

The Impact of Online Learning on Students' Achievements A Case Study of Science and Technical Schools of Higher Education

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Abstract

The current research tends to investigate the effect of online learning on students' achievement and performance in classrooms. The pandemic has disrupted teaching and learning system around the world, in general, and Morocco in particular. Electronic learning (e-learning) has become the core method of teaching curriculum during the lockdown. This paper investigates the impact of online learning on students' achievement during the lockdown; Moroccan vocational institutions as a case study. This research attempts to shed light on the perceptions and attitudes toward students' experiences regarding online learning, capacity to assimilate information, targeted skills, and the use of e-learning platforms. The paper also discusses some key challenges of online teaching for instructors and teachers followed by a discussion of the results to enhance the effectiveness of online learning.

Keywords: Online Teaching and Learning, Covid-19, Teachers' and Students' Perception, E-platform, Higher Education.

Introduction

The Coronavirus pandemic has affected the educational systems worldwide and Morocco is of no exception. Considering the primordial importance of lifelong learning especially during the pandemic, online learning has become an essential instrument for learning. Almost all universities have rapidly switched to online learning during the quarantine. After the lockdown period some universities have kept the online learning while others have opted for hybrid learning models, that combine face-to-face learning with an online component, in their teaching to maintain and accommodate diverse need in learning (Artino & Stephens, 2009).

Developed teaching research and learning research have demonstrated that professors and learners are witnessing an unprecedented learning change. According to Asabere (2012), online learning aims to seek changes in the pattern of the whole academic process. The recent change becomes a challenge for educator to support knowledge construction or providing learning context that nurtures student engagement to learning.

I. Theoretical and Background

1. Online Learning Dimensions and Strategies

Online learning could be defined in several ways depending on the contexts and milieu of occurrence. Researchers argued that online learning is a way of teaching in which multiple integration of technology, while some stated that it is a substitute of distance education that could be an effective way of rapid communications (Bertea, 2009). The pandemic forced various universities to suddenly modify their so-called traditional teaching strategies and adopt new technological materials. Almost all the universities did not get enough time to reflect upon the way to implement new strategies and associated technologies to their existing setup (Carroll & Conboy, 2020).

Effective learners employ a wide repertoire of learning and metacognitive strategies to manage their learning tasks (Zimmerman, 1994). These Learning strategies encompass the cognitive approach namely through basic and complex rehearsal, elaboration and organization strategies (Weinstein, 1982) which are ordered in increasing "depth" of processing (Radloff, 1997). Learning strategies also include adaptive techniques such as time management and organizing the learning environment, cue seeking, and help seeking. Finally, metacognitive strategies include planning, monitoring, adapting and evaluating learning and learning outcomes. These strategies are important in learning across all disciplines.

2. Characteristics of Synchronous and Asynchronous E-learning

Synchronous learning method is an environment where the teacher and the students meet online choosing a specific online platform for teaching and discussing the course content. The collaboration between the two has showed us that synchronous learning can have its advantages and disadvantages. As stated by Skylar (2009): "Advantages of using a synchronous learning environment include real time sharing of knowledge and an immediate access to the instructor to ask questions and receive

answers. However, this type of environment requires a set date and time for meeting, and this contradicts the promise of “anytime, anywhere” learning that online courses have traditionally promoted.”

According to Perveen (2016), “Asynchronous environments provide students with readily available material in the form of audio/video lectures, handouts, articles and power point presentations. This material is accessible anytime anywhere.” (p.22) Raymond, Atsumbe, Okwori, & Jebba (2016) gave some examples of online teaching tools “the teacher may decide to deliver his lesson through Videotape, YouTube, Digital Video Disc (DVD) or Podcast while the students can later respond through the use of communication modes like email.”

3. Teaching Methods and Approach Designs

3.1. Instructional Design

According to Siemens (2002), instructional design is the art and science of creating an instructional environment and materials that will bring the learner from the state of not being able to accomplish certain tasks to the state of being able to accomplish those tasks.

3.2. Constructivism Design

Constructivism design asserts that learning is particularly effective when constructing something for others to experience. This can be anything from a spoken sentence or internet posting, to more complex things like a painting or a presentation. For instance, it is mentioned in the dissertation of Stern that one might read this page several times and still forget it by tomorrow but if that person was asked to explain these ideas to someone else in his or her own words, or produce a slideshow that explained these concepts, one would gain a deeper understanding that is more integrated into his or her own ideas.

