المرفق 7. جدول *Product Moment*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N | Significant Level | | N | Significant Level | | N | Significant Level | |
| 5% | 1% | 5% | 1% | 5% | 1% |
| 3 | 0.997 | 0.999 | 27 | 0.381 | 0.487 | 55 | 0.266 | 0.345 |
| 4 | 0.950 | 0.990 | 28 | 0.374 | 0.478 | 60 | 0.254 | 0.330 |
| 5 | 0.878 | 0.959 | 29 | 0.367 | 0.470 | 65 | 0.244 | 0.317 |
|  |  |  |  |  |  |  |  |  |
| 6 | 0.811 | 0.917 | 30 | 0.361 | 0.463 | 70 | 0.235 | 0.306 |
| 7 | 0.754 | 0.874 | 31 | 0.355 | 0.456 | 75 | 0.227 | 0.296 |
| 8 | 0.707 | 0.834 | 32 | 0.349 | 0.449 | 80 | 0.220 | 0.286 |
| 9 | 0.666 | 0.798 | 33 | 0.344 | 0.442 | 85 | 0.213 | 0.278 |
| 10 | 0.632 | 0.765 | 34 | 0.339 | 0.436 | 90 | 0.207 | 0.270 |
|  |  |  |  |  |  |  |  |  |
| 11 | 0.602 | 0.735 | 35 | 0.334 | 0.430 | 95 | 0.202 | 0.263 |
| 12 | 0.576 | 0.708 | 36 | 0.329 | 0.424 | 100 | 0.195 | 0.256 |
| 13 | 0.553 | 0.684 | 37 | 0.325 | 0.418 | 125 | 0.176 | 0.230 |
| 14 | 0.532 | 0.661 | 38 | 0.320 | 0.413 | 150 | 0.159 | 0.210 |
| 15 | 0.514 | 0.641 | 39 | 0.316 | 0.408 | 175 | 0.148 | 0.194 |
|  |  |  |  |  |  |  |  |  |
| 16 | 0.497 | 0.623 | 40 | 0.312 | 0.403 | 200 | 0.138 | 0.181 |
| 17 | 0.482 | 0.606 | 41 | 0.308 | 0.398 | 300 | 0.113 | 0.148 |
| 18 | 0.468 | 0.590 | 42 | 0.304 | 0.393 | 400 | 0.098 | 0.128 |
| 19 | 0.456 | 0.575 | 43 | 0.301 | 0.389 | 500 | 0.088 | 0.115 |
| 20 | 0.444 | 0.561 | 44 | 0.297 | 0.384 | 600 | 0.080 | 0.105 |
|  |  |  |  |  |  |  |  |  |
| 21 | 0.433 | 0.549 | 45 | 0.294 | 0.380 | 700 | 0.074 | 0.097 |
| 22 | 0.423 | 0.537 | 46 | 0.291 | 0.376 | 800 | 0.070 | 0.091 |
| 23 | 0.413 | 0.526 | 47 | 0.288 | 0.372 | 900 | 0.065 | 0.086 |
| 24 | 0.404 | 0.515 | 48 | 0.284 | 0.368 | 1000 | 0.062 | 0.081 |
| 25 | 0.396 | 0.505 | 49 | 0.281 | 0.364 |  |  |  |
| 26 | 0.388 | 0.496 | 50 | 0.279 | 0.361 |  |  |  |

المرفق 8. جدول التوزيع التائي

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| df | Tow Tail Test | | | | |
| 0,20 | 0,10 | 0,05 | 0,02 | 0,01 |
| One Tail Test | | | | |
| 0,10 | 0,05 | 0,025 | 0,01 | 0,005 |
| 51 | 1,298 | 1,675 | 2,008 | 2,402 | 2,676 |
| 52 | 1,298 | 1,675 | 2,007 | 2,400 | 2,674 |
| 53 | 1,298 | 1,674 | 2,006 | 2,399 | 2,672 |
| 54 | 1,297 | 1,674 | 2,005 | 2,397 | 2,670 |
| 55 | 1,297 | 1,673 | 2,004 | 2,396 | 2,668 |
| 56 | 1,297 | 1,673 | 2,003 | 2,395 | 2,667 |
| 57 | 1,297 | 1,672 | 2,002 | 2,394 | 2,665 |
| 58 | 1,296 | 1,672 | 2,002 | 2,392 | 2,663 |
| 59 | 1,296 | 1,671 | 2,001 | 2,391 | 2,662 |
| 60 | 1,296 | 1,671 | 2,000 | 2,390 | 2,660 |
| 61 | 1,296 | 1,670 | 2,000 | 2,389 | 2,659 |
| 62 | 1,295 | 1,670 | 1,999 | 2,388 | 2,657 |
| 63 | 1,295 | 1,669 | 1,998 | 2,387 | 2,656 |
| 64 | 1,295 | 1,669 | 1,998 | 2,386 | 2,655 |
| 65 | 1,295 | 1,669 | 1,997 | 2,385 | 2,654 |
| 66 | 1,295 | 1,668 | 1,997 | 2,384 | 2,652 |
| 67 | 1,294 | 1,668 | 1,996 | 2,383 | 2,651 |
| 68 | 1,294 | 1,668 | 1,995 | 2,382 | 2,650 |
| 69 | 1,294 | 1,667 | 1,995 | 2,382 | 2,649 |
| 70 | 1,294 | 1,667 | 1,994 | 2,381 | 2,648 |
| 71 | 1,294 | 1,667 | 1,994 | 2,380 | 2,647 |
| 72 | 1,293 | 1,666 | 1,993 | 2,379 | 2,646 |
| 73 | 1,293 | 1,666 | 1,993 | 2,379 | 2,645 |
| 74 | 1,293 | 1,666 | 1,993 | 2,378 | 2,644 |

المرفق 9. جدول *Ross & Stanley*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Jumlah semua siswa yang mengikuti tes | Jumlah siswa kelompok rendah (SR) da kelompok tinggi (ST)  (0,27 dari N) | Selisih jumlah siswa kelompok (SR) redah dengan jumlah siswa kelompok tinggi (ST) yang menjawab butir soal | | | |
| Jumlah option | | | |
| 2 | 3 | 4 | 5 |
| 26-31 | 8 | 4 | 5 | 5 | 5 |
| 32-35 | 9 | 5 | 5 | 5 | 5 |
| 36-38 | 10 | 5 | 5 | 5 | 5 |
| 39-42 | 11 | 5 | 5 | 5 | 5 |
| 43-46 | 12 | 5 | 5 | 6 | 6 |
| 47-49 | 13 | 5 | 6 | 6 | 6 |
| 50-53 | 14 | 5 | 6 | 6 | 6 |
| 54-57 | 15 | 6 | 6 | 6 | 6 |
| 58-61 | 16 | 6 | 6 | 6 | 6 |
| 62-65 | 17 | 6 | 6 | 6 | 7 |
| 66-69 | 18 | 6 | 6 | 7 | 7 |
| 70-72 | 19 | 6 | 7 | 7 | 7 |
| 73-75 | 20 | 6 | 7 | 7 | 7 |
| 76-79 | 21 | 6 | 7 | 7 | 7 |
| 80-83 | 22 | 7 | 7 | 7 | 7 |
| 84-86 | 23 | 7 | 7 | 7 | 7 |
| 87-90 | 24 | 7 | 7 | 8 | 8 |
| 91-94 | 25 | 7 | 7 | 8 | 8 |
| 95-98 | 26 | 7 | 8 | 8 | 8 |
| 99-101 | 27 | 7 | 8 | 8 | 8 |
| 102-105 | 28 | 7 | 8 | 8 | 8 |
| 106-109 | 29 | 7 | 8 | 8 | 8 |
| 110-112 | 30 | 7 | 8 | 8 | 8 |
| 113-116 | 31 | 8 | 8 | 8 | 8 |
| 117-120 | 32 | 8 | 8 | 9 | 9 |

