

Comparing Distance Assessment to Face-to-Face Approach: case of LE- Maths in TETOUAN's Higher Normal School

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Abstract

Despite the challenges posed by the ongoing pandemic, there is a growing consensus that classroom assessment remains a more advantageous option for students than distance evaluation. The pandemic has catalysed developing robust information infrastructure and training qualified personnel to ensure educational continuity and assessment reliability. However, a recent comparative study on ENS maths students revealed no significant difference. This article examines the distance and face-to-face evaluations, presenting data from a comparative study during the pandemic.

Keywords: Distance Assessment, Face-to-Face Evaluation, ICT

INTRODUCTION

Distance learning is a pedagogical method that does not adhere to the traditional pedagogical philosophy. It is a teaching method that allows students to learn without attending the school or university in person and without the physical presence of the teacher. This is defined by Bashitialshaaer as technology-based teaching (Bashitialshaaer et al., 2021). Distance learning can be considered a new mode of education that employs several different methods than the traditional educational system. One of the key advantages of distance learning is its flexibility. Unlike traditional educational systems, which are often constrained by time and place, distance learning allows students to take their courses at a time and place that suits them, making it a more cost-effective option. In 2020, Hantem proposed that teaching could be categorised by four characteristics: distance learning must be accessible at any time and any place and take into account the constraints of each learner, which means accessibility. Indeed, it may allow the integration of scientific and practical knowledge and the transfer of knowledge, thus learning in a direct and permanent context. In terms of flexibility, the author proposes that distance learning allows for the planning and speed of learning activities to be adapted according to time and place, as well as offering multiple choices of content. The teaching/learning system is based on interaction between teachers and learners, as well as between the learner and their peers, which encourages collaborative work between them. However, several obstacles hinder the application of distance learning, including connectivity, materials and stakeholder engagement. Despite the best efforts of teachers to overcome these difficulties through differentiated distance learning approaches, a final distance assessment is necessary.

However, information and communication technology (ICT) is currently a critical factor for advancement in all fields and for changing work practices, as well as teaching and learning in schools and universities at all levels (Rechidi & Bennani, 2020). Consequently, at the international level, various nations have integrated ICT in education to raise the standards of teaching and examination by promoting digital pedagogy (Rechidi & Bennani, 2020). Similarly, in the context of Morocco, despite the discrepancy between theoretical and practical applications, the country has opted to integrate ICT into its educational system, encompassing both its schools and universities (HAMDANI, 2021). The Generalisation of ICT in Education (GENIE) program was first

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introduced in Morocco in 2005 through the E-Sup program, which was also adopted by the Ministry of Higher Education, Scientific Research, and Further Education in 2006. This program aimed to integrate ICT modules into university courses (Rechidi & Bennani, 2020). In addition, a number of other initiatives have been implemented since 2005. These include the Digital Morocco 2013-2020 program, the Morocco Virtual Campus (MVC) project, the MARWAN network, the APOGEE project, the INJAZ programme and most recently the LAWHATI project (Mastafi & Bouhlou, 2019).

Conversely, the High Commission for Education, Training and Scientific Research advocates for Moroccan educational institutions to prioritize the integration of information and communication technologies (ICT) in order to foster economic growth and the development of a knowledge-based society (HAMDANI, 2021). Similarly, the Framework Law 51-17 on Education, Training and Scientific Research outlines in Article 33 procedures aimed at improving the Moroccan educational system. These include integrating ICT to enhance the quality of learning and increase profitability; creating a laboratory for innovation in digital resources; and developing and refining distance learning and classroom-assisted learning models integrated with e-learning (Moroccan Higher Council for Education, Training and Scientific Research, 2019).

E-learning will become mandatory by March 2020. Following the discovery of the first cases of COVID-19 contamination, the Moroccan government declared a public health emergency. As a result, the authorities have taken several precautions to prevent the unchecked spreading of the new coronavirus. Universities and educational institutions have closed their doors until the situation has stabilized in response to the current global health crisis.

To ensure the continuity of education in Moroccan schools and universities, the Ministry of National Education, Professional Development, Higher Education, and Scientific Research has introduced an entirely online educational model, replacing face-to-face instruction.

