needs of cheetah and wild dog would need to be tested using a sample of schools. The proof of concept would take place in two stages. Stage 1 would involve showing the DVD to 5th and 6th form students of 5 randomly selected high schools in Bulawayo, ranging from privately run schools to high income government schools to low income government schools. Stage 2 would involve encouraging the students involved to introduce initiatives at their schools that would either work to reduce the impact of climate change or increase awareness further. The project would then assess these initiatives at the end of 2010, granting “wild and cool” status on any of the schools where an appropriate initiative was developed and introduced.

The project was carried out with permission from the Provincial Education Director for Bulawayo Metropolitan Province, Zimbabwe, who also assisted the project leader in randomly selecting the 5 schools that took part.

This reports details the results of Stage 1 (increasing knowledge), the results of Stage 2 (changing behavior) will be reported at in December 2010. The project involved asking the students to fill in a questionnaire before the lesson to capture their knowledge and understanding of climate change (human-induced) as well as the biology and conservation needs of cheetah and wild dog. The DVD was then shown without any input from the organising team or teachers. At the end of the DVD lesson, the students were immediately given the same (blank) questionnaire to fill in again. This allowed us to assess the impact of the presentation on the awareness and knowledge of the students.

OBJECTIVES

There were two main objectives of Stage 1:

1. To explore the use of a DVD lesson to increase knowledge and raise awareness about the conservation biology and threats to survival of cheetah and wild dog in Southern Africa as part of the implementation of the regional cheetah and wild dog conservation strategy. .
2. To explore the use of a DVD lesson to raise awareness about the causes and consequences of human-induced climate change in Southern Africa, how this will affect both human and wildlife populations (such as the cheetah and wild dog) and what individuals can do to help reduce climate change and mitigate the impacts.

METHODOLOGY

A Microsoft PowerPoint presentation was created with input from regional species specialists, and drawing upon extensive literature. The lesson was then converted to a format that could be played using a basic DVD player (Figure 1 –*Picture of the DVD*). The lesson included information about the biology of cheetah and wild dog to emphasize why they are important species to conserve, threats to their survival and the current status and distribution within the Southern Africa region. The lesson then went onto to explain the term “human-induced climate change”, the causes of this phenomenon, and the consequences to both human populations and to cheetah and wild dog survival. The lesson ended with a series of slides explaining what individuals can do to help reduce the impacts of climate change, as well as how to mitigate the impacts that will occur. The presentation was 25mins, a length of time agreed to be appropriate to a lesson for 5th and 6th formers.



Figure 1: Final DVD presentation with logos from associated participating partners.

The lesson was given to each group of students using a commonly available 29inch TV and basic DVD player, as it anticipated that most areas of the country would have such resources available, either from the schools, or from parents involved in the school, local churches and/or local businesses, where the school could request to borrow the equipment (Figure 2). The project needed to test whether such a system would be effective in the classroom, allowing all students to see the lesson.



Figure 2: Students from Founders High School watching the DVD lesson with Mr Nyoni (project leader) supervising. Note the use of a commonly available TV and DVD player

To assess the impact of the presentation on the knowledge of the students involved a questionnaire was developed. The questionnaire included 10 questions, where both correct and incorrect answers were available for the students to mark, and they were given the option of marking more than one answer (Figure 3).

We also included 3 questions where written answers were required to enable us to gain a better understanding of the knowledge and opinions of students. The questionnaire was given to each student before the DVD was shown, as they entered the classroom, and then again after the DVD was shown, but before any class discussions. This was done to ensure that all answers on the DVD captured what the student knew before the DVD was shown, and as a result of the DVD *only*. The students were given 15 minutes to complete the questionnaire both before and after the DVD lesson, as time was limited due to fitting the lesson in with the school timetable.

A copy of the questionnaire is included in Appendix I. To ensure freedom of expression without any pressure, the questionnaire was anonymous, with before and after answers being matched using the student's date of birth.