المرفق 10. اختبار أدوات البحث 1/T/INS/XI/2019

1. Pre-Test Instruments
2. Item Score

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | Items | | | | | | | | | | | | | | | | | | | | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 8 |
| 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 11 |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 18 |
| 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 5 |
| 6 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 13 |
| 7 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 8 |
| 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 16 |
| 9 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 12 |
| 10 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 12 |
| 11 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 13 |
| 12 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 15 |
| 13 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 15 |
| 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 19 |
| 15 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 16 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 16 |
| 17 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 12 |
| 18 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 5 |
| 19 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 15 |
| 20 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 11 |
| 21 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 19 |
| 22 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 |
| 23 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 15 |
| 24 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 6 |
| 25 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 15 |
| 26 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 10 |
| 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 19 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| 29 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 16 |
| 30 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 14 |
| 31 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 32 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 15 |
| 33 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 20 |
| 34 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 7 |
| 35 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 5 |
|  | 29 | 23 | 24 | 22 | 23 | 9 | 9 | 26 | 27 | 25 | 29 | 26 | 26 | 25 | 25 | 10 | 19 | 22 | 8 | 19 | 426 |

*(Continued table)*

1. Validity Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 0,829 | 0,657 | 0,686 | 0,629 | 0,657 | 0,257 | 0,257 | 0,743 | 0,771 | 0,714 |
|  | 0,171 | 0,343 | 0,314 | 0,371 | 0,343 | 0,743 | 0,743 | 0,257 | 0,229 | 0,286 |
|  | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 |
|  | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 |
|  | 4,83 | 1,92 | 2,18 | 1,69 | 1,92 | 0,35 | 0,35 | 2,89 | 3,38 | 2,50 |
|  | 2,20 | 1,38 | 1,48 | 1,30 | 1,38 | 0,59 | 0,59 | 1,70 | 1,84 | 1,58 |
|  | 13,59 | 14,26 | 13,83 | 14,36 | 14,04 | 17,22 | 17,22 | 13,62 | 13,59 | 13,88 |
|  | 1,41 | 2,09 | 1,66 | 2,19 | 1,87 | 5,05 | 5,05 | 1,44 | 1,42 | 1,71 |
|  | 0,23 | 0,34 | 0,27 | 0,36 | 0,31 | 0,82 | 0,82 | 0,24 | 0,23 | 0,28 |
|  | 0,51 | 0,47 | 0,40 | 0,46 | 0,42 | 0,48 | 0,48 | 0,40 | 0,43 | 0,44 |
|  | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 |
| **Result** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|  | 0,829 | 0,743 | 0,743 | 0,714 | 0,714 | 0,286 | 0,543 | 0,629 | 0,229 | 0,543 |
|  | 0,171 | 0,257 | 0,257 | 0,286 | 0,286 | 0,714 | 0,457 | 0,371 | 0,771 | 0,457 |
|  | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 | 12,17 |
|  | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 | 6,13 |
|  | 4,83 | 2,89 | 2,89 | 2,50 | 2,50 | 0,40 | 1,19 | 1,69 | 0,30 | 1,19 |
|  | 2,20 | 1,70 | 1,70 | 1,58 | 1,58 | 0,63 | 1,09 | 1,30 | 0,54 | 1,09 |
|  | 13,45 | 14,00 | 13,96 | 14,04 | 14,32 | 16,80 | 13,00 | 13,59 | 16,13 | 13,89 |
|  | 1,28 | 1,83 | 1,79 | 1,87 | 2,15 | 4,63 | 0,83 | 1,42 | 3,95 | 1,72 |
|  | 0,21 | 0,30 | 0,29 | 0,30 | 0,35 | 0,75 | 0,14 | 0,23 | 0,64 | 0,28 |
|  | 0,46 | 0,51 | 0,50 | 0,48 | 0,55 | 0,48 | 0,15 | 0,30 | 0,35 | 0,31 |
|  | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 |
| **Result** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **No** | **No** | **Valid** | **No** |

*(Continued table)*

1. Reliability Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 0,829 | 0,657 | 0,686 | 0,629 | 0,657 | 0,257 | 0,257 | 0,743 | 0,771 | 0,714 |
|  | 0,171 | 0,343 | 0,314 | 0,371 | 0,343 | 0,743 | 0,743 | 0,257 | 0,229 | 0,286 |
|  | 6,133 | 6,133 | 6,133 | 6,133 | 6,133 | 6,133 | 6,133 | 6,133 | 6,133 | 6,133 |
|  | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
|  | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
|  | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 |
|  | 0,14 | 0,23 | 0,22 | 0,23 | 0,23 | 0,19 | 0,19 | 0,19 | 0,18 | 0,20 |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|  | 0,829 | 0,743 | 0,743 | 0,714 | 0,714 | 0,286 |  |  | 0,229 |  |
|  | 0,171 | 0,257 | 0,257 | 0,286 | 0,286 | 0,714 |  |  | 0,771 |  |
|  | 6,133 | 6,133 | 6,133 | 6,133 | 6,133 | 6,133 |  |  | 6,133 |  |
|  | 35 | 35 | 35 | 35 | 35 | 35 |  |  | 35 |  |
|  | 34 | 34 | 34 | 34 | 34 | 34 |  |  | 34 |  |
|  | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 |  |  | 1,03 |  |
|  | 0,14 | 0,19 | 0,19 | 0,20 | 0,20 | 0,20 |  |  | 0,18 |  |
|  |  | | | | | | 3,31 | | | |
|  |  | | | | | | 37,62 | | | |
|  |  | | | | | | 34,31 | | | |
|  |  | | | | | | 0,91 | | | |
|  |  | | | | | | 0,94 | | | |
|  | **Reliability Degree** | | | | | | **High** | | | |

*(Continued table)*

1. Difficulty Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ` | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Right Answer | 29 | 23 | 24 | 22 | 23 | 9 | 9 | 26 | 27 | 25 |
| Difficulty Point | 0,83 | 0,66 | 0,69 | 0,63 | 0,66 | 0,26 | 0,26 | 0,74 | 0,77 | 0,71 |
| **Difficulty Degree** | **Easy** | **Medium** | **Medium** | **Medium** | **Medium** | **Difficult** | **Difficult** | **Easy** | **Easy** | **Easy** |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Right Answer | 29 | 26 | 26 | 25 | 25 | 10 |  |  | 8 |  |
| Difficulty Point | 0,83 | 0,74 | 0,74 | 0,71 | 0,71 | 0,29 |  |  | 0,23 |  |
| **Difficulty Degree** | **Easy** | **Easy** | **Easy** | **Easy** | **Easy** | **Difficult** |  |  | **Difficult** |  |

