

```

354 0 M>
GET DATA
355 0 M> GET DATA
      /TYPE=TXT
356 0 M>      /TYPE=TXT
      /FILE="D:\low kda score priority basis posts\first post\Q Q Plot Normality C
heck\spss_ready_data.csv"
357 0 M>      /FILE="D:\low kda score priority basis posts\first post\Q Q Plot
Normality Check\spss_ready_data.csv"
      /ENCODING='UTF8'
358 0 M>      /ENCODING='UTF8'
      /DELCASE=LINE
359 0 M>      /DELCASE=LINE
      /DELIMITERS=", "
360 0 M>      /DELIMITERS=", "
      /QUALIFIER='"'
361 0 M>      /QUALIFIER='"'
      /ARRANGEMENT=DELIMITED
362 0 M>      /ARRANGEMENT=DELIMITED
      /FIRSTCASE=2
363 0 M>      /FIRSTCASE=2
      /IMPORTCASE=ALL
364 0 M>      /IMPORTCASE=ALL
      /VARIABLES=
365 0 M>      /VARIABLES=
      school A2
366 0 M>      school A2
      sex A1
367 0 M>      sex A1
      age F8.0
368 0 M>      age F8.0
      address A1
369 0 M>      address A1
      famsize A3
370 0 M>      famsize A3
      Pstatus A1
371 0 M>      Pstatus A1
      Medu F8.0
372 0 M>      Medu F8.0
      Fedu F8.0
373 0 M>      Fedu F8.0
      Mjob A12

```

374 0 M> Mjob A12
Fjob A12
375 0 M> Fjob A12
reason A12
376 0 M> reason A12
guardian A12
377 0 M> guardian A12
traveltime F8.0
378 0 M> traveltime F8.0
studytime F8.0
379 0 M> studytime F8.0
failures F8.0
380 0 M> failures F8.0
schoolsup A3
381 0 M> schoolsup A3
famsup A3
382 0 M> famsup A3
paid A3
383 0 M> paid A3
activities A3
384 0 M> activities A3
nursery A3
385 0 M> nursery A3
higher A3
386 0 M> higher A3
internet A3
387 0 M> internet A3
romantic A3
388 0 M> romantic A3
famrel F8.0
389 0 M> famrel F8.0
freetime F8.0
390 0 M> freetime F8.0
goout F8.0
391 0 M> goout F8.0
Dalc F8.0
392 0 M> Dalc F8.0
Walc F8.0
393 0 M> Walc F8.0
health F8.0
394 0 M> health F8.0
absences F8.0

```

395  0 M>      absences F8.0
      G1 F8.0
396  0 M>      G1 F8.0
      G2 F8.0
397  0 M>      G2 F8.0
      G3 F8.0.
398  0 M>      G3 F8.0.
CACHE.
399  0 M>  CACHE.
EXECUTE.
400  0 M>  EXECUTE.

401  0 M>
DATASET NAME QQNormalityCheck WINDOW=FRONT.
402  0 M>  DATASET NAME QQNormalityCheck WINDOW=FRONT.

403  0 M>
VARIABLE LABELS
404  0 M>  VARIABLE LABELS
      school "Student school"
405  0 M>      school "Student school"
      sex "Student sex"
406  0 M>      sex "Student sex"
      age "Student age"
407  0 M>      age "Student age"
      studytime "Weekly study time category"
408  0 M>      studytime "Weekly study time category"
      failures "Number of past class failures"
409  0 M>      failures "Number of past class failures"
      absences "School absences"
410  0 M>      absences "School absences"
      G1 "First period grade"
411  0 M>      G1 "First period grade"
      G2 "Second period grade"
412  0 M>      G2 "Second period grade"
      G3 "Final grade"
413  0 M>      G3 "Final grade"
      famrel "Family relationship quality"
414  0 M>      famrel "Family relationship quality"
      freetime "Free time after school"
415  0 M>      freetime "Free time after school"
      goout "Going out with friends"

```

```

416 0 M>    goout "Going out with friends"
      Dalc "Workday alcohol consumption"
417 0 M>    Dalc "Workday alcohol consumption"
      Walc "Weekend alcohol consumption"
418 0 M>    Walc "Weekend alcohol consumption"
      health "Current health status".
419 0 M>    health "Current health status".

420 0 M>
VALUE LABELS
421 0 M>  VALUE LABELS
      school
422 0 M>    school
      "GP" "Gabriel Pereira"
423 0 M>    "GP" "Gabriel Pereira"
      "MS" "Mousinho da Silveira"
424 0 M>    "MS" "Mousinho da Silveira"
      sex
425 0 M>    sex

>Warning # 4492 in column 3.  Text: sex
>The (ADD) VALUE LABELS command included a symbol other than a value where a
>value (either numeric or string) was expected.  For compatibility with
>previous systems, a parenthesized value would have been acceptable.  All valu
e
>labels up to the next slash will be ignored.
      "F" "Female"
426 0 M>    "F" "Female"
      "M" "Male".
427 0 M>    "M" "Male".

428 0 M>
FORMATS age Medu Fedu traveltime studytime failures famrel freetime goout Dalc
Walc health absences G1 G2 G3 (F8.2).
429 0 M>  FORMATS age Medu Fedu traveltime studytime failures famrel freetim
e goout Dalc Walc health absences G1 G2 G3 (F8.2).

430 0 M>
VARIABLE LEVEL
431 0 M>  VARIABLE LEVEL
      age Medu Fedu traveltime studytime failures famrel freetime goout Dalc Walc
health absences G1 G2 G3 (SCALE)

```

```
432 0 M> age Medu Fedu traveltime studytime failures famrel freetime goou
t Dalc Walc health absences G1 G2 G3 (SCALE)
school sex address famsize Pstatus Mjob Fjob reason guardian schoolsup famsu
p paid activities nursery higher internet romantic (NOMINAL).
433 0 M> school sex address famsize Pstatus Mjob Fjob reason guardian sch
oolsup famsup paid activities nursery higher internet
romantic (NOMINAL).
```

```
434 0 M>
EXECUTE.
```

```
435 0 M> EXECUTE.
```

```
436 0 M>
```

```
* =====.
```

```
437 0 M> * =====.
```

```
* 1. Main descriptive statistics for G3.
```

```
438 0 M> * 1. Main descriptive statistics for G3.
```

```
* =====.
```

```
439 0 M> * =====.
```

```
440 0 M>
```

```
DESCRIPTIVES VARIABLES=G3 G1 G2 age studytime failures absences
```

```
441 0 M> DESCRIPTIVES VARIABLES=G3 G1 G2 age studytime failures absences
/STATISTICS=MEAN STDDEV MIN MAX SKEWNESS KURTOSIS.
```

```
442 0 M> /STATISTICS=MEAN STDDEV MIN MAX SKEWNESS KURTOSIS.
```

Descriptives

```
[QQNormalityCheck]
```

Descriptive Statistics

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic
Final grade	649	.00	19.00	11.9060	3.23066	-.913
First period grade	649	.00	19.00	11.3991	2.74527	-.003
Second period grade	649	.00	19.00	11.5701	2.91364	-.360
Student age	649	15.00	22.00	16.7442	1.21814	.417
Weekly study time category	649	1.00	4.00	1.9307	.82951	.700
Number of past class failures	649	.00	3.00	.2219	.59324	3.093
School absences	649	.00	32.00	3.6595	4.64076	2.021
Valid N (listwise)	649					

Descriptive Statistics

	Skewness	Kurtosis	
	Std. Error	Statistic	Std. Error
Final grade	.096	2.712	.192
First period grade	.096	.037	.192
Second period grade	.096	1.662	.192
Student age	.096	.072	.192
Weekly study time category	.096	.038	.192
Number of past class failures	.096	9.824	.192
School absences	.096	5.781	.192
Valid N (listwise)			

```

443  0 M>
FREQUENCIES VARIABLES=G3
444  0 M>  FREQUENCIES VARIABLES=G3
        /STATISTICS=MEAN MEDIAN STDDEV MINIMUM MAXIMUM SKEWNESS SESKEW KURTOSIS SEKU
RT
445  0 M>        /STATISTICS=MEAN MEDIAN STDDEV MINIMUM MAXIMUM SKEWNESS SESKEW K
URTOSIS SEKURT
        /HISTOGRAM NORMAL
446  0 M>        /HISTOGRAM NORMAL
        /ORDER=ANALYSIS.
447  0 M>        /ORDER=ANALYSIS.

```

Frequencies

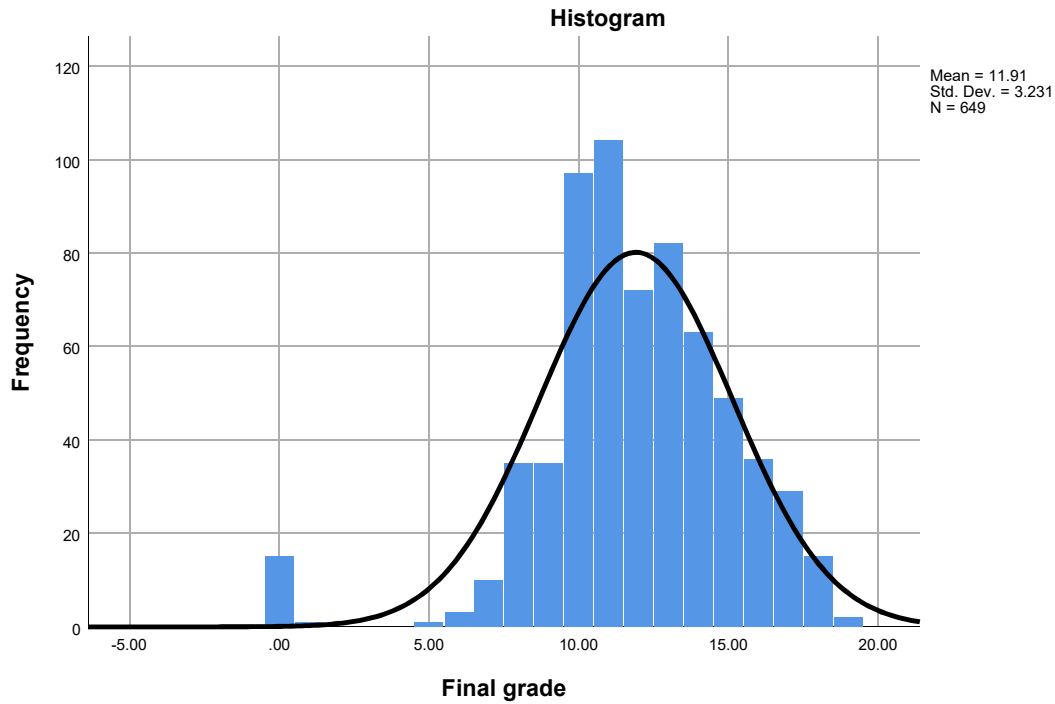
Statistics

Final grade

N	Valid	649
	Missing	0
Mean		11.9060
Median		12.0000
Std. Deviation		3.23066
Skewness		-.913
Std. Error of Skewness		.096
Kurtosis		2.712
Std. Error of Kurtosis		.192
Minimum		.00
Maximum		19.00

Final grade

		Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	.00	15	2.3	2.3	2.3	
	1.00	1	.2	.2	2.5	
	5.00	1	.2	.2	2.6	
	6.00	3	.5	.5	3.1	
	7.00	10	1.5	1.5	4.6	
	8.00	35	5.4	5.4	10.0	
	9.00	35	5.4	5.4	15.4	
	10.00	97	14.9	14.9	30.4	
	11.00	104	16.0	16.0	46.4	
	12.00	72	11.1	11.1	57.5	
	13.00	82	12.6	12.6	70.1	
	14.00	63	9.7	9.7	79.8	
	15.00	49	7.6	7.6	87.4	
	16.00	36	5.5	5.5	92.9	
	17.00	29	4.5	4.5	97.4	
	18.00	15	2.3	2.3	99.7	
	19.00	2	.3	.3	100.0	
	Total		649	100.0	100.0	



```

448  0 M>
* =====.
449  0 M> * =====.
* 2. Main Q-Q plot normality check for G3.
450  0 M> * 2. Main Q-Q plot normality check for G3.
* This gives Q-Q plot, histogram, boxplot, descriptives,
451  0 M> * This gives Q-Q plot, histogram, boxplot, descriptives,
* and Tests of Normality table: Kolmogorov-Smirnov with Lilliefors correction
and Shapiro-Wilk.
452  0 M> * and Tests of Normality table: Kolmogorov-Smirnov with Lilliefors
correction and Shapiro-Wilk.
* =====.
453  0 M> * =====.

454  0 M>
EXAMINE VARIABLES=G3
455  0 M> EXAMINE VARIABLES=G3
/PLOT BOXPLOT HISTOGRAM NPLOT
456  0 M> /PLOT BOXPLOT HISTOGRAM NPLOT
/COMPARE GROUPS
457  0 M> /COMPARE GROUPS
/STATISTICS DESCRIPTIVES EXTREME
458  0 M> /STATISTICS DESCRIPTIVES EXTREME

```

```

/CINTERVAL 95
459 0 M> /CINTERVAL 95
/MISSING LISTWISE
460 0 M> /MISSING LISTWISE
/NOTOTAL.
461 0 M> /NOTOTAL.

