

Supplementary Information

Conservation Messages in Speech Bubbles—Evaluation of An Environmental Education Comic Distributed in Elementary Schools on Madagascar. *Sustainability* 2015, 7, 8855-8880

Torsten Richter^{1,†,*}, **Antje Rendigs**^{2,†} and **Claudette Patricia Maminirina**³

¹ University of Hildesheim, Ecology and Environmental Education Group, Institute of Biology and Chemistry, Marienburger Platz 22, 31141 Hildesheim, Germany

² Madagascar Wildlife Conservation–Deutschland, Postfach 6108, 30061 Hannover, Germany; E-Mail: antjarendigs@posteo.de

³ Institut Supérieur de Technologie d’Ambositra, Ex-Bâtiment HODIMA, Ankonombe, Ambositra 306, Madagascar; E-Mail: claudette.maminirina@gmail.com

† These authors contributed equally to this work.

* Author to whom correspondence should be addressed; E-Mail: torsten.richter@uni-hildesheim.de; Tel.: +49-(0)-5121-883-40724; Fax: +49-(0)-5121-883-40701.

Table S1. Bandro questions.

| Questions | Time | | Controll Group | | Comic Group | | Comic plus add. Material Group | | |
|--|-------------------------|------------|----------------|-------|-------------|-------|--------------------------------|-------|-------|
| | | | Right | Wrong | Right | Wrong | Right | Wrong | |
| Which environment prefer Bandros to move around? | T0 | Number | 224 | 27 | 99 | 32 | 109 | 36 | |
| | | Percentage | 89.2% | 10.8% | 75.6% | 24.4% | 75.2% | 24.8% | |
| | T1 | Number | 219 | 27 | 122 | 13 | 130 | 3 | |
| | | Percentage | 89.0% | 11.0% | 90.4% | 9.6% | 97.7% | 2.3% | |
| | T2 | Number | 104 | 4 | 72 | 6 | 35 | 3 | |
| | | Percentage | 96.3% | 3.7% | 92.3% | 7.7% | 92.1% | 7.9% | |
| | Where lives the Bandro? | T0 | Number | 224 | 29 | 111 | 27 | 125 | 23 |
| | | | Percentage | 88.5% | 11.5% | 80.4% | 19.6% | 84.5% | 15.5% |
| T1 | | Number | 214 | 33 | 126 | 10 | 130 | 5 | |
| | | Percentage | 86.6% | 13.4% | 92.6% | 7.4% | 96.3% | 3.7% | |
| T2 | | Number | 108 | 0 | 78 | 4 | 37 | 1 | |
| | | Percentage | 100% | 0.0% | 94.9% | 5.1% | 97.4% | 2.6% | |

Table S1. *Cont.*

| Questions | Time | | Controll Group | | Comic Group | | Comic plus add. Material Group | | |
|--|---|------------|----------------|-------|-------------|-------|--------------------------------|-------|------|
| | | | Right | Wrong | Right | Wrong | Right | Wrong | |
| What kind of food does the Bandro depend on? | T0 | Number | 227 | 26 | 122 | 17 | 116 | 75 | |
| | | Percentage | 89.7% | 10.3% | 87.8% | 12.2% | 78.4% | 21.6% | |
| | T1 | Number | 222 | 25 | 127 | 8 | 134 | 1 | |
| | | Percentage | 89.9% | 10.1% | 94.1% | 5.9% | 99.3% | 0.7% | |
| | T2 | Number | 99 | 9 | 78 | 1 | 38 | 0 | |
| | | Percentage | 91.7% | 8.3% | 98.7% | 1.3% | 100% | 0.0% | |
| | Why have Bandros to roam freely within the marshes? | T0 | Number | 234 | 16 | 121 | 14 | 133 | 14 |
| | | | Percentage | 93.6% | 6.4% | 89.6% | 10.4% | 90.5% | 9.5% |
| T1 | | Number | 229 | 17 | 127 | 9 | 132 | 3 | |
| | | Percentage | 93.1% | 6.9% | 93.4% | 6.6% | 97.8% | 2.2% | |
| T2 | | Number | 107 | 0 | 78 | 0 | 36 | 0 | |
| | | Percentage | 100% | 0.0% | 100% | 0.0% | 100% | 0.0% | |

