

# An Evaluation of The Most Effective Learning Environments Among Moroccan University Learners: Towards Learning That Is Fit for Digital Natives

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## **Abstract:**

The surrounding conditions of COVID 19 have reconsidered issues vis-à-vis the most effective learning environments, namely online, blended, and face-to-face learning. Today, higher education institutions are in dire need to consider different platforms of learning, especially in light of the new technological revolution and social networking sites (Garison and Vaughan, 2008). Morocco, like many other countries, has faced numerous challenges in terms of the effective use of distance and blended learning environments. Notwithstanding the general satisfaction of decision makers with the experience of these environments, an ongoing scepticism has occupied the attention of many practitioners and researchers regarding the adoption of online and blended learning contexts. This paper purports to shed light on Moroccan university learners' performance in the three learning environments: face-to-face, blended and online. The study therefore compared between six modules: Paragraph writing and Grammar I (which were completely taught online), Composition I and Grammar II (which were taught using blended learning method), and Composition II and Grammar III (which were taught face-to-face). Around 84 students from the Multidisciplinary Faculty of Nador took part in the present study. The one-way ANOVA analysis has revealed that learners' performance in face-to-face learning is the highest, followed by blended and online learning successively. The study concluded with a number of implications for university students, professors and decision makers.

**Keywords:** Blending learning, online learning, face-to-face learning, Moroccan Higher Education, Evaluation

## **Introduction**

In spite of the endless opportunities that information technology (IT) has provided for learners, the real awareness of looking for ways of integrating online and blended learning has been sharpened since the emergence of COVID 19. The status quo has occupied the attention of many stakeholders and researchers stressing the need for improving the learning process through the creation of new learning platforms and environments such as online cooperative learning (e.g. Chen et al., 2006; Aghajani & Adloo, 2018), Blended learning (e.g. Hodgson, 2010; Dias & Diniz, 2012). Hence, the use of distance learning in many countries, as a consequence of COVID 9, has been the central theme of academia in an effort to

enrich the educational landscape with IT-based learning environments such as online and blended learning.

As a result, this paper is an empirical study which seeks to contribute to the growing interest in the adoption of online and blended learning in Moroccan higher education. The rationale of the study can be summarized in two prominent motivations. First, in light of the development of new contemporary learning methods such as flipped classroom, scaffolding and online collaborative learning, there is a persistent need to create and evaluate new learning environments and/or platforms. Second, each learning context is a complex environment of many social and learning challenges. Accordingly, research into the needs of digital natives is of paramount importance. On the basis of the foregoing, this study purports to investigate the most suitable learning environments for Moroccan university students, and to assess their performance in the three learning environments: online, blended, and face-to-face learning. The paper therefore is divided into six main sections. The first section situates this empirical study in its theoretical framework. The second section highlights the methodology adopted, namely participants, procedure, and data analysis. The results of the study and discussion are presented in the third section. The fourth section sheds light on some implications for university students, professors, and decision-makers. Limitations of the study are listed in the last section.

## 1. Literature review

Undoubtedly, the technological revolution has brought a number of opportunities and challenges to the educational scene over the last few decades. This is due to the ever-changing needs of learners and the new changes of the globalised world, which has impacted the processing of communication and information in various ways. For example, the internationalisation of higher education has encouraged the emergence of many distance learning programs worldwide (White, 2003; Naido, 2006). Thus, online learning has been a central aspect in the development of these programs. In line with this, many reflections have reconsidered the use of blended and online learning as opportunities to keep a good balance between traditional and technology-based learning.

Although blended learning is not a new notion, the recognition of the need to restructure courses to suit the demands to this new potential is relatively new (Garrison & Vaughan, 2006). This is due to the fact that electronic learning methods have changed the responsibilities of both students and educators. Instructors, for example, play more effective roles in the virtual world because they must understand the use of synchronous and asynchronous means of engagement, as well as facilitating online work and mastering the use of some IT tools and platforms. As a result, using blended and online learning do not only entail having access to IT technologies, it also necessitates a deep understanding of how to adapt their teaching to the approach being used.