1. Dicrimination Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Items | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Wrong Answer in Top Ranks (27%) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Wrong Answer in Lower Ranks (27%) | 7 | 5 | 9 | 6 | 6 | 5 | 9 | 5 | 6 | 6 |
| Ross & Stanley Standard | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| **Dicrimination Point** | **6** | **5** | **9** | **6** | **6** | **5** | **9** | **5** | **5** | **6** |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Wrong Answer in Top Ranks (27%) | 1 | 0 | 0 | 0 | 0 | 0 |  |  | 3 |  |
| Wrong Answer in Lower Ranks (27%) | 9 | 6 | 5 | 7 | 8 | 8 |  |  | 6 |  |
| Ross & Stanley Standard | 5 | 5 | 5 | 5 | 5 | 5 |  |  | 5 |  |
| **Dicrimination Point** | **8** | **6** | **5** | **7** | **8** | **8** |  |  | **3\*** |  |
| \*a correction is needed |  |  |  |  |  |  |  |  |  |  |

*(Continued table)*

1. Post-Test 1 Instruments
2. Item Score

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | Items | | | | | | | | | | | | | | | | | | | | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 7 |
| 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 10 |
| 3 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 7 |
| 4 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 13 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 20 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 18 |
| 7 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 20 |
| 9 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 12 |
| 10 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 18 |
| 12 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 10 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 8 |
| 14 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 12 |
| 15  *(Continued table)* | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 |
| 16 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 |
| 18 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| 19 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 7 |
| 20 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 13 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 5 |
| 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 19 |
| 23 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 14 |
| 24 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 13 |
| 25 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 18 |
| 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 20 |
| 28 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 6 |
| 29 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 5 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| 31 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| 32 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 13 |
| 33 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 |
| 34 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 10 |
| 35 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 8 |
|  | 22 | 24 | 9 | 21 | 22 | 21 | 10 | 25 | 25 | 24 | 10 | 25 | 27 | 25 | 24 | 17 | 10 | 10 | 20 | 19 | 390 |

*(Continued table)*

1. Validity Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 0,629 | 0,686 | 0,257 | 0,600 | 0,629 | 0,600 | 0,286 | 0,714 | 0,714 | 0,686 |
|  | 0,371 | 0,314 | 0,743 | 0,400 | 0,371 | 0,400 | 0,714 | 0,286 | 0,286 | 0,314 |
|  | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 |
|  | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 |
|  | 1,69 | 2,18 | 0,35 | 1,50 | 1,69 | 1,50 | 0,40 | 2,50 | 2,50 | 2,18 |
|  | 1,30 | 1,48 | 0,59 | 1,22 | 1,30 | 1,22 | 0,63 | 1,58 | 1,58 | 1,48 |
|  | 13,14 | 13,25 | 19,00 | 13,57 | 13,55 | 13,57 | 17,70 | 13,04 | 12,84 | 13,58 |
|  | 1,99 | 2,11 | 7,86 | 2,43 | 2,40 | 2,43 | 6,56 | 1,90 | 1,70 | 2,44 |
|  | 0,31 | 0,33 | 1,24 | 0,38 | 0,38 | 0,38 | 1,03 | 0,30 | 0,27 | 0,38 |
|  | 0,41 | 0,49 | 0,73 | 0,47 | 0,49 | 0,47 | 0,65 | 0,47 | 0,42 | 0,57 |
|  | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 |
| **Result** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|  | 0,286 | 0,714 | 0,771 | 0,714 | 0,686 | 0,486 | 0,286 | 0,286 | 0,571 | 0,543 |
|  | 0,714 | 0,286 | 0,229 | 0,286 | 0,314 | 0,514 | 0,714 | 0,714 | 0,429 | 0,457 |
|  | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 | 11,14 |
|  | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 | 6,35 |
|  | 0,40 | 2,50 | 3,38 | 2,50 | 2,18 | 0,94 | 0,40 | 0,40 | 1,33 | 1,19 |
|  | 0,63 | 1,58 | 1,84 | 1,58 | 1,48 | 0,97 | 0,63 | 0,63 | 1,15 | 1,09 |
|  | 17,20 | 13,00 | 12,52 | 13,28 | 13,46 | 15,12 | 17,70 | 16,70 | 11,55 | 13,58 |
|  | 6,06 | 1,86 | 1,38 | 2,14 | 2,32 | 3,97 | 6,56 | 5,56 | 0,41 | 2,44 |
|  | 0,95 | 0,29 | 0,22 | 0,34 | 0,36 | 0,63 | 1,03 | 0,87 | 0,06 | 0,38 |
|  | 0,60 | 0,46 | 0,40 | 0,53 | 0,54 | 0,61 | 0,65 | 0,55 | 0,07 | 0,42 |
|  | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 | 0,334 |
| **Result** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **No** | **Valid** |

*(Continued table)*

1. Reliability Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 0,629 | 0,686 | 0,257 | 0,600 | 0,629 | 0,600 | 0,286 | 0,714 | 0,714 | 0,686 |
|  | 0,371 | 0,314 | 0,743 | 0,400 | 0,371 | 0,400 | 0,714 | 0,286 | 0,286 | 0,314 |
|  | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 |
|  | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
|  | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
|  | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 |
|  | 0,23 | 0,22 | 0,19 | 0,24 | 0,23 | 0,24 | 0,20 | 0,20 | 0,20 | 0,22 |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|  | 0,286 | 0,714 | 0,771 | 0,714 | 0,686 | 0,486 | 0,286 | 0,286 |  | 0,543 |
|  | 0,714 | 0,286 | 0,229 | 0,286 | 0,314 | 0,514 | 0,714 | 0,714 |  | 0,457 |
|  | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 | 6,352 |  | 6,352 |
|  | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |  | 35 |
|  | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |  | 34 |
|  | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 |  | 1,03 |
|  | 0,20 | 0,20 | 0,18 | 0,20 | 0,22 | 0,25 | 0,20 | 0,20 |  | 0,25 |
|  |  | | | | | | 4,09 | | | |
|  |  | | | | | | 40,35 | | | |
|  |  | | | | | | 36,25 | | | |
|  |  | | | | | | 0,90 | | | |
|  |  | | | | | | 0,93 | | | |
|  | **Reliability Degree** | | | | | | **High** | | | |

1. Difficulty Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ` | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Right Answer | 22 | 24 | 9 | 21 | 22 | 21 | 10 | 25 | 25 | 24 |
| Difficulty Point | 0,63 | 0,69 | 0,26 | 0,60 | 0,63 | 0,60 | 0,29 | 0,71 | 0,71 | 0,69 |
| **Difficulty Degree** | **Medium** | **Medium** | **Difficult** | **Medium** | **Medium** | **Medium** | **Difficult** | **Easy** | **Easy** | **Medium** |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Right Answer | 10 | 25 | 27 | 25 | 24 | 17 | 10 | 10 |  | 19 |
| Difficulty Point | 0,29 | 0,71 | 0,77 | 0,71 | 0,69 | 0,49 | 0,29 | 0,29 |  | 0,54 |
| **Difficulty Degree** | **Difficult** | **Easy** | **Easy** | **Easy** | **Medium** | **Medium** | **Difficult** | **Difficult** |  | **Medium** |

