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The Bologna Path Gives Students the Full Picture of how they Interact with Educational Contents at the Imam Ja`afar Alsadiq University

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Abstract
The current research aims to study the impact of Bologna Path in giving students the full picture of how they interact with educational contents according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of one equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna path gives students the full picture of how they interact with educational contents.

Keywords: Bologna path, Imam Ja`afar Alsadiq University, Technical Colledge, SPSS

1. Introduction

1.1 The nature of the problem

What are the point views of the first-stage students of the Department of Communications Technology Engineering at the Technical College at Imam Ja'far Alsadiq University (pbuh) on giving the Bologna Path students the full picture of how they interact with educational contents?

1.2 Previous work

There are alot of previous works about the students` views on Bologna Path, some of them are:

1. Abdaljalil M. Hamad & Rusol A. Mohammed [1], studied the impact of Bologna Path in using the tools available to help students get the work done effectively according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of one question, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the using the tools available in the Bologna Path to help students get the work done effectively .
2. Abdaljalil M. Hamad [2], studied the impact of Bologna Path in increasing the learning proficiency according to the openionsof students of the Technical College at Imam Ja'farAlsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of onequestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna path increases the students` learning proficiency.
3. Abdaljalil M. Hamad [3], studied the impact of Bologna Path in helping the students follow and communicate with teachersaccording to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology.

4. Engineering, and a questionnaire was prepared for that consisted of onequestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna processincreases the students` learning proficiency .
5. Abdaljalil M. Hamad [4], studied the impact of Bologna Path in strengthening the teacher-student relationship according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (IJSU) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of on equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna process increases the strength of teacher-student relationship.
6. Abdaljalil M. Hamad [5], studied the impact of Bologna Path alongside traditional education without intersecting according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of on equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna track can be used alongside traditional education without intersecting..
7. Abdaljalil M. Hamad [6], studied the impact of Bologna Path in the access of educational content to students despite the weakness of the internet infrastructure according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of one equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna path does n`t prevent the access of educational content to students despite the weakness of the internet infrastructure .
8. Abdaljalil M. Hamad & Rusol A. Mohammed [7], studied the impact of Bologna Path in the new student`s skills required, according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of one equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna path requires students to learn new skills .
9. Abdaljalil M. Hamad & Rusol A. Mohammed [8], studied the impact of Bologna Path in training students to use the computer program dedicated to this,according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of one equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna path requires students training to use the computer program dedicated to this.
10. Abdaljalil M. Hamad & Rusol A. Mohammed [9], studied the impact of Bologna Path in compatibility of traditional and e-learning,according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of one equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna path requires the compatibility of traditional and e-learning.
11. Abdaljalil M. Hamad & Rusol A. Mohammed [10], studied the impact of Bologna Path in the implementation of organizational changes according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of one equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna path requires changes in the organization..
12. Abdaljalil M. Hamad & Rusol A. Mohammed [11], studied the impact of Bologna Path as an appropriate system to carry out the student`s work effectively according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of one equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna path requires changes in the organization..
13. Abdaljalil M.Hamad & Rusol A. Mohammed [12], studied the impact of Bologna Path in providing the advantage of the information and reports to effectively perform the work according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of

Communications Technology Engineering, and a questionnaire was prepared for that consisted of one equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the application of the Bologna path requires changes in the organization

14. Li, Jiahul [13], deduces the student-centered concepts, summarizes teachers' practical experiences in promoting students' competency development, and analyzes the role of activities, delivery, assessment, and institutional support, developing a holistic understanding. The findings provide nuanced theoretical insights into the global literature on "how to foster the students with competence during the student-centered course" and offer practical suggestions for realizing the effective student-centered approach in the institutional course.

