



## APPLICATION OF AUDIOVISUAL RESOURCES IN UNIVERSITY STUDENTS IN RURAL AREAS

SANDRA SALAZAR-PALOMINO<sup>1</sup>, YERSI LUIS HUAMÁN ROMANÍ<sup>2</sup>, DAVID SZCZCPANSKY-GROBAS<sup>2</sup>, ALDO ALARCÓN-SUCASACA<sup>2</sup>

<sup>1</sup> Universidad Nacional Micaela Bastidas, Perú

<sup>2</sup> Universidad Nacional Amazónica de Madre de Dios, Perú

---

### KEYWORDS

*Traditional apprenticeship  
E-learning  
Motivation  
Working groups  
Hybrid learning*

### ABSTRACT

*The preference for paper-based learning (traditional) or audio-visual learning (electronic) brought about hybrid learning whose preference among students is much greater due to the interaction with digital and audio-visual media. The general objective is to analyze and describe the experiences of university students on paper-based learning called traditional and audio-visual learning called e-learning, for which a quantitative descriptive and correlational methodology was used with a measurement instrument through an anonymous and voluntary survey with 1240 participants. The results have acceptable statistics and are demonstrated with the confirmatory factor analysis, showing the preference for hybrid learning. Conclusion, students request that universities implement this methodology (hybrid) to work properly and have a quality education in the future.*

---

Received: 28/ 01 / 2024

Accepted: 15/ 03 / 2024

## 1. Introduction

The teaching in universities is based on traditional methods (use of paper) of interaction within the classroom, but with the arrival of covid-19 there was a transition of these educational models (Alam et al., 2023), a transition that not only concerned universities but also at the national level showing the current situation in which the university education system is (Mardini & Mah'd, 2022), especially Peruvian universities, which despite having a supervised educational system there are shortcomings (Marín-Marín et al., 2022). On the other hand, this transition served to detect some shortcomings in the proper functioning of learning and thus to explore and use new alternatives that contribute to the professional training of our students through audiovisual learning or known as e-learning (Jabir & Falih, 2022).

In classrooms paradigms are maintained and in the course of time, location and the student's own pace of learning remain active (Vyas, 2022), being this model of passive learning that required a demand for more active learning and not simply based on instruction (Singhal et al., 2021), currently many countries still prefer this traditional teaching (Oda et al., 2022), but with the advent of Covid-19 this traditional system changed and the need arose to digitize education, not only in digital learning but also in audiovisual learning (Mahendra et al., 2022), in academic institutions virtual and/or audiovisual teaching replaced face-to-face or traditional teaching worldwide (Alam et al., 2021), quickly becoming preferred by many institutions especially in higher education (Abuhassna et al., 2022), being necessary to examine in detail the new trends, interests and the variety of applications offered by e-learning, virtual learning and/or audiovisual learning (Gurcan et al., 2022), but also with the advent of virtual learning students achieved greater independence in the acquisition of information and knowledge due to how effective and innovative (Abhirami & Devi, 2021) digital competencies are and even more so with the use of ICT for teaching-learning (Huamán-Romaní et al., 2022a).

While e-learning has been a very important tool during the confinement in which there were various problems and challenges for its development including those focused on the university student were overcome by the use of ICT (Alqahtani & Nadeem, 2021), from home the student could work together with the educational institutions showing progress in online learning while the world was trying to find a cure for Covid-19 (Durodolu et al., 2022), online learning was gaining a lot of popularity in the e-learning system and at the same time required the student to have more attitude, willingness and motivation as part of the learning strategy and the students themselves were required to have audiovisual review (Wang et al., 2021), which was known as the new normal during confinement (Masa'deh et al., 2022), normality accepted in higher education institutions despite the cultural diversity and language difficulties in which many technical and organizational skills were needed during the academic development (Sanusi, 2022), but not only the student adopted new ways of learning but the teacher was also forced to seek new teaching methodologies for the student to be more independent in their learning (Blaschke, 2021).

The use of technologies during e-learning, digital teaching and/or audiovisual teaching was carried online where in which provided the same levels of skills and knowledge of a traditional learning (Milićević et al., 2021), while this transition was forced for the digitization of education at all levels was because of the covid-19 (Agarkov et al., 2021), thus witnessing the global revolution in terms of information in education (Sokout & Usagawa, 2021), giving way to platforms that replaced traditional learning incorporating new applications for learning and making it a more attractive way for the student (Sruthi et al., 2020), along with these innovations long-range informal communications were observed propitiating an online life and with it a personal and individual conviction to determine whether or not certain platforms deserve to be used (Sharma & Jarikre, 2020).

Due to the limited time in a classroom, digital, electronic tools and audiovisual resources complement each other in an assertive way since the student can study and learn at his own pace (Marshman et al., 2020), a situation that leads to apprehend the reality for success or failure during this change, since it occurred without prior planning (Jaoua et al., 2022) and considering that the process of digitization of education began with information and communication technologies as part of everyday life (Martins et al., 2022). With the advent of Covid-19 and teaching with electronic, digital tools and audiovisual resources, it is intended to close educational gaps due to low cost, availability and convenience for students (Alojaiman, 2021).

To develop the different types of learning it is necessary the use of platforms that help in the teaching-learning process (Alshehri & Alahmari, 2021), being the policy of many governments in the world the learning from home (Martha et al., 2021), this implementation of all subjects in the platforms demanded more time than necessary in the preparation of classes for teachers (Pinter et al., 2021), but these platforms helped to stimulate and improve students' participation in classes (El-Sabagh, 2021), although this platform should be driven by technology, teaching is more than a learning platform and needs to be supported by a technical infrastructure driven more by pedagogy and audiovisual resources (Cheung & Lam, 2009), so we are all challenged to turn the emerging weaknesses caused by Covid-19 into great opportunities (Seyffer et al., 2022), challenges such as inequality, inequality in education, and inequalities in the quality of education, 2022), challenges such as socioeconomic inequality and policies that have brought to light already existing points of tension that need to be addressed (Pashkov & Pashkova, 2022).

