

New Educational Concept in Higher Education: Tutorials

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Abstract

The German philosopher Rudolf Steiner identified Self-learning and teaching students how to learn by themselves as a main concept in education in the last century (Steiner, 1953). Today, one of the consequences of the Covid Pandemic is also contributed to this idea and has changed our way of thinking. As a concrete example, the International University of Applied Sciences in Germany, has decided to replace regular campus courses with tutorials in bachelor and master studies. Instead of teaching three hours for 15 weeks for a bachelor or master course, the university offers the same course as a tutorial where students and professors come together in six three-hours meetings. The main reason behind this change is to improve the self-learning skills of the students in higher education. Students are expected to independently learn the topics through educational materials like online books or other learning tools provided by the university or from the library and also online learning platforms like YouTube, before the tutorials and discuss their questions with tutors in these tutorial hours. The aim of this study is to compare students learning behaviors between campus courses and this new type of tutorials. The students of Business Mathematics Course, two groups from regular studies (Winter Semester 2021 and Sommer Semester 2022) and two groups from tutorials (Sommer Semester 2022), joined a survey and through T-Test their learning methods will be analyzed and compared in this study. The study will finish in Fall 2022 and the results will be published in Winter 2022.

Keywords: Self Learning, Higher Education, Tutorials, Quantitative Research Methods

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1. Introduction

As previous research has shown, despite globalization, the German Higher Education System has retained its traditional Humboldtian structure and is based on the tripartite pillars of research-based Universities, business-oriented University of Applied Sciences (so-called *Fachhochschule* or *FHs* in German) and Universities of the Arts (Altin, 2015, p.15). On the other hand, especially with the establishment of the European Union, German universities have closely followed all developments in the world and as seen in the Covid pandemic, have updated their own operations in line with these developments.

In this context, the changes in the higher education structure of the International University of Applied Sciences (IU), which is itself a private German business-oriented university, give an idea of how higher education can change in the modern world. Founded in 1998 in Bad Honnef, Germany, IU has become one of the largest universities in Germany with over one hundred thousand students, especially through offering distance education and dual university education that offers parallel university education with professional work since 2013. Today IU offers around 200 Bachelor's, Master's and MBA Degree Programs both in English and German.

In this context, IU's growth can be attributed to the pursuit of modern educational methods and effective management. First and foremost, the university library has been able to provide its students with the most up-to-date works and a vast online content through agreements with other universities and libraries. In addition to this, each of the lectures is transformed into a module and these modules are supported by university professors with online books, quizzes and other online resources. This system, strengthened by online/digital platforms such as MyCampus, Care and Teams, has transformed the higher education courses into a system where students can access the content of the courses they will take at the university in a very easy and user-friendly way.

In order to make more effective use of these modern services and to better prepare students for life and the business world, IU has reduced the number of university course hours by two-thirds and centralized university exams, and for the last two years has been pushing students to learn more on their own. In this new Tutorial concept, professors do not so much teach the courses, instead they guide the students to learn them on their own.

The focus of this study is to examine the learning behavior of university students during this change and to compare how successful this strategy has been achieved in the field. In this context, the research question of this study is whether the learning habits of students are changing within the developing technological possibilities and different services that universities offer to their students. For example, how much do students use online documents provided by the university, YouTube or other social media platforms in their university courses? The framework of this study consists of studying hours, using YouTube or other social media, using online documents provided by the university, visiting the library, conducting group work with friends, using learning materials recommended by the lecturer and private courses offered by some other external sources. Similarly, the success rate of students is also compared in this study. In addition, to what extent does changing the way the university teaches, in this case reducing the number of course hours, encourage students to use these other learning methods and motivate their self-learning.

2. Methods

In this study, in addition to content analysis, a quantitative research method was selected in the field study to compare two different type of students who take the same course, which is Business Mathematics, in different ways. The most important reason for choosing this method is that the research question is based on a comparison of the former, or old, and current, or new type of learning and studying a Bachelor course and the results of the research should be generalizable (Hair J.F., Celsi M., Money A., Samouel P. & Page M., 2016). In addition, the Business Mathematics course was chosen for this study because it is both a large course, compulsory for 12 Bachelor's degrees, and one of the most difficult courses with the lowest success rate, with a 50% exam attendance rate and 25% passing rate, which is a nightmare for many students.