Figure 3: Students from Founders High School completing the questionnaire

The project involved the following schools in the Bulawayo province of Zimbabwe:

Masiyephambile High School (Private)

Founders High School (High income government school)

Msteli High School (Low income government school)

Masotcha High School (Low income government school)

Emagweni High School (Low income government school)*

** Data from this school are not included in the report as there was a power-cut during the DVD presentation.*

In addition the project involved the International Climate Champions (ICC) from the 10 schools participating in the British Council programme in Bulawayo, as well as their teachers. None of the schools in the British Council programme had been selected as part of the DVD project, so there was no overlap.

RESULTS

A total of 137 students, and 10 teachers took part in the project (Masiyephambile = 33; Masotcha = 22; Msteli = 29; Founders = 34; ICC students = 19; ICC teachers = 10). Data from the questionnaires were analysed per school, and ICC group, and then all four high schools were grouped together in one analysis.

Overall, there was a highly significant improvement in knowledge of the students with regard to all questions, and hence aspects of the DVD lesson (Overall high schools: $n = 118$; $t = 8.046$; $p < 0.01$, Figure 4). Interestingly, the ICC teachers' knowledge before and after watching the lesson was not significantly different (ICC teachers: $n = 10$, $t = 1.717$; $p > 0.05$, Figure 5).

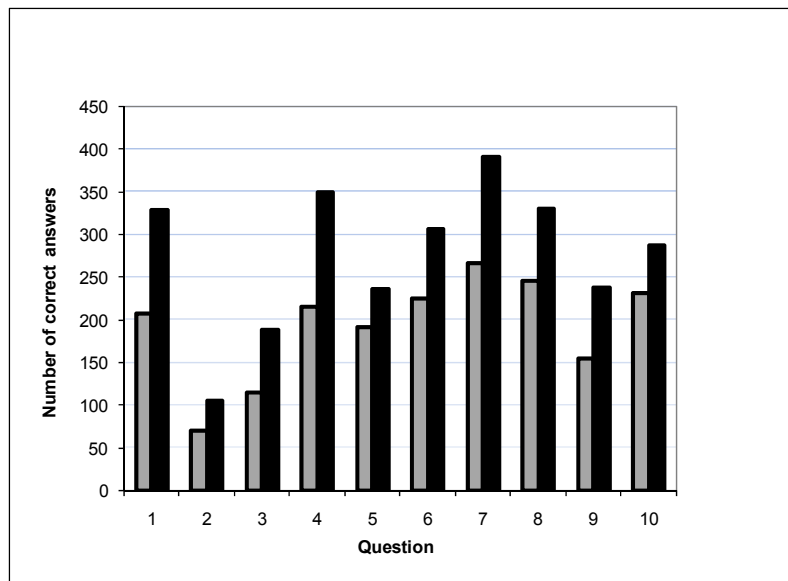


Figure 4: Increased knowledge of all students from the four participating high schools across all questions. (Grey = before the lesson; black = after the lesson). The increase in the number of correct answers was highly significant

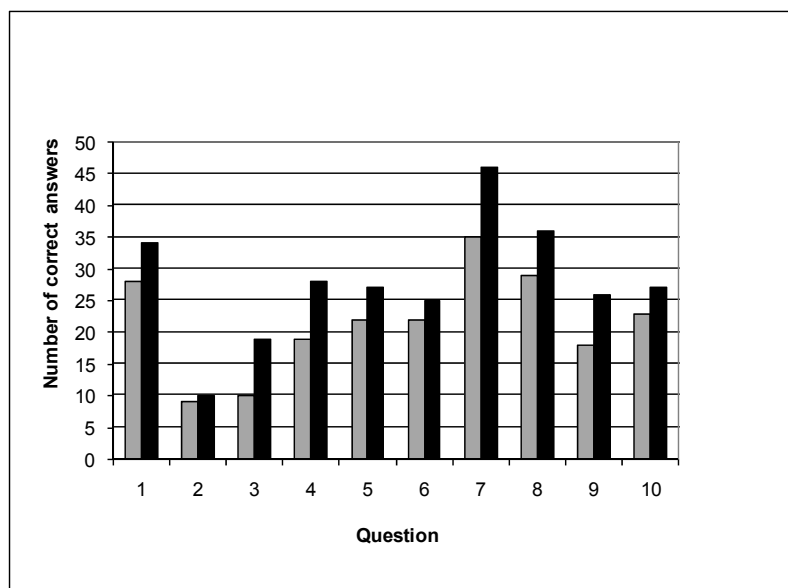


Figure 5: ICC teachers showed no significant increase in knowledge before and after the DVD lesson (Grey = before the lesson; Black = after the lesson)