After the confinement by Covid-19 the academic institutions partially opened their doors to students and this brought the conceptualization of hybrid education where electronic, digital or online education and blended learning were developed (Ulla & Perales, 2022), it is there that many universities around the world had to deal with this combined methodology (Bustamante et al., 2022), although the resources of electronic, digital or online education are important now with the partial and/or total return to the classroom must be combined with high quality educational resources to innovate inside the classroom (Liu & Qin, 2021), becoming a good practice after confinement (Zhang & Zhu, 2020) and observing the efforts of the university system to maintain the convenience offered by technology and improve the quality of teaching (Zheng, 2021).

On the other hand, the return to classes in a semipresential manner after the confinement by Covid-19 evidenced the concern of parents about the quality of preparation of their children during electronic, digital and/or audiovisual teaching (Mamun et al., 2023), this added to the physical and psychological sequels left by the passage of Covid-19 worldwide and the return to classes was carried out under a biosecurity protocol (Perea et al., 2023) with the need to vaccinate a large part of the student population in order to reduce the risk of transmission (Dao et al., 2023), a scenario that was implemented in all countries, the main objective being to achieve full vaccination rates and maintain public health in alert care (Miner et al., 2023).

The confinement of Covid-19 brought changes in universities with online, digital, electronic and/or audiovisual teaching-learning methods (Qvortrup & Lykkegaard, 2023) and many of the students' competencies were affected with this teaching (Ferrerias-Garcia et al., 2023) is how the mental health and well-being of the students (Liverpool et al., 2023) left an indelible mark on education so it is important to be very careful in the transition back to face-to-face classes (Stoain et al., 2022), this due to the rapid and sudden changes in behavior that the university student has had with the confinement by Covid-19 (Prayogo et al., 2022).

For a long time, if not all, the university system followed the patterns of a traditional teaching developed in a classroom, although there was access to information and communication technologies, this access was limited and was only used by a small sector of the educational system trying to energize more academic sessions, but with the arrival of Covid-19 these processes of adaptation and acceptance of technologies were forced to its implementation and virtual teaching with it, reaching many places where previously there was no access to this type of education. But it also showed us the other side of the reality of our country since the gaps within our territory were immense, although the government tried to provide the same opportunities to all, it did not achieve what was planned because, although the gaps between rural and urban areas were reduced in terms of the use of technology, there is still much to be done for those who have less access to technology. Therefore, the general objective of this research was to analyze and describe the experiences of university students on electronic teaching, digital teaching and teaching with audiovisual materials compared to traditional teaching after the confinement by Covid-19, for this it is necessary to know the opinion of the students themselves and find the difference between the two methodologies used. Thus, we also set as specific objectives:

To analyze and describe the traditional learning models of urban-rural university students in the province of Abancay.

To analyze and describe the e-learning, digital and/or audiovisual learning models of urban-rural university students in the province of Abancay.

To know the perspectives of university students with which learning model they want to continue their studies.

## Methodology

### 2.1. Sample

For this research, the population of university students in the province of Abancay was taken into account. During the Covid-19 period, they were in classes and e-learning, digital with audiovisual materials, then they returned to face-to-face learning classes, noting the lack of ICT in students to perform their academic work. The sample is made up of 1240 university students, 56.5% of whom are male and 43.5% are female. In addition, 65.6% of the students study in a national university and the other percentage of 34.4% study in a private university, noting that the vast majority of university students in the province of Abancay prefer national universities. The students surveyed voluntarily and anonymously ranged in age from 16 to 20 years old (64%), from 21 to 25 years old (24.7%), which are the most representative samples, while the remaining percentage only represents 11.3% between the ages of 26 years old and older.

The instrument used for this research was the result of the careful selection of four articles, selecting the instrument used and validated by Dios and Charlo, (2021) where it works with two dimensions such as the traditional learning model and the e-learning model. Traditional learning is made up of the following items, AT1: Direct communication with teachers; AT2: Direct communication with other students and working in groups; AT3: Use of physical materials; AT4: Explanation, questions and doubts; AT5: Teachers' empathy and adaptation; AT6: Teachers' overwhelm; AT7: Teachers' stress/anxiety; AT8: Lack of motivation; AT9: Lack of motivation; AT9: Lack of motivation; AT10: Lack of motivation; AT10: Lack of motivation; AT11: Lack of motivation; AT12: Lack of motivation; AT8: Lack of motivation. While the e-learning model has the following items SA1: Flexible schedules; SA2: Economic savings; SA3: Explanatory videos; SA4: Complaints from other teachers; SA5: Doing more work; SA6: Having problems with connectivity and the online platform; SA7: Teachers' empathy and adaptation; SA8: Teachers' overwhelm; SA9: Teachers' stress/anxiety; SA10: Lack of teacher motivation.

In both cases, the instrument measures the students' perspectives on the learning model, both face-to-face and e-learning. In order to evaluate and analyze the students' opinion of the learning models, a Likert scale was used, focused on the perception of the traditional learning model and the post-Covid 19 e-learning model, with the following points: 1=very little useful, 2=little useful, 3=somewhat useful, 4=useful and 5=very useful. Sociodemographic data were also consulted, such as: gender (male and female), type of university in which they study (national or private), age, and what professional career they study. In order to measure the preference of the learning models, the values obtained will first be analyzed by means of a weighted average to compare the results, and then they will be analyzed again with the question: With which learning model would you like to continue your university studies?

