**Table S2. Pre-/post-test variations in the quality of the participants’ responses.**

|  |
| --- |
| **Q1. How do you define bacteria?** |
|  |   |   | Paired Samples *t*-test   | Effect size  |
|   |   | *M ± SD* |  *t*(41) | *p*  | *d*  |
| Scoring rubric score  | Pre-test  | 1.95 *±* 1.32 | 4.86  | 0.00  | 0.90  |
|  | Post-test  | 3.19 *±* 1.44 |   |   |  |
| Number of correct notions/ response  | Pre-test  | 2.10 *±* 1.36 | 3.55  | 0.00  | 0.65  |
|  | Post-test  | 3.00 *±* 1.40 |   |   |  |
| Number of incorrect notions/ response  | Pre-test  | 0.36 *±* 0.79 | -2.80  | 0.01  | 0.53  |
|  | Post-test  | 0.05 *±* 0.22 |   |   |  |
|  |
| **Q2. Are bacteria beneficial or harmful for humans? Give some illustrative examples.** |
|  |  |  | Paired Samples *t*-test   | Effect size  |
|  |  | *M ± SD* |  *t*(41) | *p*  | *d*  |
| Scoring rubric score | Pre-test  | 2.31 ± 1.73 | 5.24  | 0.00 | 0.99  |
|  | Post-test  | 3.86 ± 1.39 |   |   |  |
| Number of correct examples of beneficial bacteria/ response | Pre-test  | 0.69 ± 0.60 | 3.12  | 0.00 | 0.62  |
|  | Post-test  | 1.21 ± 1.03 |   |   |  |
| Number of correct examples of harmful bacteria/ responses | Pre-test  | 0.71 ± 0.46 | 3.47  | 0.00 | 0.72  |
|  | Post-test  | 1.19 ± 0.83 |   |   |  |
|  |
| **Q3. Describe the main phases in bacteria’s growth cycle.** |
|  |  |  | Paired Samples *t*-test   | Effect size  |
|  |  | *M ± SD* |  *t*(41) | *p*  | *d*  |
| Scoring rubric score  | Pre-test  | 0.19 ± 0.40 | 11.34  | 0.00  | 2.62  |
|  | Post-test  | 3.83 ± 1.92 |   |   |  |
| Number of correct notions/ response  | Pre-test  | 0.33 ± 0.65 | 13.97  | 0.00 | 3.12  |
|  | Post-test  | 7.17 ± 3.03 |   |   |  |
|  |
| **Q4. Do you think that bacterial infectious diseases are currently under control? Justify your answer.** |
|  |  |  | Paired Samples *t*-test   | Effect size |
|  |  | *M ± SD* |  *t*(41) |  *t*(41) | *d* |
| Scoring rubric score  | Pre-test  | 0.61 ± 0.77 | 5.49  | 0.00  | 1.18  |
|  | Post-test  | 1.54 ± 0.81 |   |   |  |
| Number of valid claims to support the response  | Pre-test  | 0.52 ± 0.67 | 6.95 | 0.00 | 1.43  |
|  | Post-test  | 1.86 ± 1.14 |   |   |  |
| Number of invalid claims to support the response  | Pre-test  | 0.62 ± 0.58 | -5.87 | 0.00 | 1.06  |
|  | Post-test  | 0.12 ± 0.33 |   |   |  |
|  |
| **Q5. How do you define antibiotics?** |
|  |  |  | Paired Samples *t*-test   | Effect size  |
|  |  | *M ± SD* |  *t*(41) | *p*  | *d* |
| Scoring rubric score  | Pre-test  | 0.88 ± 1.21 | 7.18  | 0.00 | 1.39  |
|  | Post-test  | 2.93 ± 1.70 |   |   |  |
| Number of correct notions/ response  | Pre-test  | 1.14 ± 0.85 | 7.04 | 0.00 | 1.42  |
|  | Post-test  | 3.48 ± 2.13 |   |   |  |
| Number of incorrect notions/ response  | Pre-test  | 0.71 ± 0.71 | -2.47  | 0.02 | 0.51  |
|  | Post-test  | 0.38 ± 0.58 |   |   |  |
|  |
| **Q6. How do you explain the selectivity of antibiotics for microorganisms?** |
|  |  |  | Paired Samples *t*-test   | Effect size  |
|  |  | *M ± SD* |  *t*(41) | *p*  | *d* |
| Scoring rubric score  | Pre-test  | 0.17 ± 0.54 | 2.05  | 0.04  | 0.39  |