```

Explore

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Final grade	649	100.0%	0	0.0%	649	100.0%

Descriptives

		Statistic	Std. Error	
Final grade	Mean	11.9060	.12681	
	95% Confidence Interval for Mean	Lower Bound	11.6570	
		Upper Bound	12.1550	
	5% Trimmed Mean	12.0574		
	Median	12.0000		
	Variance	10.437		
	Std. Deviation	3.23066		
	Minimum	.00		
	Maximum	19.00		
	Range	19.00		
	Interquartile Range	4.00		
	Skewness	-.913	.096	
	Kurtosis	2.712	.192	

Extreme Values

		Case Number		Value
Final grade	Highest	1	339	19.00
		2	637	19.00
		3	114	18.00
		4	182	18.00
		5	186	18.00 ^a
	Lowest	1	641	.00
		2	640	.00
		3	638	.00
		4	627	.00
		5	611	.00 ^b

a. Only a partial list of cases with the value 18.00 are shown in the table of upper extremes.

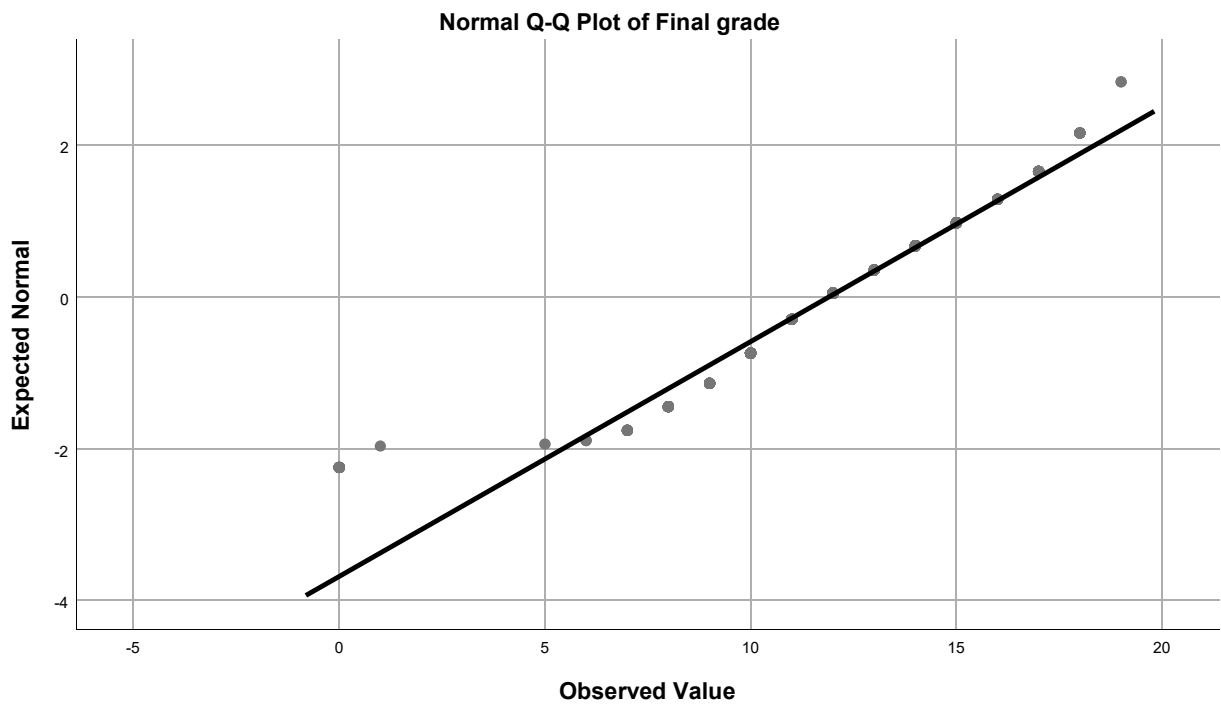
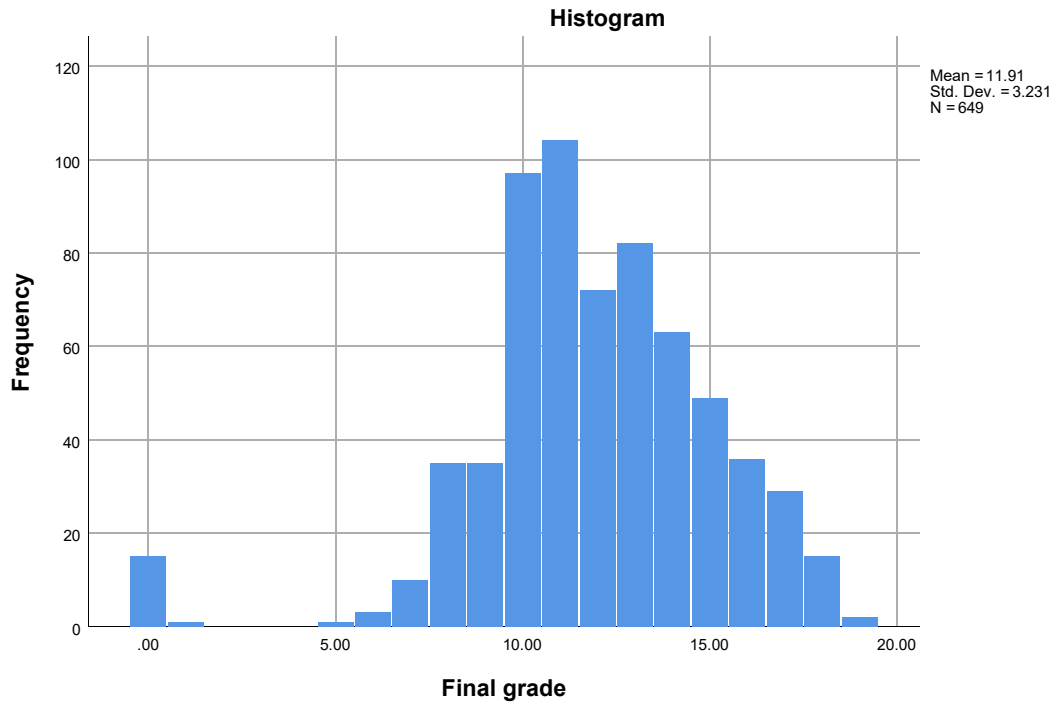
b. Only a partial list of cases with the value .00 are shown in the table of lower extremes.

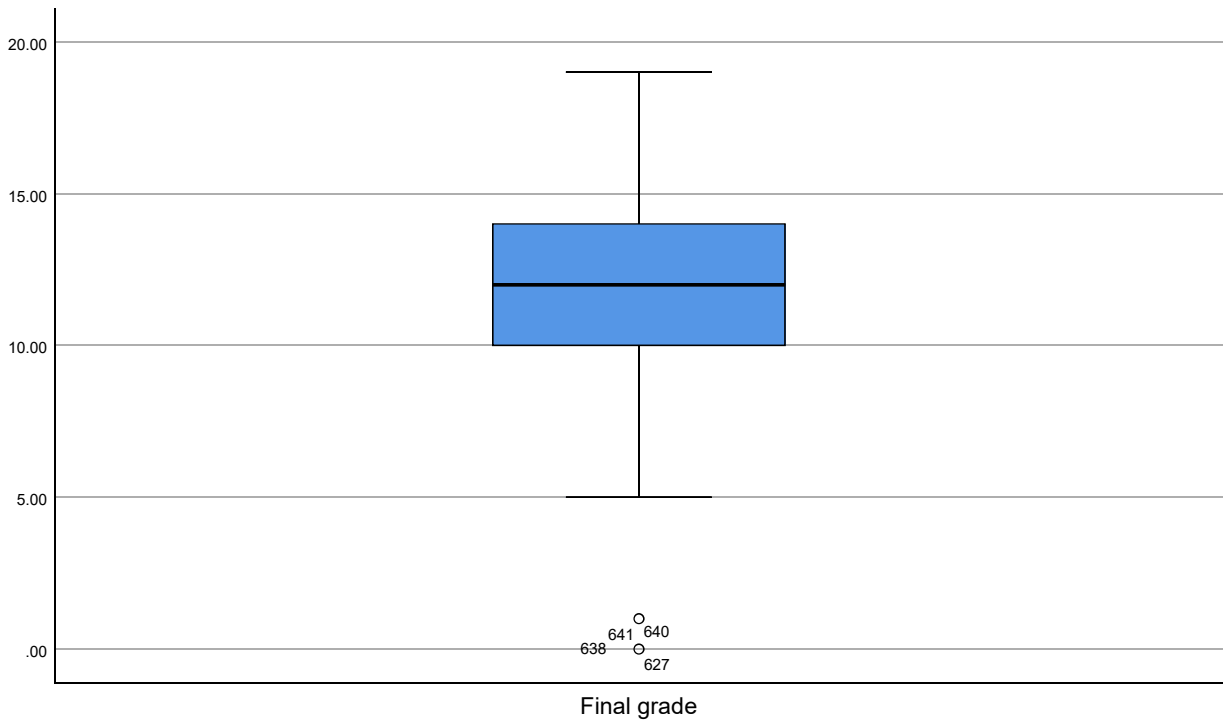
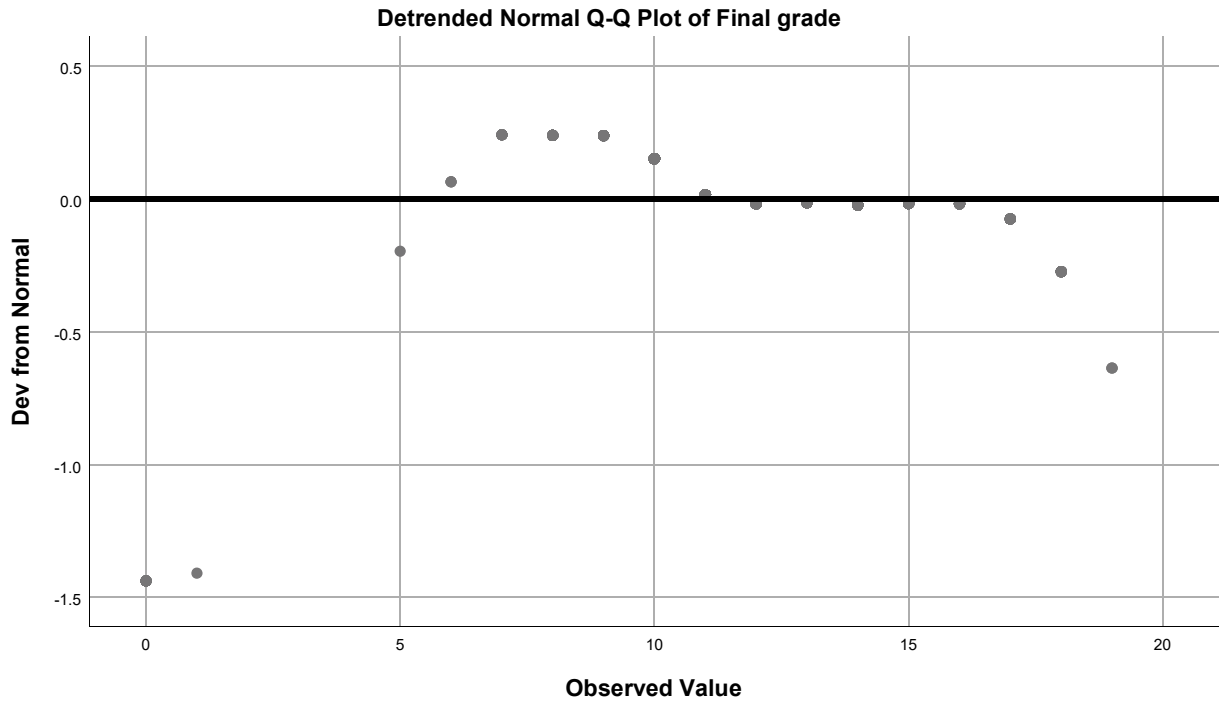
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Final grade	.124	649	.000	.926	649	.000

a. Lilliefors Significance Correction

Final grade





```

462  0 M>
* =====.
463  0 M> * =====.
* 3. Q-Q plot comparison for G1, G2, and G3.