1. Dicrimination Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Items | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Wrong Answer in Top Ranks (27%) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Wrong Answer in Lower Ranks (27%) | 7 | 5 | 9 | 6 | 6 | 5 | 9 | 5 | 6 | 6 |
| Ross & Stanley Standard | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| **Dicrimination Point** | **6** | **5** | **9** | **6** | **6** | **5** | **9** | **5** | **5** | **6** |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Wrong Answer in Top Ranks (27%) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |  | 1 |
| Wrong Answer in Lower Ranks (27%) | 9 | 6 | 5 | 7 | 8 | 8 | 8 | 8 |  | 6 |
| Ross & Stanley Standard | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |  | 5 |
| **Dicrimination Point** | **8** | **6** | **5** | **7** | **8** | **8** | **8** | **6** |  | **5** |
| \*a correction is needed |  |  |  |  |  |  |  |  |  |  |

*(Continued table)*

1. Post-Test 2 Instruments
   1. Item Score

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | Items | | | | | | | | | | | | | | | | | | | | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 1 | I | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 2 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
| 5 | 5 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 6 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 | 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
| 8 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| 9 | 9 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 10 | 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 11 | 11 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
| 12 | 12 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 13 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 14 | 14 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 15 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 17 | 17 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| 18 | 18 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 19 | 19 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 3 | 0 | 0 | 0 |
| 20 | 20 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| 21 | 21 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 22 | 22 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| 23 | 23 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 24 | 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 25 | 25 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 26 | 26 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 27 | 27 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 28 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 29 | 29 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 30 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 31 | 31 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 32 | 32 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| 33 | 33 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
|  | 26 | 23 | 20 | 22 | 10 | 21 | 23 | 24 | 9 | 21 | 22 | 22 | 23 | 19 | 24 | 20 | 27 | 16 | 10 | 10 | 392 |

*(Continued table)*

* 1. Validity Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 0,788 | 0,697 | 0,606 | 0,667 | 0,303 | 0,636 | 0,697 | 0,727 | 0,273 | 0,636 |
|  | 0,212 | 0,303 | 0,394 | 0,333 | 0,697 | 0,364 | 0,303 | 0,273 | 0,727 | 0,364 |
|  | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 |
|  | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 |
|  | 3,71 | 2,30 | 1,54 | 2,00 | 0,43 | 1,75 | 2,30 | 2,67 | 0,38 | 1,75 |
|  | 1,93 | 1,52 | 1,24 | 1,41 | 0,66 | 1,32 | 1,52 | 1,63 | 0,61 | 1,32 |
|  | 13,12 | 13,61 | 14,35 | 13,91 | 18,40 | 14,05 | 13,57 | 13,63 | 18,78 | 14,57 |
|  | 1,24 | 1,73 | 2,47 | 2,03 | 6,52 | 2,17 | 1,69 | 1,75 | 6,90 | 2,69 |
|  | 0,19 | 0,26 | 0,37 | 0,31 | 0,98 | 0,33 | 0,25 | 0,26 | 1,04 | 0,41 |
|  | 0,36 | 0,40 | 0,46 | 0,43 | 0,65 | 0,43 | 0,39 | 0,43 | 0,64 | 0,54 |
|  | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 |
| **Result** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|  | 0,667 | 0,667 | 0,697 | 0,576 | 0,727 | 0,606 | 0,818 | 0,485 | 0,303 | 0,303 |
|  | 0,333 | 0,333 | 0,303 | 0,424 | 0,273 | 0,394 | 0,182 | 0,515 | 0,697 | 0,697 |
|  | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 | 11,88 |
|  | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 | 6,63 |
|  | 2,00 | 2,00 | 2,30 | 1,36 | 2,67 | 1,54 | 4,50 | 0,94 | 0,43 | 0,43 |
|  | 1,41 | 1,41 | 1,52 | 1,16 | 1,63 | 1,24 | 2,12 | 0,97 | 0,66 | 0,66 |
|  | 14,36 | 13,59 | 14,13 | 14,37 | 13,92 | 12,75 | 13,30 | 14,25 | 16,70 | 16,00 |
|  | 2,48 | 1,71 | 2,25 | 2,49 | 2,04 | 0,87 | 1,42 | 2,37 | 4,82 | 4,12 |
|  | 0,37 | 0,26 | 0,34 | 0,38 | 0,31 | 0,13 | 0,21 | 0,36 | 0,73 | 0,62 |
|  | 0,53 | 0,37 | 0,52 | 0,44 | 0,50 | 0,16 | 0,45 | 0,35 | 0,48 | 0,41 |
|  | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 | 0,344 |
| **Result** | **Valid** | **Valid** | **Valid** | **Valid** | **Valid** | **No** | **Valid** | **Valid** | **Valid** | **Valid** |

*(Continued table)*

* 1. Reliability Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|  | 0,788 | 0,697 | 0,606 | 0,667 | 0,303 | 0,636 | 0,697 | 0,727 | 0,273 | 0,636 |
|  | 0,212 | 0,303 | 0,394 | 0,333 | 0,697 | 0,364 | 0,303 | 0,273 | 0,727 | 0,364 |
|  | 6,630 | 6,630 | 6,630 | 6,630 | 6,630 | 6,630 | 6,630 | 6,630 | 6,630 | 6,630 |
|  | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
|  | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
|  | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 |
|  | 0,17 | 0,21 | 0,24 | 0,22 | 0,21 | 0,23 | 0,21 | 0,20 | 0,20 | 0,23 |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|  | 0,667 | 0,667 | 0,697 | 0,576 | 0,727 |  | 0,818 | 0,485 | 0,303 | 0,303 |
|  | 0,333 | 0,333 | 0,303 | 0,424 | 0,273 |  | 0,182 | 0,515 | 0,697 | 0,697 |
|  | 6,630 | 6,630 | 6,630 | 6,630 | 6,630 |  | 6,630 | 6,630 | 6,630 | 6,630 |
|  | 33 | 33 | 33 | 33 | 33 |  | 33 | 33 | 33 | 33 |
|  | 32 | 32 | 32 | 32 | 32 |  | 32 | 32 | 32 | 32 |
|  | 1,03 | 1,03 | 1,03 | 1,03 | 1,03 |  | 1,03 | 1,03 | 1,03 | 1,03 |
|  | 0,22 | 0,22 | 0,21 | 0,24 | 0,20 |  | 0,15 | 0,25 | 0,21 | 0,21 |
|  |  | | | | | | 4,04 | | | |
|  |  | | | | | | 43,96 | | | |
|  |  | | | | | | 39,92 | | | |
|  |  | | | | | | 0,91 | | | |
|  |  | | | | | | 0,94 | | | |
|  | **Reliability Degree** | | | | | | **High** | | | |