|  | Post-test  | 0.43 ± 0.77 |   |   |  |
| Number of correct notions/ response  | Pre-test  | 0.14 ± 0.42 | 2.71 | 0.01 | 0.49  |
|  | Post-test  | 0.40 ± 0.63 |   |   |  |
|  |
| **Q7. Imagine that you have the flu, you are feverish and aching. In this situation, do you think that antibiotic prescription would be a suitable solution? Justify your answer.** |
|  | Paired Samples *t*-test   | Effect size  |
|  |  | *M ± SD* |  *t*(41) | *p*  | *d* |
| Scoring rubric score  | Pre-test  | 0.24 ± 0.76 | 7.10  | 0.00  | 1.55  |
|  | Post-test  | 1.81 ± 1.21 |   |   |  |
| Number of correct notions/ response  | Pre-test  | 0.14 ± 0.47 | 6.79 | 0.00 | 1.36  |
|  | Post-test  | 1.10 ± 0.88 |   |   |  |
| Number of incorrect notions/ response  | Pre-test  | 0.31 ± 0.47 | -2.22 | 0.03 | 0.33  |
|  | Post-test  | 0.17 ± 0.38 |   |   |  |
|  |
| **Q8. Describe how an antibiotic is produced.** |
|  |  |  | Paired Samples *t*-test   | Effect size  |
|  |  | *M ± SD* |  *t*(41) | *p*  | *d* |
| Scoring rubric score  | Pre-test  | 0.26 ± 0.70 | 7.89  | 0.00 | 1.58  |
|  | Post-test  | 1.95 ± 1.34 |   |   |  |
| Number of correct notions/ response  | Pre-test  | 0.33 ± 0.93 | 7.43 | 0.00 | 1.49  |
|  | Post-test  | 2.95 ± 2.30 |   |   |  |
|  |
| **Q9. How do you define antibiotic resistance?** |
|  |  |  | Paired Samples *t*-test   | Effect size  |
|  |  | *M ± SD* |  *t*(41) | *p* | *d* |
| Scoring rubric score  | Pre-test  | 2.71 ± 1.94 | 4.02  | 0.00 | 0.76  |
|  | Post-test  | 3.98 ± 1.37 |   |   |  |
| Number of correct notions/ response  | Pre-test  | 2.33 ± 1.39 | 3.62 | 0.00 | 0.77  |
|  | Post-test  | 3.38 ± 1.34 |   |   |  |
| Number of incorrect notions/ response  | Pre-test  | 0.19 ± 0.40 | -3.11 | 0.00 | 0.67  |
|  | Post-test  | 0.00 ± 0.00 |   |   |  |
|  |
| **Q10. List measures that can be used to avoid or reduce antibiotic resistance.** |
|  |  |  | Paired Samples *t*-test   | Effect size  |
|  |  | *M ± SD* |  *t*(41) | *p* | *d* |
| Scoring rubric score  | Pre-test  | 0.64 ± 0.73 | 8.85  | 0.00  | 1.79  |
|  | Post-test  | 2.21 ± 1.00 |   |   |  |
| Number of correct notions/ response  | Pre-test  | 0.67 ± 0.72 | 8.23  | 0.00  | 1.72  |
|  | Post-test  | 2.45 ± 1.27 |   |   |  |
|  |
| **Q11. Do you agree with the statement: *The progeny of antibiotic resistant bacteria is also resistant*. Justify your answer.** |
|  |  |  | Paired Samples *t*-test   | Effect size  |
|  |  | *M ± SD* |  *t*(41) | *p* | *d* |
| Scoring rubric score  | Pre-test  | 0.48 ± 0.74 | 3.19  | 0.00  | 0.54  |
|  | Post-test  | 1.00 ± 1.13 |   |   |  |
| Number of correct notions/ response  | Pre-test  | 0.52 ± 0.74 | 4.27  | 0.00  | 0.73  |
|  | Post-test  | 1.21 ± 1.12 |   |   |  |
| Number of incorrect notions/ response  | Pre-test  | 0.24 ± 0.43 | 2.67  | 0.01  | 0.43  |
|  | Post-test  | 0.45 ± 0.55 |   |   |  |

*M* ± *SD* – Mean ± Standard Deviation. *d* – Cohen’s *d* measure of effect size. The scoring rubrics used to rate the participants’ responses can be found in Supporting file Table S1, and a list of notions conveyed in the pre- and post-test is available in Supporting file Table S3.