```

```

464 0 M> * 3. Q-Q plot comparison for G1, G2, and G3.
* =====.
465 0 M> * =====.

466 0 M>
EXAMINE VARIABLES=G1 G2 G3
467 0 M> EXAMINE VARIABLES=G1 G2 G3
/PLOT BOXPLOT HISTOGRAM NPLOT
468 0 M> /PLOT BOXPLOT HISTOGRAM NPLOT
/COMPARE VARIABLES
469 0 M> /COMPARE VARIABLES
/STATISTICS DESCRIPTIVES
470 0 M> /STATISTICS DESCRIPTIVES
/CINTERVAL 95
471 0 M> /CINTERVAL 95
/MISSING LISTWISE
472 0 M> /MISSING LISTWISE
/NOTOTAL.
473 0 M> /NOTOTAL.

```

Explore

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
First period grade	649	100.0%	0	0.0%	649	100.0%
Second period grade	649	100.0%	0	0.0%	649	100.0%
Final grade	649	100.0%	0	0.0%	649	100.0%

Descriptives

		Statistic	Std. Error
First period grade	Mean	11.3991	.10776
	95% Confidence Interval for Mean	Lower Bound	11.1875
		Upper Bound	11.6107
	5% Trimmed Mean	11.3861	
	Median	11.0000	
	Variance	7.536	
	Std. Deviation	2.74527	
	Minimum	.00	
	Maximum	19.00	
	Range	19.00	
	Interquartile Range	3.00	
	Skewness	-.003	.096
	Kurtosis	.037	.192
Second period grade	Mean	11.5701	.11437
	95% Confidence Interval for Mean	Lower Bound	11.3455
		Upper Bound	11.7947
	5% Trimmed Mean	11.6011	
	Median	11.0000	
	Variance	8.489	
	Std. Deviation	2.91364	
	Minimum	.00	
	Maximum	19.00	
	Range	19.00	
	Interquartile Range	3.00	
	Skewness	-.360	.096
	Kurtosis	1.662	.192
Final grade	Mean	11.9060	.12681
	95% Confidence Interval for Mean	Lower Bound	11.6570
		Upper Bound	12.1550
	5% Trimmed Mean	12.0574	
	Median	12.0000	
	Variance	10.437	
	Std. Deviation	3.23066	
	Minimum	.00	
Maximum	19.00		

Descriptives

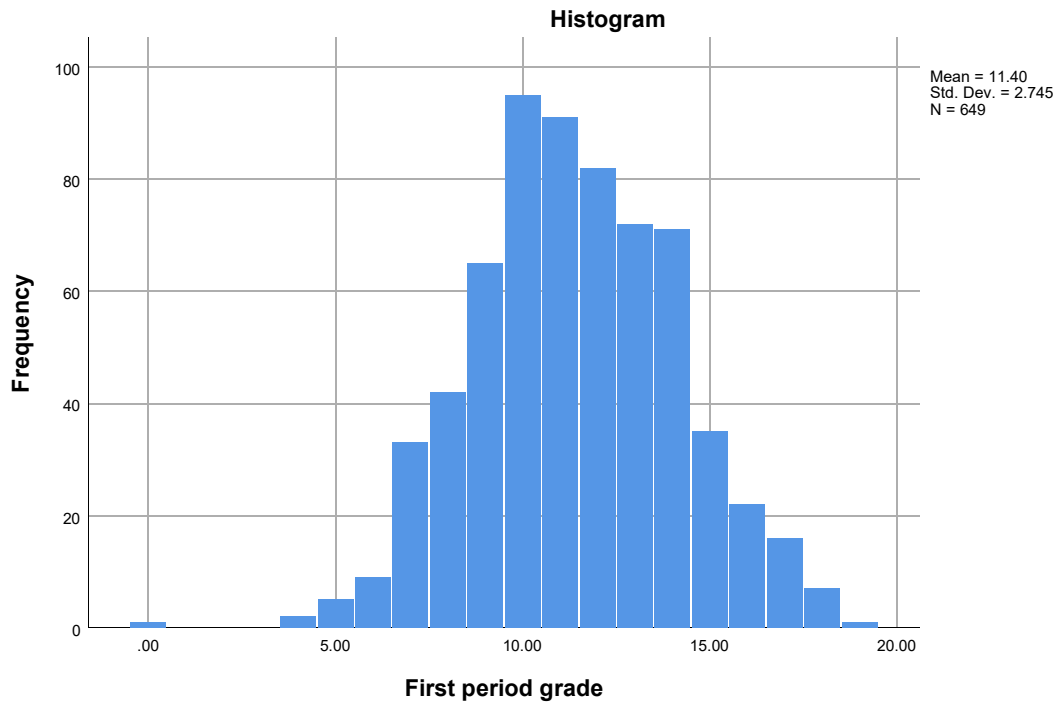
	Statistic	Std. Error
Range	19.00	
Interquartile Range	4.00	
Skewness	-.913	.096
Kurtosis	2.712	.192

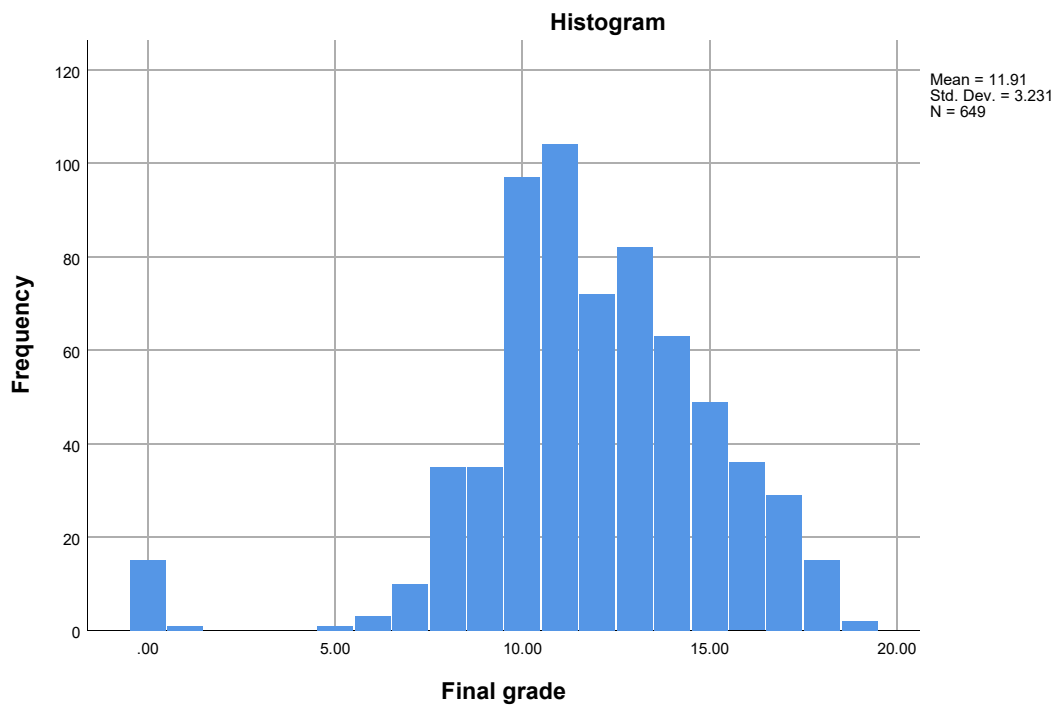
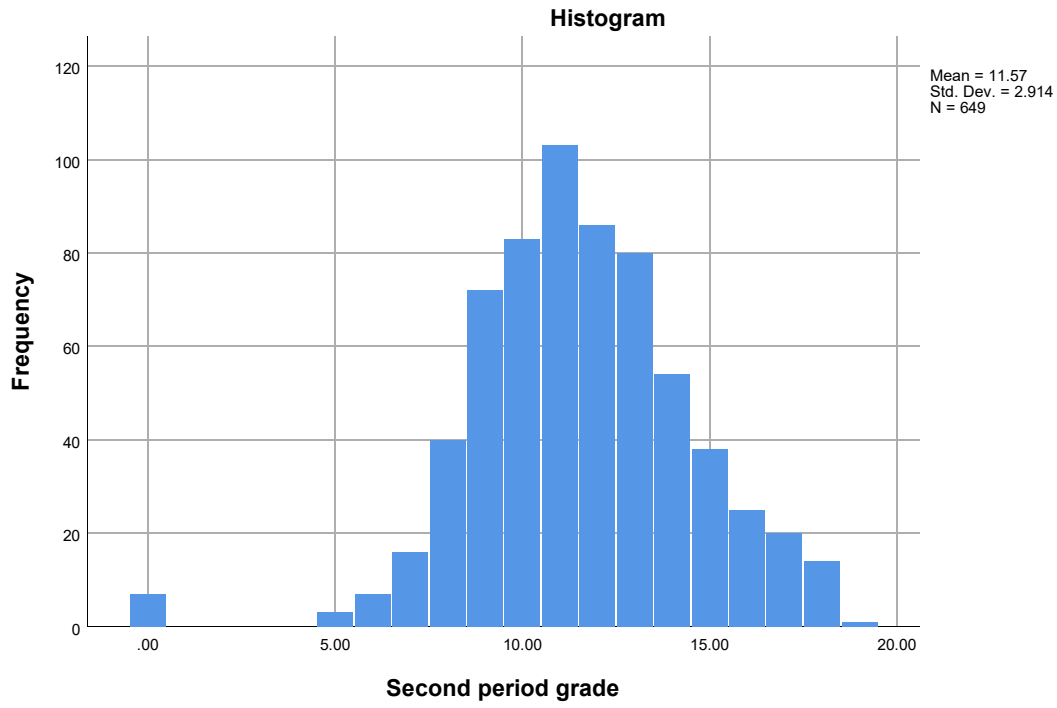
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
First period grade	.086	649	.000	.986	649	.000
Second period grade	.088	649	.000	.962	649	.000
Final grade	.124	649	.000	.926	649	.000