In the sampling part, there are two types of students who contributed to this study. The first group, which we will characterize as group A, took the course in the former, traditional way in the winter and summer semester of 2021 and are the last students to take this course with this old-style teaching system. This group attended three-hour lectures weekly for 15 weeks and at the end of the semester took a nine-question written exam prepared by the professor of the course.

On the other hand, the second group, group B, which we can call the test group, took the course in 2022 with the new system called Tutorial and were the first students of this new type of education. Accordingly, this group only visited this course for three hours a week for six weeks and took the exam that consisted of 15 multiple choice questions and five open-ended questions which is prepared by the university as a central exam.

Both groups were informed by e-mail after the lessons and asked to answer the questions sent by the researcher. In this context, 36 students from group A and 80 students from group B were e-mailed, and the answers of the first 25 students who returned from these students were selected for the research. Table 1 below shows this procedure visually.

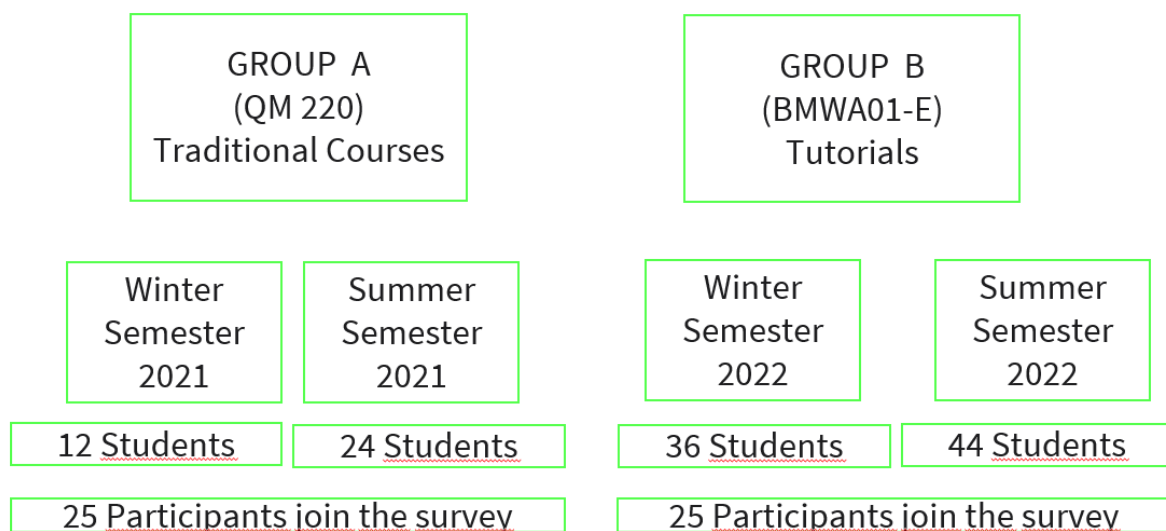


Table 1. Participants of the Field Study

In the data collection part, the available data was collected by questionnaire method and 13 questions were sent to the participants. Respondents were asked to answer these questions on a scale of 1 (the lowest) to 5 (the highest). Below is an example of one of these questions.

I studied in the library every week

- a) Less than an hour
- b) 1 hour
- c) 2 hours
- d) 3 hours
- e) More than 3 hours

In the data analysis part, the Students T Test method was used. This is because we are questioning whether the means of two groups of respondents on in learning behaviors in Bachelor course are different or not. In this case the students in this study were normally distributed (Saunders M., Lewis P. & Thornhill A., 2016, p.543) and this method gives very reliable results, especially in studies with more than 25 participants (Hair J.F., Celsi M., Money A., Samouel P. & Page M., 2016). DATAtab.net website is used to analyze the data that was collected in the field study, which has a professional and user-friendly structure for this type of research. In this study, the level of significance is chosen as 5% and the two-tailed test is used which is an accepted standard in this type of analysis. For visual clarity, this article uses boxplots obtained in the data analysis section, which are popular in quantitative studies (Bryaman and Bell, 2011, p. 350).

In general, objectivity, reliability and validity are shown as the main research criteria in quantitative research methods (Bryman, 2008, p. 148). In this study, attention was paid to these three criteria. The researcher approached the subject from the outside in an impartial manner and did not have any prejudices about the subject he/she researched. In addition, the questionnaire was examined by other experts and applied in the field with minor modifications, so it was reliable research. The same questionnaire can be applied in similar other studies. In addition to all these aspects, one of the most important limitations of this research is that it is limited to a single course. Due to time constraints and accessibility problems, other courses could not be examined and this research was conducted only on Business Mathematics course students. On the other hand, since the selected course is one of the most important and difficult bachelor's courses, it can be said that similar results can be obtained in other courses.