When analysed individually each high school that took part, and the ICC student group, all showed a significant improvement in knowledge after watching the DVD lesson (Masiyephambile: $n = 33$; $t = 6.038$; $p < 0.01$; Masotcha: $n = 22$; $t = 4.375$; $p < 0.01$; Mstheli: $n = 29$; $t = 3.213$; $p = 0.01$; Founders: $n = 34$; $t = 5.182$; $p < 0.01$; ICC students: $n = 19$, $t = 4.573$; $p < 0.01$; Figure 6)

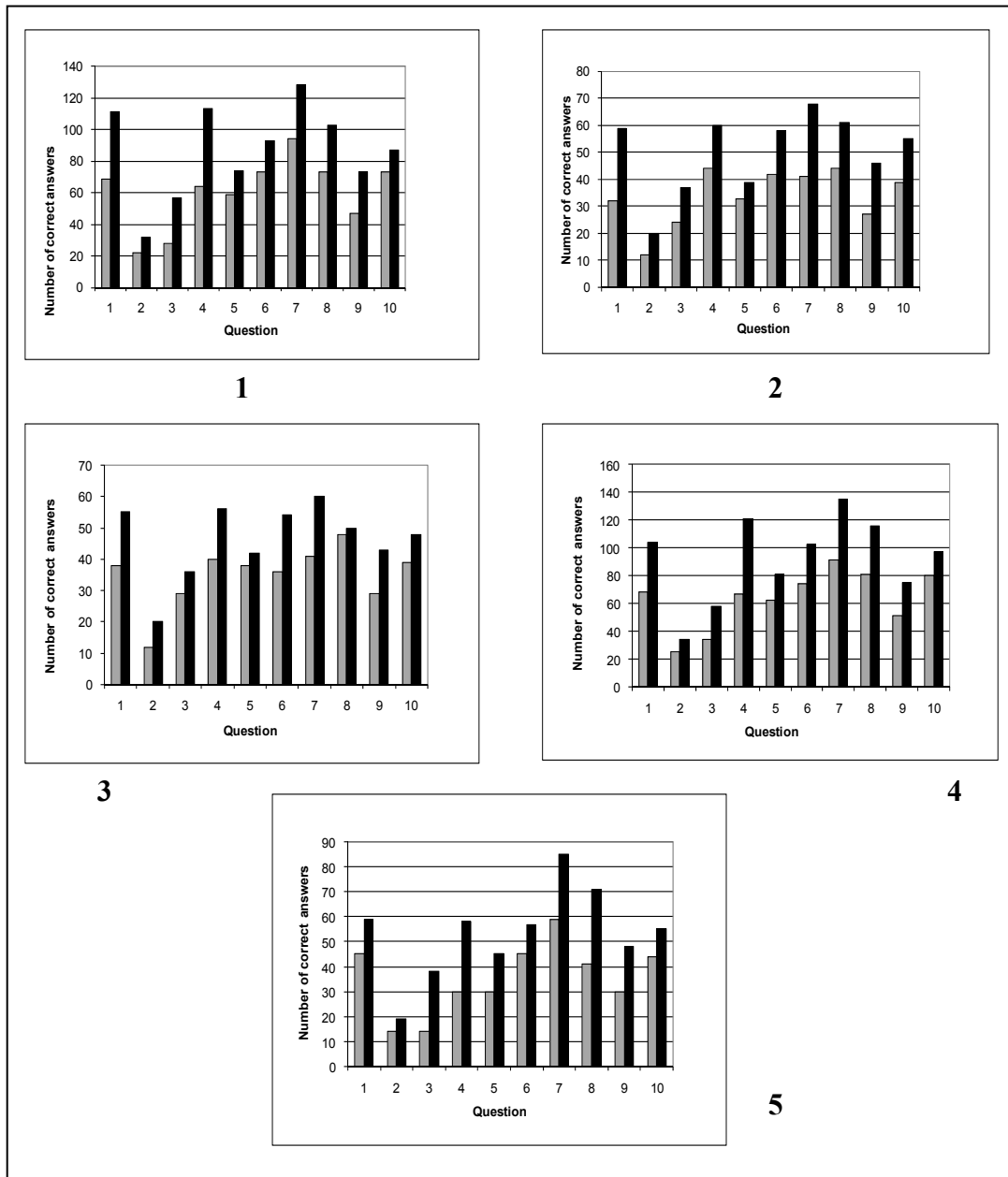


Figure 6: Increase in knowledge of students from four high schools in Bulawayo, and the International Climate Champions (ICC) group of students: 1 = Masiyephambile; 2 = Masotcha; 3 = Mstheli; 4 = Founders; 5 = ICC students. (Grey = before the lesson; Black = after the lesson)

When analysed in terms of increased knowledge per question and per issue (cheetah and wild dog conservation and human-induced climate change) there were differences between the four high schools, with higher income schools showing a greater knowledge prior to the DVD lesson than lower income schools (Table 1)

Table 1: Comparison of the percentage change in the number of correct answers per question between the four high schools after students were shown a lesson using a DVD: (B = before the lesson, A = after the lesson; Masiyephambile and Founders (high income high schools); Masotcha and Msitheli (low income high schools); Questions 1 – 4 deal with cheetah and wild dog conservation issues; questions 5 –8 and 10 deal with human induced climate change issues; question 9 deals with both issues)

Question	School							
	Masiyephambile		Founders		Msitheli		Masotcha	
	B	A	B	A	B	A	B	A
1	54	87	50	76	33	47	36	67
2	69	100	74	100	41	69	55	91
3	29	59	33	57	33	41	36	56
4	33	59	33	59	23	32	33	45
5	61	77	61	79	44	48	50	59
6	57	73	54	75	31	47	48	66
7	59	80	54	79	28	41	37	62
8	46	64	48	68	33	34	40	55
9	37	57	38	55	25	37	31	52
10	57	68	59	71	34	41	44	63

There were three open questions on the questionnaire which allowed for each student to give their own opinion; what they could do to mitigate the scale of climate change (Table 2), what they could demand of their government (Table 3) and why they thought it was important to conserve cheetah and wild dog (Table 4).

To explore whether watching the DVD had changed the thoughts, ideas and opinions of students, similar answers to each question were grouped within schools to allow for comparison between those given before watching the DVD and those given afterwards. (Tables 2, 3 and 4). To determine where there had been the most change in student's thoughts, ideas and opinions similar answers were grouped across the four schools, the difference between the number of students recording the answer before and after was calculated (see Tables 2, 3 and 4).