a. Lilliefors Significance Correction

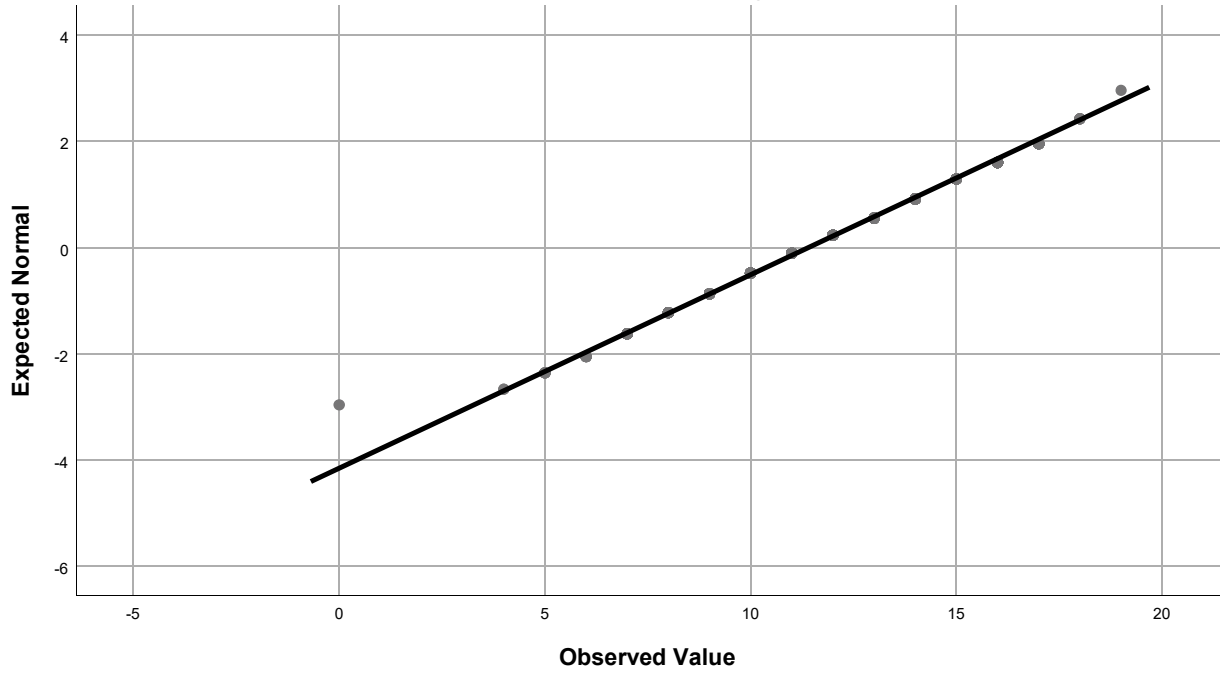
Histograms



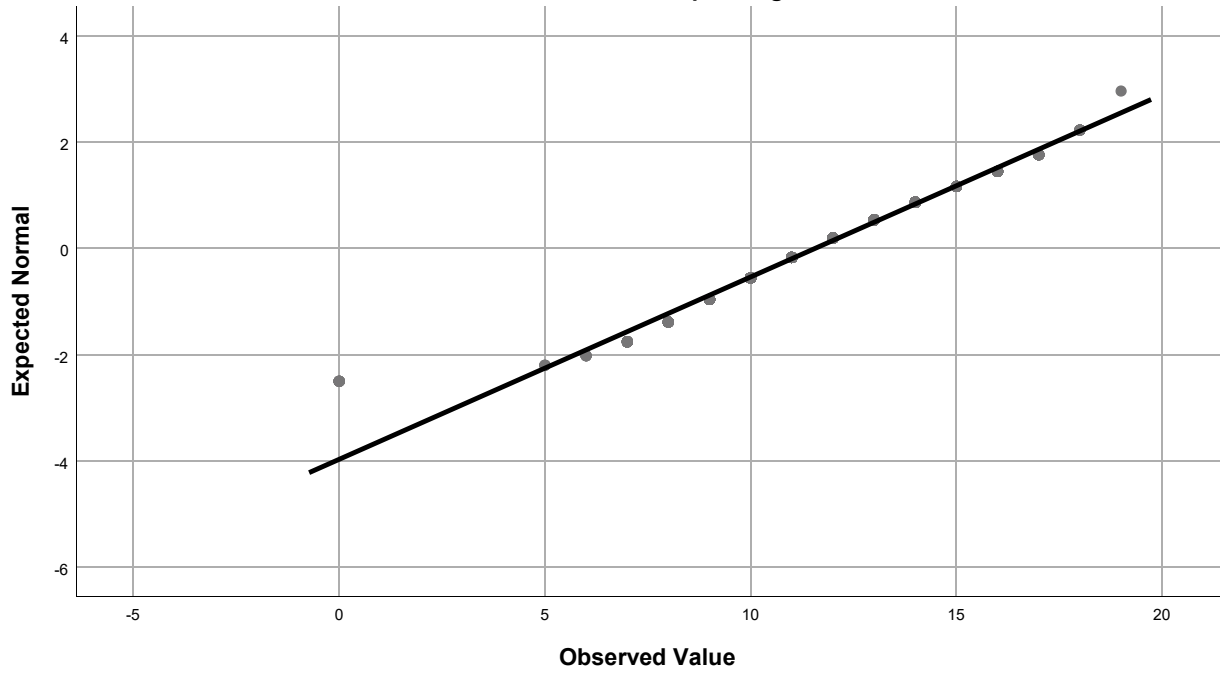


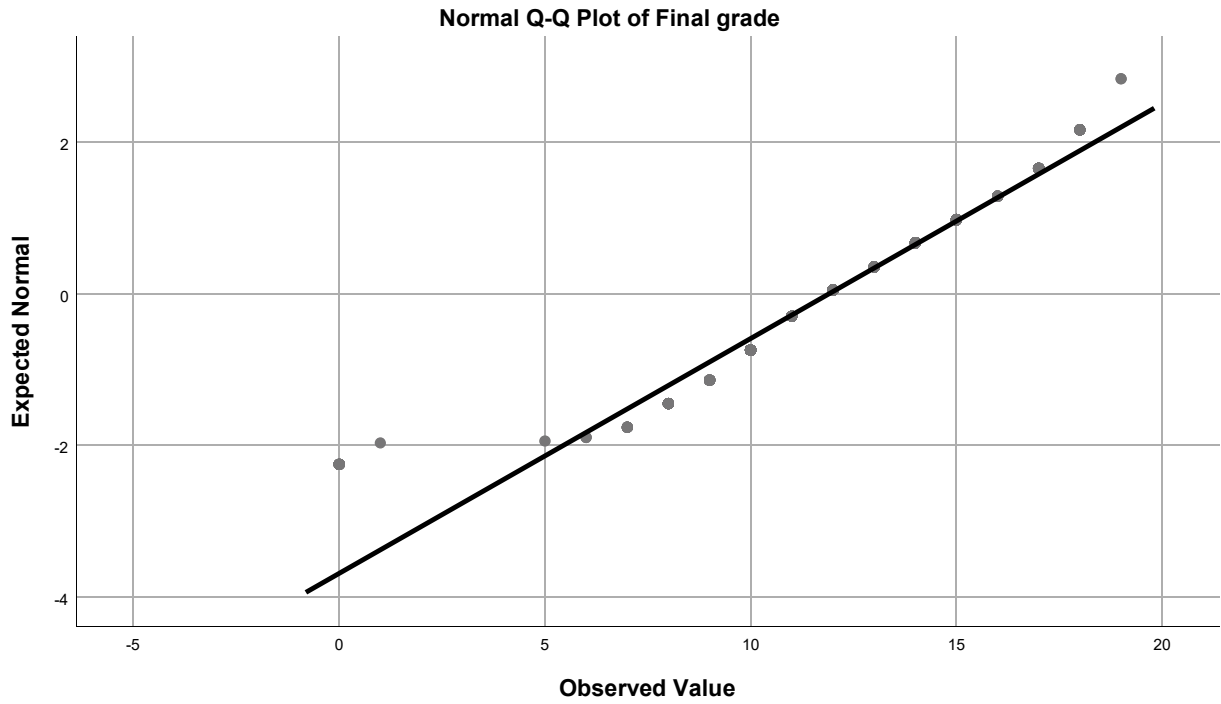
Normal Q-Q Plots

Normal Q-Q Plot of First period grade

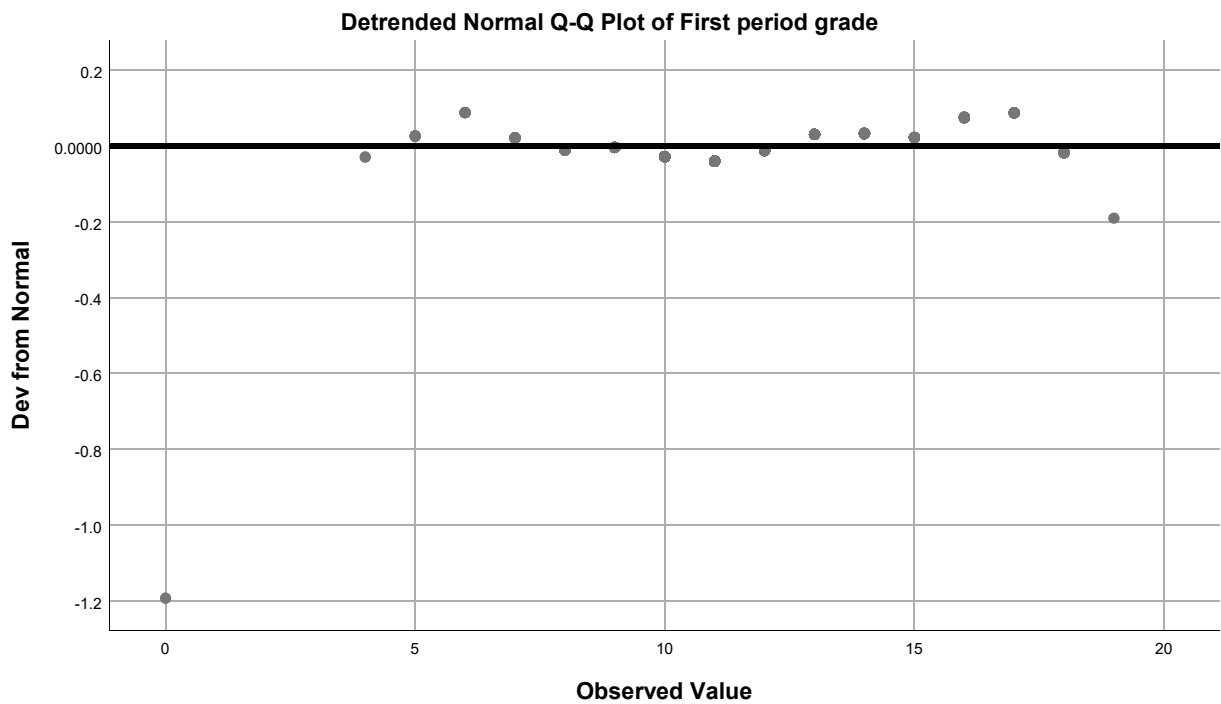


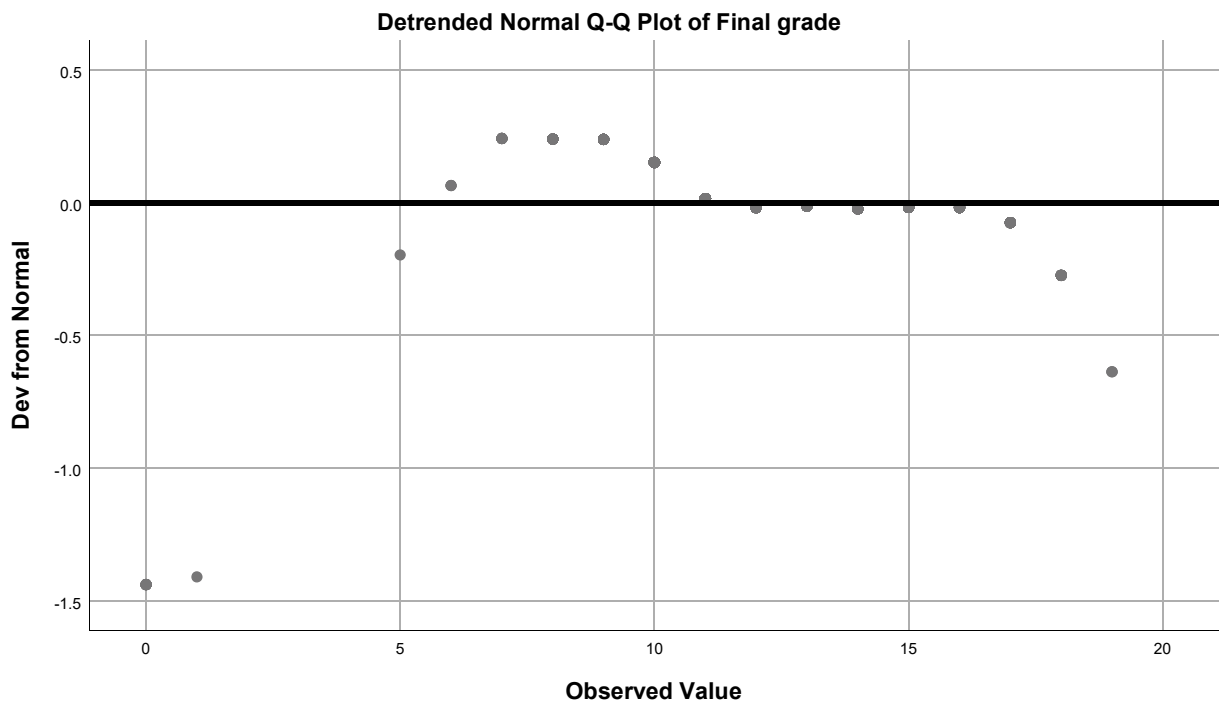
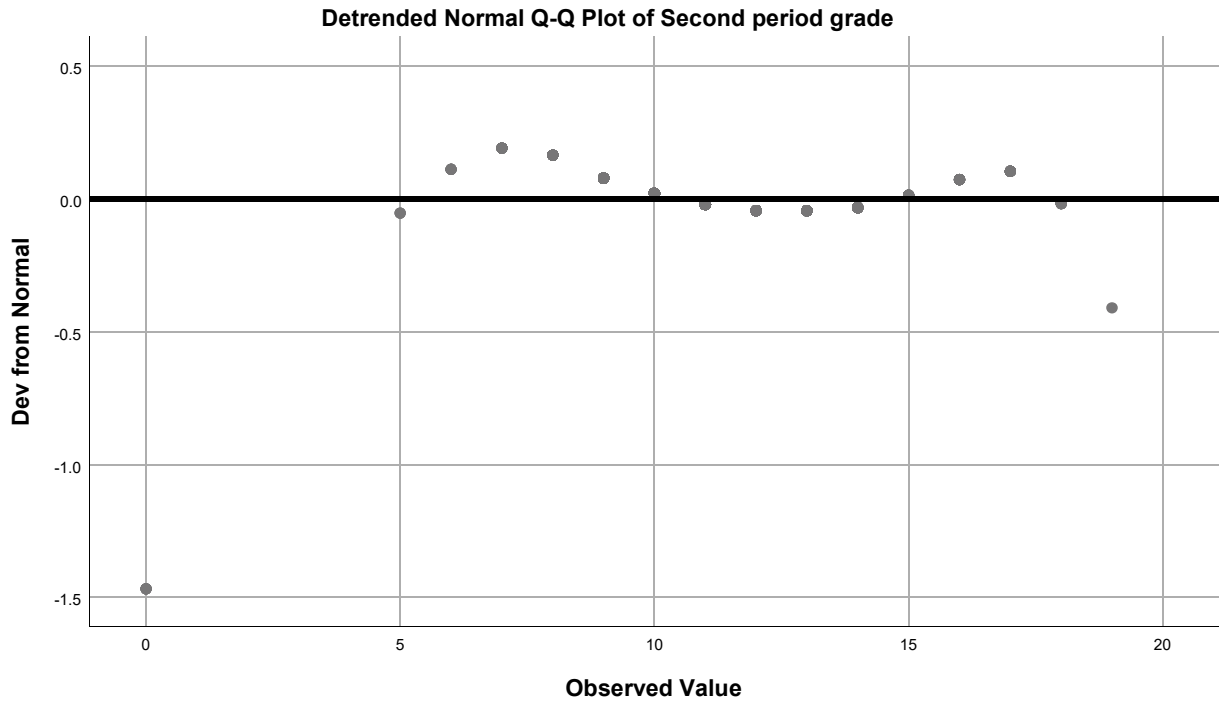
Normal Q-Q Plot of Second period grade