The statistical values are optimal to continue the research, among them we have Cronbach's Alpha (0.905) which is a high and acceptable value, this value guarantees that the instrument with its respective items is valid for the research in a Peruvian context and even more so in the Apurímac region, province of Abancay. We also have the mean (56.631), variance (157.110), standard deviation (12.5343) that will help us understand the results. The following results are from the confirmatory factor analysis where the ANOVA test for Tukey's non-additivity (mean square=164.769, F=199.046 and Sig.=0.000) is optimal, Hotelling's T-square (717.499, F=41.661 and Sig.=0.000) is high, the Kaiser-Meyer-Olkin test (0.922) is high and Bartlett's test of sphericity (gl=153 and Sig.=0.000) is also optimal and finally the goodness-of-fit test (Chi-square=766.419 and Sig.=0.000) .

With the appearance of Covid-19 the whole society adapted to virtuality, especially education where it was presented in a different way to education, this research work begins due to the return of face-to-face academic sessions and with it the return to the traditional teaching method after the confinement by Covid-19 (Huamán-Romaní, et al. 2022b), also due to shared preferences of our students since many of them adapted very well to electronic teaching, digital teaching even more with audiovisual resources where they developed different skills and abilities that cannot be achieved with traditional teaching, on the other hand also a group of students were happy with the return to face-to-face teaching since having their teacher in front of them generated in them greater confidence in the teaching-learning process, but also requested that the teacher share audiovisual materials to strengthen their knowledge.

It is for this reason that in this research work we want to measure on the one hand the electronic teaching, digital teaching or online teaching, where we present the advantages, disadvantages and some disadvantages in terms of suitability to this teaching method, on the other hand, we measure the traditional teaching after having gone through an electronic, digital or online teaching, in the same way we present the advantages and disadvantages of this teaching. To finally measure what is the preference of our students in terms of both teaching methods. It is the capital of the Department of Apurimac, located in the south central Andes of Peru, with a population of 72 227 inhabitants according to the last census of population and housing and at an altitude of 2 377m.sn.m on the banks of the Mariño river, with an average annual temperature of 16°C. Although its geography is rugged, its main activity is agricultural production, taking advantage of agrobiodiversity and the Andean cosmovision.

Currently in Abancay there are two universities, one of which is a state university with approximately 3,650 students and the other is private with 6,500 students. The state university is the Universidad Nacional Micaela Bastidas de Apurímac and the private university is the Universidad Tecnológica de los Andes (sub headquarters). In these two universities we want to measure virtual teaching and traditional teaching due to the divided opinions found in our students and with it their advantages and disadvantages that they present, besides wanting to innovate and present better proposals and alternatives to improve the academic sessions and ensure that students learn the necessary content that will allow them to successfully face their subsequent courses until the end of their professional training.

In order to achieve the objectives of this research work, a survey was conducted anonymously and voluntarily, which had to be answered from a personal or institutional email. The survey was made up of four dimensions, the first dimension contains the socio-demographic data of the student, the second dimension refers to traditional learning, the third dimension to e-learning, where these last two dimensions were developed through a five-point Likert scale, finally the fourth dimension refers to the preference of the students regarding the two methodologies since they are asked directly with which of the learning they wish to continue their studies. Once the online survey was completed, the information was downloaded from Google Forms and then analyzed if any data was missing. After reviewing the data, it was converted to Excel format and then taken to the SPSS version 24 free access program format, with which the respective analyses were carried out.

### 3. Results

Table 1 shows the mean, variance, skewness and kurtosis data. In this table 1 we also find the mean of each dimension; that is, the total mean of the traditional learning dimension is 3.256, a value considered medium high, while the e-learning dimension has a total mean of 3.058, also considered as a medium high value, but lower than the traditional learning dimension. These values give us a perspective on both learning methodologies, students are more inclined to traditional learning which will be demonstrated later.

It is observed that in the traditional learning dimension the highest mean AT4 where the teacher explains the questions and doubts of the students in the classroom and the lowest mean AT7 where the students notice the stress, anxiety and tiredness of the teachers, which indicates that in traditional learning these points should be reinforced and promote some recreational activity for the teachers so that they do not feel mentally exhausted, so that they can continue to maintain the desire to teach their students.

It is also observed that in the e-learning dimension the highest average is AE3 where students highlight the class because it is recorded on video and these can be used as many times as they can to try to understand them and the lowest average is AE9 where students highlight the lack of motivation on the part of teachers, that is to say that teachers are not doing the respective motivation in their class sessions, the reason is not known, but should be oriented and remind teachers of their five minutes of their motivation towards students so that they can improve their learning development.



**Table 1.** Distribution of the dispersion values of the dimensions.

Dimension	Total average	Media	Variance	Asymmetry	Kurtosis
AT1	3.256	3,539	1,209	-,502	-,345
AT2		3,547	1,068	-,451	-,275
AT3		3,480	1,238	-,337	-,585
AT4		<b>3,616</b>	1,225	-,467	-,505
AT5		3,524	1,228	-,428	-,462
AT6		2,852	1,244	,040	-,678
AT7		<b>2,698</b>	1,341	,178	-,730
AT8		2,792	1,564	,108	-,952
AE1	3.058	3,453	1,313	-,443	-,486
AE2		3,443	1,333	-,388	-,576
AE3		<b>3,485</b>	1,194	-,360	-,544
AE4		2,891	1,121	,001	-,498
AE5		3,079	1,133	-,122	-,469
AE6		2,784	1,461	,085	-,861
AE7		3,276	1,222	-,212	-,559
AE8		2,769	1,237	,078	-,666
AE9		<b>2,652</b>	1,286	,162	-,733
AE10		2,752	1,385	,104	-,797

Source: Own elaboration.