Consequently, teachers and students were compelled to transition from the traditional face-to-face format to a more individualized online approach, where each student was isolated from their classmates and solely reliant on their technological equipment (Poláková & Klímová, 2021). The educational platform or virtual classroom allows teachers and students to communicate via computer, smartphone, or tablet. This necessitates reliable internet access, familiarity with the use of all relevant IT tools, and the ability to adapt to the numerous challenges encountered at various levels (connection, IT tools and software, instructional methods, educational approaches, stress, etc.) (Polona Gradišek & Alenka Polak, 2021). Conversely, the utilisation of communication and educational technology (such as a platform, virtual classroom, video capsule, etc.) has facilitated effective communication between teachers and their students, as well as streamlined planning and distance learning, resulting in a novel approach to teaching and learning. However, we have observed a diverse range of applications, including the delivery of courses, lessons with voice commentary, and recording (Hantem, 2020). Indeed, modern software and online learning environments have made it possible for new visual learning experiences to be delivered (G. & Lipin, 2020). However, it is crucial that students recognise the value of using actual classroom instruction in practical and laboratory courses. It is becoming increasingly clear that this situation will present a significant challenge in the future (Gonçalves et al., 2020). Integrating online learning is one of the most pressing issues currently facing the educational system (Saienko et al., 2020).

Arrival at exam time, online performance and learning evaluation periods pose another challenge for instructors and students (Agarwala et al., 2021). The majority of educational institutions proposed to evaluate distance learning, thus university students were required to complete online exams using platforms and programmes on their devices (computers, tablets, smartphones, etc.) with a strong internet connection to prevent any interruptions. In fact, it wasn't at all easy to carry out an impartial assessment on a virtual platform, because there is less supervision, which allows certain students to use dishonest methods during the assessment, and there are numerous problems with fraud, credibility and resources... (Stradiotová et al., 2021). Conversely, there are no similar conditions for online exams, which are taken at each person's home, making it difficult to ensure fairness, as opposed to face-to-face exams, which are taken in the same classroom with the teacher present (Agarwala et al., 2021).

The use of distance learning assessment forms in Moroccan educational institutions was an exception. And as this was the first time this new form of assessment was tried, there will be advantages and disadvantages in terms of student satisfaction, learning assessment methods, and final examination grades and results.

On the other hand, the integration of ICT in assessment, particularly in education, has become a necessity in the contemporary era. The future of education is contingent upon the utilisation of new technology, which provides a proactive strategy that will prevent any disruption of educational continuity due to pandemics such as the coronavirus.

Consequently, Moroccan universities must initially address the challenges of distance learning and assessment in the university system by providing a conducive environment for teaching practices, where students are adequately equipped with the knowledge and skills to utilise ICT in a prudent and responsible manner. Conversely, distance learning programmes are intended to be presented as viable alternatives; they must be accessible to all students. Furthermore, face-to-face teaching could be adapted, democratised and developed to enhance the quality of teaching and assessment.

This led us to conduct a quantitative study on the results of assessments in both modalities of ICTE modules among students in the first year of LE MATHS at ENS Tetouan before and during the COVID-19 pandemic during the 2019/2020 academic year.

This study compares the results of two assessment modalities to ascertain the impact of the differing environments in which examinations are conducted on student performance. Furthermore, the study will determine whether there is an increase in results in a particular modality compared to the others. A qualitative interview was conducted to ascertain student satisfaction, to investigate the potential for the use and generalisation of online examinations in Moroccan higher education, and to ensure optimal conditions in the event of future pandemics and containment.

Evaluation Models

Evaluation Types

In general, assessment is the process of gathering, evaluating, explaining, and interpreting data on students' levels of learning in order to make judgements about learning and the best possible teaching decisions regarding the quality of the instruction and the learners' learning level (Leroux, 2017).

Many students fear “assessments, which they endure and sometimes view as a threat (they don't know what is expected of them). Others prepare for them strategically: they look for the expected answer rather than seeking to understand. For their part, many teachers feel uncomfortable with a task that has become more complex” (Quebec Superior Council of Education, 2018).

There are two types of assessment: face-to-face assessment and distance assessment. Within these two approaches three types of assessment can be distinguished:

Orientation or diagnostic assessment enables the understanding of the learner's starting point in the learning environment. It provides a basis for identifying new activities needed (Leroux, 2017). The function of diagnostic assessment can be summarised as follows: To provide teachers with an assessment to personalise and direct teaching, secondly, to provide teachers with tools to design effective solutions to enhance students' potential, in addition to helping students to identify strengths and weaknesses in order to work on improvements (University LAVAL, 2015).

