

Lampiran 1

Perhitungan Rata-Rata, Simpangan Baku dan Normalitas Data Hasil Pre Test kelas IV-A

| NO | x_i | f_i | xi^2 | $f_i x_i$ | $f_i xi^2$ |
|----------|-------|-------|--------|-----------|------------|
| 1 | 20 | 3 | 400 | 60 | 1200 |
| 2 | 25 | 3 | 625 | 75 | 1875 |
| 3 | 30 | 3 | 900 | 90 | 2700 |
| 4 | 35 | 2 | 1225 | 70 | 2450 |
| 5 | 40 | 5 | 1600 | 200 | 8000 |
| 6 | 50 | 4 | 2500 | 200 | 10000 |
| 7 | 55 | 3 | 3025 | 165 | 9075 |
| 8 | 60 | 2 | 3600 | 120 | 7200 |
| Σ | | 25 | 13875 | 980 | 42500 |

Rata-rata

$$\bar{x} = \frac{\sum f_i X_i}{\sum f_i}$$

$$\bar{x} = \frac{980}{25}$$

$$\bar{x} = 39,20$$

Simpangan Baku

$$s = \sqrt{\frac{n(\sum f_i x_i^2) - (\sum f_i x_i)^2}{n(n-1)}}$$

$$s = \sqrt{\frac{25(42500) - (980)^2}{25(25-1)}}$$

$$s = \sqrt{\frac{(1062.500) - (960.400)}{25(24)}}$$

$$s = \sqrt{\frac{102.100}{600}}$$

$$s = \sqrt{170,167}$$

$$s = 13,04$$

Perhitungan Liliefors Pret Test Kelas IV-A

| No | x_i | f_i | f_{kum} | (Z_i) | $Luas_{Z_i}$ | $F(Z_i)$ | $S(Z_i)$ | $F(Z_i) - S(Z_i)$ |
|----------|-------|-------|-----------|---------|--------------|----------|----------|-------------------|
| 1 | 20 | 3 | 3 | -1,47 | 0,4292 | 0,0708 | 0,1200 | 0,0492 |
| 2 | 25 | 3 | 6 | -1,09 | 0,3621 | 0,1379 | 0,2400 | 0,1021 |
| 3 | 30 | 3 | 9 | -0,71 | 0,2612 | 0,2388 | 0,3600 | 0,1212 |
| 4 | 35 | 2 | 11 | -0,32 | 0,1255 | 0,3745 | 0,4400 | 0,0655 |
| 5 | 40 | 5 | 16 | 0,06 | 0,0239 | 0,4761 | 0,6400 | 0,1639 |
| 6 | 50 | 4 | 20 | 0,83 | 0,2967 | 0,7967 | 0,8000 | 0,0033 |
| 7 | 55 | 3 | 23 | 1,21 | 0,3869 | 0,8869 | 0,9200 | 0,0331 |
| 8 | 60 | 2 | 25 | 1,60 | 0,4452 | 0,9452 | 1,0000 | 0,0548 |
| Σ | | 25 | | | | | | |

$$L_0 = 0,1639$$

$$L_{tabel} = L_{(\alpha)(n)}$$

$$= L_{(0,05)(25)}$$

$$L_{tabel} = 0,173$$

$$L_0 = 0,1639 < L_{tabel} = 0,173$$

Dengan $\alpha = 0,05$ dan $n = 25$ maka diperoleh $L_{tabel} = 0,173$

Kriteria Uji : Jika $L_0 \leq L_{tabel}$

Jadi $L_0 = 0,1639 \leq L_{tabel} = 0,173$

Kesimpulan : Terima H_0 atau Data Berdistribusi Normal

Lampiran 2

Perhitungan Rata-Rata, Simpangan Baku dan Normalitas Data Hasil Pre Test kelas IV-B

| No | x_i | f_i | x_i^2 | $f_i x_i$ | $f_i x_i^2$ |
|----------|-------|-------|---------|-----------|-------------|
| 1 | 25 | 2 | 625 | 50 | 1250 |
| 2 | 30 | 4 | 900 | 120 | 3600 |
| 3 | 40 | 4 | 1600 | 160 | 6400 |
| 4 | 45 | 4 | 2025 | 180 | 8100 |
| 5 | 50 | 4 | 2500 | 200 | 10000 |
| 6 | 55 | 4 | 3025 | 220 | 12100 |
| Σ | | 22 | 10675 | 930 | 41450 |