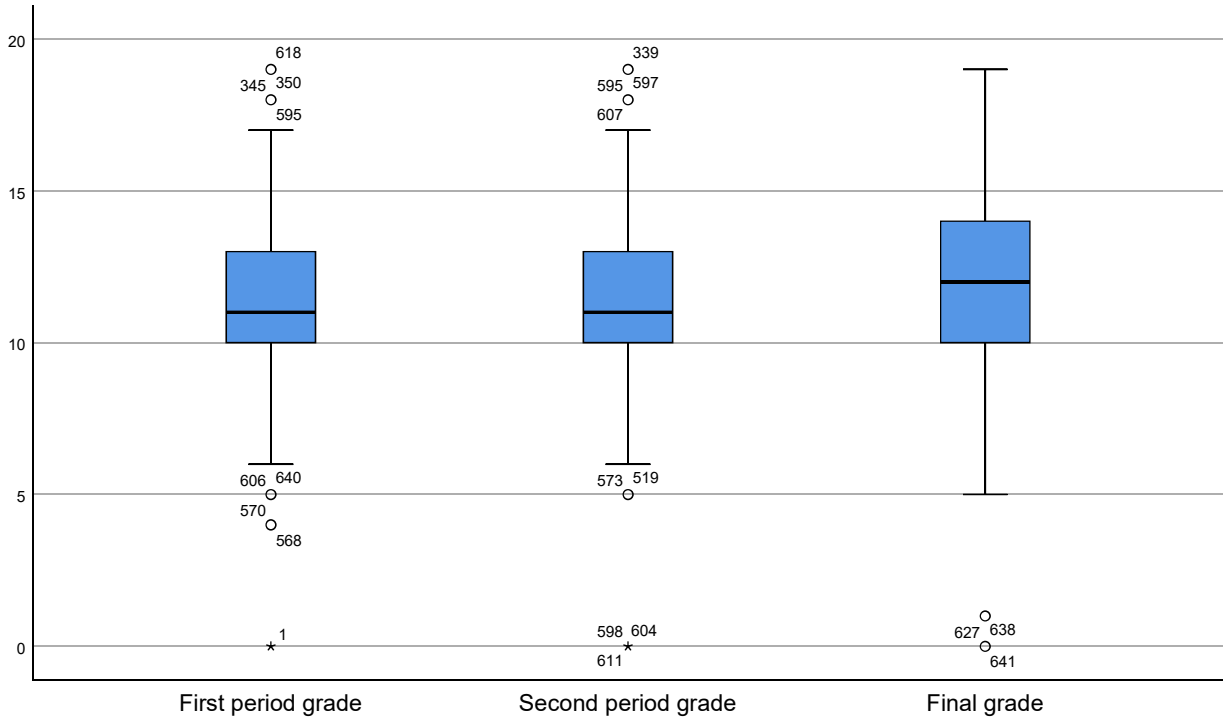




Detrended Normal Q-Q Plots







```

474  0 M>
* =====.
475  0 M> * =====.
* 4. Q-Q plot normality check for G3 by school.
476  0 M> * 4. Q-Q plot normality check for G3 by school.
* =====.
477  0 M> * =====.

478  0 M>
EXAMINE VARIABLES=G3 BY school
479  0 M> EXAMINE VARIABLES=G3 BY school
/PLOT BOXPLOT HISTOGRAM NPLOT
480  0 M> /PLOT BOXPLOT HISTOGRAM NPLOT
/COMPARE GROUPS
481  0 M> /COMPARE GROUPS
/STATISTICS DESCRIPTIVES
482  0 M> /STATISTICS DESCRIPTIVES
/CINTERVAL 95
483  0 M> /CINTERVAL 95
/MISSING LISTWISE
484  0 M> /MISSING LISTWISE
/NOTOTAL.
485  0 M> /NOTOTAL.

```

Explore

Student school

Case Processing Summary

	Student school	Cases				
		Valid		Missing		Total
		N	Percent	N	Percent	N
Final grade	GP Gabriel Pereira	423	100.0%	0	0.0%	423
	MS Mousinho da Silveira	226	100.0%	0	0.0%	226

Case Processing Summary

	Student school	Cases
		Total Percent
Final grade	GP Gabriel Pereira	100.0%
	MS Mousinho da Silveira	100.0%

Descriptives

	Student school	Statistic		
Final grade	GP Gabriel Pereira	Mean	12.5768	
		95% Confidence Interval for Mean	Lower Bound	12.3259
			Upper Bound	12.8278
		5% Trimmed Mean	12.6221	
		Median	13.0000	
		Variance	6.894	
		Std. Deviation	2.62564	
		Minimum	.00	
		Maximum	19.00	
		Range	19.00	
		Interquartile Range	3.00	
		Skewness	-.336	
		Kurtosis	1.388	
		Final grade	MS Mousinho da Silveira	Mean
95% Confidence Interval for Mean	Lower Bound			10.1479
	Upper Bound			11.1530
5% Trimmed Mean	10.8500			
Median	11.0000			

Descriptives

Student school			Std. Error	
Final grade	GP Gabriel Pereira	Mean	.12766	
		95% Confidence Interval for Mean	Lower Bound	
			Upper Bound	
		5% Trimmed Mean		
		Median		
		Variance		
		Std. Deviation		
		Minimum		
		Maximum		
		Range		
		Interquartile Range		
		Skewness	.119	
		Kurtosis	.237	
		MS Mousinho da Silveira		Mean
95% Confidence Interval for Mean	Lower Bound			
	Upper Bound			
5% Trimmed Mean				
Median				

Descriptives

Student school		Statistic
	Variance	14.699
	Std. Deviation	3.83399
	Minimum	.00
	Maximum	19.00
	Range	19.00
	Interquartile Range	4.00
	Skewness	-.828
	Kurtosis	1.778

Descriptives

Student school		Std. Error
	Variance	
	Std. Deviation	
	Minimum	
	Maximum	
	Range	
	Interquartile Range	
	Skewness	.162
	Kurtosis	.322

Tests of Normality

	Student school	Kolmogorov-Smirnov ^a			Shapiro-Wilk	
		Statistic	df	Sig.	Statistic	df
Final grade	GP Gabriel Pereira	.092	423	.000	.965	423
	MS Mousinho da Silveira	.147	226	.000	.905	226

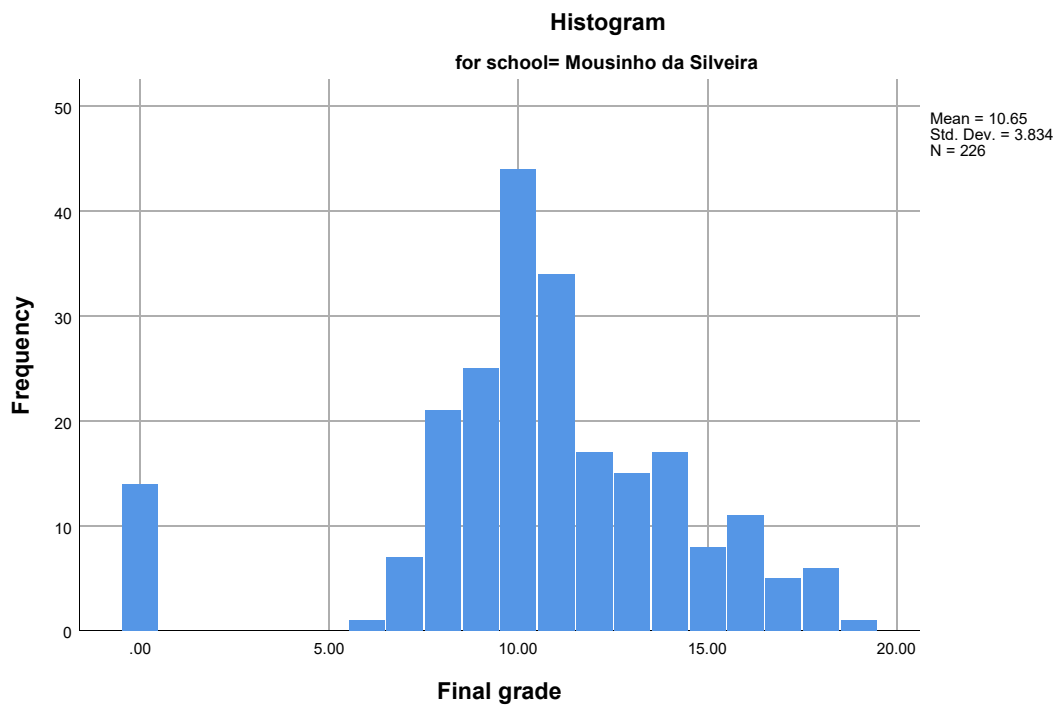
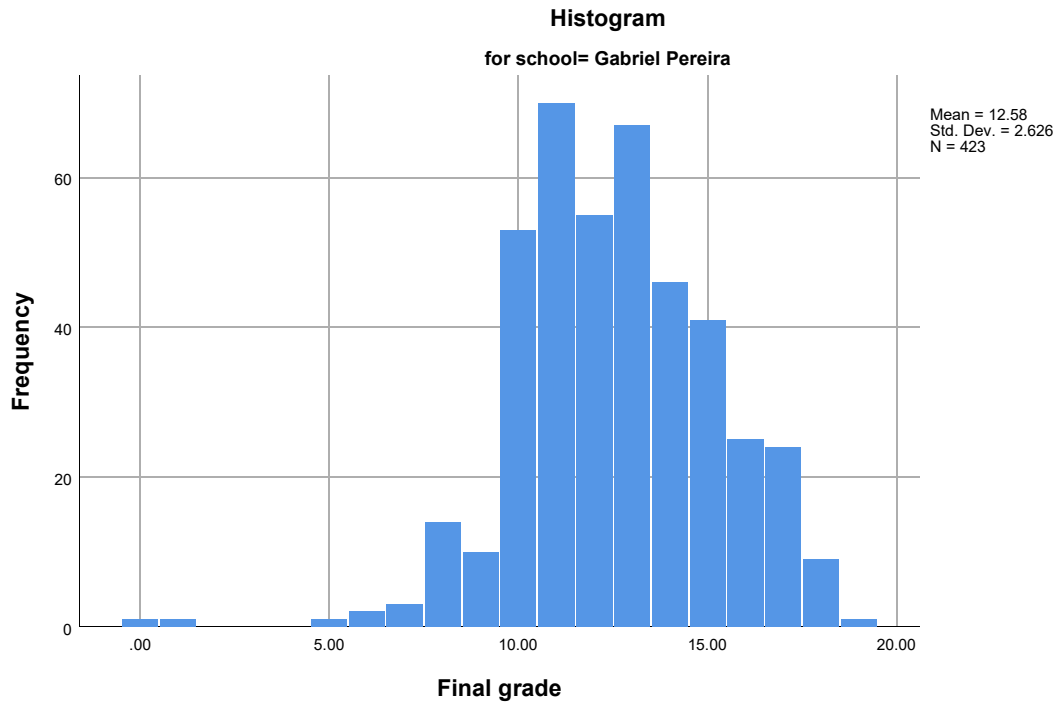
Tests of Normality