Formative or 'regulatory' assessment aims to facilitate learning and inform both students and teachers of progress and areas for development. It takes place during learning activities and is intended to provide insight into students' development, as well as common errors and difficulties encountered. In addition to peer and self-assessment, formative assessment can also be guided by teachers (University LAVAL, 2015). For example, using mind maps to organise the topics presented and asking students to explain what they have learned in lectures. The use of multiple choice, variation and true/false questions to assess student understanding.

Summative or certifying assessment is used to validate or certify learning. It takes place at the end of learning to ensure mastery of the content taught (University of LAVAL, 2015).

Evaluation pre and post COVID for LE-MATHS ENS Tetouan Students'

The first semester of the academic year 2019–2020 was conducted face-to-face (distance or hybrid) as usual, prior to the coronavirus in Morocco. For our hybrid instance of the ICTE module for students pursuing a Bachelor of Education in Secondary Mathematics, some of the courses were given online, while others were conducted face to face. Both the continuous evaluation and the final exam were administered onsite.

The courses were presented digitally while the individuals were confined, with small projects on the topics covered in each session prepared by the students as part of the continuous monitoring process. At the conclusion, there was a distance final evaluation after the students had fully utilized their knowledge to create a digital resource they could use to teach their subjects.

After Covid, the tests were administered as planned on September 1, 2020, a unique date for this crisis year it was in online form. Students were made aware well in advance to find connections (especially for those who reside in rural areas). Additionally, a practice test has been created and posted on the platform for student use in order to avoid issues on the exam day.

Multiple-choice questions, true-false questions, check boxes, and settings to reduce the chance of cheating were all included in the exam's preparation. It has been posted with instructions on the UPTICE platform, which will be used to teach the ICTE Module throughout the 2019–2020 academic year (1st semester in hybrid modality and 2nd semester in distance modality). Additionally, students can access the exam using an internet-connected computer or phone.

The following steps have been taken to reduce cheating:

The exam was available from 11am till 12:30pm.

After the exam is opened, a storyteller is turned on, and after one hour it automatically closes with a message telling the students they have three minutes to submit their answers.

The answers are chosen and the questions are automatically mixed in such a way that if students try to cheat or communicate with one another, they will waste a lot of time and not be able to finish the exam.

The instructor watched over and followed up during the exam to help the students if the answers were blocked or did not get through. There was only one absence, and the exam went extremely well.

METHODOLOGY

Comparative analysis looks at the connection between at least two variables and the circumstances that arise between them (Ural & Başkan Takaoğlu, 2022) (Mustafa Nuri Ural, 2022).

In this study, we'll use statistical analyses comparative to evaluate a class of student enrolled in the Bachelor of education in secondary Mathematics at the ENS of Tetouan's 2019/2020 ICTE module. There were 57 students enrolled in the degree, and 70,18% of them female. The ICTE1 and ICTE2 are two of the modules that were administered. In addition to the constant assessment during this year, the professor was required to do two types of evaluation for the final exam.

Our research was based on a descriptive statistical analysis of the various results of first year high school mathematics students in the Bachelor of Education option. We then analyzed the results using inferential statistics in order to support or reject the hypothesis. On the other hand, we conducted a qualitative analysis based on an interview with a student from the sample considered, and finally we analyzed a satisfaction question that was asked to the students in order to know their satisfaction during the distance evaluations.

The study population has 57 members, which makes it above the threshold of 30.

ANALYSIS & RESULTS

The first semester's range of grades was 10.25 points, with a maximum grade of 18 and a minimum grade of 6.75, compared to the second semester's range of 11.25 points, from 6.75 to 18, and 50% of the study population had more than 13.5 in both semesters. In S1, the median grade was 13.25, which is nearly on par with S2's mode of 15. The averages of the scores obtained between S2 and S1 differ by 0.9, on average.

Descriptive Statistics

The figure 1 displays the various results found in s1 and s2.