In addition, the total number of times an answer was given to an open ended question was calculated for each question, to enable us to determine what aspects of human-induced climate change and cheetah and wild dog conservation the students felt were important before and after watching the DVD (see Tables 2, 3 and 4)

Table 2: Summary of responses to the open ended question number 11 “What can you as an individual do to mitigate the scale of climate change?”. “B” indicates the number of similar answers given before the presentation, “A” indicates the number of the same similar answers given after the presentation. Total score is the accumulation of similar answers both before and after the presentation. (A-B) Difference is the difference between similar answers given after the presentation and those given before. The highlighted answers are the top three with the greatest difference.

Answer	Masiyephambile		Founder		Msithele		Masotcha		Total Score	(A – B) Difference
	B	A	B	A	B	A	B	A		
Practice afforestation/ reduce deforestation	16	23	22	29	7	16	17	19	149	25
Use Alternative Energy	5	18	17	22	1	10			73	27
Use less fossil fuels	15	7	11	6	2	7	11	8	67	-11
Educate others on the causes and effects of global warming	4	7	9	7	1	1	3	3	35	1
Switch Off Appliances	0	13	0	6	0	5	1	2	27	25
Reduce industrial and other forms of pollution	12	4	3	0			3	5	27	-9
Conserve and recycle resources	3	9	1	3	1	4			21	11
Use alternative fuel/chemicals that are environmentally friendly							9	11	20	2
Control population growth	1	2	3	3	2	2	0	1	14	2
Stop Veldt Fires			3	3	1	1	2	2	12	0
Enforce strict measures regarding pollution			4	7					11	3
Avoid sprays that contain CFC			8	0					8	-8
Control livestock numbers	0	1	0	2	0	1	1	0	5	3
Increase Carbon tax			2	2					4	0
Introduce energy saving technology							2	2	4	0
Practice good farming methods			0	1			1	1	3	1
Encourage the government to act	2	0							2	-2
Control industrial and residential expansion							0	1	1	1
Avoid burning rubbish					1	0			1	-1
Build dams to conserve water					1	0			1	-1
Conserve Nature			1	0					1	-1
Electrify rural areas to reduce pressure on forests			1	0					1	-1
Grow drought resistant crops					1	0			1	-1
Reduce use of inorganic fertilisers	0	1							1	1

