**LAMPIRAN 4**

**HASIL ANALISIS DATA**

1. **Hasil Analisis Tabel Distribusi Frekuensi *Pretest* dan *Posttest***
2. **Menentukan Nilai Rentang (R)**

**Diketahui:**

Nilai Maksimal = 29

Nilai Minimal = 10

**Rumus:**

R = Nilai Maksimal – Nilai Minimal

 = 29 – 10

 = 19

Jadi, nilai rentang hasil *pretest* adalah 18.

1. **Menentukan Kelas yang Digunakan (K)**

**Diketahui:**

Banyak Data (n) = 30

**Rumus:**

K = 1 + 3, 3 log n

 = 1 + 3, 3 log 30

 = 5, 88 (dibulatkan menjadi 5)

Jadi, banyak kelas yang digunakan adalah 5.

1. **Menentukan Panjang Kelas (P)**

Diketahui:

Rentang (R) = 19

Kelas (K) = 5

Rumus:

$P= \frac{R}{K}$

$P= \frac{18}{5}$

$P= 3, 8$ (dibulatkan menjadi 4)

Jadi, panjang kelas adalah 4.

1. **Menentukan Tabel Distribusi Frekuensi *Pretest***

|  |  |
| --- | --- |
| **Kategori** | **Nilai** |
| **Sangat Rendah** | **10 – 14** |
| **Rendah** | **15 – 18** |
| **Sedang** | **19 – 22** |
| **Tinggi** | **23 – 26** |
| **Sangat Tinggi** | **27 - 30** |

1. **Hasil Analisis Data Manual**

Dalam mencari besar t hitung sebelum dan sesudah perlakuan maka digunakan rumus berikut (Sugiyono, 2015):



Keteranngan:

x̅1 = rata-rata sebelum perlakuan

x̅2 = rata-rata setelah perlakuan

s1 = simpangan baku sebelum perlakuan

s2 = simpangan baku setelah perlakuan

n1 = jumlah sampel sebelum perlakuan

n2= jumlah sampel setelah perlakuan

r = r hitung

Mencari R hitung

$R\_{hitung}=\frac{n.\sum\_{}^{}x.y- \sum\_{}^{}x.\sum\_{}^{}y}{\sqrt{n.\sum\_{}^{}x^{2}-(\sum\_{}^{}x)^{2}} × \sqrt{n.\sum\_{}^{}y^{2}-(\sum\_{}^{}y)^{2}}} $

$R\_{hitung}=\frac{33 . 15246- 653 .770}{\sqrt{33 . 13705-(653)^{2}} × \sqrt{33 . 18442-(770)^{2} }}$

$R\_{hitung}=\frac{503118- 502810}{\sqrt{452265-426409} × \sqrt{608586-592900 }}$

$R\_{hitung}=\frac{308}{\sqrt{25856} × \sqrt{15686 }}$

$R\_{hitung}=\frac{308}{20138,9477}$

$R\_{hitung}=0,015$

Jadi, diketahui R hitung yaitu 0,015

Mencari standar deviasi (S1)

$S\_{1}=\frac{\sqrt{\sum\_{}^{}(x-\overleftarrow{x})^{2}}}{n-1}$

$S\_{1}=\frac{\sqrt{\sum\_{}^{}(653-19,78788)^{2}}}{33-1}$

$S\_{1}=\frac{\sqrt{400958}}{32}$

$S\_{1}=\frac{633.212445}{32}$

$S\_{1}=19,788$

Mencari standar deviasi (S2)

$S\_{2}=\frac{\sqrt{\sum\_{}^{}(x-\overleftarrow{x})^{2}}}{n-1}$

$S\_{2}=\frac{\sqrt{\sum\_{}^{}(770-23.3333)^{2}}}{33-1}$

$S\_{2}=\frac{\sqrt{557511}}{32}$

$S\_{2}=\frac{746.666592}{32}$

$S\_{2}=233.33$

Mencari besat t hitung



$t\_{hitung}=\frac{19,788- 233.33}{\frac{391.560}{33}+\frac{544.444}{33}-0.03\left(\frac{19.788}{\sqrt{33}}\right)\left(\frac{23.333}{\sqrt{33}}\right)}$

$t\_{hitung}=\frac{-213.542}{11.865+16.498-0.03\left(3.445\right)\left(4.062\right)}$