* 1. Difficulty Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ` | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Right Answer | 26 | 23 | 20 | 22 | 10 | 21 | 23 | 24 | 9 | 21 |
| Difficulty Point | 0,74 | 0,66 | 0,57 | 0,63 | 0,29 | 0,60 | 0,66 | 0,69 | 0,26 | 0,60 |
| **Difficulty Degree** | **Easy** | **Medium** | **Medium** | **Medium** | **Difficult** | **Medium** | **Medium** | **Medium** | **Difficult** | **Medium** |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Right Answer | 22 | 22 | 23 | 19 | 24 |  | 27 | 16 | 10 | 10 |
| Difficulty Point | 0,63 | 0,63 | 0,66 | 0,54 | 0,69 |  | 0,77 | 0,46 | 0,29 | 0,29 |
| **Difficulty Degree** | **Medium** | **Medium** | **Medium** | **Medium** | **Medium** |  | **Easy** | **Medium** | **Difficult** | **Difficult** |

* 1. Dicrimination Test

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Items | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Wrong Answer in Top Ranks (27%) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wrong Answer in Lower Ranks (27%) | 5 | 5 | 6 | 5 | 9 | 5 | 5 | 5 | 9 | 7 |
| Ross & Stanley Standard | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| **Dicrimination Point** | **5** | **5** | **6** | **5** | **9** | **5** | **5** | **5** | **9** | **7** |
|  | Items | | | | | | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Wrong Answer in Top Ranks (27%) | 1 | 2 | 0 | 1 | 0 |  | 0 | 2 | 1 | 1 |
| Wrong Answer in Lower Ranks (27%) | 8 | 7 | 8 | 8 | 7 |  | 6 | 7 | 8 | 7 |
| Ross & Stanley Standard | 5 | 5 | 5 | 5 | 5 |  | 5 | 5 | 5 | 5 |
| **Dicrimination Point** | **7** | **5** | **8** | **7** | **7** |  | **6** | **5** | **7** | **6** |
| \*a correction is needed |  |  |  |  |  |  |  |  |  |  |

*(Continued table)*

المرفق 11. نتائج التعلم للاختبار القبلي والبعدي

**Pre-Test & Post-Test Result**

**No. 1/T/PPT/XI/2019**

1. Experiment Class

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Name | Pre | Post 1 | Post 2 | Post Mean |
| 1 | Achmad Kurnia Abi Maulana | 67 | 80 | 73 | 76,5 |
| 2 | Afina Brevita Adnan | 67 | 80 | 80 | 80 |
| 3 | Anditha Eka Yuana | 73 | 87 | 93 | 90 |
| 4 | Andreano Adinata | 60 | 80 | 73 | 76,5 |
| 5 | Bayu Dzannuril Habib | 80 | 93 | 93 | 93 |
| 6 | Bintang Thariq Zulda Putra | 80 | 93 | 87 | 90 |
| 7 | Dava Farid Deannova | 67 | 80 | 73 | 76,5 |
| 8 | Devi Aprilia | 87 | 93 | 93 | 93 |
| 9 | Dila Ayu Kusuma Wardani | 67 | 73 | 80 | 76,5 |
| 10 | Dita Rahmawati | 67 | 93 | 87 | 90 |
| 11 | Diva Aulia Dwi Fransiska | 67 | 87 | 93 | 90 |
| 12 | Egrita Marsilea Crenata | 53 | 53 | 67 | 60 |
| 13 | Eris Gaviota Firjanaqa | 87 | 93 | 93 | 93 |
| 14 | Fiqih Nasrul Riza | 67 | 80 | 80 | 80 |
| 15 | Galang Jundu Prasetyo | 87 | 93 | 87 | 90 |
| 16 | Habibah | 60 | 73 | 80 | 76,5 |
| 17 | Hendra Wisnu Wardana | 53 | 80 | 73 | 76,5 |
| 18 | Ifan Dwi Armadani | 87 | 93 | 93 | 93 |
| 19 | Jodi Armansyah | 67 | 93 | 87 | 90 |
| 20 | Karir Mafirroh | 87 | 87 | 93 | 90 |
| 21 | Mirza Miran Daud | 73 | 73 | 87 | 80 |
| 22 | Moh. Dwi Afandi | 60 | 73 | 73 | 73 |
| 23 | Moh Revo Pradisna Putra | 87 | 93 | 93 | 93 |
| 24 | Mohammad Dani Dwi Ivanka | 60 | 73 | 73 | 73 |
| 25 | Nurmala Arini | 60 | 73 | 73 | 73 |
| 26 | Orrick Julyan M.D | 73 | 87 | 80 | 83,5 |
| 27 | Pandu Slamet Prayoga | 67 | 73 | 80 | 76,5 |
| 28 | Pramita Jatu Parmawati | 67 | 73 | 73 | 73 |
| 29 | Rahma Sakinah | 73 | 87 | 80 | 83,5 |
| 30  *(Continued table)* | Ridho Septian Syamsah | 60 | 73 | 73 | 73 |
| 31 | Risma Dewi Ariani | 60 | 67 | 73 | 70 |
| 32 | Sadewa Putra Alcantara | 67 | 80 | 80 | 80 |
| 33 | Wahyu Dea Ajeng Sarastika | 87 | 93 | 93 | 93 |
| 34 | Yosvian Ellinnobela | 80 | 93 | 87 | 90 |
| 35 | Yulita Sapti Asraini | 80 | 87 | 93 | 90 |
| Average | | 70,97 | 82,34 | 82,54 | 81,41 |