1.3 Purpose and the contribution

The researcher in the current research aims to identify the consideration of students of the first stage in the Department of Communication Technology Engineering about giving students the full picture of how they interact with educational contents according to the openions of students of the Technical College at Imam Ja'far Alsadiq University (Ijsu) - Baghdad - Iraq, the research sample consisted of (109) male and female students from the Department of Communications Technology Engineering, and a questionnaire was prepared for that consisted of one equestion, and the indicators of their validity and stability were verified, then the data were processed statistically using the statistical SPSS computer program, and the results indicated that the Bologna Path gives students the full picture of how they interact with educational contents . in university education, as the first experience in Iraq, and this research will contribute to promoting the use of this process or not in the future.

2. Theoritical Part

2.1 Bologna Path

Imam Ja`far Alsadiq University (IJSU) is a public university in Iraq that has started implementing the Bologna Track in 2023. On June 19, 1999, educational ministers from 29 different European nations signed an agreement in the Italian city of Bologna that would become known as the Bologna track [13]. The process seeks to promote a higher education system in Europe that is both internationally competitive and globally appealing.

2.2 Methodology

In this study, a questionnaire was used. It had only one question, it was "Does the Bologna Path give students the full picture of how they interact with educational contents?". This question was take from some quastionnaires ordinary used to test the activities of any university education process.

2.3. Participants of the Study

109 student of both genders (male and female) in communications technical engineering department of technical colledge at Imam Ja`afar Alsadiq university involved in the study during the academic year 2023- 2024. All the participants were engaged in Bologna path; and consented to respond the question in the study.

2.4 Data Collection and Data Analysis

A survey was used to gather the necessary information. Data were examined using a 5-point Likert scale (I do n`t agree at all, I do n`t agree, unaligned, I agree, I completely agree) that was derived from the researcher-created scale.

2.5 SPSS computer Program

The IBM® SPSS® software platform offers advanced statistical analysis, a vast library of machine learning algorithms, text analysis, open-source extensibility, integration with big data and seamless deployment into applications. Its ease of use, flexibility and scalability make SPSS accessible to users of all skill levels. What's more, it's suitable for projects of all sizes and levels of complexity, and can help in finding new opportunities, improve efficiency and minimize risk [14]

3. Practical Part

A questionnaire was prepared in the previously mentioned way, and it was distributed to the students of the first stage in the Department of Communications Technology Engineering, and after filling it out by them, it was entered into the SPSS program for statistical analysis, according to the following steps:

1. The SPSS computer program is excuted.
2. Clicks File, then New, then Data, then Save, and the results file is named result.pdf
3. Select Variable view and the required information is filled in the name field. Let the name is "Q".
4. In the label list, the question is written.
5. From the value menu, click on value labels and write the 1st option (1. I do not agree at all). Then click add.
6. Then click on Repeat the process for the rest of the choices (2. I do not agree), (3. Unaligned), (4. I agree) and (5. I completely agree). Then click OK.
7. Click Variable view, and write the selection number of all participants (109).
8. Click on the question, select the question, click on the arrow to transfer the question to the other side, click statistics.
9. Point the options, then continue
10. Click charts, then point the histograms, then show normal curve on histograms, then continue
11. Choose analyze, then descriptive statistics, then explore
12. Choose number, then click on the arrow to transfer the number to the dependent list, then choose the question, then click the 2nd arrow to transfer the question to the factor list, then click statistics, the explore interface will occure.
13. Point all options, then continue
14. Return to explore list, choose plots, another interface will occure, select some options, then continue, then OK.
15. All results will occure.

4. Results

Table (4-1)
Case Processing Summary

	The Bologna track gives me the full picture of how students interact with educational contenTS	Cases Total Percent
number	I do n`t agree at all	100.0%
	I do n`t agree	100.0%
	unaligned	100.0%
	I agree	100.0%
	I completely agree	100.0%

Table (4-2)
Descriptives[a,b]