		Means_S2	Means_S1
N	Valid	57	57
	Missing	0	0
Mean		14.05526	13.2412
Median		14.00000	13.5000
Mode		15.000	13.25
Standard deviation		2.391366	2.14693
Variance		5.719	4.609
range		11.250	10.25
Minimum		6.750	6.50
Maximum		18.000	16.75
Sum		801.150	754.75
Percentiles	25	12.87500	11.6250
	50	14.00000	13.5000
	75	15.62500	14.8750

Figure1. Descriptive statistics performed on the means of S1 and S2

Multiple Component Analysis (MCA)

On the other hand, we made a qualitative analysis from a question that was distributed to the students of our sample in order to measure their satisfaction with the distance exam and the conditions of the course of this exam. We applied the MCA (Multiple Component Analysis) treatment on a two dimensional matrix question presented in annexes1 and the results are in figure 2.

Dimension	Alpha de Cronbach	Explained variance		
		Total (own value)	Inertia	Percentage of variance explained
1	,977	4,587	,917	91,739
2	,935	3,962	,792	79,245
Total		8,549	1,710	
Mean	,958 ^a	4,275	,855	85,492

a. The average Cronbach's Alpha value is based on the average eigenvalue.

Figure 2. Recap of MCA

Annexes 1. Matrix question

Indiquez votre degré de d'accord ou de désaccord avec chacun des énoncés suivantes en cochant l'option convenable

Grille à choix multiples

R I U ↵ ↶

Lignes	Colonnes
1. En général, les conditions du déroulemen... X	<input type="radio"/> fortement en désaccord X
2. Les conditions dans lesquelles s'est déro... X	<input type="radio"/> En désaccord X
3. Je suis satisfait(e) de la manière avec la... X	<input type="radio"/> légèrement en désaccord X
4. J'étais satisfait(e) de l'efficacité de l'évalu... X	<input type="radio"/> Ni en désaccord ni en accord X
5. Si j'avais la possibilité de gérer le déroule... X	<input type="radio"/> légèrement en accord X
6. Ajouter une ligne	<input type="radio"/> en accord X
	<input type="radio"/> fortement en accord X

Correlation

The figure 3 is a correlation table that allows us to know the links between the two dimensions of the

question addressed, and from this table we see that there is a strong correlation between them. So we can conclude that most students agree with this mode of evaluation and they are generally satisfied with the conditions of the passage.

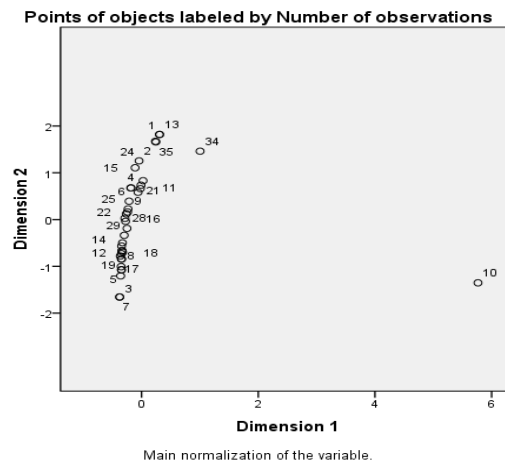
Correlations of transformed variables					
Dimension: 1					
	In general, the conditions of the online exam closely matched my expectations	The conditions under which the remote exam was conducted were excellent	I am satisfied with the way the distance learning exam was conducted	I was satisfied with the effectiveness of the online learning assessment via the UPTICE platform	If I had the opportunity to manage the course of the exam during this period, I would change almost nothing
In general, the conditions of the online exam closely matched my expectations	1,000	,985	,985	,990	,735
The conditions under which the remote exam was conducted were excellent	,985	1,000	,994	,984	,746
I am satisfied with the way the distance learning exam was conducted	,985	,994	1,000	,991	,756
I was satisfied with the effectiveness of the online learning assessment via the UPTICE platform	,990	,984	,991	1,000	,751
If I had the opportunity to manage the course of the exam during this period, I would change almost nothing	,735	,746	,756	,751	1,000
Dimension	1	2	3	4	5
Valeur propre	4,587	,378	,020	,011	,004

Figure 3. Correlation table

Normalization

The annexes 2 shows us the normalization of student opinions. We notice that all students follow the same trend except for student number 10 who appears alone on the diagram.

Annexes 2. Main normalization diagram of the variable



Next, we have this diagram of variables presented in figure 4. We notice that the answers are grouped in the same area at the top right, and therefore there is a strong correlation.