3.3. Collaboration Design

As an instructor, you focus on the experiences that would best generate learning from the learner's point of view, rather than just cascading and assessing the information you think they need to know. Each participant in a course can and should be a teacher as well as a learner. Your job changes from being the sole source of knowledge, to being a guide and role model. You connect with students in ways that address their own learning needs by moderating discussions and activities in a way that collectively leads students towards the larger learning goals of the class (Joshua Stern, n.d)

4. E-Learning Platforms Challenges and Perceptions

Internet technologies facilitate the distribution of content at the same time, to a large number of users; e-learning platforms offer many advantages to learners such as control over the content, control over the time spent learning, and thus the process can be adapted according to the learner needs and objectives of learning.

E-learning might enhance the learning process for students (Claudiu Coman et al., 2020). E-learning platforms could evoke some obstacles for the students such as: delayed feedback, low interaction, low motivation, technical problems and self-isolation. (Claudio Coman et al., 2020)

This might happen due to the lack of teachers' experience in using E-learning and due to the short time in which they had to adapt their teaching style to the new conditions. Relevant in this way are the results of a study conducted by School Education Gateway at the beginning of the pandemic that showed that 66.9% of respondents affirmed that they used online platforms for teaching for the first time. Thus, it can be inferred that students and teachers were not ready for an entirely online experience (Claudiu Coman et al., 2020)

II. Methodology

The current study tended to investigate the impact of online learning on students' academic performance. It also discussed the professors' perception and point of view regarding online teaching. In this regard, this paper adopted a mixed method to collect quantitative and qualitative data, the data collected attempted to explore students' attitudes toward the online learning; assimilating information, acquired skills and the use of the platform in their learning contexts.

III. Sampling

This paper used closed- ended questionnaires that were distributed to 250 students and structured interviews for 30 professors from different vocational institutions of

higher education namely; the Higher Normal School of Technical Education of Mohamadia, Hassan II University Mohammedia; Hassan II Higher Institute of Agronomy and veterinary Medicine, Rabat; Faculty of Sciences and Techniques of Tangier, Abdelmalik Essaidi Tangier; Higher School of Technology of Essaouira-Cadi Ayyad University Marrakech.

The questionnaires received were 110 males and 140 females from different vocational institutions of higher education. This type of questionnaire was used to collect numerical data to identify students' attitudes and standpoints regarding online learning and its impact on their academic performances. The interviews were used to get qualitative data to mainly explore the teachers' perception of online teaching and what measures and recommendations could be implemented to improve the effectiveness of online teaching practices.

IV. Data Interpretation and Analysis

1- Merits and Demerits of Online learning

Figure 1 and 2 showed the impact of online learning on the students' academic performance. The majority of students approved many disadvantages of online learning as illustration: low interaction with the teacher, technical problems, challenging conditions at home, lack of self-discipline and few extra-curriculum activities. Nevertheless, online learning may have a positive impact for some other students such as; accessing online materials, learning on your pace, ability to record the class, and time flexibility.