3. Results

As can be expected, this new method of teaching with Tutorials and motivating or forcing students to learn on their own has brought controversy with it. In this context, the results of the research conducted in this study can be summarized under three main headings, namely: Changes in student learning habits, what remains the same and the effect of the changing system on student achievement.

3.1 Basic Differences between Old and New Type of Learning

When we analyze the responses of these two groups on learning methods, we observe that the two groups differ on four main issues.

(a) Working Hours of the Students

As expected, one of the main differences was that group B students who took Tutorial type courses worked more than group A students. As can be seen in Figure 1 below, group B students who had fewer course hours with the instructor needed to study more in order to fully understand the lessons in the curriculum.

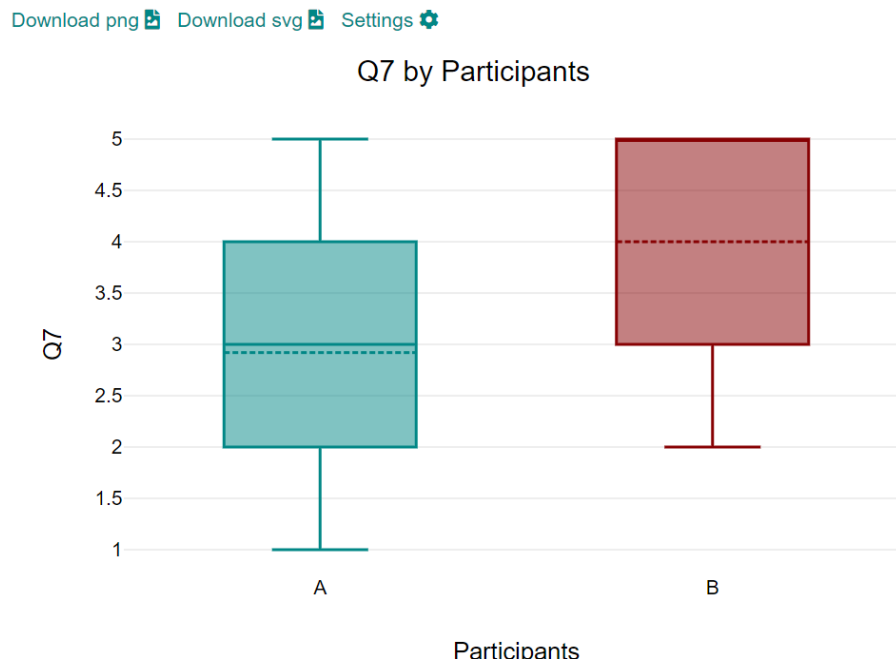


Figure 1.

In this, the questions grouped as Q7 are about how many hours the students studied during the semester and before the exam for this course. A two-tailed t-test for independent samples (equal variances assumed) showed that the difference between group A and B with respect to the dependent variable Q7 was statistically significant, $t(48) = -3.12, p = .003$, 95% confidence interval $[-1.78, -0.38]$.

In fact, it is natural to see this result, because each lesson has a time frame in which students need to work in order to understand it. Therefore, students with fewer lessons try to make up the difference by studying more on their own. How adequate and effective this self-study is, is the subject of other studies, but in conclusion, it is easy to say that this new Tutorial type of university education has been successful in encouraging students to learn on their own.

(b) Online Sources Provided by the University

The second significant difference between these two groups was observed in terms of interest in the course documents offered by the university. Accordingly, group A students who participate in the traditional type of education are less interested in these documents, while group B students who take part in a Tutorial type of education are more interested in these documents. The responses of the two groups are visualized in Figure 2 below.