Table 3: Summary of responses to the open ended question number 12 “What can you as an individual demand of your government to mitigate human-induced climate change?”. “B” indicates the number of similar answers given before the presentation, “A” indicates the number of the same similar answers given after the presentation. Total score is the accumulation of similar answers both before and after the presentation. (A-B) Difference is the difference between similar answers given after the presentation and those given before. The highlighted answers are the top three with the greatest difference.

Answer	Masiyephambile		Founder		Msithele		Masotcha		Total Score	(A - B) Difference
	B	A	B	A	B	A	B	A		
Use Alternative forms of energy	16	25	13	18	0	6	10	15	103	25
Encourage forestation/avoid deforestation	10	11	11	15	4	4	9	12	76	8
Awareness campaign to educate the public	4	11	8	11	2	3	4	9	52	16
Use less fossil fuels	2	4	6	6	4	9	6	8	45	9
Enact legislation, restrictions and penalties against offenders	1	0	8	7	1	2	7	3	29	-5
Increase Carbon Tax	5	5	9	6					25	-3
Reduce emissions and pollution	1	0	6	5	1	0	6	4	23	-5
Reduce the number of Heavy Industries			8	12					20	4
Advance technology to save energy	1	2	5	4	1	0	0	2	15	1
Enforce polluters to pay	0	5	8	2					15	-1
Intensify electrification programme to reduce deforestation			5	3			1	1	10	-2
Stop veldt fires	3	3	1	0	0	1	0	1	9	1
Control Population	0	2	1	2			0	2	7	5
Increase food security and provide incentives and subsidies for farmers	0	4					1	2	7	5
Create/Conserve National Parks and Natural Resources	1	2	1	2					6	2
Control and introduce better farming methods	0	1			0	1	1	2	5	3
Incentives to industries that recycle or use alternative energy							2	2	4	0
Restrict production of environmentally unfriendly substances	2	2							4	0
Improve living standards			3	0					3	-3
Provide less polluting forms of transport	0	2							2	2
Save Energy			0	2					2	2
Greater involvement with associations that mitigate Climate Change	0	1							1	1
Increase funding for scientific research	1	0							1	-1
Provision of waste disposal and recycle facilities							1	0	1	-1
Reclaim water sources e.g. dams, to create microclimates							1	0	1	-1

Table 4: Summary of responses to the open ended question number 13 “Why should we be concerned about whether cheetah and wild dogs survive?”. “B” indicates the number of similar answers given before the presentation, “A” indicates the number of the same similar answers given after the presentation. Total score is the accumulation of similar answers both before and after the presentation. (A-B) Difference is the difference between similar answers given after the presentation and those given before. The highlighted answers are the top three with the greatest difference.

Answer	Masiyephambile		Founder		Msithele		Masotcha		Total Score	(A - B) Difference
	B	A	B	A	B	A	B	A		
A tourist attraction	8	13	19	16	7	3	11	14	91	1
Their absence leads to an imbalance in the ecosystem	15	14	12	12	2	2	8	6	71	-3
They are attractive and a beautiful part of nature	2	13	5	7	1	2	2	5	37	17
They are rare, vulnerable and endangered.	0	8	6	9	0	5	0	4	32	20
Because they are unique to, and a part of Africa	2	8	2	13	1	1	1	2	30	18
For future generations to see them	4	5	2	4	0	2	4	5	26	6
For trade, e.g. skin or live animals	1	0	4	4	5	1	3	7	25	-1
Because their numbers are going down	1	5	2	6	0	1	1	4	20	12
Because they have a right to live	2	2	5	4			2	1	16	-2
They control prey populations	3	0	3	1			4	3	14	-6
So they do not become extinct			6	7					13	1
God gave us a task to protect them, so we should not be careless	2	3			1	1	2	2	11	1
To increase the diversity of species			1	1	3	3			8	0
For raw materials, e.g. Cheetah skin	0	4					2	0	6	2
They are valuable							0	1	1	1