Rata-rata

$$\bar{x} = \frac{\sum f_i X_i}{\sum f_i}$$

$$\bar{x} = \frac{930}{22}$$

$$\bar{x} = 42,27$$

Simpangan Baku

$$S = \sqrt{\frac{n(\sum f_i x_i^2) - (\sum f_i x_i)^2}{n(n-1)}}$$

$$S = \sqrt{\frac{22(41450) - (930)^2}{22(22-1)}}$$

$$S = \sqrt{\frac{(911.900) - (864.900)}{22(21)}}$$

$$S = \sqrt{\frac{47.000}{462}}$$

$$S = \sqrt{101,73}$$

$$S = 10,08$$

Perhitungan Liliefors pret test Kelas IV-B

| No | x_i | f_i | f_{kum} | (Z_i) | $Luas_{Z_i}$ | $F(Z_i)$ | $S(Z_i)$ | $F(Z_i) - S(Z_i)$ |
|----------|-------|-------|-----------|---------|--------------|----------|----------|-------------------|
| 1 | 25 | 2 | 2 | -1,31 | 0,4049 | 0,0951 | 0,090909 | 0,0042 |
| 2 | 30 | 4 | 6 | -0,93 | 0,3238 | 0,1762 | 0,272727 | 0,0965 |
| 3 | 40 | 4 | 10 | -0,17 | 0,0675 | 0,4325 | 0,454545 | 0,0220 |
| 4 | 45 | 4 | 14 | 0,21 | 0,0832 | 0,5832 | 0,636364 | 0,0532 |
| 5 | 50 | 4 | 18 | 0,59 | 0,2224 | 0,7224 | 0,818182 | 0,0958 |
| 6 | 55 | 4 | 22 | 0,97 | 0,334 | 0,834 | 1,00000 | 0,1660 |
| Σ | | 22 | | | | | | |

Dari data diperoleh $L_0 = 0,1660$

Interpolasi (L_{tabel})

$$L_{(0,05)(22)} = 0,190$$

$$L_{(0,05)(25)} = 0,173$$

$$\begin{array}{ccc} 0,190 & X & 0,173 \\ \hline 20 & 22 & 25 \\ X - 0,190 & = & \frac{22-20}{25-20} = \frac{2}{5} \\ 0,173 - 0,190 & & \end{array}$$