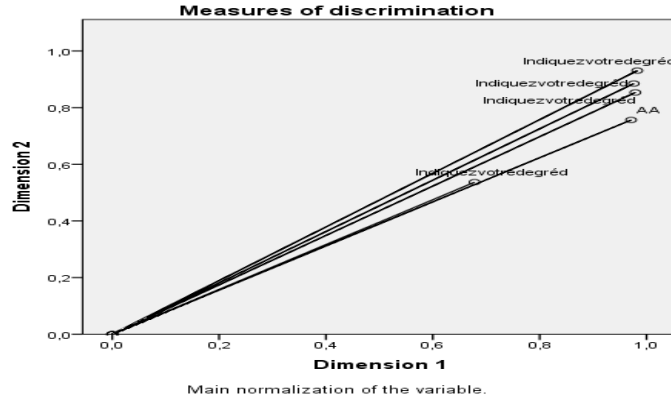


Figure 4. Variables

Box & Whisker Plots

Can we accept the homogeneity (equality) of the results? To see the distribution of the scores, we have plotted the Box & whisker plots presented in Figure 5. We note that student number 93/94 received 6,50 in S1 and 6,75 in S2 in the regular session, placing him outside the box. He then passed the ratchet session with a note of 10. Same goes for student number 18, who scored 7,00 in the regular S2 session and then scored 10, in the ratchet session.

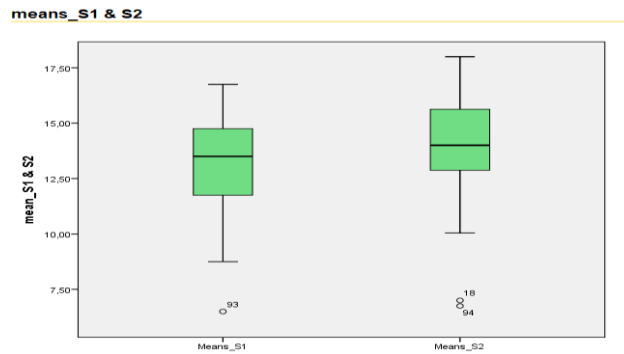


Figure 5. Box & whisker plots for means S1 and S2

So, we conducted an interview with student 93/94 in order to know the conditions that prevented him from getting a good grade in S1 and in the normal session of S2, as well as those that allowed him to increase his grade in the catch-up session of S2. According to his statements, we can summarize the causes of having a bad mark in S1 and in the normal session of S2 in: personal and social problems in the first year which caused him a delay in enrolling in the first year of LE Maths and therefore a delay in learning new skills, a serious lack in his level of the French language since he obtained a Baccalaureate totally in Arabic, which poses a great problem in understanding his lessons. On the other hand, the increase in his grade in the remedial session of S2, is that the evaluation was at a distance and in the form of easy MCQs, as well as his use of cheating; according to what he affirmed, during the evaluation, he sent screenshots to a colleague who had already succeeded and who helped him to answer well the questions asked in the evaluation. The results of parameters of Box & Whisker plots are presented in Table 1.

Table 1. Box & Whisker plots parameters

Parameter	Semester 1	Semester 2
Median	110	103
Q1 (first quartile)	223	214
Q3 (third quartile)	197	120
The inter quartile range Q3-Q1	998	908

Normality Test

Although the data show a slight improvement, can we conclude whether or not this change is meaningful? We shall determine if the two series adhere to the normal distribution before beginning the test of equality of means. The Figure 6 summarizes the results of the normality test that was applied to the differences between the means of S1 and S2, in order to know if the data follow the normal distribution, as well as the comparison of the distributions. From this table, it appears that $p=0.200 > 0.05$ for the Kolmogorov-Smirnov test, and also $p=0.885 > 0.05$ for the Shapiro-Wilk test, which means that our sample follows the normal distribution.

Normality tests

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistics	ddl	Signification	Statistics	ddl	Signification
MoyenneS1_MoyenneS2	,076	57	,200 [*]	,989	57	,885

*. Correction of the signification of Lilliefors

a. Correction of the signification of Lilliefors

Figure 6. Normality test for the difference mean 2 - mean 1

Homogeneity Of Variance Test

So we will apply a test of homogeneity of variances which allows to know that the results are almost equal. From the figure 7 of tests for homogeneity of variance, we can conclude that the homogeneity of variances, or that the homogeneity is equal on the averages of s1 and s2, is present. The value of significance is equal to $0.885 > 0.05$.