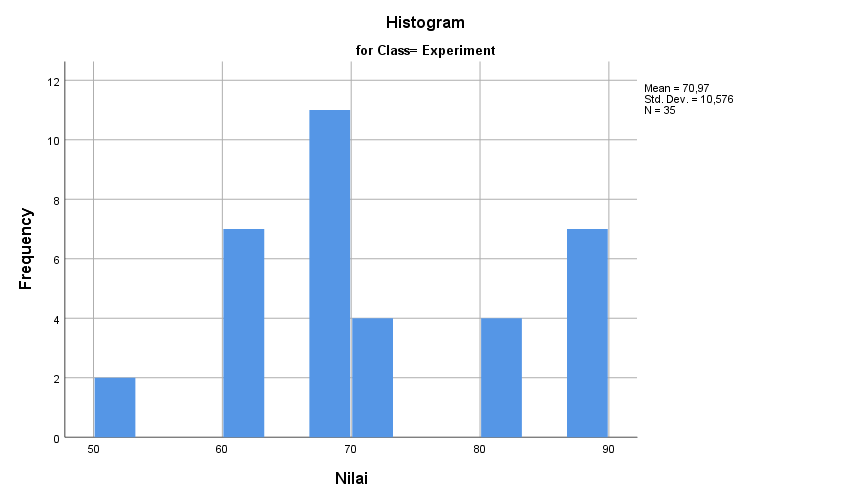
1. Control Class

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Name | Pre | Post 1 | Post 2 | Post Mean |
| 1 | Agnes Yohana | 60 | 67 | 67 | 67 |
| 2 | Alfan Nanda | 60 | 67 | 73 | 70 |
| 3 | Alfin Pratama | 60 | 67 | 67 | 67 |
| 4 | Anis Mu'älfa | 80 | 87 | 87 | 87 |
| 5 | Devi Juniar Pratiwi | 80 | 93 | 87 | 90 |
| 6 | Elsa Febrianti | 73 | 80 | 87 | 83,5 |
| 7 | Eva Citra Aprelia | 87 | 93 | 93 | 93 |
| 8 | Gayuh Ramadhan | 60 | 73 | 73 | 73 |
| 9 | Hayyan Mubarok | 60 | 60 | 67 | 63,5 |
| 10 | Ilham Nurmansah | 60 | 73 | 73 | 73 |
| 11 | Intan Aulia Wardani | 67 | 80 | 80 | 80 |
| 12 | Karisa Levi Rizatun Tadayyuni | 80 | 93 | 87 | 90 |
| 13 | Leny Budi Martha | 73 | 80 | 80 | 80 |
| 14 | Muhammad Ramdani | 60 | 73 | 73 | 73 |
| 15 | Muhammad Risqi | 67 | 73 | 73 | 73 |
| 16 | Muh. Rifqy Setiawan | 60 | 67 | 67 | 67 |
| 17 | Nadia Aulia Nafis | 73 | 80 | 80 | 80 |
| 18 | Nadya Asmawati Natasyia | 60 | 73 | 80 | 76,5 |
| 19 | Najwa Insanida Nahla | 73 | 80 | 80 | 80 |
| 20 | Pinandita Hidayatullah | 60 | 67 | 73 | 70 |
| 21 | Rafael Arya Tengku Sadewa | 60 | 73 | 73 | 73 |
| 22 | Rindy Wahyu Apriliza | 60 | 80 | 73 | 76,5 |
| 23 | Rizky Triyo Pamungkas | 80 | 87 | 93 | 90 |
| 24 | Roro Ayu Sekar Pembayun | 80 | 87 | 87 | 87 |
| 25 | Sandi Sanjaya | 53 | 67 | 73 | 70 |
| 26 | Sherlyna Dwi Rahayu | 87 | 93 | 93 | 93 |
| 27  *(Continued table)* | Sindy Ayu Roslani | 80 | 87 | 80 | 83,5 |
| 28 | Tio Dodik Saputra | 53 | 73 | 67 | 70 |
| 29 | Trisna Ahmad Nurkholis | 60 | 67 | 73 | 70 |
| 30 | Vikia Irmawati | 60 | 73 | 73 | 73 |
| 31 | Wulan Desita | 73 | 87 | 80 | 83,5 |
| 32 | Yudistira Andeta Ramadhani | 73 | 80 | 73 | 76,5 |
| 33 | Yulia Firmanda Septia Wati | 60 | 73 | 67 | 70 |
| 34 | Zizilia Nasya Maharani | 87 | 93 | 87 | 90 |
| Average | | 68,21 | 77,82 | 77,62 | 74,91 |

المرفق 12. تحليل البيانات

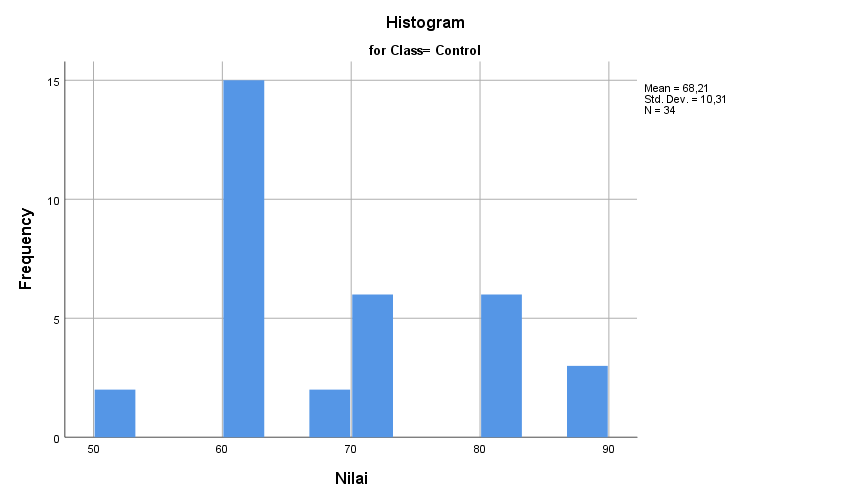
1. **Initial Ability Analysis**
2. Interval Score
   1. Experiment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 53-58 | 2 | 5,7 | 5,7 | 5,7 |
| 59-66 | 7 | 20,0 | 20,0 | 25,7 |
| 67-72 | 11 | 31,4 | 31,4 | 57,1 |
| 73-78 | 4 | 11,4 | 11,4 | 68,6 |
| 79-84 | 4 | 11,4 | 11,4 | 80,0 |
| 85-90 | 7 | 20,0 | 20,0 | 100,0 |
| Total | 35 | 100,0 | 100,0 |  |



* 1. Control

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 53-58 | 2 | 5,9 | 5,9 | 5,9 |
| 59-66 | 15 | 44,1 | 44,1 | 50,0 |
| 67-72 | 2 | 5,9 | 5,9 | 55,9 |
| 73-78 | 6 | 17,6 | 17,6 | 73,5 |
| 79-84 | 6 | 17,6 | 17,6 | 91,2 |
| 85-90 | 3 | 8,8 | 8,8 | 100,0 |
| Total | 34 | 100,0 | 100,0 |  |



1. Pre-Test Score Description

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Class | | | Statistic | Std. Error |
| Experiment | Mean | | 70,97 | 1,788 |
| 95% Confidence Interval for Mean | Lower Bound | 67,34 |  |
| Upper Bound | 74,60 |  |
| 5% Trimmed Mean | | 71,08 |  |
| Median | | 67,00 |  |
| Variance | | 111,852 |  |
| Std. Deviation | | 10,576 |  |
| Minimum | | 53 |  |
| Maximum | | 87 |  |
| Range | | 34 |  |
| Interquartile Range | | 20 |  |
| Skewness | | ,271 | ,398 |
| Kurtosis | | -1,036 | ,778 |
| Control | Mean | | 68,21 | 1,768 |
| 95% Confidence Interval for Mean | Lower Bound | 64,61 |  |
| Upper Bound | 71,80 |  |
| 5% Trimmed Mean | | 68,01 |  |
| Median | | 63,50 |  |
| Variance | | 106,290 |  |
| Std. Deviation | | 10,310 |  |
| Minimum  *(Continued table)* | | 53 |  |
| Maximum | | 87 |  |
| Range | | 34 |  |
| Interquartile Range | | 20 |  |
| Skewness | | ,444 | ,403 |
| Kurtosis | | -1,142 | ,788 |

1. Normality Test using IBM SPSS Statistics 26

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Class | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
| Statistic | df | Sig. | Statistic | df | Sig. |
| Experiment | ,218 | 35 | ,000 | ,898 | 35 | ,004 |
| Control | ,287 | 34 | ,000 | ,860 | 34 | ,000 |
| \*. This is a lower bound of the true significance. | | | | | | | |
| a. Lilliefors Significance Correction | | | | | | | |

Considering Sig. value of Shapiro-Wilk above, **the data are not normal.**

1. Hypothesis Test using IBM SPSS Statistics 26

|  |  |
| --- | --- |
|  | Pre-Test Score |
| Mann-Whitney U | 496,000 |
| Wilcoxon W | 1091,000 |
| Z | -1,218 |
| Asymp. Sig. (2-tailed) | ,223 |