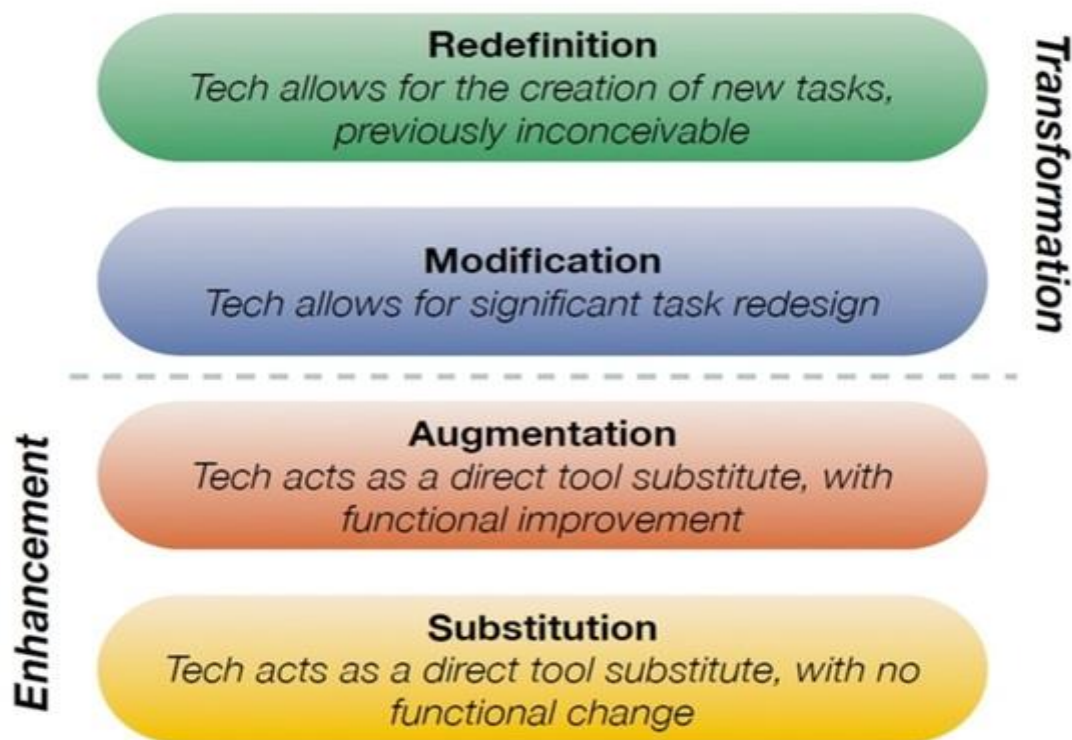
In a similar vein, Kumaravadiveli (2006), in his parameter of particularity, suggests that each learning context is an intertwined terrain of social, economic, and psychological factors, which need to be in line with each particular context and environment. Put differently, though the use of technologies in language learning has been very common worldwide, its implementation can be different based on the challenges and facilities of each learning environment. For instance, digital divide might be an important factor to assess the success of using IT for learning purposes.

Furthermore, the plethora of IT platforms and ICT facilities cannot be considered sufficient for the successful use of technology. However, the tasks given to learners need to be in line with the objective of using technology-based learning. In this respect, Hodgson (2010) points out that “the quality of the

learning experience depends not only on the variety of technologies employed but on learners’ commitment to and engagement with the learning process” (p. 64). In other words, technology is not a panacea, but a learning objective that engage learners in meaningful situations to enhance and improve their learning experience. In this context, Puentedura’s popular model ‘SAMR’ classifies the integration of technology into two major dimensions: enhancement and transformation.

Based on Puentedura’s model (figure 1), the basic level of technology integration is *substitution*. At this level, the use of technology does not extend the learning experience in a meaningful way given that there is a lack of functional change. However, the *augmentation* level enhances more the experience of technology integration in that students have more important roles to play in the exchange of technology-based information. Yet, the more effective integration of technology occurs when students have more active roles to play as IT users, which necessitate redesigning some tasks to fit IT-based objectives. Hence, the *modification* stage changes, to a certain extent, the way learners learn and interact with their instructors. Technology at this point has a direct influence on students’ learning. Puentedura’s highest level of technology integration is *redefinition*. This level is achieved when technology is the direct tool of doing a given task. For example, students might show the use of a statistical software a achieve educational objectives.

**Figure 1: The SAMR Model of Technology Integration Puentedura, Citing Hamilton, Rosenberg and Akcaoglu (2016)**



All in all, blended and online learning necessitate a new understanding in terms of course design, teaching methods, assessment... (Torrise-Steele & Drew, 2013). Additionally, E-learning does not include the use of ICT tools merely, but it requires a critical digital pedagogy in that it needs to target the positive effect of the adopted tools/platforms on students’ performance. However, E-learning remains an important aspect of the process of globalisation, which has turned the world into a ‘global village’.