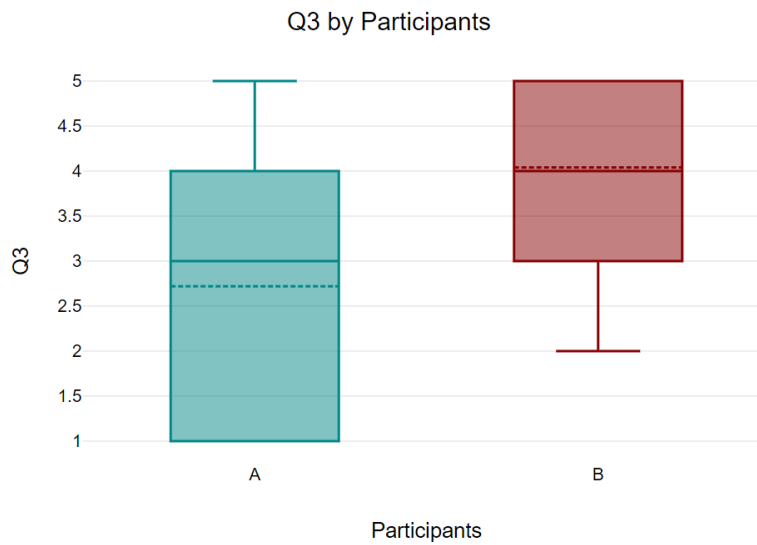


Figure 2.

In this figure, the questions grouped as Q3 are about how many hours the students studied the documents provided by IU during the semester and before the exam for this course. A two-tailed t-test for independent samples (equal variances assumed) showed that the difference between A and B with respect to the dependent variable Q3 was statistically significant, $t(48) = -3.53$, $p = .001$, 95% confidence interval $[-2.07, -0.57]$.

In this part, it is of great importance who prepares the passing exam. Since students taking courses in the new Tutorial system will take a centralized exam prepared by the university, the main opinion among group B students is that the primary course document is the resources provided by the university. Group A students, on the other hand, studied these documents less, probably because they knew that the professor would prepare the exam. In particular, the course professor did not find these documents sufficient and recommended other sources to the students. As a result of this we could say that unlike traditional courses which are professor based, the new Tutorial courses are more central or university-based courses.

(c) Using Other Sources

Another striking difference is the use of other resources. It was observed that all other search engines, especially Google, or other sources related to the topics of the course were used more frequently by Group B students. This is illustrated in Figure 3 below:

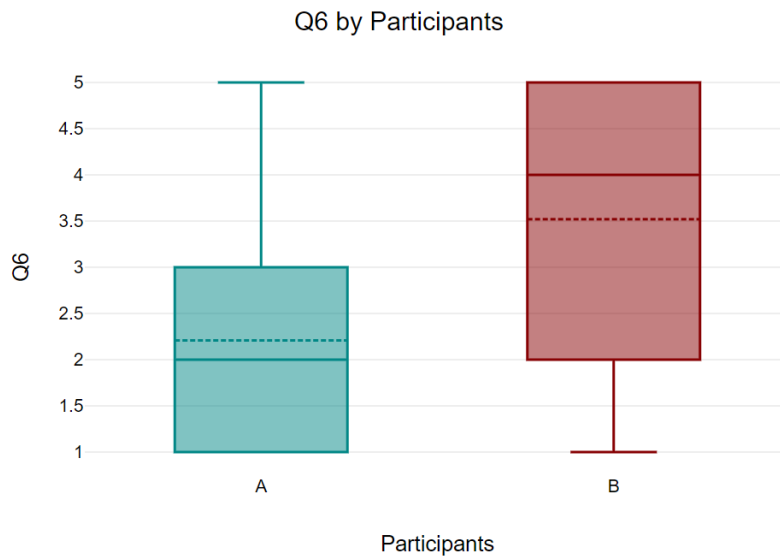


Figure 3.

In this figure, the questions grouped as Q6 are about how many hours the students studied the documents provided by other sources during the semester and before the exam for this course. A two-tailed t-test for independent samples (equal variances assumed) showed that the difference between group A and group B with respect to the dependent variable Q6 was statistically significant, $t(47) = -3.35$, $p = .002$, 95% confidence interval $[-2.1, -0.52]$.

The main reason for this result is that students taking Tutorial type courses do not know what kind of exam questions they are going to face. Besides, there are fewer examples in online sources provided by the university and therefore students searched for more documents to fulfill this gap. In contrast, group A students learn about the professor and the way he/she asks questions from previous semester students and do not need to look for other sources.

(d) Sources Recommended by the Lecturers

Contrary to expectations, it was observed that the course documents and worksheets shared with the students by the professor of the course were used more by Group B students. Figure 4 below shows this difference very clearly.