The most common answer to question 11 “What can you as an individual do to mitigate the scale of climate change” was that students should actively carry out afforestation or reduce deforestation (total number of answers = 149, Table 2) and the number of students given this answer increased after watching the DVD, suggesting that this message had been absorbed. Interestingly, the next most common answer was to use alternative energy, and answer given both before and after watching the DVD but more students recording the answer after watching the lesson (Table 2). A message obviously clearly stated by the DVD lesson was to switch off appliances to reduce energy use with only 1 student recording this answer before watching the DVD and 27 after (Table 2). Two other differences to take note of in terms of assessing how students’ knowledge changed as a result of watching the DVD are “reducing industrial and other forms of pollution” and “avoiding sprays that contain CFC” (Table 2). While these are issues of concern, it is exciting to note that the students appreciated after watching the DVD lesson that these are not critical to reducing the scale of climate change or conserving cheetah and wild dog.

The most common answer to question 12 “*What can you as an individual demand of your government to mitigate human-induced climate change?*” was to encourage the use of alternative energy, a strong message in the DVD lesson and one that was obviously absorbed, with an increase in the number of students giving this answer after watching the DVD (Table 3). The most common answer was again that of encouraging afforestation and reducing deforestation, but interestingly there was not a large increase in the number of students recording this answer after watching the DVD, compared to the increase in the number of students responding that governments should have awareness campaigns and should use less fossil fuels (Table 3). This indicates that the DVD lesson emphasized the correct issues from the point of view of what governments can do.

It is important to note here that higher income schools (Masiyephambile and Founders) showed more understanding of issues surrounding human-induced climate change than the lower income (Msitheli and Masotcha) when comparing total number of answers given and the range of answers given (Table 3)

Unfortunately it is not possible to assess whether the fewer answers given for question 13 “*Why should we be concerned about whether cheetah and wild dog survive?*” reflects less interest and a lower impact of the DVD on the students, or whether it is a result of this being the last question on the questionnaire, with students possibly running out of time to write answers. However, what is encouraging to note is that as a result of watching the DVD lesson there was a large increase in the number of students recording the answers “They are attractive and a beautiful part of nature”; “They are rare, vulnerable and endangered” and “because they are unique to, and a part of, Africa” (Table 4). The value of wildlife to Africa people is a message that has perhaps been well taught given that this was the answer given the most times (Table 4)

Furthermore, if Table 4 is compared with Tables 2 and 3, there is a noticeable difference in the change in answers given by the students. In Tables 2 and 3, before and after watching the DVD the students still gave predominantly the same answers, whereas in Table 4, relating to cheetah and wild dog, the change was more dramatic, with many new answers being given after watching the DVD. This suggests that the prior knowledge of students was greater for climate change related issues than cheetah and wild dog related issues. This makes the DVD very important for cheetah and wild dog conservation.

CONCLUSION

This pilot study indicates that there is potential to increase knowledge and awareness of both the conservation needs of cheetah and wild dog, and the implications of climate change of high school students in Zimbabwe through the use of a DVD lesson, given without the need for an expert teacher to be present. The pilot study has illustrated that providing information through a presentation improved the student’s knowledge of the conservation issues of cheetahs and wild dogs, and the implications of human-induced climate change. It also showed that students’ opinions, ideas and thoughts changed as a result of watching the DVD, with them focusing on more critical issues after watching the lesson than before.

We feel that the results of this pilot study strongly support rolling out the project to include a larger number of schools in Zimbabwe, as well as rolling out the project to other countries in Africa where cheetah and wild dog occur – all countries will be affected by human-induced climate change. With African countries suffering from a shortage of skilled and motivated teachers, this pilot study has shown that it is possible to increase the knowledge and understanding of the next generation without the need for experience and expert teachers to be involved. This is an important output of the project. We propose that this project extend to a larger group of schools encompassing both rural and urban (high and low densities) in Zimbabwe, preferably taking place at the national scale with DVD sent to all high schools, accompanied by a government ministry directive that the DVD be shown to all 4th, 5th and 6th form students.