## 2. Methodology

### 2.1. Participants

The participants of this study were 84 students from the English department at the Multidisciplinary Faculty of Nador. The participant students were first and second year students whose test results were taken from the first, second and third semester. During the first semester, they had classes fully taught online. During the second semester, they had three face-to-face classes and the rest were taught online (blended learning). The third semester was fully taught face-to-face. 72% of the participants were females and 28% were males. In addition, 30 university professors took part in the qualitative part to investigate their perceptions of the challenges and recommendation vis-à-vis the integration of the online dimension in higher education.

### 2.2. Procedure

To gather data on the students' performance in the three learning modes, the list of students was selected to compare their S1, S2 and S3 results. Hence, Paragraph Writing and Grammar I were taught online during the first semester, composition I and Grammar II were taught using blended learning method during the second semester, composition II and Grammar III were taught using face-to-face learning mode.

Concerning the online modules, students had 3 live sessions and 6 videos. In addition, students had more interaction occasions via a Facebook group. After providing feedback to some students individually, the author decided to record a video and share with students the most common mistakes as a form of open class feedback.

Concerning the modules taught with the blended method, students had 3 live videos in addition to the interaction and the constant feedback provided via the Facebook group, they also had 4 face-to-face classes in which we also discussed the online content previously shared with the group.

The modules taught with face-to-face method were very familiar to students as it has been the case for many years.

### 2.3. Data Analysis

One-way ANOVA was used to gather data on the three compared tests. One-way ANOVA is useful when comparing between the means of three groups to investigate if there is any significant difference between their means. In this study, the aim was to compare between the means of students in the three learning environments to get clear insights on how their performance differs when exposed to different learning modes.

Additionally, thematic analysis was used as the method of the qualitative part. This technique is useful when themes are determined in the attitudes expressed by the participants. In this study, many themes of challenges and recommendations of using online learning were marked out.

## 3. Results & Discussion

### 3.1. The qualitative part

As shown in table 1, the modules of writing (paragraph writing, composition I, and composition II) have revealed that the difference between the groups occurs between online and face-to-face modules. For example, the difference between paragraph writing and composition II is highly significant **0.00**. the same remark goes with composition I (blended) and composition II (face-to-face), which marked a significant difference **0.001**. However, online and blended modules do not show any significant

differences. For instance, the difference between composition I (blended) and paragraph writing (online) is **0.6**, which point out that students’ performance in blended and online environments do not differ much.

This is an indication that the relative access to face-to-face interaction in writing modules has positively impacted students’ level. Furthermore, it is crystal clear that both learning environments (blended and online) were very challenging for students as their performance, by and large, was weaker than theirs in face-to-face.

**Table 1: Differences between the three learning methods in writing models**

Multiple Comparisons						
Dependent Variable: score.comp						
LSD						
(I) method2	(J) method2	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
online paragraph writing	blended composition	-,46703	1,06870	<b>,665</b>	-2,6389	1,7048
	face to face composition II	-4,72857*	1,14882	<b>,000</b>	7,0633	2,3939
blended composition I	online paragraph writing	,46703	1,06870	<b>,665</b>	1,7048	2,6389
	face to face composition II	-4,26154*	1,16709	<b>,001</b>	6,6333	1,8897
face to face composition II	online paragraph writing	4,72857*	1,14882	<b>,000</b>	2,3939	7,0633
	blended composition I	4,26154*	1,16709	<b>,001</b>	1,8897	6,6333

\*. The mean difference is significant at the 0.05 level.

Moreover, the lack of training in both online and blended learning environments is a very salient factor. As was mentioned in the literature review, the use of these learning methods requires a new awareness in terms of students’ needs, ways of interaction, assignments, and so forth. The status quo also confirms that the integration of technology is still at the substitution level as was described in the SAMR model. Added to this is the challenge of digital divide, which affects many students in higher education.

Furthermore, the differences between the groups in grammar models have shown relatively the same results (table2). The major differences occurred between face-to-face learning, on the one side, and online and blended learning, on the other side.

**Table 2: Differences between the three learning methods in Grammar models**

Multiple Comparisons						
Dependent Variable: score.grammar						
LSD						
(I) method	(J) method	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
online grammar	Blended grammar	-1,35989	1,53446	<b>,382</b>	-4,4783	1,7585
	face to face grammar II	-3,62143*	1,64950	<b>,035</b>	-6,9736	-,2692
Blended grammar I	online grammar	1,35989	1,53446	<b>,382</b>	-1,7585	4,4783
	face to face grammar II	-2,26154	1,67572	<b>,186</b>	-5,6670	1,1439
face to face grammar II	online grammar	3,62143*	1,64950	<b>,035</b>	,2692	6,9736
	Blended grammar I	2,26154	1,67572	<b>,186</b>	-1,1439	5,6670

\*. The mean difference is significant at the 0.05 level.