Table S1. *Cont.*

| Questions | Time | | Controll Group | | Comic Group | | Comic plus add. Material Group | |
|--|------|------------|----------------|-------|-------------|-------|--------------------------------|-------|
| | | | Right | Wrong | Right | Wrong | Right | Wrong |
| Is ist allowed to capture Bandros and keep them as pets? | T0 | Number | 231 | 40 | 115 | 22 | 124 | 24 |
| | | Percentage | 84.2% | 15.8% | 83.9% | 16.1% | 83.8% | 16.2% |
| | T1 | Number | 200 | 46 | 124 | 10 | 125 | 10 |
| | | Percentage | 81.3% | 18.7% | 92.5% | 7.5% | 92.6% | 7.4% |
| | T2 | Number | 105 | 2 | 73 | 6 | 36 | 2 |
| | | Percentage | 98.1% | 1.9% | 92.4% | 7.6% | 94.7% | 5.3% |
| The Bandro is famous in the Alaotra region because... | T0 | Number | 185 | 67 | 83 | 52 | 89 | 58 |
| | | Percentage | 73.4% | 26.6% | 61.5% | 38.5% | 60.5% | 39.5% |
| | T1 | Number | 180 | 66 | 104 | 32 | 121 | 14 |
| | | Percentage | 73.2% | 26.8% | 76.5% | 23.5% | 89.6% | 10.4% |
| | T2 | Number | 98 | 10 | 69 | 10 | 37 | 1 |
| | | Percentage | 90.7% | 9.3% | 87.3% | 12.7% | 97.4% | 2.6% |

Table S2. Environmental questions.

| Questions | Time | | Controll Group | | Comic Group | | Comic plus add. Material Group | |
|---|------|------------|----------------|-------|-------------|-------|--------------------------------|-------|
| | | | Right | Wrong | Right | Wrong | Right | Wrong |
| What can we do to help the animals in the zetra (marshes) to survive? | T0 | Number | 186 | 54 | 94 | 34 | 97 | 40 |
| | | Percentage | 77.5% | 22.5% | 73.4% | 26.6% | 70.8% | 29.2% |
| | T1 | Number | 200 | 42 | 112 | 18 | 117 | 16 |
| | | Percentage | 82.6% | 17.4% | 86.2% | 13.8% | 88.0% | 12.0% |
| | T2 | Number | 102 | 6 | 72 | 7 | 37 | 1 |
| | | Percentage | 94.4% | 5.6% | 91.1% | 8.9% | 97.4% | 2.6% |
| What importance has the zetra (marsh) for wildlife? | T0 | Number | 199 | 45 | 81 | 49 | 102 | 39 |
| | | Percentage | 81.6% | 18.4% | 62.3% | 37.7% | 72.3% | 27.7% |
| | T1 | Number | 215 | 31 | 107 | 28 | 121 | 12 |
| | | Percentage | 87.4% | 12.6% | 79.3% | 20.7% | 91.0% | 9.0% |
| | T2 | Number | 99 | 9 | 68 | 9 | 37 | 1 |
| | | Percentage | 91.7% | 8.3% | 88.3% | 11.7% | 97.4% | 2.6% |

Table S2. *Cont.*

| Questions | Time | | Controll Group | | Comic Group | | Comic plus add. Material Group | |
|---|------|------------|----------------|-------|-------------|-------|--------------------------------|-------|
| | | | Right | Wrong | Right | Wrong | Right | Wrong |
| Forests are good for... | T0 | Number | 185 | 59 | 84 | 48 | 78 | 62 |
| | | Percentage | 75.8% | 24.2% | 63.6% | 36.4% | 55.7% | 44.3% |
| | T1 | Number | 181 | 62 | 99 | 36 | 97 | 37 |
| | | Percentage | 74.5% | 25.5% | 73.3% | 26.7% | 72.4% | 27.6% |
| | T2 | Number | 92 | 16 | 63 | 16 | 28 | 10 |
| | | Percentage | 85.2% | 14.8% | 79.7% | 20.3% | 73.7% | 26.3% |
| Why are the trees on the hills so important ? | T0 | Number | 160 | 86 | 64 | 57 | 76 | 69 |
| | | Percentage | 65.0% | 35.0% | 52.9% | 47.1% | 52.4% | 47.6% |
| | T1 | Numbe | 195 | 51 | 86 | 49 | 111 | 23 |
| | | Percentage | 79.3% | 20.7% | 63.7% | 36.3% | 82.8% | 17.2% |
| | T2 | Number | 100 | 8 | 63 | 16 | 36 | 2 |
| | | Percentage | 92.6% | 7.4% | 79.7% | 20.3% | 94.7% | 5.3% |