	Student school	Shapiro-...
		Sig.
Final grade	GP Gabriel Pereira	.000
	MS Mousinho da Silveira	.000

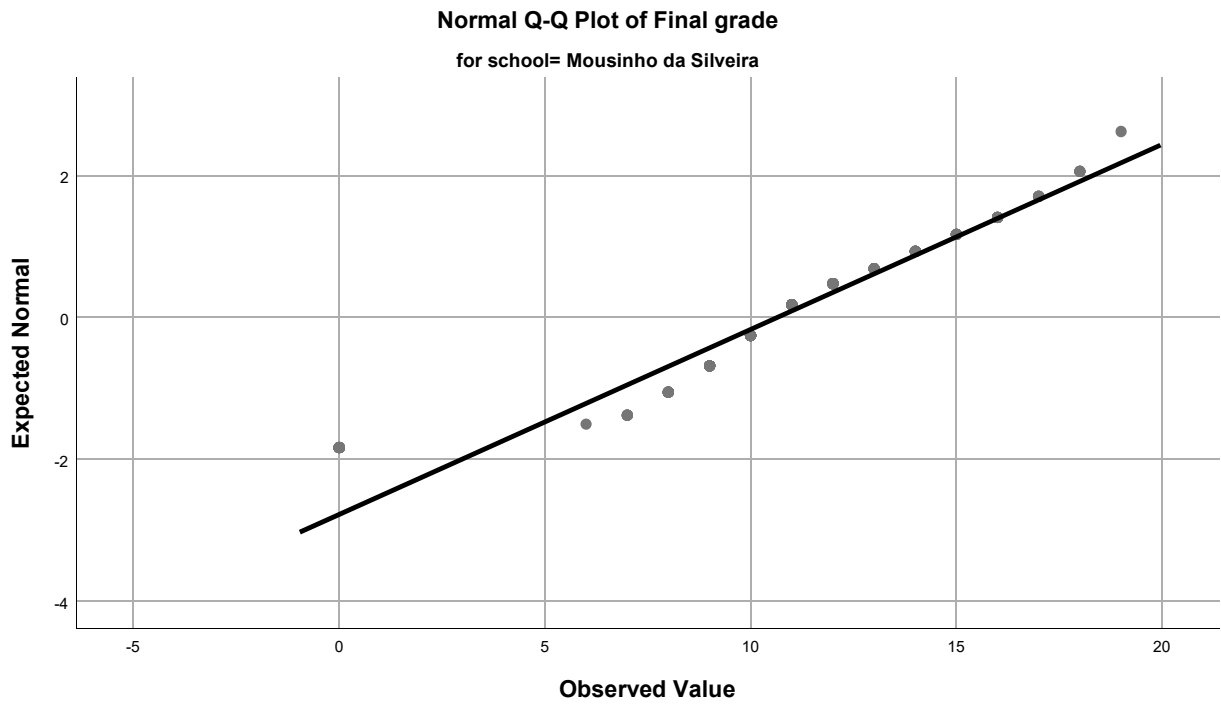
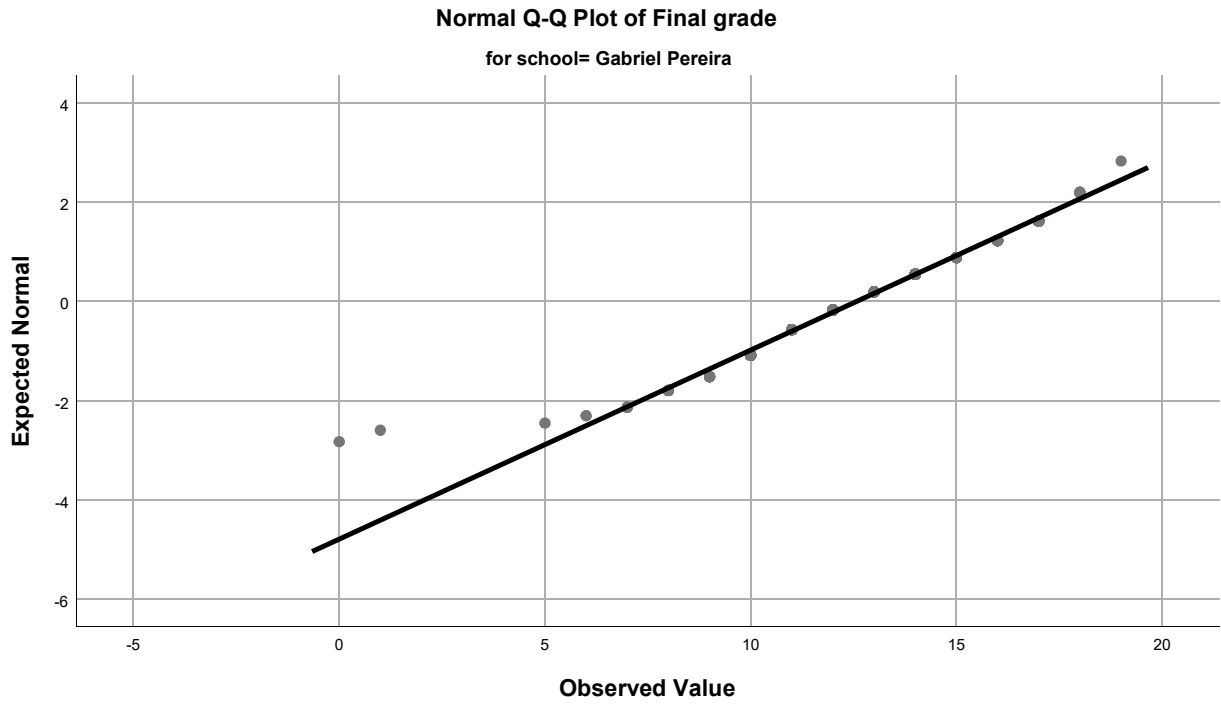
a. Lilliefors Significance Correction

Final grade

Histograms



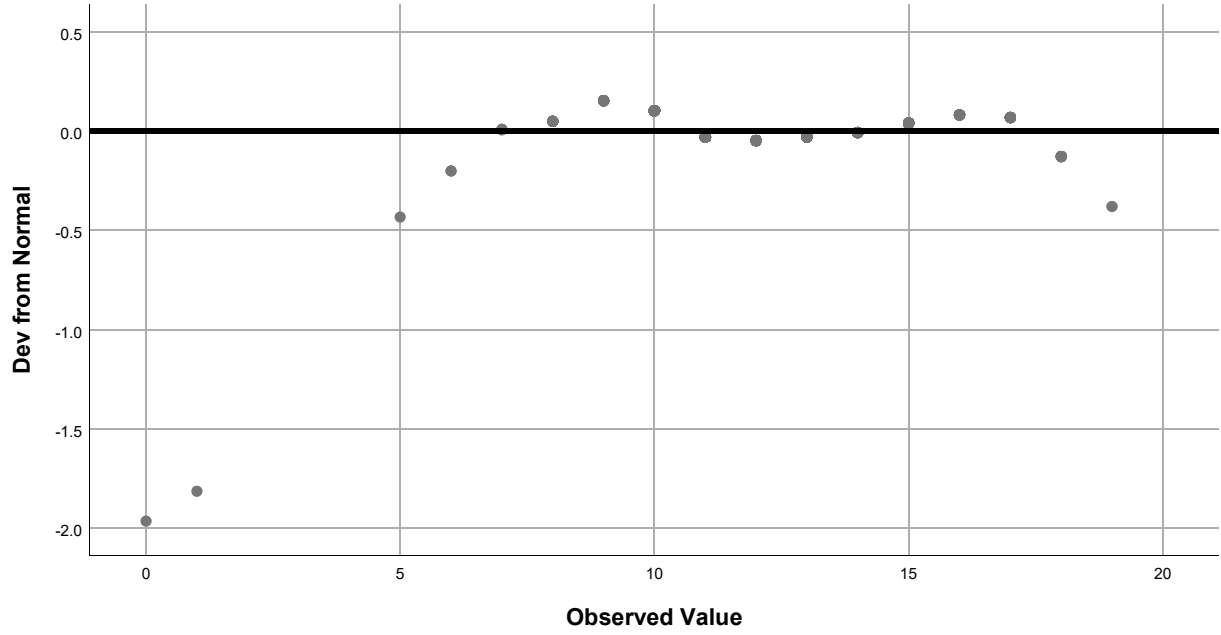
Normal Q-Q Plots



Detrended Normal Q-Q Plots

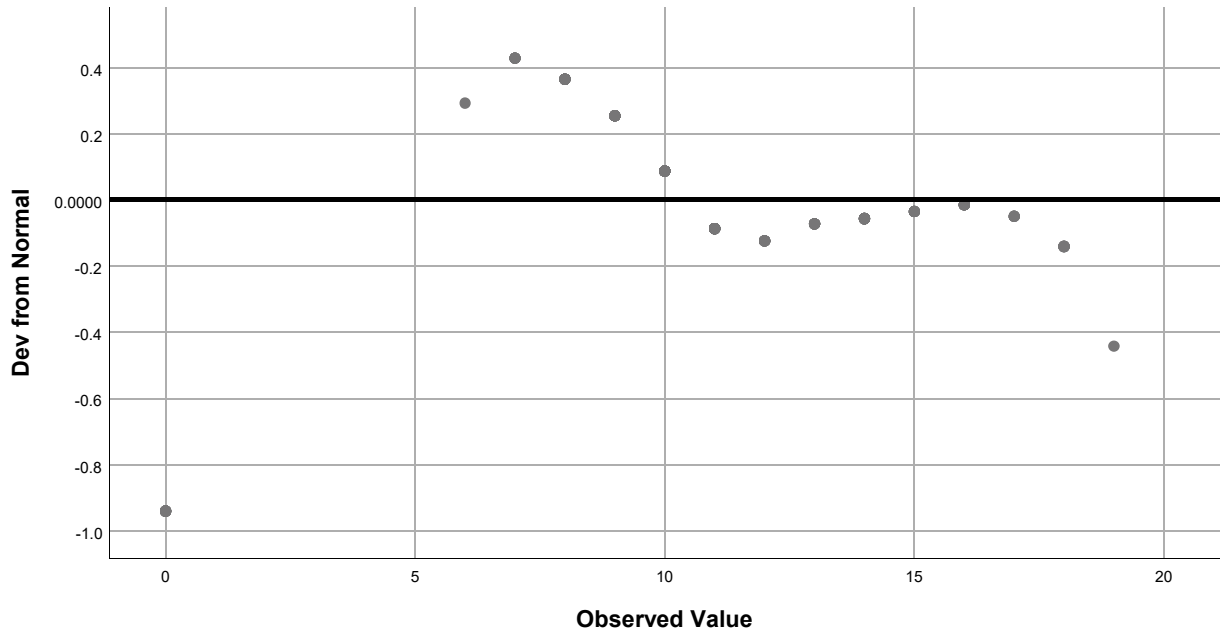
Detrended Normal Q-Q Plot of Final grade