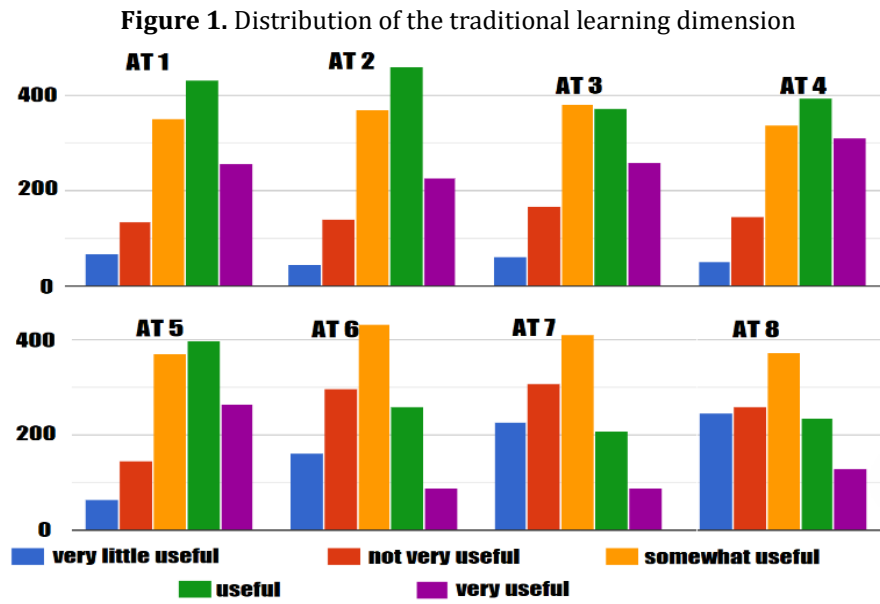
Let us analyze the traditional learning dimension in Table 2, in which we observe the highest number of responses (red color) and the lowest number of responses (green color) when choosing answers. In the traditional learning dimension, it is observed that the perspectives with the highest scores (red color) are "somewhat useful (AT3, AT6, AT7 and AT8) and useful (AT1, AT2, AT4 and AT5)" while the perspectives with the lowest scores (green color) are "very little useful (AT1, AT2, AT3, AT4 and AT5) and very useful (AT6, AT7 and AT8)"

**Table 2.** Distribution of traditional learning perspectives

Perspective	AT1	AT2	AT3	AT4	AT5	AT6	AT7	AT8
<b>Very unhelpful</b>	<b>68</b>	<b>47</b>	<b>62</b>	<b>52</b>	<b>65</b>	163	226	246
<b>Not very useful</b>	136	140	168	146	146	297	307	258
<b>Something useful</b>	351	368	<b>381</b>	338	368	<b>431</b>	<b>411</b>	<b>373</b>
<b>Useful</b>	<b>430</b>	<b>458</b>	371	<b>394</b>	<b>396</b>	259	207	234
<b>Very useful</b>	255	227	258	310	265	<b>90</b>	<b>89</b>	<b>129</b>

Source: Own elaboration.

Figure 1 shows the different answers to each question of the dimensions of traditional learning, where the point of direct communication with other students and working in groups stands out, which is a reason to be able to meet in the library and carry out different collaborative works, the other most important point is the direct communication with the teachers to be able to consult any doubt of the course and thus strengthen their knowledge. The other point under discussion by the students is that the teachers lack the corresponding motivation in each class session.



Then we have the analysis of the e-learning dimension in Table 3, in which we observe the perspectives most used by the students. In the e-learning dimension we observe the highest number of responses (red color) and the lowest number of responses (green color) on the perspectives used in this dimension of e-learning. In the e-learning dimension, it is observed that the perspectives with the highest scores (red color) are "somewhat useful (SA2, SA4, SA5, SA6, SA7, SA8, SA9 and SA10) and useful (SA1, and SA3)" while the perspectives with lower scores (green color) are "very little useful (SA1, SA2, SA3, SA5 and SA7) and very useful (SA4, SA6, SA8 and SA9, SA10)".

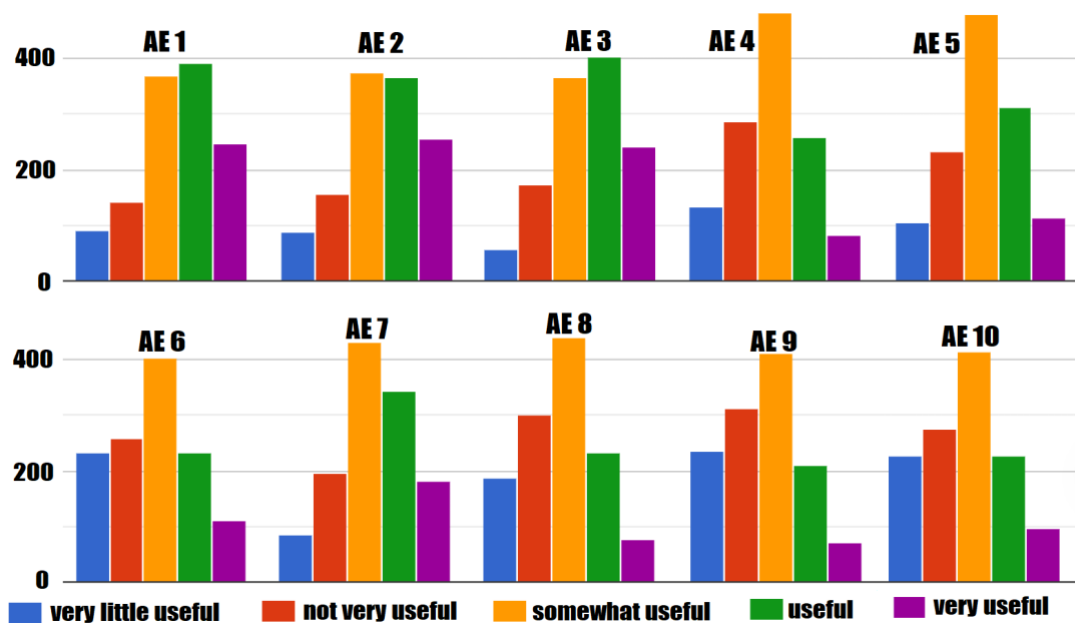
**Table 3.** Distribution of the perspectives of the e-learning dimension