The Bologna track gives me the full picture of how students interact with educational contenTS				Statistic	Std Error
number	unaligned	Mean		56.7500	7.49472
		95% Confidence Interval for Mean	Lower Bound	40.7754	
			Upper Bound	72.7246	
		5% Trimmed Mean		56.8333	
		Median		52.0000	
		Variance		898.733	
		Std. Deviation		29.97888	
		Minimum		8.00	
		Maximum		104.00	
		Range		96.00	
		Interquartile Range		54.50	
		Skewness		.138	0.564
		Kurtosis		-1.349	1.091
	I agree	Mean		71.5333	5.24541
		95% Confidence Interval for Mean	Lower Bound	60.8053	
			Upper Bound	82.2614	
		5% Trimmed Mean		72.8704	
		Median		76.5000	
		Variance		825.430	
		Std. Deviation		28.73030	
		Minimum		7.00	
		Maximum		109.00	
		Range		102.00	
		Interquartile Range		47.75	

Table (4-3)

Descriptives[a,b]

The Bologna track gives me the full picture of how students interact with educational contenTS			Statistic	Std Error
	Skewness		-.593	0.427
	Kurtosis		-.452	0.833
I completely agree	Mean		46.2951	3.96531
	95% Confidence Interval for Mean	Lower Bound	38.3633	
		Upper Bound	54.2269	
	5% Trimmed Mean		45.6475	
	Median		42.0000	
	Variance		959.145	
	Std. Deviation		30.97006	
	Minimum		1.00	
	Maximum		107.00	
	Range		106.00	
	Interquartile Range		53.00	
	Skewness		.274	0.306
	Kurtosis		-1.166	0.604

a. number is constant when The Bologna track gives me the full picture of how students interact with educational contenTS = I do n`t agree at all. It has been omitted.

b. number is constant when The Bologna track gives me the full picture of how students interact with educational contenTS = I do n`t agree. It has been omitted.

Table (4-4)

M-Estimators[a,b]

	The Bologna track gives me the full picture of how students interact with educational contenTS	Huber's M-Estimator[c]	Tukey's Biweight[d]	Hampel's M-Estimator[e]	Andrews' Wave
number	unaligned	55.5290	55.7933	56.5393	55.7924
	I agree	74.2924	74.0024	73.4076	73.9837
	I completely agree	44.3600	44.8772	45.3861	44.8819

a. number is constant when The Bologna track gives me the full picture of how students interact with educational contenTS = I do n`t agree at all. It has been omitted.

b. number is constant when The Bologna track gives me the full picture of how students interact with educational contenTS = I do n`t agree. It has been omitted.

c. The weighting constant is 1.339.

d. The weighting constant is 4.685.

e. The weighting constants are 1.700, 3.400, and 8.500

f. The weighting constant is 1.340*pi.

Table (4-5)

Percentiles[a,b]

		The Bologna track gives me the full picture of how students interact with educational contenTS	Percentiles 5	10	25
Weighted Average (Definition 1)	number	unaligned	8.0000	19.9000	31.7500
		I agree	12.5000	20.3000	50.7500
		I completely agree	3.1000	6.6000	19.5000
Tukey's Hinges	number	unaligned			32.5000
		I agree			51.0000
		I completely agree			20.0000

Table (4-5) Continue

Percentiles[a,b]

		The Bologna track gives me the full picture of how students interact with educational contenTS	Percentiles 50	75	90	95
Weighted Average (Definition 1)	number	unaligned	52.0000	86.2500	100.5000	
		I agree	76.5000	98.5000	105.7000	108.4500
		I completely agree	42.0000	72.5000	92.8000	95.9000
Tukey's Hinges	number	unaligned	52.0000	85.5000		
		I agree	76.5000	98.0000		
		I completely agree	42.0000	72.0000		

Table (4-6)

Extreme Values[a,b]