Table S2. *Cont.*

| Questions | Time | | Controll Group | | Comic Group | | Comic plus add. Material Group | |
|---|------|------------|----------------|-------|-------------|-------|--------------------------------|-------|
| | | | Right | Wrong | Right | Wrong | Right | Wrong |
| What happens when the soil is washed away from the surrounding hills into the lake? | T0 | Number | 71 | 179 | 34 | 102 | 32 | 113 |
| | | Percentage | 28.4% | 71.6% | 25.0% | 75.0% | 22.1% | 77.9% |
| | T1 | Number | 109 | 138 | 55 | 81 | 83 | 52 |
| | | Percentage | 44.1% | 55.9% | 40.4% | 59.6% | 61.5% | 38.5% |
| | T2 | Number | 63 | 45 | 35 | 44 | 30 | 8 |
| | | Percentage | 58.3% | 41.7% | 44.3% | 55.7% | 78.9% | 21.1% |
| Are the birds from the forest good as pet animals? | T0 | Number | 179 | 72 | 96 | 42 | 76 | 65 |
| | | Percentage | 71.3% | 28.7% | 69.6% | 30.4% | 53.9% | 46.1% |
| | T1 | Number | 182 | 64 | 110 | 26 | 104 | 31 |
| | | Percentage | 74.0% | 26.0% | 80.9% | 19.1% | 77.0% | 23.0% |
| | T2 | Number | 95 | 13 | 74 | 5 | 34 | 4 |
| | | Percentage | 88.0% | 12.0% | 93.7% | 6.3% | 89.5% | 10.5% |

Table S2. *Cont.*

| Questions | Time | | Controll Group | | Comic Group | | Comic plus add. Material Group | |
|--|------|------------|----------------|-------|-------------|-------|--------------------------------|-------|
| | | | Right | Wrong | Right | Wrong | Right | Wrong |
| Not only humans eat fish. Which animal eats fish, too? | T0 | Number | 85 | 167 | 51 | 84 | 50 | 94 |
| | | Percentage | 33.7% | 66.3% | 37.8% | 62.2% | 34.7% | 65.3% |
| | T1 | Number | 96 | 149 | 82 | 54 | 85 | 50 |
| | | Percentage | 39.2% | 60.8% | 60.3% | 39.7% | 63.0% | 37.0% |
| | T2 | Number | 56 | 52 | 56 | 23 | 22 | 16 |
| | | Percentage | 51.9% | 48.1% | 70.9% | 29.1% | 57.9% | 42.1% |
| Should we burn the zetra (marshes)? | T0 | Number | 169 | 81 | 74 | 60 | 83 | 63 |
| | | Percentage | 67.6% | 32.4% | 55.2% | 44.8% | 56.8% | 43.2% |
| | T1 | Number | 178 | 68 | 98 | 38 | 111 | 24 |
| | | Percentage | 72.4% | 27.6% | 72.1% | 27.9% | 82.2% | 17.8% |
| | T2 | Number | 98 | 10 | 68 | 11 | 36 | 2 |
| | | Percentage | 90.7% | 9.3% | 86.1% | 13.9% | 94.7% | 5.3% |

Table S2. *Cont.*

| Questions | Time | | Controll Group | | Comic Group | | Comic plus add. Material Group | |
|--|------|------------|----------------|-------|-------------|-------|--------------------------------|-------|
| | | | Right | Wrong | Right | Wrong | Right | Wrong |
| What use has zozoro (papyrus)? | T0 | Number | 200 | 51 | 91 | 43 | 112 | 34 |
| | | Percentage | 79.7% | 20.3% | 67.9% | 32.1% | 76.7% | 23.3% |
| | T1 | Number | 198 | 47 | 104 | 31 | 124 | 11 |
| | | Percentage | 80.8% | 19.2% | 77.0% | 23.0% | 91.9% | 8.1% |
| | T2 | Number | 99 | 9 | 67 | 12 | 38 | 0 |
| | | Percentage | 91.7% | 8.3% | 84.8% | 15.2% | 100% | 0.0% |
| Why need also the fishes the zetra (marsh)? | T0 | Number | 125 | 126 | 47 | 89 | 64 | 82 |
| | | Percentage | 49.8% | 50.2% | 34.6% | 65.4% | 43.8% | 56.2% |
| | T1 | Number | 125 | 120 | 70 | 66 | 76 | 59 |
| | | Percentage | 51.0% | 49.0% | 25.8% | 48.5% | 56.3% | 43.7% |
| | T2 | Number | 47 | 61 | 34 | 45 | 29 | 9 |
| | | Percentage | 43.5% | 56.5% | 43.0% | 57.0% | 76.3% | 23.7% |