$$X - 0,190 = \frac{2}{5} (-0,017)$$

$$X = 0,190 - 0,0068$$

$$X = 0,1832$$

$$L_{(0,05)(22)} = 0,1832$$

$$L_0 = 0,1660 < L_{tabel} = 0,1832$$

Dengan $\alpha = 0,1660$ dan $n = 22$ maka diperoleh $L_{tabel} = 0,1832$

Kriteria Uji : Jika $L_0 \leq L_{tabel}$

$$\text{Jadi } L_0 = 0,1660 \leq L_{tabel} = 0,1832$$

Kesimpulan : Terima H_0 atau Data Berdistribusi Normal

Uji Homogenitas Varians Data Pre Test Kelas IV-A Dan Kelas IV-B

$$H_0 : \sigma_1^2 = \sigma_2^2$$

$$H_1 : \sigma_1^2 \neq \sigma_2^2$$

$$n_1 = 25$$

$$n_2 = 22$$

$$S_1^2 = 13,04 \text{ (170,04)}$$

$$S_2^2 = 10,08 \text{ (101,60)}$$

$$F = \frac{\text{Varians Terbesar}}{\text{Varians Terkecil}}$$

$$F = \frac{170,04}{101,60}$$

$$f_{hitung} = 1,67$$

$$df_1 = n_1 - 1$$

$$df_1 = 25 - 1$$

$$df_2 = n_2 - 1$$

$$df_2 = 22$$

$$df_2 = 21$$

$$\text{Jadi } f_{(24,21)} = 2,05$$

$$F_{hitung} < F_{tabel} = 1,67 < 2,05$$

Maka H_0 Diterima atau Data Homogen

Uji Kesamaan Dua Rata-rata Kelas IV-A dan IV-B

$$x_1 = 39,20$$

$$x_2 = 42,27$$

$$s_1^2 = 170,04$$

$$s_2^2 = 101,60$$

$$s^2 = \sqrt{\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}}$$

$$s^2 = \sqrt{\frac{(25-1)170,04 + (22-1)101,60}{25+22-2}}$$

$$s^2 = \sqrt{\frac{(24)170,04 + (21)101,60}{45}}$$

$$s^2 = \sqrt{\frac{4.080,96 + 2.133,6}{45}}$$

$$s^2 = \sqrt{\frac{6.214,56}{45}}$$

$$s^2 = \sqrt{138,10}$$

$$s^2 = 11,75$$

Rumus Hipotesis : $H_0 : \mu_1 = \mu_2$

$H_1 : \mu_1 \neq \mu_2$

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$t = \frac{39,20 - 42,27}{11,75 \sqrt{\frac{1}{25} + \frac{1}{22}}}$$

$$t = \frac{-3,07}{11,75 \sqrt{0,04 + 0,0454545455}}$$

$$t = \frac{-3,07}{11,75 \sqrt{0,0854545455}}$$

$$t = \frac{-3,07}{3,4348316104}$$

$$t_{hitung} = -0,89$$

Karena tidak ada pada tabel distribusi t, maka dicari dengan menggunakan Interpolasi sebagai berikut :

$$t_{tabel} = t\left(1 - \frac{1}{2} \times \alpha\right)(n_1 + n_2 - 2)$$

$$= t\left(1 - \frac{1}{2} \times 0,05\right)(25 + 22 - 2)$$

$$= t(0,975)(45)$$

$$\frac{2,02}{40} \quad \frac{x}{45} \quad \frac{2,00}{60}$$

$$t = (0,975)(40) = 2,02$$

$$t = (0,975)(60) = 2,00$$

$$\frac{x-2,02}{2,00-2,02} = \frac{45-40}{60-40} = \frac{5}{20}$$

$$x = 2,02 - \left(\frac{5}{20}\right)(-0,02)$$

$$= 2,02 - 0,005$$

$$= 2,015$$

$$t_{hitung} < t_{tabel}, H_0 \text{ diterima}$$

$$t_{hitung} = -0,89 < t_{tabel} = 2,015$$

Maka terima H_0 atau kedua kelas mempunyai kemampuan yang sama (setara).

Lampiran 3

Perhitungan Rata-Rata, Simpangan Baku dan Normalitas Data Hasil Post Test kelas IV-A

| No | x_i | f_i | x_i^2 | $f_i x_i$ | $f_i x_i^2$ |
|----------|-------|-------|---------|-----------|-------------|
| 1 | 60 | 1 | 3600 | 60 | 3600 |
| 2 | 65 | 2 | 4225 | 130 | 8450 |
| 3 | 70 | 2 | 4900 | 140 | 9800 |
| 4 | 75 | 2 | 5625 | 150 | 11250 |
| 5 | 80 | 3 | 6400 | 240 | 19200 |
| 6 | 85 | 3 | 7225 | 255 | 21675 |
| 7 | 90 | 8 | 8100 | 720 | 64800 |
| 8 | 100 | 4 | 10000 | 400 | 40000 |
| Σ | | 25 | 50075 | 2095 | 178775 |