Homogeneity of variance test

		Statistics of Levene	ddl1	ddl2	Sig.
means_S1etS2	Based on the mean	.021	1	112	.885
	Based on the median	.281	1	112	.597
	Based on median with adjusted ddl	.281	1	103.677	.597
	Based on the truncated mean	.003	1	112	.953

Figure 7. Test of homogeneity of variance

Paired Samples Test

Then we applied the paired samples test on the results of s1 and s2 presented in figure 8. It is clear from this paired samples test that there is a difference between the means of s1 and s2, and the p value is equal to $0.004 < (\alpha = 0.05)$.

Paired samples test

		Paired differences					t	ddl	Sig. (bilateral)
		Mean	Standard deviation	Mean standard error	Confidence interval of the difference at 95%.				
					Lower	Superior			
Pair 1	Mean2 - mean1	.814035	2.051823	.271771	.269613	1.358457	2.995	56	.004

Figure 8. Paired samples test

Radar Presentation

Which is clear in the Radar presentation presented in Figure 9. The majority of the S1 and S2 peaks are side by side, the curves are identical, and there is convergence between the two values, as shown by the radar

graph.

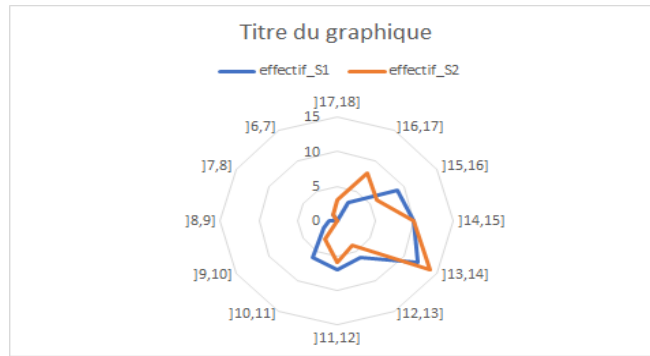


Figure 9. Radar presentation of the results of s1 and s2

Linear Correlation & Regression

Finally, to measure the strength of the link between the s1 and s2 results and analyze the relationship between them, we applied linear correlation and regression in the Figure 10.

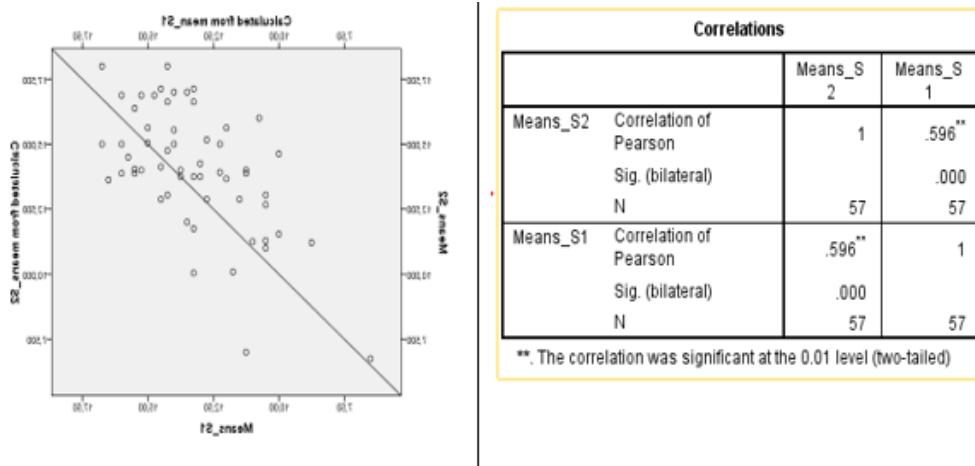


Figure 10. Correlation diagram

The positive linear function that the points create in this scatter plot helps us to notice that there is a strong correlation between the two averages and to observe that the good points remained good in both styles of evaluations and the less good points did the same.

The significance of this correlation table of the s1 and s2 findings is equal to $0.00 < 0.05$, indicating that there is a connection between the two sets of results. Additionally, the correlation coefficient is 59.6%, indicating that there is a substantial

link between s1 and s2, which means that the performance of the hardworking and less hardworking individuals improved slightly.

Additionally, the regression coefficient is significant of mean s2 compared to mean s1 according to the test of the linear regression model in Figure 11, which has a significance of $0.00 < 0.1$. Thus, a linear regression exists.