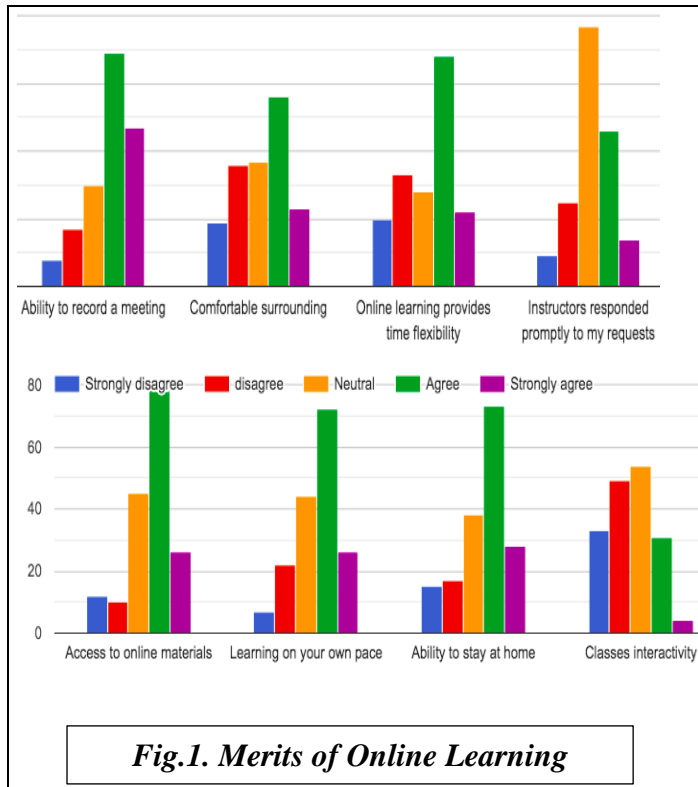


Fig.1. Merits of Online Learning

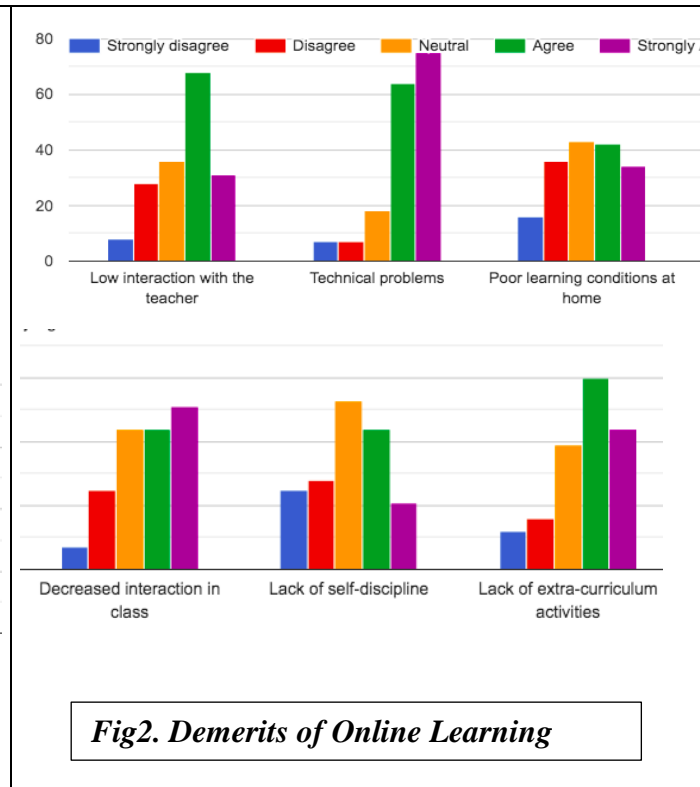


Fig.2. Demerits of Online Learning

2- The Effectiveness of Online Learning in Mastering Learning Objectives

This section tended to investigate the effectiveness of online learning in mastering learning objectives. It has been noticed that most students agree that online learning helped them increase their knowledge and understand the course content very well. However, students approved that online learning has decreased their social competences and social activity. They felt passive and not fully engaged in the social community as they used to be in the face to face learning.

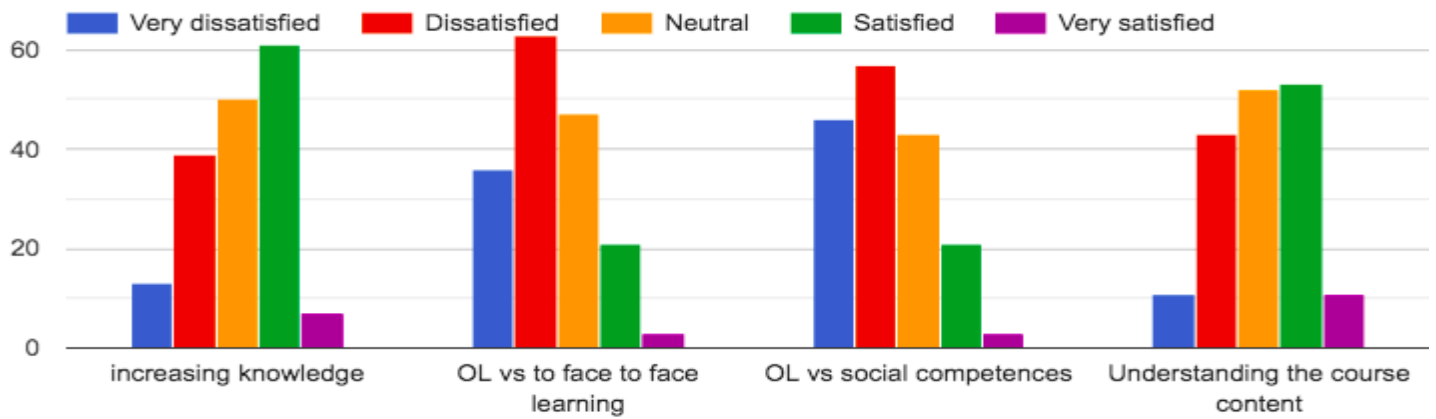


Fig.3. The Effectiveness of Online Learning in Mastering Learning Objectives

3- Online Learning Teaching Modes

The graph showed that most online teaching activities implemented in classes were text information, power point lessons, analytical tasks, problem-solving, research project tasks assigned as group work activity. Nevertheless, activities such as: debate, discussion, conflict and management activities were rarely integrated in online classes.