Considering Sig. (2-tailed) value above, **the null hypothesis is accepted.**

1. **Effectiveness Analysis**
2. N-Gain Calculation
3. Experiment Class

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No | Pre | Post  Mean | Post-Pre | 100-Pre | N-Gain | N-Gain (%) |
| 1 | 67,0 | 76,5 | 9,5 | 33,0 | 0,288 | 28,8% |
| 2 | 67,0 | 80,0 | 13,0 | 33,0 | 0,394 | 39,4% |
| 3 | 73,0 | 90,0 | 17,0 | 27,0 | 0,630 | 63,0% |
| 4 | 60,0 | 76,5 | 16,5 | 40,0 | 0,413 | 41,3% |
| 5 | 80,0 | 93,0 | 13,0 | 20,0 | 0,650 | 65,0% |
| 6 | 80,0 | 90,0 | 10,0 | 20,0 | 0,500 | 50,0% |
| 7 | 67,0 | 76,5 | 9,5 | 33,0 | 0,288 | 28,8% |
| 8 | 87,0 | 93,0 | 6,0 | 13,0 | 0,462 | 46,2% |
| 9 | 67,0 | 76,5 | 9,5 | 33,0 | 0,288 | 28,8% |
| 10 | 67,0 | 90,0 | 23,0 | 33,0 | 0,697 | 69,7% |
| 11 | 67,0 | 90,0 | 23,0 | 33,0 | 0,697 | 69,7% |
| 12 | 53,0 | 60,0 | 7,0 | 47,0 | 0,149 | 14,9% |
| 13 | 87,0 | 93,0 | 6,0 | 13,0 | 0,462 | 46,2% |
| 14 | 67,0 | 80,0 | 13,0 | 33,0 | 0,394 | 39,4% |
| 15 | 87,0 | 90,0 | 3,0 | 13,0 | 0,231 | 23,1% |
| 16 | 60,0 | 76,5 | 16,5 | 40,0 | 0,413 | 41,3% |
| 17 | 53,0 | 76,5 | 23,5 | 47,0 | 0,500 | 50,0% |
| 18 | 87,0 | 93,0 | 6,0 | 13,0 | 0,462 | 46,2% |
| 19 | 67,0 | 90,0 | 23,0 | 33,0 | 0,697 | 69,7% |
| 20 | 87,0 | 90,0 | 3,0 | 13,0 | 0,231 | 23,1% |
| 21 | 73,0 | 80,0 | 7,0 | 27,0 | 0,259 | 25,9% |
| 22 | 60,0 | 73,0 | 13,0 | 40,0 | 0,325 | 32,5% |
| 23 | 87,0 | 93,0 | 6,0 | 13,0 | 0,462 | 46,2% |
| 24 | 60,0 | 73,0 | 13,0 | 40,0 | 0,325 | 32,5% |
| 25 | 60,0 | 73,0 | 13,0 | 40,0 | 0,325 | 32,5% |
| 26 | 73,0 | 83,5 | 10,5 | 27,0 | 0,389 | 38,9% |
| 27 | 67,0 | 76,5 | 9,5 | 33,0 | 0,288 | 28,8% |
| 28 | 67,0 | 73,0 | 6,0 | 33,0 | 0,182 | 18,2% |
| 29 | 73,0 | 83,5 | 10,5 | 27,0 | 0,389 | 38,9% |
| 30 | 60,0 | 73,0 | 13,0 | 40,0 | 0,325 | 32,5% |
| 31 | 60,0 | 70,0 | 10,0 | 40,0 | 0,250 | 25,0% |
| 32 | 67,0 | 80,0 | 13,0 | 33,0 | 0,394 | 39,4% |
| 33 | 87,0 | 93,0 | 6,0 | 13,0 | 0,462 | 46,2% |
| 34 | 80,0 | 90,0 | 10,0 | 20,0 | 0,500 | 50,0% |
| 35 | 80,0 | 90,0 | 10,0 | 20,0 | 0,500 | 50,0% |
|  | Mean | | | | | 40,6% |
|  | Minimum | | | | | 14,9% |
|  | Maximum | | | | | 69,7% |
|  | **Effectiveness Degree** | | | | | **Medium** |