	The Bologna track gives me the full picture of how students interact with educational contenTS			Case Number	Value
number	unaligned	Highest	1	104	104.00
			2	99	99.00
			3	89	89.00
			4	87	87.00
			5	84	84.00
		Lowest	1	8	8.00
			2	25	25.00
			3	28	28.00
			4	31	31.00
			5	34	34.00
	I agree	Highest	1	109	109.00
			2	108	108.00
			3	106	106.00
			4	103	103.00
			5	102	102.00
		Lowest	1	7	7.00
			2	17	17.00
			3	18	18.00
			4	41	41.00
			5	44	44.00
	I completely agree	Highest	1	107	107.00
			2	105	104.00
			3	96	96.00
			4	95	95.00
			5	94	94.00
		Lowest	1	1	1.00
			2	2	2.00
			3	3	3.00
			4	4	4.00
			5	5	5.00

a. Number is constant when the Bologna track gives students the full picture of how they interact with educational contents = I don`t agree at all, it has been omitted.
b. Number is constant when the Bologna track gives students the full picture of how they interact with educational contents = I do n`t agree , it has been omitted.

number

Histograms

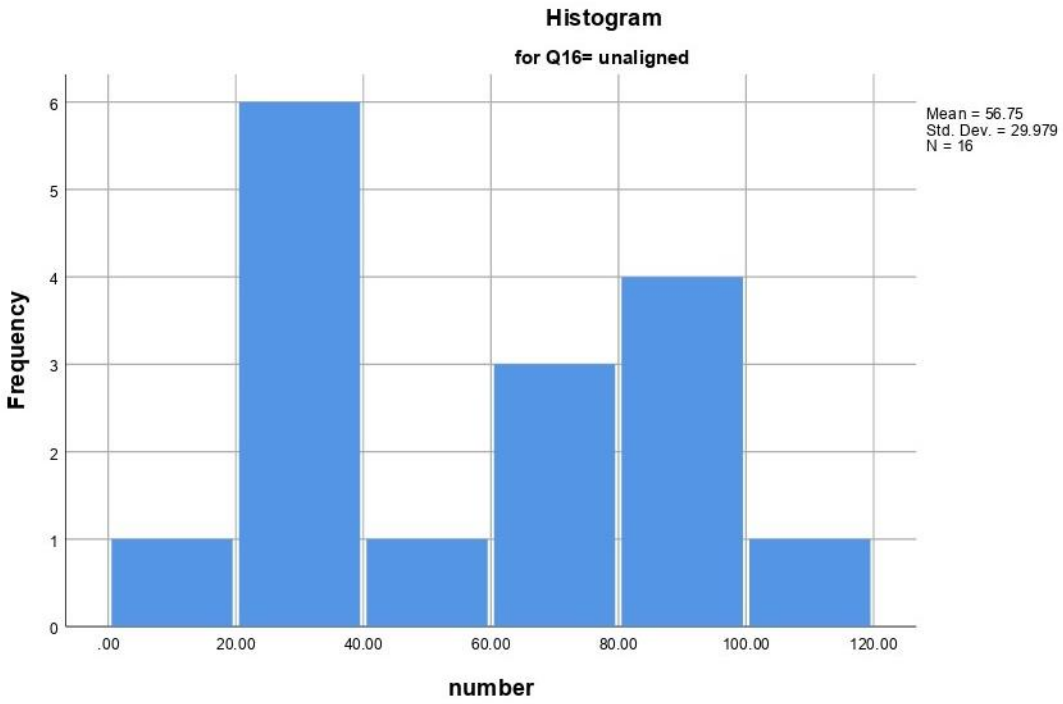

Figure (4-1)