For example, the difference between grammar (online) and grammar (blended) is not significant **0.3**, whereas the difference occurs between grammar (online) and grammar (face-to-face) **0.03**. However, it should be noted that the environment factor affects writing skills more than grammatical competence. This is might be due to the fact that students need more guidance regarding writing skills. Unlike grammatical mistakes, which require more technical knowledge about fixed rules, writing skills need constant feedback to improve aspects of coherence and cohesion. Also, writing, as a productive skill, is largely related to students’ reading skills.

Besides, some psychological factors that accompanied the period of the exams during the wide spread of COVID 19 need to be highlighted. The lockdown during COVID 19 students had impacted widely students’ mental strength given that many students had no clear idea about how education could possibly be changed during and after the lockdown. Also, less collaborative work took place during this period and many students did not get the habit of studying individually. Therefore, the issue of different learning styles come to the surface. Added to this is the issue of getting access to some new online platforms for the first time. That is to say, students had no prior experience of blended and online learning though they are widely exposed to many digital contents. In fact, the use of online tools does not presuppose merely the exposure to IT tools, but it requires a lot of training to use it as an educational tool.

**3.2. The qualitative part**

The qualitative part addressed the issue of challenges and recommendations to integration IT in higher education. These two aspects were the central topic discussed with university professors.

The themes that were identified regarding the challenges of integrating IT in Moroccan higher education can be listed as follows:

- ▶ Digital divide
- ▶ IT infrastructure
- ▶ Lack of culture (digital culture)
- ▶ Time: lack of fixed schedule.
- ▶ Training.

Many professors highlighted that the lack of digital culture is a serious hindrance facing the use of digital content. This is mainly related to the lack of seriousness and many confusions revealed by students. Also, logistics and training were seriously impeding the efficient use of IT tools.

### Participant 1:

overall, the experience was challenging because everything happened without prior planning. We had issues with time as we couldn't have a **flexible and fixed schedule** for both students and professors. Also, many students had limited means, and couldn't follow the online mode due to **the lack of IT tools**. I'd also say that **the culture of online learning** is missing. Well, you can say that many students did not take things seriously during the lockdown. Many students also faced challenges in terms of **getting access to the online materials** and the platforms suggested by the institution because of **the lack of training**.

In fact, the shift to distance education is challenging because of the new infrastructure needed for both students and professors. It takes a new paradigm of understanding and adapting to the needs of digital natives.

In this respect, the recommendations highlighted four major themes:

- ▶ Teacher training
- ▶ Awareness towards OL Modes
- ▶ Sophisticated platforms.
- ▶ Developing IT facilities.

The conditions of COVID 19 have accelerated the new demand of new modes of learning in higher education. However, much emphasis on how to prepare the new generations of learners including, say, platforms and IT facilities is on the horizon. Participant 2 refers to these needs in addition to the paramount importance of teaching education in higher education:

### Participant 2:

There is an urgent to invest in **teacher education** to integrate the **new modes** such as blended and online learning. First, we need to understand the nature of each mode, its characteristics, and the needs of each. In addition, I think each university has to create its own resources and provide **well-developed platforms** to enrich these experience (online, blended). There is also a need to invest in tools and logistics to avoid tech-related challenges, and bring a **solid infrastructure** to take the online challenge to another level.

Undoubtedly, the next few decades are critical to the development of distance education in that students mobility and the process of globalisation are still in remarkable growth. As highlighted by the participants, an awareness of the new learning needs and shifts can be central to the development of education in the future. However, this is subject to the effort invested by the stakeholders, practitioners, university professors, and even university students.

#### 4. Implications

The findings obtained paved the ground to highlight a number of implications. First, technology is ever-changing and many methods of learning and teaching are on the horizon. As a result, the need for continuous professional development is of a primary importance given that numerous synchronous and asynchronous platforms are created to meet the changing expectations of learners.

Second, the use of different learning methods indicates that learners display different learning styles. For instance, visual learners feel more comfortable when it comes to the inclusion of effective visual aids. Similarly, kinesthetic learners are energetic and they can remember a lot of details about physical objects and materials. Hence, creating different learning platforms will provide learners with multiple and meaningful learning experiences.