Perspective	AE1	AE2	AE3	AE4	AE5	AE6	AE7	AE8	AE9	AE10
<b>Very unhelpful</b>	<b>90</b>	<b>87</b>	<b>57</b>	134	<b>104</b>	233	<b>85</b>	188	235	226
<b>Not very useful</b>	143	156	172	286	232	258	196	301	312	276
<b>Something useful</b>	369	<b>374</b>	366	<b>482</b>	<b>479</b>	<b>404</b>	<b>433</b>	<b>439</b>	<b>412</b>	<b>414</b>
<b>Useful</b>	<b>391</b>	367	<b>403</b>	257	312	234	344	234	211	228
<b>Very useful</b>	247	256	242	<b>81</b>	113	<b>111</b>	182	<b>78</b>	<b>70</b>	<b>96</b>

Source: Own elaboration.

Figure 2 shows the different answers to each question of the e-learning dimensions, where it highlighted the point where the teacher complained about the other teachers, ie; because the other teacher does not measure his time, because the teacher has to quote them in the same hour of my recovery of my classes, because the other teacher does labs in my class time and other complaints that the students had to listen even about why the other teacher had to do this or that; the students only had the notion that the teacher was envious of his colleagues, which significantly affected the students (distracted). The other point under discussion and very criticized by the students is that the teachers left the largest amount of academic work, it is not a complaint, but it is uncomfortable for the students because some of them had as many as seven courses enrolled and with so many tasks and academic work the student stress was on the way.

Figure 2. Distribution of the e-learning dimension



Source: Own elaboration.

The question considered "most" important for this research: With which educational learning would you like to continue your university studies, the students responded according to Figure 3, where it is shown that AA (both learning) has a higher percentage with 63.9%, while traditional learning (TA) has 25.9%, but compared to e-learning (E-learning) which has 10.6%. The results obtained were not as expected because it was expected that only one of the learning "would be the favorite" but with these perspectives now a decision has to be made in front of the students and above all the university institutions should implement new provisions to be able to satisfy the students and continue with both types of learning.

The correlation between the elements of traditional learning and e-learning is shown, clearly showing that there is a significantly positive correlation. The values of the correlational matrix between elements of the research are significant and positive, since their correlational values are greater than zero, indicating that there is a relationship between the traditional learning dimension and e-learning.

#### 4. Discussion

Traditional learning has been interrupted with the appearance of Covid-19 and with it the compulsory confinement caused several changes in university teaching going from traditional teaching to electronic teaching, after Covid-19 the university community returns to traditional teaching but with very good experiences of electronic teaching, now with the return to traditional teaching students after having experimented with both academic methodologies it is observed that the total average of traditional learning is 3.256 being higher than the average of electronic learning which is 3.058, which indicates that: students prefer traditional classroom learning models much more than e-learning (Alam et al., 2023), because together with virtual teaching we observe different teaching methods, new tools and applications (Gurcan et al., 2022) but also e-learning shows the existing shortcomings in traditional learning (Marin-Marín et al., 2022) in addition to highlighting other types of skills in our students.

Traditional teaching presents its highest average in the explanation that students get from their teachers, with it also the solution to their questions and doubts about topics not understood at the time, the fact of having the teacher face to face allows the dialogue to be fluid and direct, While online learning systems evolved rapidly providing new learning alternatives planning and structured system of traditional learning are necessary (Mahendra et al., 2022), furthermore, evidence was obtained of the success of interactive sessions between teacher and student (Jabir & Falih, 2022), although teachers tried to have the best methodology during e-learning for their student, it was observed that there is not much difference between traditional learning and e-learning in terms of students' academic



performance (Oda et al., 2022) but it was found that traditional teaching is much more beneficial in their rising grades in the long run (Vyas, 2022).

E-learning served as a strategy for all educational institutions during the confinement so that students did not see their education interrupted (Durodolu et al., 2022), this adaptation from traditional teaching-learning to e-learning was a rather complicated transition, but with much effort on the part of teachers and students it was possible, so the highest e-learning dimension was found in the ease of being able to record the academic sessions and use them as video tutorials, accompanied by flexible schedules to view them, On the other hand, since the sessions were taught at home, it allowed students to save money, since they no longer had to travel to traditional classrooms, making it a great alternative for education in times of pandemic, and considering that technology facilitates in many cases the student's teaching-learning and promotes self-learning (Sruthi et al., 2020), which although it was viable during the pandemic, its sustainable adaptation must be achieved (Allam et al., 2021), but students and teachers still have their doubts about the success of e-learning (Abuhassna et al., 2022), on the other hand in this dimension on e-learning there were connectivity problems because no one was prepared to perform an electronic teaching and along with virtual teaching different teaching methods, new tools and various applications are observed (Gurcan et al., 2022), this is how it is necessary to reflect on e-learning since not all students are prepared to deal with accelerated developments (Sharma & Jarikre, 2020) and if this dimension is to be successful a learning system and prior preparation for interaction and resistance to change is needed (Jaoua et al., 2022).