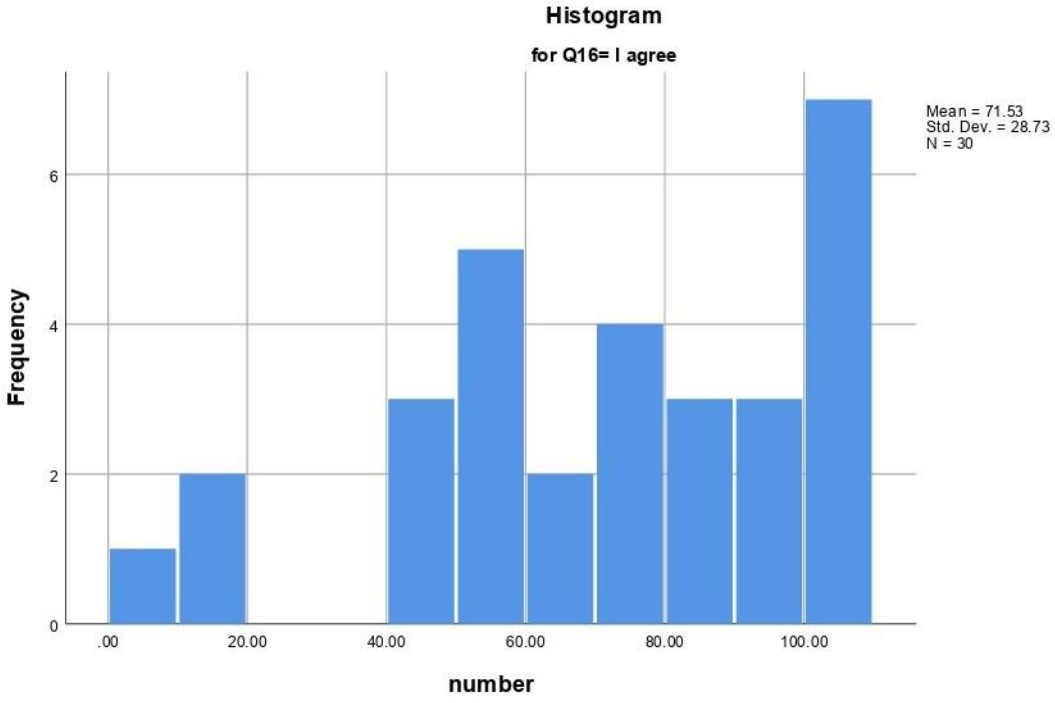

Figure (4-2)

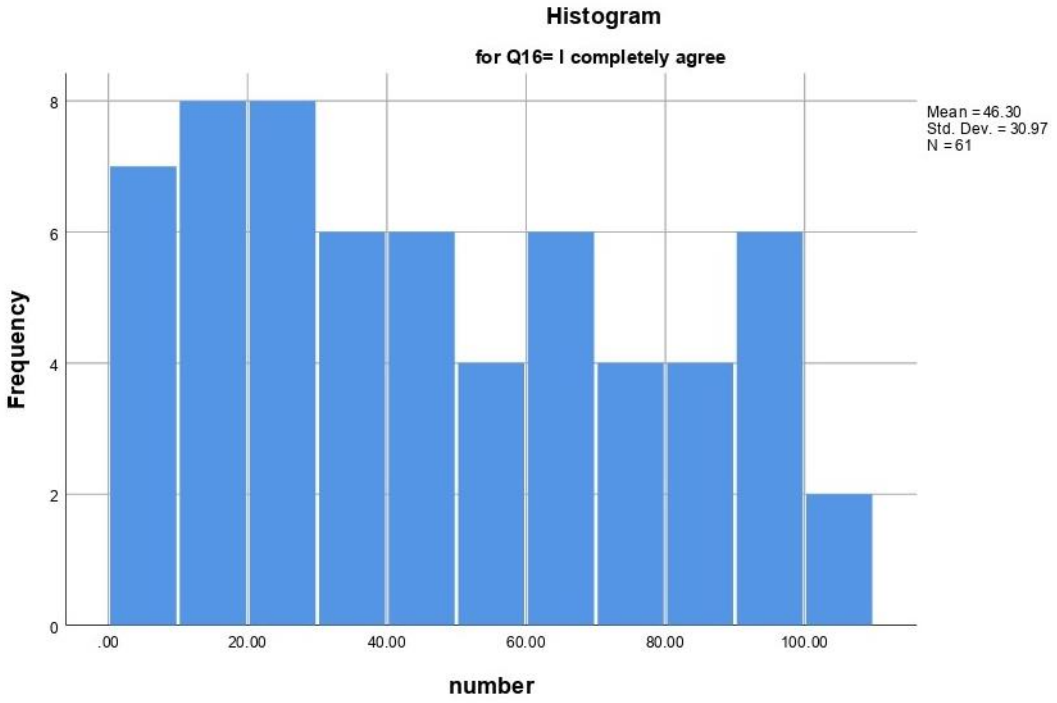

Figure (4-3)