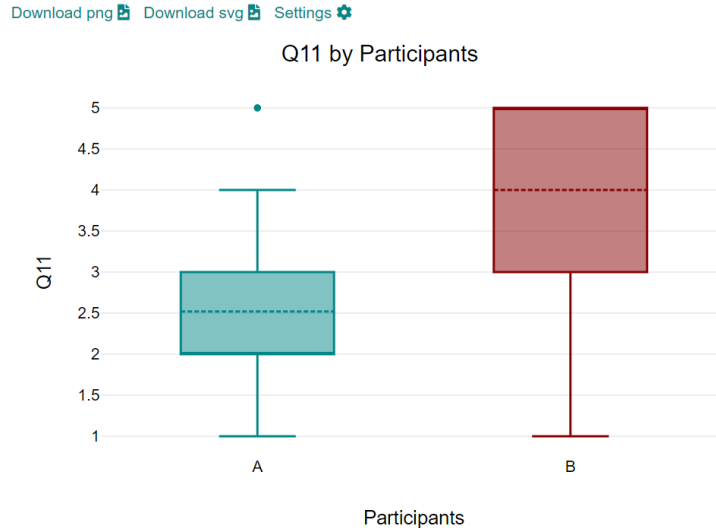


Figure 4.

In this figure, the questions grouped as Q11 are about how many hours the students studied the documents recommended or provided by the lecturers during the semester and before the exam for this course. A two-tailed t-test for independent samples (equal variances assumed) showed that the difference between group A and B with respect to the dependent variable Q11 was statistically significant, $t(48) = -3.73$, $p = <.001$, 95% confidence interval $[-2.28, -0.68]$.

There could be two reasons behind this unexpected result. The first is that students who spend less time with their professors may value their words more and their advice more. The second reason is that students who take courses in this new type of Tutorials feel vulnerable and weak in terms of their studies and are open more to advice or additional learning documents that will support and strengthen them in this area.

3.2 The Unchanging Aspects of these two Teaching Methods

In addition to the above-mentioned differences, the results of the research revealed that there are issues that do not constitute a difference between in these two groups. For example, in Figure 5 below, Q9 represents the questions related with the library use of the two groups of students:

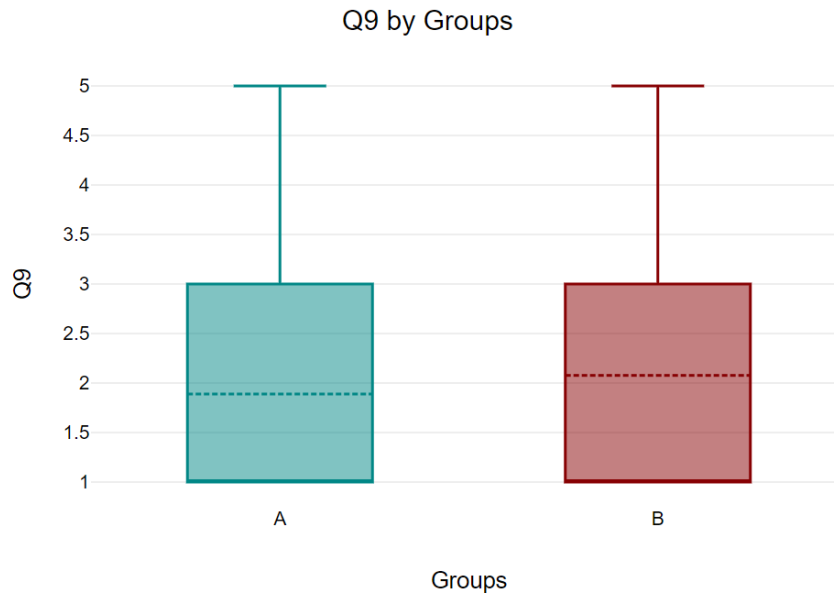


Figure 5.

A two-tailed t-test for independent samples (equal variances assumed) showed that the difference between group A and B with respect to the dependent variable Q9 was not statistically significant, $t(29) = -0.36, p = .719$, 95% confidence interval $[-1.25, 0.87]$. Similar results were found for the use of YouTube and social media, group work and external private tutoring. Since it would be redundant to present similar figures again here, it would be useful to put them aside and think about why there is no change in these areas.

The first thing we can say here is that these are the issues that are related to the social life of students and the system change has little or no impact on social life at this point. For example, if a student likes to study alone at home, we can change the system as much as we want, but it will have little or no effect on his/her social life or going to the library or participating in group work as needed.