To the surprise of this research, when the student is asked: With what educational learning would you like to continue your university studies? 63.9% of the students prefer it with both traditional and electronic methods, which is why it is necessary to incorporate in the educational models the use of technology in order to provide a better service to our students (Mardini & Mah'd, 2022), because a critical aspect of the use of e-learning especially in those students who need extra help is that they do not engage assertively to supervised situations and fail to advance at their own pace (Marshman et al., 2020), then student engagement along with their effort is positive towards e-learning finding no bias compared to traditional teaching (Sanusi, 2022), students who prefer to continue their studies with traditional learning represent 25.9% and students who prefer to continue their studies with e-learning represent 10.6%. Then we must recognize that information and communication technologies allowed to achieve great benefits from the methodology, tools and management of e-learning (Martins et al., 2022), e-learning should not be left behind, but should be preserved alongside traditional teaching methods so that the student can manage and make decisions about change Barros Bastidas, (2022). (Agarkov et al., 2021), a good alternative with virtual teaching is that teachers were able to improve their live classes and, in many cases, better understand the concerns of students, on the other hand students improved their digital competencies (Seyffer et al., 2022).

Educational institutions and students can improve their effectiveness with e-learning with good motivation and a lot of attitude as a strategy (Wang et al., 2021) as it has high quality and cognitive engagement which is beneficial and satisfying for the student (Masa'deh et al., 2022) which manages to position self-learning in traditional teaching and e-learning as a strategy to develop lifelong skills in students (Blaschke, 2021). One of the main values brought by e-learning is that it allows the student to learn from anywhere in the world and at any time he wants without prejudice to his potentiality (Milićević et al., 2021) and each educational institution must decide which of the various platforms available is best suited to its reality and thus be able to help teachers and students (Alojaiman, 2021) thus having many alternatives to obtain information and convert it into knowledge, e-learning should be adaptive so as not to generate difference in capabilities among students and for that the motivation of the student himself is needed (Abhirami & Devi, 2021), having been given partial control to the student in e-learning many problems were evidenced in the return of face-to-face education (Huamán-Romaní et al., 2022a).

Many of the existing platforms positively influence teachers and students for which only training is required (Alsherhi & Alahmari, 2021) where teachers and students should be prepared for the process of teaching-learning online so that there is no significant difference in the acquisition of knowledge during e-learning (Martha et al., 2021), as also noted the lack of feedback and digital inequalities of our students, in addition the tasks became more challenging (Pinter et al., 2021) so many of the students were on the verge of abandoning e-learning when this should be adapted to each of the educational

institutions to perform more personalized teachings that promote student participation impacting positively (El-Sabagh, 2021), this is how open source systems are available to be used in e-learning and this should be developed jointly between teaching staff and technical staff (Cheung & Lam, 2009).

With the sole goal of having a quality virtual teaching led by teachers who were able to improve their live classes and in many cases better understand the concerns of students, and on the other hand students improved their digital competencies (Seyffer et al., 2022) thanks to the use of technology which should be practiced with ethics and responsibility in order not to generate dependence on technology companies (Pashkov & Pashkova, 2022), to always keep in mind that hybrid teaching became the best methodology in the transition of the return to classes of the entire university system (Ulla & Perales, 2022) whose preference for face-to-face teaching was above virtual teaching but hybrid teaching perfectly complements traditional teaching (Bustamante et al., 2022). With hybrid teaching, university teaching can be improved as well as improving student learning (Liu & Qin, 2021), as hybrid teaching is more effective than traditional and e-learning (Zhang & Zhu, 2020), hybrid teaching improves its efficiency by using digital platforms as resources and providing convenience to teachers and students (Zheng, 2021).

The return of students to blended learning classes with hybrid education generates more expenses in the family basket due to the distance from educational institutions (Mamun et al., 2023) and in some cases it was necessary to vaccinate a large part of the population to make it possible to return to classes, in addition to making society aware of all the care that still had to be maintained (Perea et al., 2023). One of the main reasons why parents allowed their children to be vaccinated is to return to semi-presential classes without any risk (Dao et al., 2023) but the resistance to the acceptance of vaccines against covid-19 still represents a large sector of the population for fear of the consequences that this may have (Miner et al., 2023), is for such reason that the return to school should be worked on in a more time efficient way, improve home-school collaboration and try to work on new and creative methodologies (Qyortrup & Lykkegaard, 2023).

One of the effects of the pandemic is on the competencies of our students, a situation that gives us the opportunity to take action and address strategies to help them adapt to this new situation of hybrid teaching (Ferrerias-Garcia et al., 2023) as many of the university students experienced a reduction not only in their mental health but also in their social, economic and academic well-being (Liverpool et al., 2023). A balance must be found between e-learning and face-to-face teaching and achieve quality education in the future (Stoain et al., 2022) although e-learning has been very important during confinement by Covid-19 it has not been able to replace traditional teaching (Prayogo et al., 2022).

And definitely the importance of this research work is to innovate in the teaching-learning process and why not in education in general, because we consider that it is a key factor to ensure the learning of our students. For this reason we leave as a question: What would happen to university students if they finished their professional career with an online education, would it be of the same quality or would it be of poor quality, as there are still universities that provide 100% online education, we should measure the difference between these modalities and see what are the effects in the workplace.

## 5. Conclusion

The perception with respect to traditional learning or on paper remarked several points which are all accepted because they have good scores according to their average, but they highlight a very important point where the student can ask their questions in person and that makes the student can better grasp, because when he does it virtually, the university student cannot see the expression of the teacher and cannot grasp the idea of the feedback or the answer given by the teacher, that is why the student prefers to ask the questions in person and when reviewing the audiovisual materials the student finds another method of solution or another method of explanation and has to deal with it and then consult the teacher.

While the perception of e-learning, digital or online also highlights all the questions because they have high scores according to the average, but the most important are the recorded videos of the classes and audiovisual materials, if the student did not understand the explanation at the time then he has the option to watch the class again, that is, he can review his audiovisual material, since it has been recorded and shared by the teacher, that is, the student has the option to watch the explanation again and again until he understands.