Stem-and-Leaf Plots

number Stem-and-Leaf Plot for
Q16= unaligned

Frequency	Stem &	Leaf
8.00	0 .	02233334
7.00	0 .	6778889
1.00	1 .	0

Stem width: 100.00
Each leaf: 1 case(s)

number Stem-and-Leaf Plot for
Q16= I agree

Frequency	Stem &	Leaf
3.00	0 .	011

```
     8.00          0 .  44455555
     6.00          0 .  667777
     6.00          0 .  888999
     7.00          1 .  0000000

 Stem width:     100.00
 Each leaf:         1 case(s)


number Stem-and-Leaf Plot for
Q16= I completely agree

 Frequency     Stem &  Leaf

    15.00          0 .  000000011111111
    14.00          0 .  22222222333333
    10.00          0 .  4444445555
    10.00          0 .  6666667777
    10.00          0 .  8888999999
     2.00          1 .  00

 Stem width:     100.00
 Each leaf:         1 case(s)
```

Boxplots

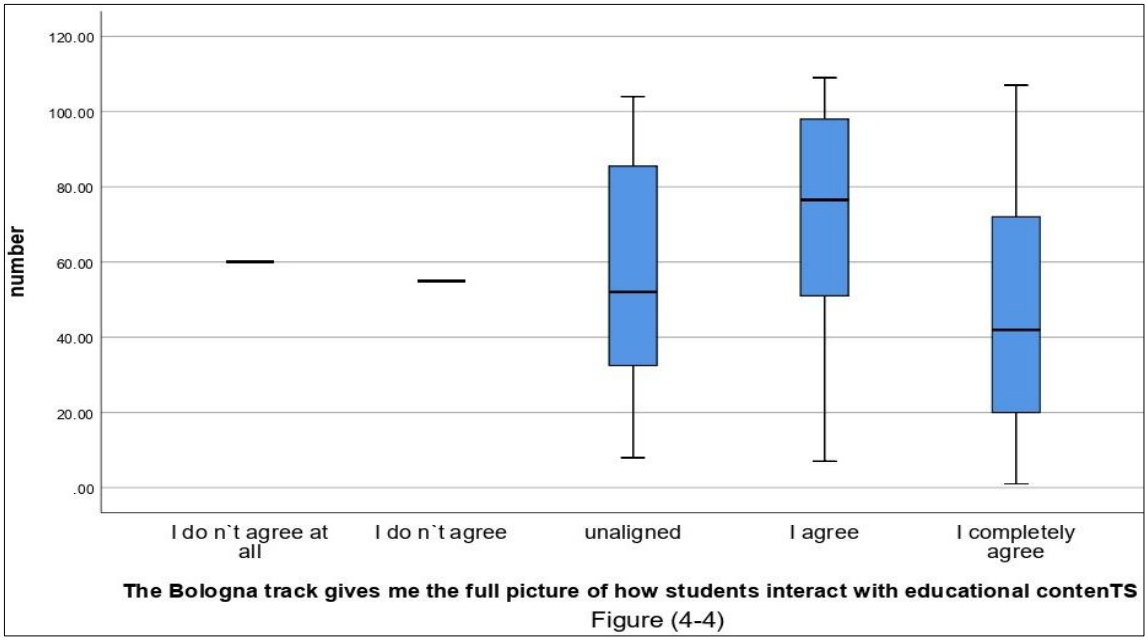

Figure (4-4)

5. Conclusion

Statistical Analysis and Interpretation of Results on the Bologna Track Perception

1. Introduction

This section presents an analytical discussion of participants' perceptions regarding the effectiveness of the *Bologna track* in providing a complete picture of how students interact with educational content. Responses were categorized across a Likert scale ranging from "I don't agree at all" to "I completely agree," and analyzed using descriptive statistics, robust estimators, and visualizations including histograms, stem-and-leaf plots, and boxplots.