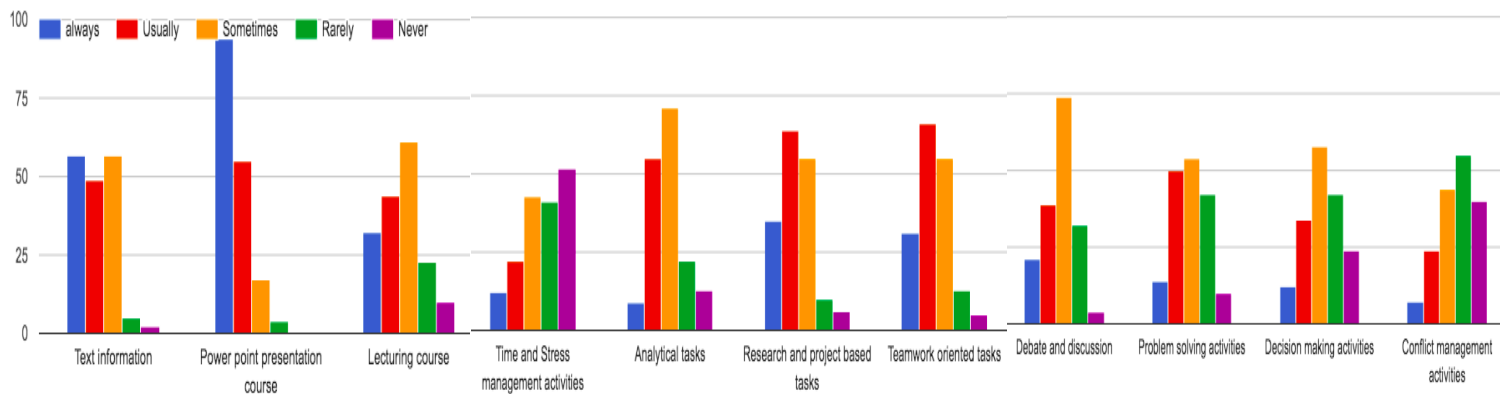


Fig.4. Basic Online Learning Teaching Modes

4- Students' Learning Preferences

The findings showed that students approved some learning preferences that are more important and effective for them as an example: Time and stress management activities, conflict management, teamwork, interaction and speaking, and decision-making activities. 21st century skills are very crucial abilities to boost their academic performance and to prepare them integrate the job market.