We also propose that the concept is taken on board by other range states in Africa, with the DVD being adapted to be relevant to each country, and the issues faced by cheetah and wild dog, as well as those faced by people as a result of human-induced climate change. The cost of disseminating information this way is minimal, and yet the benefits are potentially enormous, the next generation given the knowledge and understanding they need to help reduce the impacts of climate change while ensuring that their rich natural heritage survives.

REFERENCES

IUCN/SSC 2007, Regional conservation strategy for the cheetah and African wild dog in Southern Africa, IUCN, Gland, Switzerland

APPENDIX I

Questionnaire used to test the impact of the lesson given using a DVD, developed in a partnership between the Regional Cheetah Conservation Strategy Implementation Programme for Southern Africa and The British Council (Zimbabwe). This questionnaire was given to the students before and after the lesson to assess changes in their knowledge.

(Correct answers are marked in *italics*)

Date of Birth

___/___/___

BEFORE

BRITISH COUNCIL/REGIONAL CHEETAH CONSERVATION PROGRAMME

Use an X to mark the answers. You can give more than one answer for each question

1. What do you know about cheetah and wild dog?
 The cheetah is the fastest land animal
 The wild dog lives in packs
 They are unique to Africa
 They are endangered
 They are a threat to human life
 Don't know
2. What is the status of cheetah and wild dog populations in Southern Africa?
 Thriving
 Decreasing
 Stable
 Don't know
3. What are the similarities between cheetah and wild dog that allow us to design similar conservation actions?
 Their size
 The kind of animals they eat
 The way they hunt animals
 Their mating and breeding behavior
 The way they interact with other large predators such as lions and spotted hyaenas
 Don't know
4. What are the main threats to their survival?
 Trade in skins and live animals
 Killing by farmers with livestock to protect the livestock
 Habitat fragmentation and degradation
 Disease
 Other large predators
 Reduction in the number of wild animals that they hunt
 Don't know

5. What is your understanding of the term “climate change” (human-induced)?
- General temperatures will rise in the future because of global warming*
 - General temperatures will go down in the future because of global warming
 - Our weather patterns and climate will change in the future*
 - Our weather patterns will be more extreme and erratic.*
 - The climate changes naturally
 - Don't know
6. What are the causes of human-induced climate change?
- Use of fossil fuels*
 - Use of renewable energy sources
 - Transportation*
 - Planting trees
 - Deforestation*
 - Increasing consumption of resources*
 - Don't know
7. What are the long term consequences of human induced climate change?
- No consequence
 - Changes in food production*
 - Changes in fresh water availability*
 - Increased natural disasters*
 - Extinction of animals*
 - Increasing sea level*
 - Don't know
8. Why should Africans be concerned about human-induced climate change?
- Food security*
 - Natural disaster*
 - Economic hardship*
 - Extinction*
 - Hotter summers and colder winters*
 - Don't know
9. How would human-induced climate change affect the survival of the cheetah and wild dog?
- Make it too hot for them to survive*
 - Change the distribution and abundance of the wild animals they hunt*
 - Increase conflict with humans with livestock*
 - Reduce availability of habitat through changes in human agricultural activities*
 - There will no effect
 - Don't know
10. What can be done to reduce the scale of human-induced climate change (mitigation measures)?
- Use fossil fuels as quick as possible
 - Use less fossil fuels*
 - Reduce dependency on rain fed agriculture*
 - Use alternative forms of energy*
 - Stop using any form of energy

_____ *Work towards population growth reduction.*

11. What can you, as an individual, to mitigate the scale of human-induced climate change?
(List at three things)

1 _____

2 _____

3 _____

12. What can you, as an individual, demand of your government to mitigate human-induced climate change?
(List three things)

1 _____

2 _____

3 _____

13. Why should we be concerned about whether cheetah and wild dog survive?
(List three things)

1 _____

2 _____

3 _____

Date of Birth

____/____/____