Table S3. Lemur questions.

| Have you ever seen a lemur? (n = 1269) | | Where are lemurs only to be found? (n = 1279) | | Are lemurs protected by law? (n = 1266) | |
|---|--------------|--|--------------|--|--------------|
| Yes | 299 23.6% | Lake Alaotra | 792 61.9% | Yes | 749 59.2% |
| No | 822 64.8% | Madagascar | 100 7.8% | No | 285 22.5% |
| Not sure | 148 11.7% | Africa | 387 30.3% | Not sure | 232 18.3% |

| Questions | Time | Controll Group | | | Comic Group | | | Comic plus add. material Group | | | |
|-----------------------------------|-------------|-----------------------|-----------|-----------------|--------------------|-----------|-----------------|---------------------------------------|-----------|-----------------|-------|
| | | Yes | No | Not sure | Yes | No | Not sure | Yes | No | Not sure | |
| Have you ever seen a lemur? | T0 | Number | 75 | 146 | 29 | 21 | 84 | 29 | 21 | 102 | 24 |
| | | Percentage | 30.0% | 58.4% | 11.6% | 15.7% | 62.7% | 21.6% | 14.3% | 69.4% | 16.3% |
| | T1 | Number | 43 | 175 | 25 | 41 | 76 | 18 | 61 | 71 | 3 |
| | | Percentage | 17.7% | 72.0% | 10.3% | 30.4% | 56.3% | 13.3% | 45.2% | 52.6% | 2.2% |
| | T2 | Number | 8 | 89 | 11 | 12 | 62 | 5 | 17 | 17 | 4 |
| | | Percentage | 7.4% | 82.4% | 10.2% | 15.2% | 78.5% | 6.3% | 44.7% | 44.7% | 10.5% |

Table S3. *Cont.*

| Questions | Time | Controll Group | | | Comic Group | | | Comic plus add. material Group | | | |
|------------------------------------|------|----------------|------------|----------|--------------|------------|----------|--------------------------------|------------|----------|-------|
| | | Yes | No | Not sure | Yes | No | Not sure | Yes | No | Not sure | |
| | | Lake Alaotra | Madagascar | Africa | Lake Alaotra | Madagascar | Africa | Lake Alaotra | Madagascar | Africa | |
| Where are lemurs only to be found? | T0 | Number | 147 | 19 | 86 | 67 | 27 | 42 | 68 | 15 | 65 |
| | | Percentage | 58.3% | 7.5% | 34.1% | 49.3% | 19.9% | 30.9% | 45.9% | 10.1% | 43.9% |
| | T1 | Number | 175 | 12 | 60 | 105 | 5 | 26 | 93 | 5 | 37 |
| | | Percentage | 70.9% | 4.9% | 24.3% | 77.2% | 3.7% | 19.1% | 68.9% | 3.7% | 27.4% |
| | T2 | Number | 53 | 8 | 47 | 56 | 7 | 16 | 28 | 2 | 8 |
| | | Percentage | 49.1% | 7.4% | 43.5% | 70.9% | 8.9% | 20.3% | 73.7% | 5.3% | 21.1% |
| | | Yes | No | Not sure | Yes | No | Not sure | Yes | No | Not sure | |
| Are lemurs protected by law? | T0 | Number | 159 | 49 | 43 | 54 | 42 | 39 | 39 | 75 | 32 |
| | | Percentage | 63.3% | 19.5% | 17.1% | 40.0% | 31.1% | 28.9% | 26.7% | 51.4% | 21.9% |
| | T1 | Number | 154 | 49 | 42 | 79 | 21 | 33 | 109 | 14 | 11 |
| | | Percentage | 62.9% | 20.0% | 17.1% | 59.4% | 15.8% | 24.8% | 81.3% | 10.4% | 8.2% |
| | T2 | Number | 69 | 16 | 22 | 55 | 15 | 8 | 31 | 4 | 2 |
| | | Percentage | 64.5% | 15.0% | 20.6% | 70.5% | 19.2% | 10.3% | 83.8% | 10.8% | 5.4% |