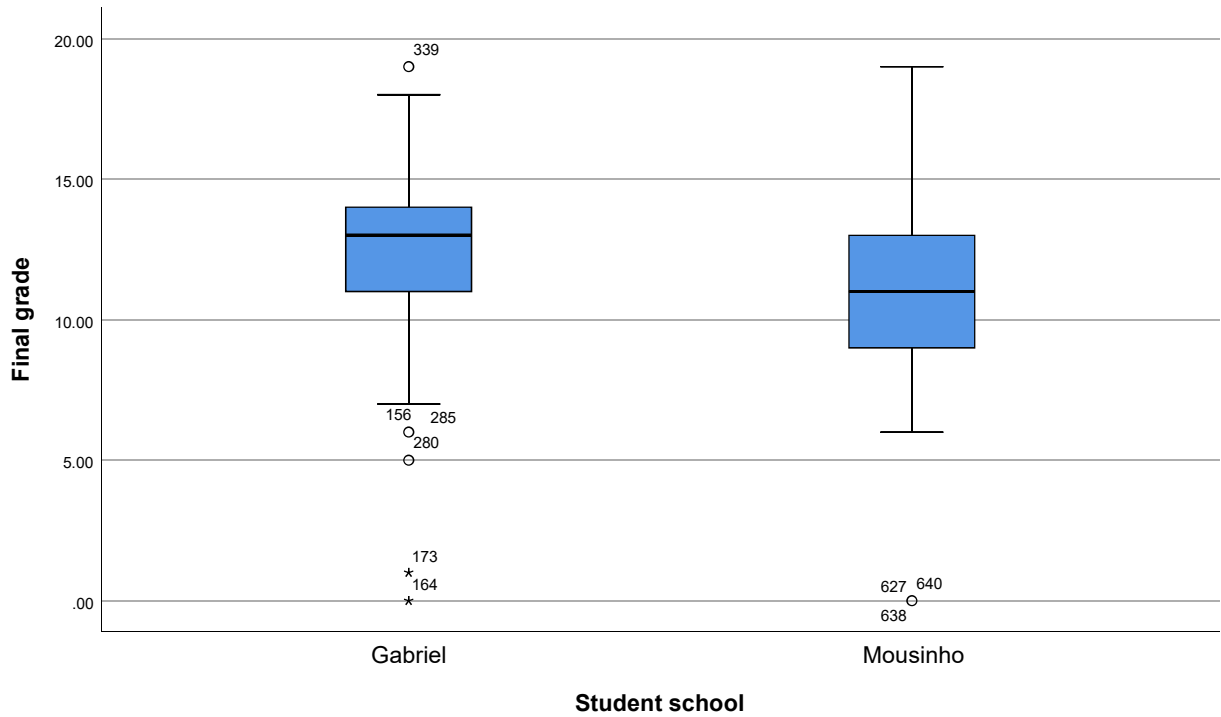
for school= Gabriel Pereira



Detrended Normal Q-Q Plot of Final grade

for school= Mousinho da Silveira





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486  0 M>
* =====.
487  0 M> * =====.
* 5. Q-Q plot normality check for G3 by sex.
488  0 M> * 5. Q-Q plot normality check for G3 by sex.
* =====.
489  0 M> * =====.