The perception of the students with respect to each of the apprenticeships both traditional and e-learning are well qualified, but as a result of the search for the preference of these two apprenticeships it was found that students prefer both types of apprenticeships due to the fact that in both apprenticeships they find very outstanding points to better develop their learning and continue with their university studies.

## **6. Acknowledgments**

The present text begins when the students request that the hybrid classes be carried out to improve the quality of education in the city of Abancay, but due to the provisions of the two universities, they were not implemented due to higher provisions, but they are for their respective evaluation and implementation. The deep gratitude to each of the members who gave their time to achieve the culmination of this research and to all the university students of the two universities who participated in the survey.

## References

- Alam, B.F., Bashir, R., Hussain, T., Abbas, T., Malik, S.A., Jan, S.H., Khurshid, M. (2023) Online vs. traditional learning: A comparative analysis of student's responses during COVID-19. *Work*, 74(1), 21-29. <https://doi.org.10.3233/WOR-220082>.
- Abhirami, K., Devi, M.K.K. (2021) Student Behavior Modeling for an E-Learning System Offering Personalized Learning Experiences. *Computer Systems Science and Engineering*, 40(3), 1127-1144. <https://doi.org.10.32604/CSSE.2022.020013>
- Abuhassna, H., Busalim, A.H., Mamman, B., Yahaya, N., Zakaria, M.A.Z.M., Al-Maatouk, Q., Awae, F. (2022) From Student's Experience: Does E-learning Course Structure Influenced by learner's Prior Experience, Background Knowledge, Autonomy, and Dialogue. *Contemporary Educational Technology*, 14(1). <https://doi.org.10.30935/cedtech/11386>  
<https://doi.org.10.30935/cedtech/11386>
- Agarkov, G.A., Sandler, D.G., Sushchenko, A.D. A (2021) Year after the Outbreak of COVID-19: Applicants' Perception of Higher Education Quality in the Context of Digitalization and Blended Learning. *Integration of Education*, 25(4), 646-660. <https://doi.org.10.15507/1991-9468.105.025.202104.646-660>
- Alam, M.M., Ahmad, N., Naveed, Q.N., Patel, A., Abohashrh, M., Khaleel, M.A. (2021) E-learning services to achieve sustainable learning and academic performance: An empirical study. *Sustainability (Switzerland)*, 13(5), 1-20. <https://doi.org.10.3390/su13052653>
- Alojaiman, B. (2021) Toward Selection of Trustworthy and Efficient E-Learning Platform. *IEEE Access*, 9, 133889-133901. <https://doi.org.10.1109/ACCESS.2021.3114150>
- Alqahtani, N., Nadeem, F. (2021) Improving the Effectiveness of e-Learning Processes through Dynamic Programming: A Survey. *International Journal of Advanced Computer Science and Applications*, 12(5), 818-825. <https://doi.org.10.14569/IJACSA.2021.0120595>
- Alshehri, A.H., Alahmari, S.A. (2021) Faculty e-Learning Adoption During the COVID-19 Pandemic: A Case Study of Shaqra University. *International Journal of Advanced Computer Science and Applications*, 12(10), 855-862. <https://doi.org.10.14569/IJACSA.2021.0121095>
- Barros Bastidas, C. (2022). Research training and scientific production: trajectories and meanings of faculty at a public university in Ecuador. *Revista Universidad y Sociedad*, 14(4), 699-707.
- Blaschke, L.M. (2021) The dynamic mix of heutagogy and technology: Preparing learners for lifelong learning. *British Journal of Educational Technology*, 52(4), 1629-1645. <https://doi.org.10.1111/bjet.13105>
- Bustamante, J.C., Segura-Berges, M., Lizalde-Gil, M., Peñarrubia-Lozano, C. (2022) Qualitative Analyses of e-Learning Implementation and Hybrid Teaching during the COVID-19 Pandemic at Spanish Universities. *Sustainability (Switzerland)*, 14(19), art. no. 12003. <https://doi.org.10.3390/su141912003>
- Cheung, K.S., Lam, J. (2009) A framework for developing e-learning solutions. *SKG 2009 - 5th International Conference on Semantics, Knowledge, and Grid*, art. no. 5370113, 294-297. <https://doi.org.10.1109/SKG.2009.44>
- Dao, T.L., Vu Thi, H., Gautret, P., Al-Tawfiq, J.A., Nguyen, T.L., Chu, D.T., Hoang, V.T. (2023) Willingness and attitudes of parents towards COVID-19 vaccines for children in Vietnam. *Journal of Communication in Healthcare*, 16(1), 75-82. <https://doi.org.10.1080/17538068.2022.2150207>
- Dios, M.T.C., Charlo, J.C.P. (2021) Face-to-face vs. E-learning models in the covid-19 era: Survey research in a Spanish university. *Education Sciences*, 11(6), art. no. 293. <https://doi.org.10.3390/educsci11060293>
- Durodolu, O.O., Enakrire, R., Chisita, C.T., Tsabedze, V. (2022) Coronavirus Pandemic Open Distance E-Learning (ODEL) as an Alternative Strategy for Higher Educational Institutions. *International Journal of e-Collaboration (IJeC)*, 19(1), 1-10. <https://doi.org.10.4018/IJeC.315785>
- El-Sabagh, H.A. (2021) Adaptive e-learning environment based on learning styles and its impact on development students' engagement. *International Journal of Educational Technology in Higher Education*, 18(1), art. no. 53. <https://doi.org.10.1186/s41239-021-00289-4>
- Ferreras-Garcia, R., Sales-Zaguirre, J., Serradell-López, E. (2023) Generic Competences in Higher Education After Covid-19 Pandemic. *Springer Proceedings in Complexity*, 375-383. [https://doi.org.10.1007/978-3-031-19560-0\\_29](https://doi.org.10.1007/978-3-031-19560-0_29)