$t\_{hitung}=\frac{-213.542}{28.363-0.420}$

$t\_{hitung}=-7.642$

Jadi, dapat diketahui t hitung yaitu – 7.642

Berdasarkan perhitungan di atas, maka dapat dilihat bahwa besaran nilai t hitung = – 7.642 terletak di daerah penerimaan Ha, dengan catatan nilai thitung adalah nilai mutlak, jadi tidak dapat dilihat positif (+) atau negatif (-) nya. Sehingga dapat dilihat bahwa Ho ditolak, di mana thitung > ttabel yaitu 7.642 > 2,04.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Pr | 0.25 | 0.10 | 0.05 | 0.25 | 0.01 | 0.005 | 0.001 |
| df | 0.50 | 0.20 | 0.10 | 0.050 | 0.02 | 0.010 | 0.002 |
| 29 | 0.68304 | 1.31143 | 1.69913 | 2.04523 | 2.46202 | 2.75639 | 3.39624 |
| 30 | 0.68276 | 1.31042 | 1.69726 | 2.04227 | 2.45726 | 2.75000 | 3.38518 |
| 31 | 0.68249 | 1.30946 | 1.69552 | 2.03951 | 2.45282 | 2.74404 | 3.37490 |
| 32 | 0.68223 | 1.30857 | 1.69389 | 2.03693 | 2.44868 | 2.73848 | 3.36531 |
| 33 | 0.68200 | 1.30774 | 1.69236 | 2.03452 | 2.44479 | 2.73328 | 3.35634 |
| 34 | 0.68177 | 1.30695 | 1.69092 | 2.03224 | 2.44115 | 2.72839 | 3.34793 |

1. **Hasil Analisis Data SPSS**
2. **Hasil Analisis Data *Pretest***

|  |
| --- |
| **Case Processing Summary** |
|  | Cases |
| Valid | Missing | Total |
| N | Percent | N | Percent | N | Percent |
| PreTest | 33 | 100,0% | 0 | 0,0% | 33 | 100,0% |

|  |
| --- |
| **Descriptives** |
|  | Statistic | Std. Error |
| PreTest | Mean | 19,7879 | ,86137 |
| 95% Confidence Interval for Mean | Lower Bound | 18,0333 |  |
| Upper Bound | 21,5424 |  |
| 5% Trimmed Mean | 19,8098 |  |
| Median | 20,0000 |  |
| Variance | 24,485 |  |
| Std. Deviation | 4,94822 |  |
| Minimum | 10,00 |  |
| Maximum | 28,00 |  |
| Range | 18,00 |  |
| Interquartile Range | 8,50 |  |
| Skewness | ,038 | ,409 |
| Kurtosis | -1,052 | ,798 |

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| **Tests of Normality** |
|  | Kolmogorov-Smirnova | Shapiro-Wilk |
| Statistic | df | Sig. | Statistic | df | Sig. |
| PreTest | ,142 | 33 | ,091 | ,956 | 33 | ,197 |
| a. Lilliefors Significance Correction |

1. **Hasil Analisis Data *Posttest***

|  |
| --- |
| **Case Processing Summary** |
|  | Cases |
| Valid | Missing | Total |
| N | Percent | N | Percent | N | Percent |
| PostTest | 33 | 100,0% | 0 | 0,0% | 33 | 100,0% |

|  |
| --- |
| **Descriptives** |
|  | Statistic | Std. Error |
| PostTest | Mean | 23,3333 | ,67091 |
| 95% Confidence Interval for Mean | Lower Bound | 21,9667 |  |
| Upper Bound | 24,6999 |  |
| 5% Trimmed Mean | 23,4040 |  |
| Median | 24,0000 |  |
| Variance | 14,854 |  |
| Std. Deviation | 3,85411 |  |
| Minimum | 16,00 |  |
| Maximum | 29,00 |  |
| Range | 13,00 |  |
| Interquartile Range | 6,50 |  |
| Skewness | -,340 | ,409 |
| Kurtosis | -,911 | ,798 |

|  |
| --- |
| **Tests of Normality** |
|  | Kolmogorov-Smirnova | Shapiro-Wilk |
| Statistic | df | Sig. | Statistic | df | Sig. |
| PostTest | ,114 | 33 | ,200\* | ,944 | 33 | ,088 |
| \*. This is a lower bound of the true significance. |
| a. Lilliefors Significance Correction |