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Standard error	Bêta		
1					
	(Constant)	5.268	1.618	3.256	.002
	means_S1	.664	.121	5.502	.000

a. Dependent variable: Mean_S2

Figure 11. Linear regression of S2 against S1

DISCUSSION

After all these statistical treatments of the averages of the first semester and the second semester of the ICTE module, we can conclude that the averages of the students remained almost the same between the face-to-face evaluation in S1 and the distance evaluation in S2, and thus the good students remained the good ones and the less good ones idem with a small improvement of performance. On the other hand, at the level of satisfaction of the students by these two modes of evaluation and teaching, most of them agreed with the face-to-face evaluation more than the distance mode because of the unfavorable conditions in technical reasons at the level of connection problem and their rural environments, as well as the presence of the teacher during the exam can help them to better pass their evaluation... On the contrary, there are a number of students who prefer the remote online mode because it is more convenient, it is passed in good conditions and there is nothing to cheat...

On the other hand, both modes have become more necessary for evaluation and even for all teaching practices, especially the severe conditions imposed by nature such as pandemics, and natural disasters. And therefore we are obliged to prepare and integrate technology into our life and our educational system.

CONCLUSION

Following the discovery of the first COVID19 cases, a number of measures were made in an effort to stop the virus's unstoppable spread and to resolve the public health emergency. On Monday, March 16, 2020, Morocco entered a state of sanitary confinement, forcing schools and colleges to close indefinitely. As a way to ensure academic continuity for this year, the Ministry of National Education, Higher Education, and Scientific Research has suggested distant learning. Professors and students were required to complete exams, examinations, and defenses online using systems that facilitated communication, interaction, and the passing of evaluations between teachers and students.

In order to compare the results of the first and second semesters of the ICTE module and identify the impact of information technology and communication on student performance, we conducted this study using a methodology based on descriptive statistics and inferential analysis to examine the evaluation situation during and before the pandemic COVID 19 in the ENS of Tetouan among students pursuing a Bachelor of Education in Secondary Mathematics.

This study demonstrated that there was no difference in the variability of students' scores between the first semester (prior to the pandemic) and the second semester (during the pandemic). There is also a strong correlation between the two scores, with a coefficient of 59.6%, indicating that the brightest students' performance slightly improved. As a result, provided that measures to reduce cheating are followed and that good technical conditions in terms of connection, machine, and the appropriate choice of teaching/learning platform are met, distant assessments have an equal impact on student performance as face-to-face assessments.

REFERENCES

- Agarwala, P., Phadke, S., Tilak, P., & Devare Phadke, S. (2021). Online Exams During COVID-19: Teacher's Perspective. *Turkish Online Journal of Qualitative Inquiry*, 12, 5050-5056.
- Bashitialshaaer, R., Alhendawi, M., & Lassoued, Z. (2021). Obstacle Comparisons to Achieving Distance Learning and Applying Electronic Exams during COVID-19 Pandemic. *Symmetry*, 13(1), 99. <https://doi.org/10.3390/sym13010099>
- G., A. J., & Lipin, R. (2020). Students' Reflections on Pandemic Impacted Chemistry Learning. *Journal of Chemical Education*, 97(9), 3327-3331. <https://doi.org/10.1021/acs.jchemed.0c00613>
- Gonçalves, S. P., Sousa, M. J., & Pereira, F. S. (2020). Distance Learning Perceptions from Higher Education Students—The Case of Portugal. *Education Sciences*, 10(12), Article 12. <https://doi.org/10.3390/educsci10120374>
- HAMDANI, Y. (2021). L'évaluation de l'enseignement à distance par les étudiants dans les universités marocaines au temps du COVID-19 : Expériences et perspectives. *Revue Marocaine de l'Évaluation et de la Recherche Éducative*, 5, Article 5. <https://doi.org/10.48423/IMIST.PRSM/rmere-v0i5.24172>
- Hantem, A. (2020). Les conditions de l'enseignement à distance pendant le confinement dû au COVID19 : Cas de l'enseignement supérieur au Maroc. <https://hal.archives-ouvertes.fr/hal-02883214>
- Leroux, J., Lync. (2017). DISTANCE ASSESSMENT OF KNOWLEDGE AND SKILLS: A PROCESS, AN APPROACH AND RESOURCES TO SUPPORT TEACHERS. 94.