Third, it should be noted that online and blended learning methods are multifaceted. For these methods to be effective, all parties concerned must participate in the planning and implementation of any program. Therefore, stakeholders, university professors, and students all play an effective role in any educational trend.

fourth, online learning presupposes an adequate provision of IT logistics and infrastructure. For example, IT tools need to be available in educational institutions to record videos for students with high quality. Overcoming the challenge of the digital divide (DD) thus is a prerequisite before resorting to online courses.

Last, the attitudes of professors suggest that important decisions need to be taken to avoid lagging behind in terms of IT integration. Therefore, these attitudes support the hypothesis that the education system is still at the substitution level as was described in the SMART model.

#### 5. Limitations of the Study

The shortcomings of this study can be summarized into two major points. First, the inclusion of students from other institutions might yield new variables that can enrich the issue being discussed. Consequently, the findings cannot be generalized. Second, getting deeper insights into blended and online learning environments might need other important dimensions or can be analyzed from other perspectives. For instance, evaluating logistics development predicts the will to use technology-based learning. Also, professors' attitudes are crucial since they are in direct relationship with learners and the challenges they face when it comes to online/blended learning.

#### Conclusion

Although COVID-19 has sharpened the need to resort to online learning environments, it inevitably takes time to plan, evaluate and use distance learning at least as an extended learning opportunity. Today, learners, as digital natives, will encounter endless occasions of learning via the virtual world. This fact puts much emphasis on the role of education in turning the technological experience into a fully beneficial tool of communication and learning. Furthermore, online learning remains an indispensable factor in the envisaged goal of internationalizing Moroccan higher education. As has been expressed by the ministry of higher education over the last years, there is a serious intention to work in collaboration with international universities and institutions to create new learning and teaching experiences. In addition, the assessment of online and blended learning in Moroccan higher education is still at an infant stage, which suggest that numerous perspectives need to be taken into account to provide a full picture for the future of distance education in Morocco.



## References

1. Aghajani, M., & Adloo, M. (2018). The Effect of Online Cooperative Learning on Students' Writing Skills and Attitudes through Telegram Application. *International Journal of Instruction*, V. 11 (3), pp. 433-448. <https://doi.org/10.12973/iji.2018.11330a>
2. Chen, C.C., & Jjinpo, W., & Yang, S.C. (2006). The efficacy of online cooperative learning systems. *Campus-Wide Information Systems*, Vol. 23 Iss 3 pp. 112 – 127
3. Dias, S. B., & Diniz, J. A. (2012). Blended Learning in Higher Education: Different Needs, Different Profiles. *Procedia Computer Science*, 4 pp. 438- 446.
4. Drew, S., & Torissi-Steel, G. (2013). The Literature Landscape of Blended Learning in Higher Education: The Need for Better Understanding of Academic Blended Practice. *International Journal of Academic Development*, V. 18(4). Pp. 371-383. <http://dx.doi.org/10.1080/1360144X.2013.786720>
5. Garrison, D.R., & Vaughan, N.D. (2006). Blended Learning in Higher Education: Framework, Principles, and Guidelines. San Francisco: Jossey-Bass.
6. Gradel, K., & Edson, A. J. (2011). Cooperative Learning: Smart Pedagogy and Tools for Online and Hybrid Courses. *Educational Technology Systems*, V 39(2), pp. 193 – 212. DOI: 10.2190/ET.39.2.i
7. Hamilton, E. R., Rosenberg, J. M., & Akcaoglu, M. (2016). Examining the Substitution Augmentation Modification Redefinition (SAMR) model for technology integration. *Tech Trends*, 60, 433-441. <http://dx.doi.org/10.1007/s11528-016-0091-y>
8. Hodgson, P. (2010). Enhancing Student Learning through Blended Varied Learning and Assessment Experiences. In M. W. N. Eugenia, *Comparative Blended Learning Practices and Environments* (pp.50-69). New York: Information Science Reference.
9. Kumaravadiveli, B. (2006). *Understanding Language Teaching: From Method to Postmethod*. New Jersey: Lawrence Erlbaum Associates.
10. Naido, S. (2006). *E-Learning: Guidebook of Principles, Procedures and Practices*. (2nd ed), Australia, Commonwealth Educational Media Center for Asia
11. Porter, W. W., et al. (2014). Blended Learning in Higher Education: Institutional Adoption and Implementation. *ELSEVIER Computers & Education*, 75, pp. 185-195.
12. Torrissi-Steele, G., & Drew, S. (2013) The literature landscape of blended learning in higher education: the need for better understanding of academic blended practice. *International Journal for Academic Development*, 18:4, 371-383, DOI: 10.1080/1360144X.2013.786720
13. White, C. (2003). *Language in Distance Education*. Cambridge University Press