**Supplementary Material**

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**Fig. 1** Example of class design for the BOPPPS model



**Fig. 2** Distribution chart of students' theoretical test scores



**Fig. 3** Evaluation of student questionnaire

**Table 1** Comparison of testing scores between experimental and control groups

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Control group(n=44) | Experimental group(n=44) | *t* value | *p* value |
| Final examination score | 76.3636±10.6402 | 81.4773±10.9215 | 2.225 | 0.029 |

**Table 2** Comprehensive evaluation of two teaching models by two groups of students

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Control group(n=44) | Experimental group(n=44) | *t* value | *p* value |
| Course satisfaction | 4.7273 ±0.4505 | 4.9091 ±0.2908 | 2.249 | 0.027 |
| Student-teacher interaction  | 3.8182±0.7241 | 4.5909±0.6583 | 5.238 | 0.001 |
| Learning initiative | 3.8182 ±0.6317 | 4.2727±0.5852 | 3.676 | 0.001 |
| Analytical ability | 3.5000 ±0.6647 | 4.000±0.5283 | 3.906 | 0.001 |
| Clinical thinking ability | 4.000 ±0.4822 | 4.6136±0.6893 | 4.838 | 0.001 |
| Self-study ability | 4.4318±0.5011 | 4.8864±0.3210 | 5.067 | 0.001 |