*(Continued table)*

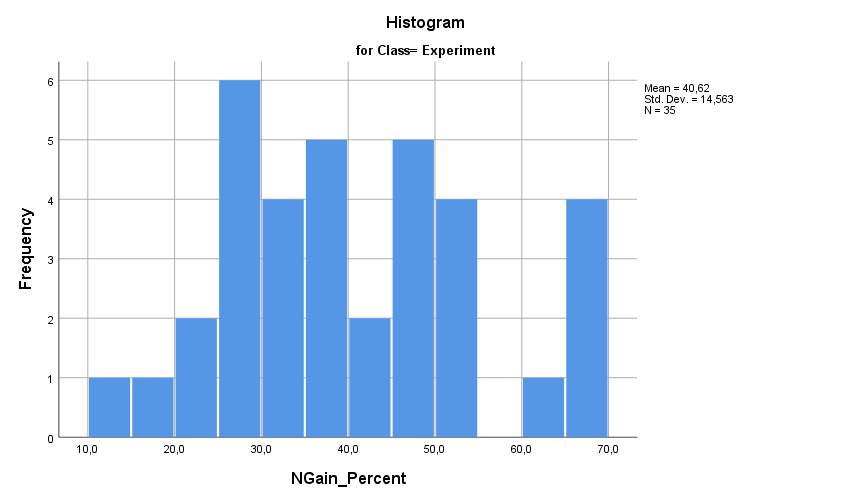
1. Control Class

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No | Pre | Post  Mean | Post-Pre | 100-Pre | N-Gain | N-Gain (%) |
| 1 | 60,0 | 67,0 | 7,0 | 40,0 | 0,175 | 17,5% |
| 2 | 60,0 | 70,0 | 10,0 | 40,0 | 0,250 | 25,0% |
| 3 | 60,0 | 67,0 | 7,0 | 40,0 | 0,175 | 17,5% |
| 4 | 80,0 | 87,0 | 7,0 | 20,0 | 0,350 | 35,0% |
| 5 | 80,0 | 90,0 | 10,0 | 20,0 | 0,500 | 50,0% |
| 6 | 73,0 | 83,5 | 10,5 | 27,0 | 0,389 | 38,9% |
| 7 | 87,0 | 93,0 | 6,0 | 13,0 | 0,462 | 46,2% |
| 8 | 60,0 | 73,0 | 13,0 | 40,0 | 0,325 | 32,5% |
| 9 | 60,0 | 63,5 | 3,5 | 40,0 | 0,088 | 8,8% |
| 10 | 60,0 | 73,0 | 13,0 | 40,0 | 0,325 | 32,5% |
| 11 | 67,0 | 80,0 | 13,0 | 33,0 | 0,394 | 39,4% |
| 12 | 80,0 | 90,0 | 10,0 | 20,0 | 0,500 | 50,0% |
| 13 | 73,0 | 80,0 | 7,0 | 27,0 | 0,259 | 25,9% |
| 14 | 60,0 | 73,0 | 13,0 | 40,0 | 0,325 | 32,5% |
| 15 | 67,0 | 73,0 | 6,0 | 33,0 | 0,182 | 18,2% |
| 16 | 60,0 | 67,0 | 7,0 | 40,0 | 0,175 | 17,5% |
| 17 | 73,0 | 80,0 | 7,0 | 27,0 | 0,259 | 25,9% |
| 18 | 60,0 | 76,5 | 16,5 | 40,0 | 0,413 | 41,3% |
| 19 | 73,0 | 80,0 | 7,0 | 27,0 | 0,259 | 25,9% |
| 20 | 60,0 | 70,0 | 10,0 | 40,0 | 0,250 | 25,0% |
| 21 | 60,0 | 73,0 | 13,0 | 40,0 | 0,325 | 32,5% |
| 22 | 60,0 | 76,5 | 16,5 | 40,0 | 0,413 | 41,3% |
| 23 | 80,0 | 90,0 | 10,0 | 20,0 | 0,500 | 50,0% |
| 24 | 80,0 | 87,0 | 7,0 | 20,0 | 0,350 | 35,0% |
| 25 | 53,0 | 70,0 | 17,0 | 47,0 | 0,362 | 36,2% |
| 26 | 87,0 | 93,0 | 6,0 | 13,0 | 0,462 | 46,2% |
| 27 | 80,0 | 83,5 | 3,5 | 20,0 | 0,175 | 17,5% |
| 28 | 53,0 | 70,0 | 17,0 | 47,0 | 0,362 | 36,2% |
| 29 | 60,0 | 70,0 | 10,0 | 40,0 | 0,250 | 25,0% |
| 30 | 60,0 | 73,0 | 13,0 | 40,0 | 0,325 | 32,5% |
| 31 | 73,0 | 83,5 | 10,5 | 27,0 | 0,389 | 38,9% |
| 32 | 73,0 | 76,5 | 3,5 | 27,0 | 0,130 | 13,0% |
| 33 | 60,0 | 70,0 | 10,0 | 40,0 | 0,250 | 25,0% |
| 34 | 87,0 | 90,0 | 3,0 | 13,0 | 0,231 | 23,1% |
|  | Mean | | | | | 31,1% |
|  | Minimum | | | | | 8,8% |
|  | Maximum | | | | | 50,0% |
|  | **Effectiveness Degree** | | | | | **Medium** |

*(Continued table)*

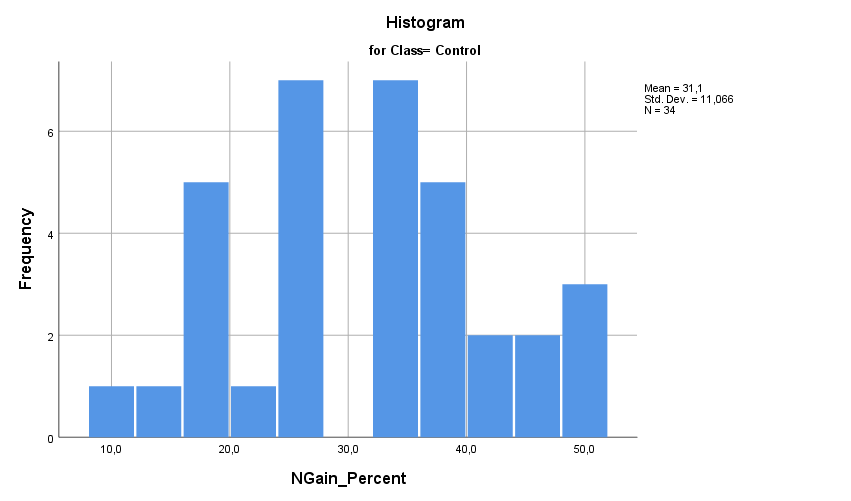
1. Interval Score
2. Experiment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 14-23 | 4 | 11,4 | 11,4 | 11,4 |
| 24-33 | 10 | 28,6 | 28,6 | 40,0 |
| 34-43 | 7 | 20,0 | 20,0 | 60,0 |
| 44-53 | 9 | 25,7 | 25,7 | 85,7 |
| 54-63 | 1 | 2,9 | 2,9 | 88,6 |
| 64-73 | 4 | 11,4 | 11,4 | 100,0 |
| Total | 35 | 100,0 | 100,0 |  |



1. Control

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 8-15 | 2 | 5,9 | 5,9 | 5,9 |
| 16-23 | 6 | 17,6 | 17,6 | 23,5 |
| 24-31 | 7 | 20,6 | 20,6 | 44,1 |
| 32-39 | 12 | 35,3 | 35,3 | 79,4 |
| 40-47 | 4 | 11,8 | 11,8 | 91,2 |
| 48-55 | 3 | 8,8 | 8,8 | 100,0 |
| Total | 34 | 100,0 | 100,0 |  |



1. Score Description using IBM SPSS Statistics 26

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Class | | | Statistic | Std. Error |
| Experi-  ment | Mean | | 40,617 | 2,4616 |
| 95% Confidence Interval for Mean | Lower Bound | 35,614 |  |
| Upper Bound | 45,619 |  |
| 5% Trimmed Mean | | 40,352 |  |
| Median | | 39,394 |  |
| Variance | | 212,083 |  |
| Std. Deviation | | 14,5631 |  |
| Minimum | | 14,9 |  |
| Maximum | | 69,7 |  |
| Range | | 54,8 |  |
| Interquartile Range | | 21,2 |  |
| Skewness | | ,492 | ,398 |
| Kurtosis | | -,268 | ,778 |
| Control | Mean | | 31,105 | 1,8979 |
| 95% Confidence Interval for Mean | Lower Bound | 27,244 |  |
| Upper Bound | 34,966 |  |
| 5% Trimmed Mean | | 31,201 |  |
| Median | | 32,500 |  |
| Variance | | 122,466 |  |
| Std. Deviation | | 11,0664 |  |
| Minimum | | 8,8 |  |
| Maximum | | 50,0 |  |
| Range | | 41,3 |  |
| Interquartile Range | | 14,5 |  |
| Skewness | | -,004 | ,403 |
| Kurtosis | | -,737 | ,788 |

*(Continued table)*

1. Normality Test using IBM SPSS Statistics 26

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Class | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
| Statistic | df | Sig. | Statistic | df | Sig. |
| Experiment | ,117 | 35 | ,200\* | ,948 | 35 | ,100 |
| Control | ,121 | 34 | ,200\* | ,966 | 34 | ,366 |
| \*. This is a lower bound of the true significance. | | | | | | |
| a. Lilliefors Significance Correction | | | | | | |

Considering Sig. value of Shapiro-Wilk above, **the data are normal.**

1. Homogeneity Test using IBM SPSS Statistics 26

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Levene Statistic | df1 | df2 | Sig. |
| Based on Mean | 1,591 | 1 | 67 | ,212 |
| Based on Median | 1,551 | 1 | 67 | ,217 |
| Based on Median and with adjusted df | 1,551 | 1 | 60,543 | ,218 |
| Based on trimmed mean | 1,564 | 1 | 67 | ,215 |

Considering Sig. value based on mean above, **the data are homogeneous.**

1. Hypothesis Test using IBM SPSS Statistics 26

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
| F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| Equal variances assumed | 1,591 | ,212 | 3,048 | 67 | ,003 | 9,5119 | 3,1206 | 3,2832 | 15,7405 |
| Equal variances not assumed |  |  | 3,060 | 63,366 | ,003 | 9,5119 | 3,1083 | 3,3011 | 15,7226 |

Considering Sig. (2-tailed) value above, **the null hypothesis is rejected.**