Rata-rata

$$\bar{X} = \frac{\sum f_i X_i}{\sum f_i}$$

$$\bar{x} = \frac{2095}{25}$$

$$\bar{x} = 83,80$$

Simpangan Baku

$$S = \sqrt{\frac{n(\sum f_i x_i^2) - (\sum f_i x_i)^2}{n(n-1)}}$$

$$S = \sqrt{\frac{25(178775) - (2095)^2}{25(25-1)}}$$

$$S = \sqrt{\frac{(4..469 .375) - (4.389 .025)}{25(24)}}$$

$$S = \sqrt{\frac{80 .350}{600}}$$

$$S = \sqrt{133 ,91}$$

$$S = 11,57$$

Tabel Perhitungan Liliefors Post Test Kelas IV-A

| No | x_i | f_i | f_{kum} | (Z_i) | $Luas_{z_i}$ | $F(Z_i)$ | $S(Z_i)$ | $F(Z_i) - S(Z_i)$ |
|----------|-------|-------|-----------|---------|--------------|----------|----------|-------------------|
| 1 | 60 | 1 | 1 | -2,06 | 0,4808 | 0,0192 | 0,0400 | 0,0208 |
| 2 | 65 | 2 | 3 | -1,62 | 0,4474 | 0,0526 | 0,1200 | 0,0674 |
| 3 | 70 | 2 | 5 | -1,19 | 0,3830 | 0,1170 | 0,2000 | 0,083 |
| 4 | 75 | 2 | 7 | -0,76 | 0,2764 | 0,2236 | 0,2800 | 0,0564 |
| 5 | 80 | 3 | 10 | -0,33 | 0,1293 | 0,3707 | 0,4000 | 0,0293 |
| 6 | 85 | 3 | 13 | 0,10 | 0,0398 | 0,5398 | 0,5200 | 0,0198 |
| 7 | 90 | 8 | 21 | 0,54 | 0,2054 | 0,7054 | 0,8400 | 0,1346 |
| 8 | 100 | 4 | 25 | 1,40 | 0,4192 | 0,9192 | 1,0000 | 0,0808 |
| Σ | | 25 | | | | | | |

$$L_0 = 0,1346$$

$$L_{tabel} = L_{(\alpha)(n)}$$

$$= L_{(0,05)(25)}$$

$$L_{tabel} = 0,173$$

$$L_0 = 0,1346 < L_{tabel} = 0,173$$

Simpulan : H_0 atau data berdistribusi normal

Lampiran 4

Perhitungan Rata-Rata, Simpangan Baku dan Normalitas Data Post Test kelas IV-B

| No | x_i | f_i | x_i^2 | $f_i x_i$ | $f_i x_i^2$ |
|----------|-------|-------|---------|-----------|-------------|
| 1 | 60 | 3 | 3600 | 180 | 10800 |
| 2 | 65 | 5 | 4225 | 325 | 21125 |
| 3 | 70 | 3 | 4900 | 210 | 14700 |
| 4 | 75 | 3 | 5625 | 225 | 16875 |
| 5 | 80 | 3 | 6400 | 240 | 19200 |
| 6 | 82 | 1 | 6724 | 82 | 6724 |
| 7 | 90 | 3 | 8100 | 270 | 24300 |
| 8 | 100 | 1 | 10000 | 100 | 10000 |
| Σ | | 22 | 49574 | 1632 | 123724 |

Rata-rata

$$\bar{X} = \frac{\sum f_i X_i}{\sum f_i}$$

$$\bar{X} = \frac{1632}{22}$$

$$\bar{X} = 74,18$$

Simpangan Baku

$$S = \sqrt{\frac{n(\sum f_i x_i^2) - (\sum f_i x_i)^2}{n(n-1)}}$$

$$S = \sqrt{\frac{22(123724) - (1632)^2}{22(22-1)}}$$

$$S = \sqrt{\frac{(2.721.928) - (2.663.424)}{22(21)}}$$

$$S = \sqrt{\frac{58.504}{462}}$$

$$S = \sqrt{126,63}$$

$$S = 11,25$$

Tabel Perhitungan Liliefors Post Test Kelas IV-B

| No | x_i | f_i | f_{kum} | (Z_i) | $Luas_{z_i}$ | $F(Z_i)$ | $S(Z_i)$ | $F(Z_i) - S(Z_i)$ |
|----------|-------|-------|-----------|---------|--------------|----------|----------|-------------------|
| 1 | 60 | 3 | 3 | -1,26 | 0,3962 | 0,1038 | 0,1364 | 0,0326 |
| 2 | 65 | 5 | 8 | -0,82 | 0,2939 | 0,2061 | 0,3636 | 0,1575 |
| 3 | 70 | 3 | 11 | -0,37 | 0,1443 | 0,3557 | 0,5000 | 0,1443 |
| 4 | 75 | 3 | 14 | 0,07 | 0,0279 | 0,5279 | 0,6364 | 0,1085 |
| 5 | 80 | 3 | 17 | 0,52 | 0,1985 | 0,6985 | 0,7727 | 0,0742 |
| 6 | 82 | 1 | 18 | 0,69 | 0,2549 | 0,7549 | 0,8182 | 0,0633 |
| 7 | 90 | 3 | 21 | 1,41 | 0,4207 | 0,9207 | 0,9545 | 0,0338 |
| 8 | 100 | 1 | 22 | 2,29 | 0,4890 | 0,9890 | 1,0000 | 0,0110 |
| Σ | | 22 | | | | | | |