490  0 M>
EXAMINE VARIABLES=G3 BY sex
491  0 M> EXAMINE VARIABLES=G3 BY sex
/PLOT BOXPLOT HISTOGRAM NPLOT
492  0 M> /PLOT BOXPLOT HISTOGRAM NPLOT
/COMPARE GROUPS
493  0 M> /COMPARE GROUPS
/STATISTICS DESCRIPTIVES
494  0 M> /STATISTICS DESCRIPTIVES
/CINTERVAL 95
495  0 M> /CINTERVAL 95
/MISSING LISTWISE
496  0 M> /MISSING LISTWISE
/NOTOTAL.
497  0 M> /NOTOTAL.

```

Explore

Student sex

Case Processing Summary

	Student sex	Valid		Cases Missing		Total	
		N	Percent	N	Percent	N	Percent
Final grade	F	383	100.0%	0	0.0%	383	100.0%
	M	266	100.0%	0	0.0%	266	100.0%

Descriptives

Student sex		Statistic	Std. Error		
Final grade	F	Mean	12.2533	.15964	
		95% Confidence Interval for Mean	Lower Bound	11.9394	
			Upper Bound	12.5671	
		5% Trimmed Mean	12.3709		
		Median	12.0000		
		Variance	9.760		
		Std. Deviation	3.12415		
		Minimum	.00		
		Maximum	19.00		
		Range	19.00		
		Interquartile Range	4.00		
		Skewness	-.857	.125	
		Kurtosis	2.683	.249	
		M	M	Mean	11.4060
95% Confidence Interval for Mean	Lower Bound			11.0051	
	Upper Bound			11.8069	
5% Trimmed Mean	11.5961				
Median	11.0000				
Variance	11.027				
Std. Deviation	3.32069				
Minimum	.00				
Maximum	19.00				
Range	19.00				
Interquartile Range	3.00				

Descriptives

Student sex		Statistic	Std. Error
Skewness		-.980	.149
Kurtosis		2.803	.298

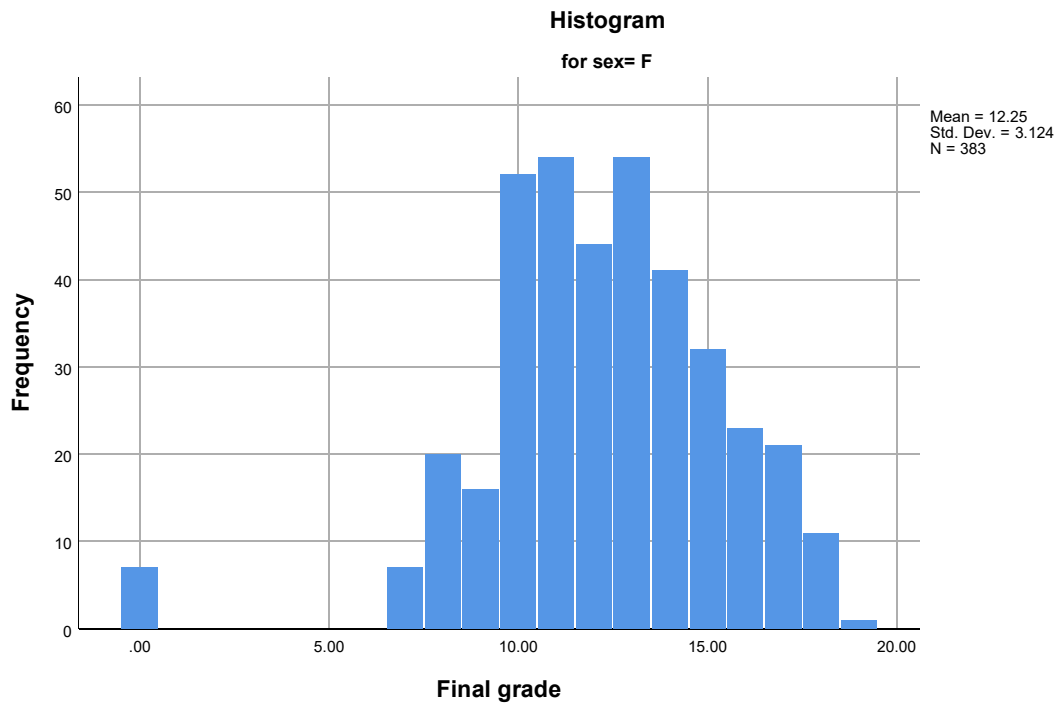
Tests of Normality

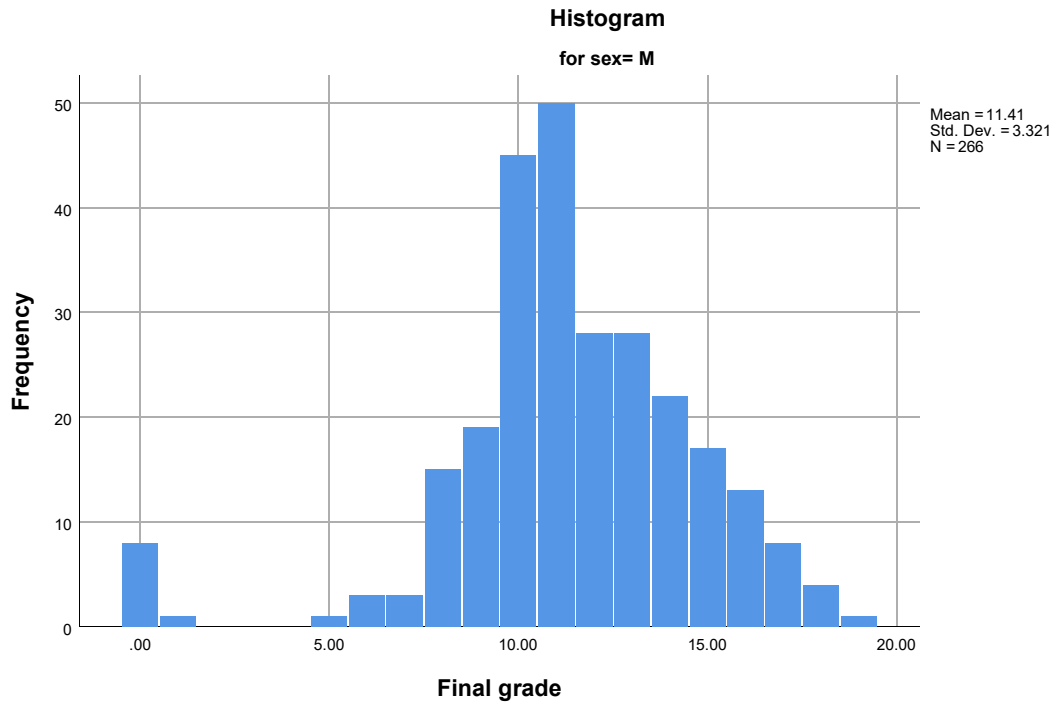
Student sex		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Final grade	F	.105	383	.000	.934	383	.000
	M	.148	266	.000	.913	266	.000

a. Lilliefors Significance Correction

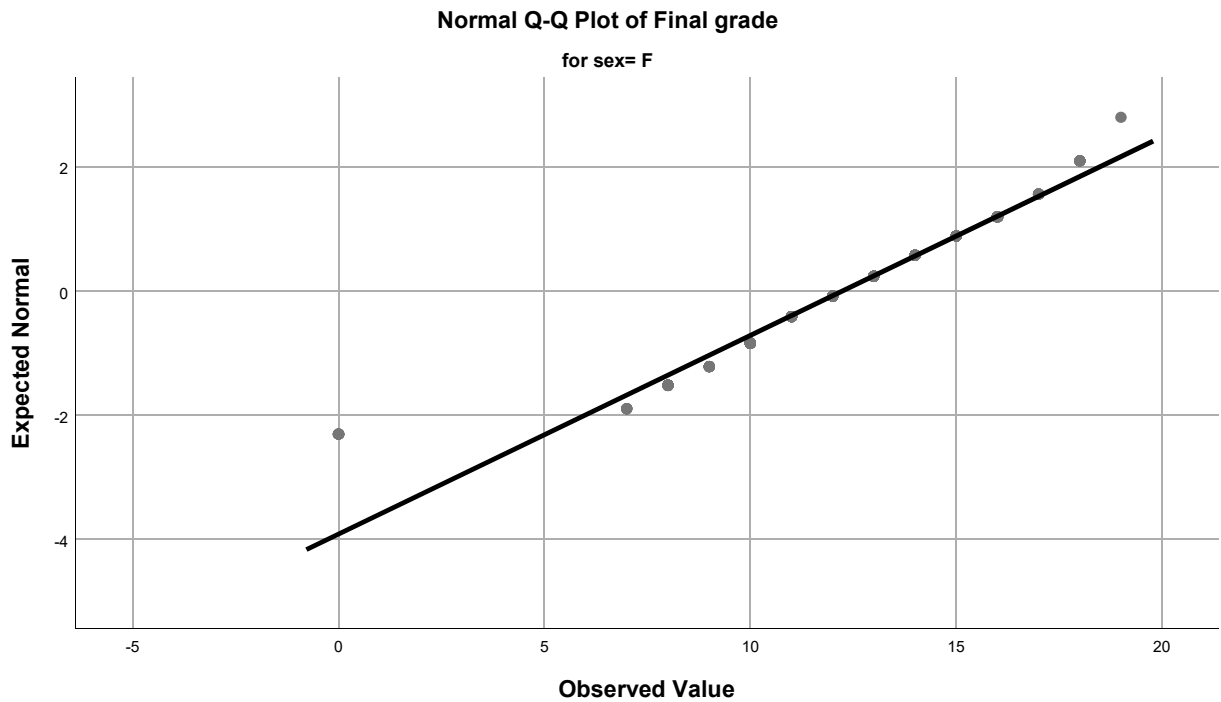
Final grade

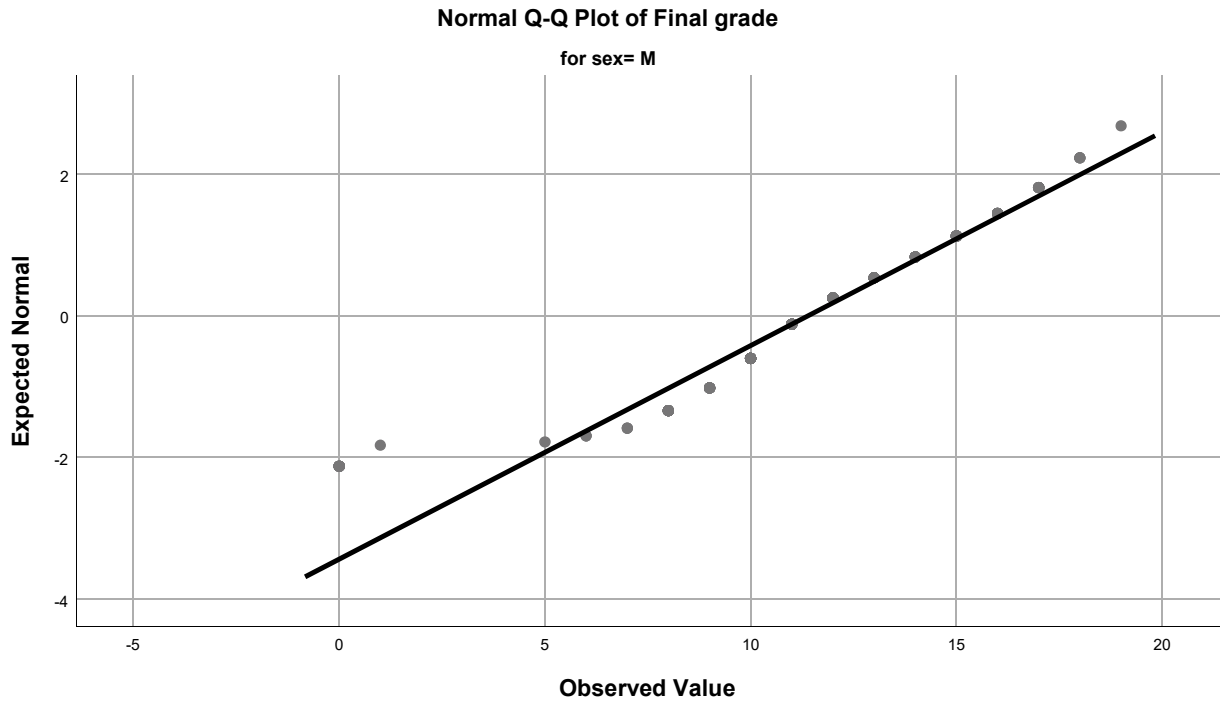
Histograms



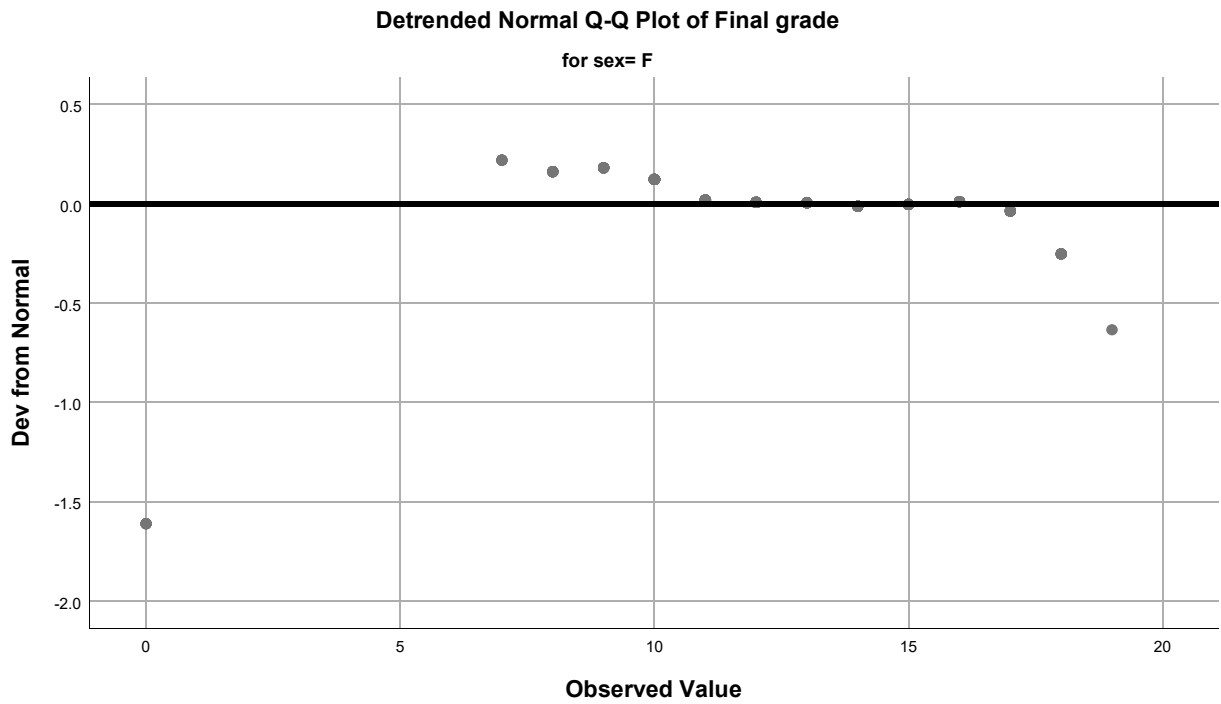


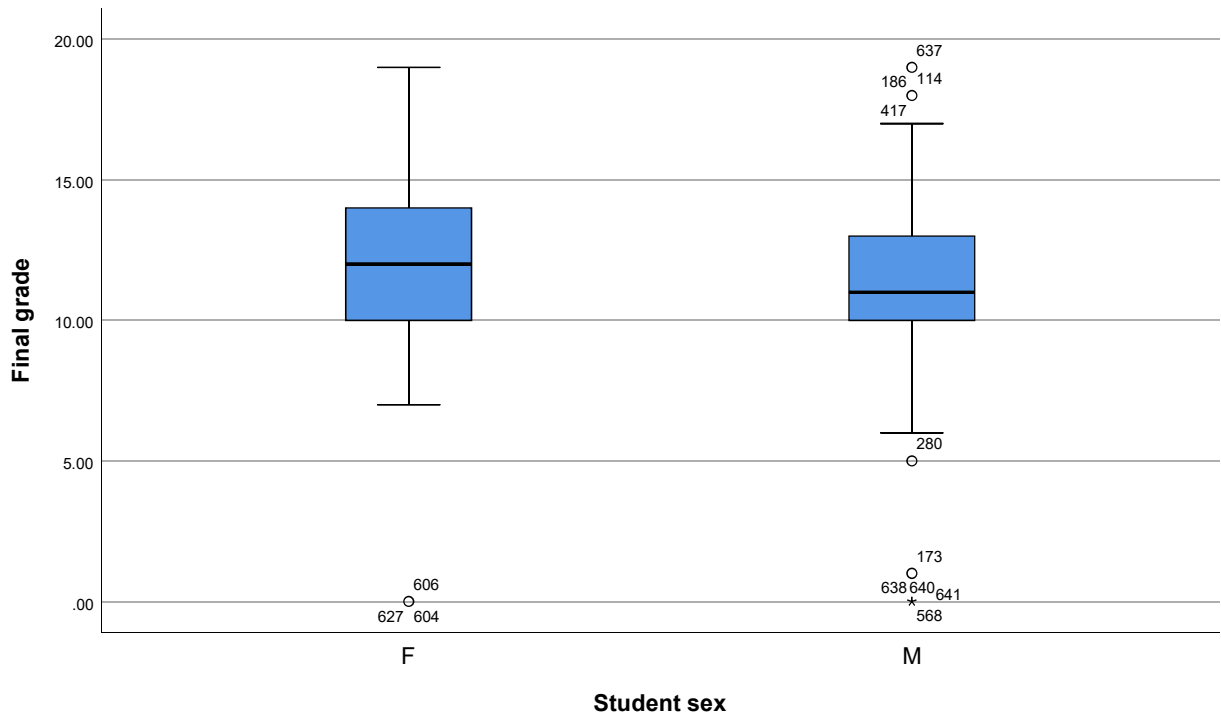
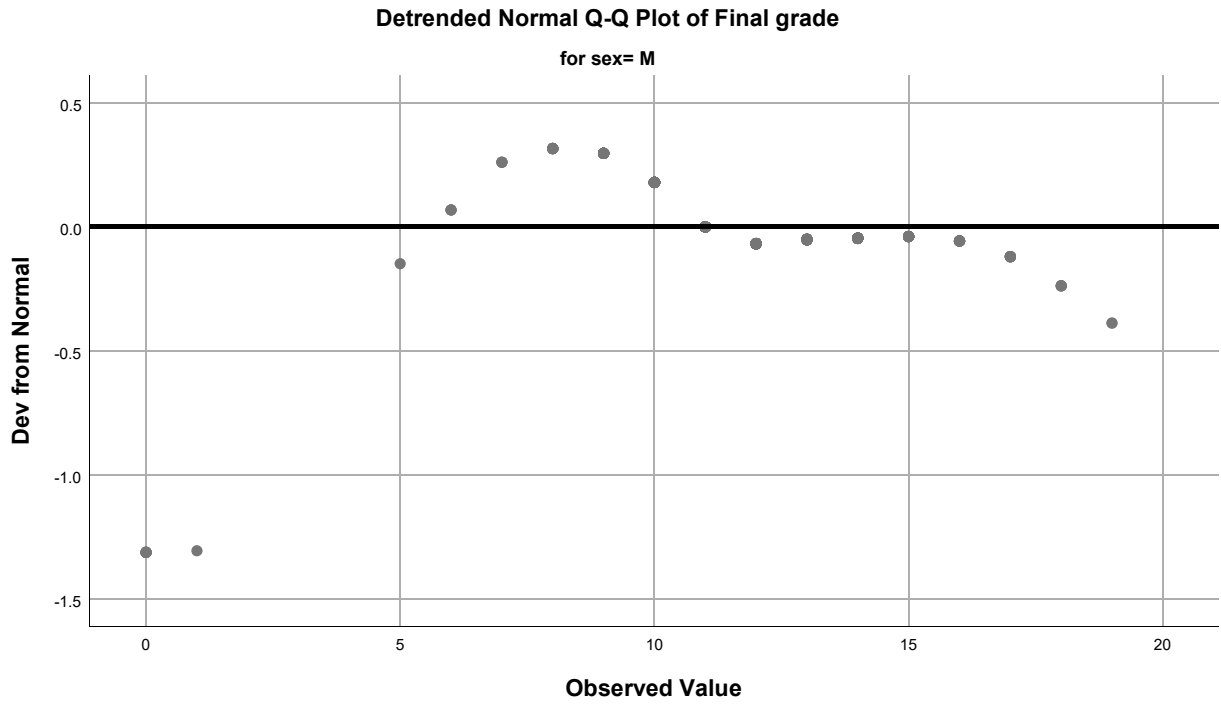
Normal Q-Q Plots





Detrended Normal Q-Q Plots





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498  0 M>
* =====.
499  0 M> * =====.
* 6. Candidate numeric variables normality checking.

```

```

500 0 M> * 6. Candidate numeric variables normality checking.
* Use this table to support the blog section on numeric variables.
501 0 M> * Use this table to support the blog section on numeric variables.
* =====.
502 0 M> * =====.

503 0 M>
EXAMINE VARIABLES=age traveltime studytime failures famrel freetime goout Dalc
Walc health absences G1 G2 G3
504 0 M> EXAMINE VARIABLES=age traveltime studytime failures famrel freetim
e goout Dalc Walc health absences G1 G2 G3
/PLOT BOXPLOT NPLOT
505 0 M> /PLOT BOXPLOT NPLOT
/COMPARE VARIABLES
506 0 M> /COMPARE VARIABLES
/STATISTICS DESCRIPTIVES
507 0 M> /STATISTICS DESCRIPTIVES
/CINTERVAL 95
508 0 M> /CINTERVAL 95
/MISSING LISTWISE
509 0 M> /MISSING LISTWISE
/NOTOTAL.
510 0 M> /NOTOTAL.

```