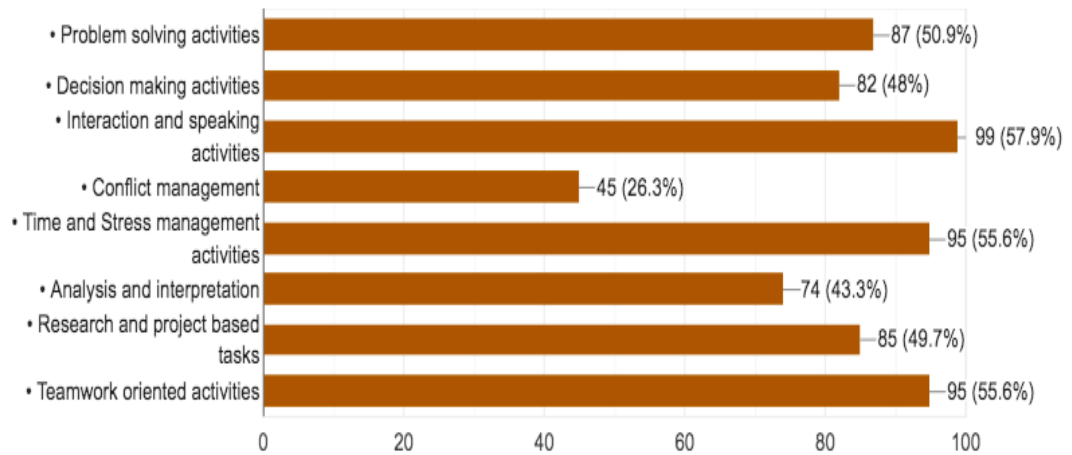
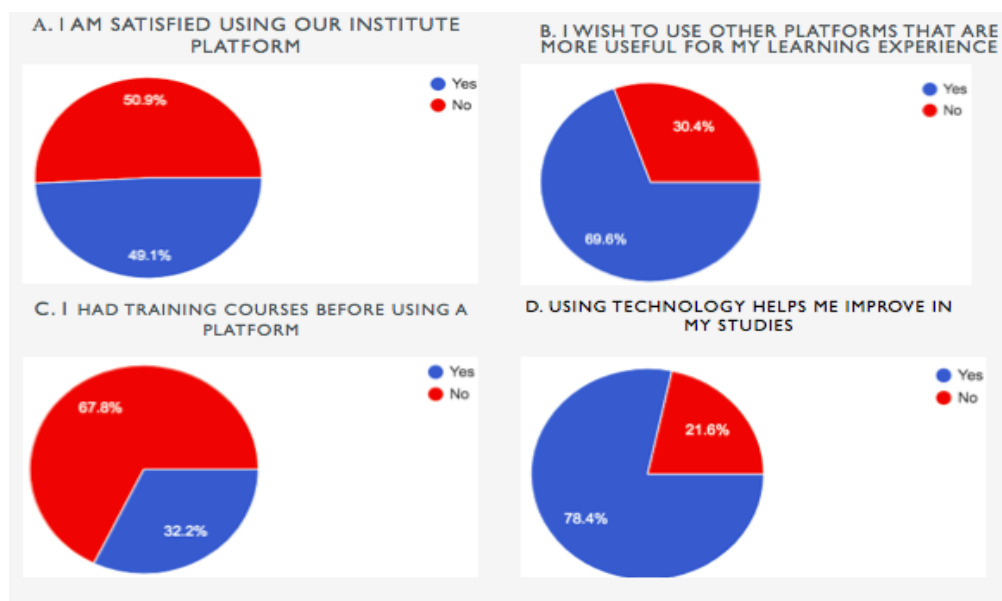


Fig.5 Learning Preferences

5. The Use of E-learning Platforms: Perspectives and Perceptions

The findings showed the students’ opinions and attitudes toward the use of technologies and e-platforms in online learning context. Students approved a neutral attitude concerning the use of the institute’s platform. In addition, 69% of students wished to use other online platforms that can be more useful for their learning environment. Many students asserted that they did not have enough training courses to use educational platforms; therefore, students are not familiar and confident enough to use them. It has been noticed that, in general, technology helped students become autonomous learners and has improved to some extent their academic performance.



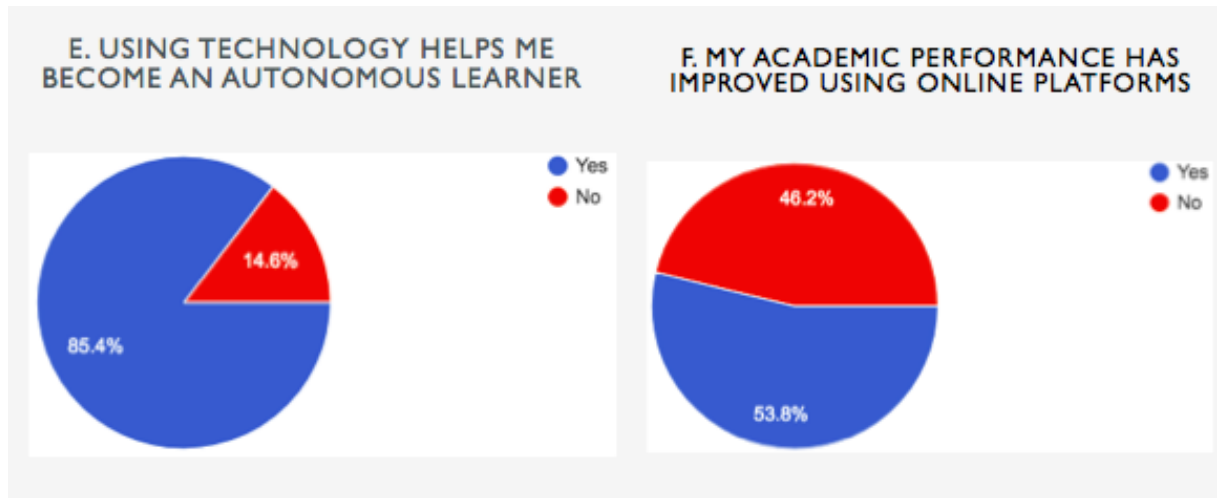


Fig.6 E-learning Platforms

V. Interviews: Opinions and Attitudes

After gathering the responses of the interviewees, all answers were categorized into themes and analyzed in order to respond to the second research question that is to explore the teachers' experience of online learning context and to offer some solutions and recommendation to improve the effectiveness of online teaching practices.