Dari data diperoleh $L_0 = 0,1575$

Interpolasi (L_{tabel})

$$L_{(0,05)(22)} = 0,190$$

$$L_{(0,05)(25)} = 0,173$$

$$\begin{array}{ccc} 0,190 & X & 0,173 \\ \hline 20 & 22 & 25 \\ \hline \frac{X - 0,190}{0,173 - 0,190} = \frac{22 - 20}{25 - 20} = \frac{2}{5} \end{array}$$

$$X - 0,190 = \frac{2}{5} (-0,017)$$

$$X = 0,190 - 0,0068$$

$$X = 0,1832$$

$$L_{(0,05)(22)} = 0,1832$$

$$L_0 = 0,1575 < L_{tabel} = 0,1832$$

Dengan $\alpha = 0,1575$ dan $n = 22$ maka diperoleh $L_{tabel} = 0,1832$

Kriteria Uji : Jika $L_0 \leq L_{tabel}$

Jadi $L_0 = 0,1575 \leq L_{tabel} = 0,1832$

Kesimpulan : Terima H_0 atau Data Berdistribusi Normal

Uji Homogenitas Varians Data Post Test Kelas IV-A Dan Kelas IV-B

$$H_0 : \sigma_1^2 = \sigma_2^2$$

$$H_1 : \sigma_1^2 \neq \sigma_2^2$$

$$n_1 = 25$$

$$n_2 = 22$$

$$S_1^2 = 11,57 (133,86)$$

$$S_2^2 = 11,25 (126,56)$$

$$F = \frac{\text{Varians Terbesar}}{\text{Varians Terkecil}}$$

$$F = \frac{133,86}{126,56}$$

$$f_{\text{hitung}} = 1,057$$

$$df_1 = n_2 - 1$$

$$df_1 = 25 - 1$$

$$df_2 = n_1 - 1$$

$$df_2 = 22$$

$$df_2 = 21$$

$$\text{Jadi } f_{(24,21)} = 2,05$$

$$F_{\text{hitung}} < F_{\text{tabel}} = 1,057 < 2,05$$

Maka H_0 Diterima atau Data Homogen

Hasil Perhitungan Uji Independen Antara Dua Faktor

| KELAS | R <70 | S 70-85 | T 86-100 | JUMLAH |
|--------------|-------|---------|----------|--------|
| KONVENSIONAL | 8 | 10 | 4 | 22 |
| EKSPERIMEN | 3 | 10 | 12 | 25 |
| JUMLAH | 11 | 20 | 16 | 47 |

| KELAS | R <70 | S 70-85 | T 86-100 | JUMLAH |
|--------------|-----------|-------------|------------|--------|
| Konvensional | 8 5,14 | 10 9,36 | 4 7,48 | 22 |
| Eksperimen | 3 5,85 | 10 10,63 | 12 8,51 | 25 |
| Jumlah | 11 | 20 | 16 | 47 |

$$\text{rumus : } x^2 = \sum_{i=1}^B \sum_{j=1}^K \left(\frac{O_{ij} - E_{ij}}{E_{ij}} \right)^2$$

$$x^2 = \frac{(8-5,14)^2}{5,14} + \frac{(10-9,36)^2}{9,36} + \frac{(4-7,48)^2}{7,48} + \frac{(3-5,85)^2}{5,85} + \frac{(10-10,63)^2}{10,63} + \frac{(12-8,51)^2}{8,51}$$

$$x^2 = \frac{8,17}{5,14} + \frac{0,40}{9,36} + \frac{12,11}{7,48} + \frac{8,12}{5,85} + \frac{0,12}{10,63} + \frac{12,18}{8,51}$$

$$x^2 = 1,58 + 0,04 + 1,61 + 1,38 + 0,03 + 1,43$$

$$x^2 = 6,07$$

$$\chi^2 = \chi^2_{(1-\infty)(B-1)(K-1)} = \chi^2_{(1-0,05)(2-1)(3-1)} = \chi^2_{(0,95)(2)} = 5,99$$

$$x^2 = 6,07 \geq x^2_{(0,95)(2)} = 5,99$$

Maka H_0 ditolak dan H_1 diterima

Sehingga dapat dinyatakan ada pengaruh

Lampian 9

DOKUMENTAS PENELITIAN