2. Descriptive Statistics

2.1 Group: "Unaligned"

- **Mean:** 56.75
- **Standard Deviation:** 29.98
- **Median:** 52.00
- **Range:** 96 (Min: 8.00, Max: 104.00)
- **Skewness:** 0.138
- **Kurtosis:** -1.349

Interpretation: The responses in this group are widely spread, suggesting inconsistent or neutral perceptions. The near-zero skewness indicates a symmetrical distribution, while the negative kurtosis implies a flatter than normal distribution (platykurtic), signaling a wide range of varied opinions.

2.2 Group: "I Agree"

- **Mean:** 71.53
- **Standard Deviation:** 28.73
- **Median:** 76.50
- **Range:** 102
- **Skewness:** 0.564
- **Kurtosis:** 1.091

Interpretation: Participants in this group show a strong positive inclination toward the Bologna track, with values clustering toward higher scores. The moderate positive skewness indicates some lower values but overall a trend toward agreement.

2.3 Group: "I Completely Agree"

- **Mean:** 46.30
- **Standard Deviation:** 30.97
- **Median:** 42.00
- **Range:** 106
- **Skewness:** -0.593
- **Kurtosis:** -0.452

Interpretation: Surprisingly, this group reflects a lower average than the "I Agree" group, despite its stronger wording. This might suggest misinterpretation of the category, overuse of the response, or diverse internal subgroups. The negative skew and lower median imply concentration toward lower scores, despite the seemingly affirmative label.

3. Robust Estimators (M-Estimators)

Group	Huber's M	Tukey's Biweight	Hampel's	Andrews'
Unaligned	55.53	55.79	56.54	55.79
I Agree	74.29	74.00	73.41	73.98
I Completely Agree	44.36	44.88	45.39	44.88

Interpretation: Robust estimators reaffirm that the group labeled *"I Agree"* has the highest central tendency, further supporting that it better represents genuine agreement than the *"I Completely Agree"* group. This may highlight inconsistencies in how participants interpret extreme response categories.

4. Visual Data Analysis

4.1 Histograms

- "Unaligned": Normal-like but dispersed.
- "I Agree": Skewed slightly left with dense high scores.
- "I Completely Agree": Surprisingly low scores concentrated at the left end.

4.2 Stem-and-Leaf Plots

- Reinforce histogram findings: "I Agree" shows greater clustering around higher values; "I Completely Agree" has a broader and flatter distribution.

4.3 Boxplots

- Clearly visualize spread and medians. The "I Completely Agree" category shows the widest variability and lowest median, despite its name.

5. Interpretation and Discussion

- **Contradiction between Labels and Responses:** The *"I completely agree"* group yielded the lowest average, suggesting that either participants misunderstood the category or were influenced by survey fatigue, primacy/recency effects, or cultural perceptions of extremity in agreement.
- **Consistency in "I Agree" Group:** This group provided the most coherent and statistically stable support for the Bologna track's impact on understanding student interaction with content.
- **Wide Variability in Neutral or Misaligned Responses:** The "unaligned" group's spread suggests ambivalence or lack of clarity about the Bologna system's effectiveness.

6. Recommendations

1. **Revise Likert Scale Wording:** Consider collapsing or rewording the extreme agreement categories to better reflect participant intentions.
2. **Include Qualitative Feedback:** Follow-up interviews or open-ended questions could clarify ambiguous interpretations.
3. **Segment Analysis:** Investigate demographic or educational background variables to understand subgroup differences.

Reinforce Measurement Validity: Future instruments should be pilot tested for cognitive clarity, especially for scales involving strong agreement/disagreement.

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