This paper identified four important themes that most professors have emphasized on; the instructors' teaching experience, the use of the platform, teaching methods, target-oriented activities in online context, and finally listing some suggestions and recommendations for a better education quality.

1. Teaching Experience in Online Context

Most teachers and instructors agreed that online teaching was a big challenge for them and completely different from the face to face context. The majority of teachers pointed that online teaching necessitates lot of hard work, preparation and training. Generally speaking, some teachers asserted that most of their objective courses were communicated; however, low interactivity and motivation were quite remarkable behaviors in the online teaching context. Some of the teachers claimed: "Generally, all the course objectives were achieved but low interactivity is highly dominant in the online teaching-learning context".

All teachers approved that professional development programs, workshops and training are mandatory for staff educators and for the students in order to improve the effectiveness of online learning context. All teachers pointed that information technology and e-learning educational trainings are needed to enable teachers face the challenges of the online and even the blended learning context.

2- The Impact of Online Learning on Students

The majority of teachers asserted that online learning was not a positive experience for the students. Most students were not satisfied and approved low feedback and interactivity. The overall impact was negative due to many variables such as:

- Low internet access
- The use of the platform was challenging
- Internal and external challenging conditions
- Lack of digital technologies
- Low motivation and enthusiasm
- Adaptation issues

Nevertheless, some teachers approved that the institutions that opted for the hybrid learning or blended learning context displayed a positive impact. According to teachers, the majority of students asserted satisfying performances and managed to work effectively in class and at the same time students' autonomy and independency increased through assigned online research and project based activities.

3. The Usefulness of the Platforms

According to the professors interviewed, the synchronous method supports, and encourages communication between students and their instructors and pushes the learners to ask questions in real-time. In addition, the asynchronous method is also an effective learning strategy that boosts the students' autonomy and encourages them to actively participate in their own learning environment by giving them the opportunity to interact, and work with their peers, get feedback, and reflect on the status of their personal learning goals and outcomes. Teachers think that assigning reflective and analytical tasks help students create, synthesize, explain, and apply the content or skills that have being taught in class.

4- Effective Teaching Techniques and Target Skills

Generally, all teachers haven't received enough professional trainings and tutorials before engaging them into the online teaching context. Instructors made personal efforts to learn and use the platforms for their courses. Some teachers approved that the professional trainings given in the beginning were not enough to grasp effectively the technical side of it.

In addition, the majority of teachers did not clarify clearly their opinions and standpoints regarding the question of the teaching techniques and activities that could be effectively used in the online context. Some teachers used words as "probably" and "maybe", which show an indecisive and doubtful attitude or behavior regarding this matter. Some teachers suggested that lecturing and academic theories could be suitable techniques for online learning. Others think that sharing videos, games and asynchronous assignments are appropriate modes to improve students' autonomy and enthusiasm.

Teachers asserted that teaching online is very different from the face to face contact; therefore, skills and target abilities should be adopted and adapted accordingly. Instructors approve that group work, communication and content analysis could be effective oriented activities to develop, and enhance the students' academic performance.

5- Enhancing the Effectiveness of Online Learning

Last but not least, many professors pointed lot of recommendations and suggestions to improve the teaching and learning quality for both instructors and students. The majority of professors pointed the following tips to improve the effectiveness of online teaching-learning practices which are:

- Providing a good connection and appropriate IT equipment
- Boosting students with project based activities and research
- Programming continuous workshops and trainings to use platforms for students and teachers
- Preparing power points slides for students to review the course content
- Adopting innovative online teaching tools and techniques from time to time.

VI. Conclusion

In order to enhance the quality of online instruction, faculty members and teachers need to be adequately trained to assure an effective online teaching. As we clarify what quality instruction looks like from the perspective of faculty, staff, and administrator who experienced online education along with output from online students, we need to mobilize more training on the competencies associated with quality instruction into a comprehensive and effective faculty development programs.

It is worth mentioning that needs assessment and analysis could play a crucial role since it determines the kind of instructions required by defining the need. This is often referred to as identifying a gap in knowledge or performance. Needs assessment also determines whether an instructional method is what is required to address the gap or not.

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