In addition to this, unfortunately students use YouTube and other social media for entertainment purposes only and are not aware of the educational aspect of these platforms. They need more guidance in this regard. Finally, it was observed that students are not interested in taking private lessons during their university life.

3.3 Success Rate of the Students in these two Groups

In this part of the research, the Examination Office was contacted and with their help, the first exams of the students who took this Business Mathematics course were compared. As can be seen in Figure 6 below, the results are similar between group A and group B.

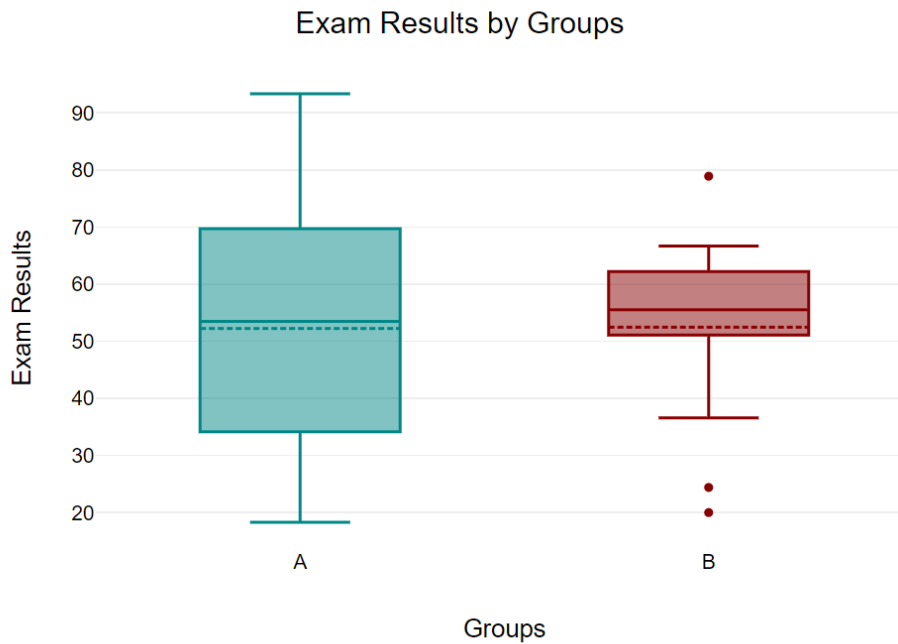


Figure 6.

A two-tailed t-test for independent samples (equal variances assumed) showed that the difference between group A and B with respect to the dependent variable first attempt Exam Results was not statistically significant, $t(28.89) = -0.62, p = .543$, 95% confidence interval $[-19.94, 10.71]$.

Although there are students in both groups with very good and very bad grades, the majority are in the middle and a normal distribution emerges. The only noticeable difference is that the distribution of the grades of Group A students who took the traditional type of course (between 35 and 70 out of 100) is more widespread than the distribution of Group B students (between 50 and 65 out of 100). The probable reason for this may be that most of the questions for Group B students were multiple choice and the student either received full points or no points at all. On the other hand, group A students may not answer the question completely, but may still score points for it and their score may be spread over a wider area. But in conclusion, it can be easily said that the system change has no effect on the success rate of the students.

4. Conclusion

As can be seen, many recent developments, like artificial intelligence, are affecting university education and a new university education system centered on self-learning is emerging. How useful these new developments are and how much they will improve the quality of university education will be observed over time. However, it is clear that in today's world interest in higher education is increasing rapidly and traditional teaching methods are both expensive and difficult to implement with a large number of students. On the other hand, it can be easily said that Tutorial type higher education teaching methods are more flexible, motivating students to self-learning and more profitable for the universities which is why it is expected that these types of applications will be more popular among universities. The most critical points are for this change or transformation to be more accurate and for universities to fulfill

this change without compromising quality. In this context, three crucial points that this research shows is that the quality of the educational documents that universities provide to students should be high. In addition, students, especially at a young age, need proper guidance on how to learn the course material on their own. Finally, all other social media platforms, especially YouTube, and external learning channels should be promoted to university students, otherwise these opportunities are just for entertainment purposes in the eyes of students. The increase of such new applications and further studies on the subject will reveal additional different aspects of this topic and give us a vision of how Higher Education will evolve in the future.

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