- Gurcan, F., Dalveren, G.G.M., Derawi, M. (2022) Covid-19 and E-Learning: An Exploratory Analysis of Research Topics and Interests in E-Learning During the Pandemic. *IEEE Access*, 10, 123349-123357. <https://doi.org/10.1109/ACCESS.2022.3224034>
- Huamán-Romaní, Y.-L., Carrasco-Choque, F., Maquera-Flores, E.-A., Lázaro-Guillermo, J.-C., Kuaquira-Huallpa, F. (2022a) Level of Digital Teaching Competence on the Verge of the Post Pandemic. *International Journal of Emerging Technologies in Learning*, 17(14), 187-204. <https://doi.org/10.3991/ijet.v17i14.31039>
- Huamán-Romaní, Y.-L., Juárez-Pulache, J.-C., Romero, N.P., Carrillo-Riveros, E., De la Cruz-Giron, K.-A. (2022b) University Students' Learning Experiences in the Virtual Environment. *International Journal of Emerging Technology and Advanced Engineering*, 12(5), 88-95. [https://doi.org/10.46338/ijetae0522\\_10](https://doi.org/10.46338/ijetae0522_10)
- Jabir, B., Falih, N. (2022) A new hybrid model of deep learning ResNeXt-SVM for Weed Detection: Case study. *International Journal of Intelligent Information Technologies*, 18(2). <https://doi.org/10.4018/IJIT.296269>
- Jaoua, F., Almurad, H.M., Elshaer, I.A., Mohamed, E.S. (2022) E-Learning Success Model in the Context of COVID-19 Pandemic in Higher Educational Institutions. *International Journal of Environmental Research and Public Health*, 19(5), art. no. 2865. <https://doi.org/10.3390/ijerph19052865>
- Liu, Y., Qin, Y. (2021) The Innovation Research and Practice of the Hybrid Teaching Mode in Colleges and Universities Based on Computer Technology. *Journal of Physics: Conference Series*, 1744(4), art. no. 042055. <https://doi.org/10.1088/1742-6596/1744/4/042055>
- Liverpool, S., Moinuddin, M., Aithal, S., Owen, M., Bracegirdle, K., Caravotta, M., Walker, R., Murphy, C., Karkou, V. (2023) Mental health and wellbeing of further and higher education students returning to face-to-face learning after Covid-19 restrictions. *PloS one*, 18(1), p. e0280689. <https://doi.org/10.1371/journal.pone.0280689>
- Mahendra, J., Sivapathasundharam, B., Mahendra, L., Chandrasekaran, S., Srinivasan, S., Muralidharan, J., Balaji, T.M., Bhandi, S., Patil, S. (2022) Effectiveness of Online Learning vs Traditional Learning during COVID-19 Pandemic in Chennai: A Questionnaire Study. *Journal of Contemporary Dental Practice*, 23(3), pp. 295-302. <https://doi.org/10.5005/jp-journals-10024-3270>
- Mamun, T.M., Akter, M., Akter, R., Alam, M.T., Hasan, K.M., Hossain, R. (2023) Role of school preparedness on children's in-person schooling decision during Covid-19 pandemic in Bangladesh. *Clinical Epidemiology and Global Health*, 20. <https://doi.org/10.1016/j.cegh.2023.101238>
- Mardini, G.H., O.A. (2022) Distance learning as emergency remote teaching vs. traditional learning for accounting students during the COVID-19 pandemic: Cross-country evidence. *Journal of Accounting Education*, 61, art. no. 100814. <https://doi.org/10.1016/j.jaccedu.2022.100814>
- Marín-Marín, J.-A., Huamán-Romaní, Y.-L., Seminario-Morales, M.-V., Moreno-Guerrero, A.-J. (2022) Learning strategies in e-learning formative processes in mathematical contents during the Covid-19 era. *World Transactions on Engineering and Technology Education*, 20(4), 238-245.
- Marshman, E., Devore, S., Singh, C. (2020) Holistic framework to help students learn effectively from research-validated self-paced learning tolos. *Physical Review Physics Education Research*, 16(2), art. no. 020108, <https://doi.org/10.1103/PhysRevPhysEducRes.16.020108>
- Martha, A.S.D., Junus, K., Santoso, H.B., Suhartanto, H. (2021) Assessing undergraduate students' e-learning competencies: A case study of higher education context in Indonesia. *Education Sciences*, 11(4), art. no. 189. <https://doi.org/10.3390/educsci11040189>
- Martins, J., Gonçalves, R., Branco, F. (2022) A bibliometric analysis and visualization of e-learning adoption using VOSviewer. *Universal Access in the Information Society*, <https://doi.org/10.1007/s10209-022-00953-0>
- Masa'deh, R., Almajali, D.A., Majali, T., Hanandeh, A., Al-Radaideh, A. (2022) Evaluating e-learning systems success in the new normal. *International Journal of Data and Network Science*, 6(4), 1033-1042. <https://doi.org/10.5267/j.ijdns.2022.8.006>
- Milićević, V., Denić, N., Milićević, Z., Arsić, I., Spasić-Stojković, M., Petković, D., Stojanović, J., Krkić, M., Milovančević, N.S., Jovanović, A. (2021) E-learning perspectives in higher education institutions. *Technological Forecasting and Social Change*, 166, art. no. 120618. <https://doi.org/10.1016/j.techfore.2021.120618>



- Miner, C.A., Timothy, C.G., Percy, K., Mashige, Osuagwu, U.L., Envuladu, E.A., Amiebenomo, O.M.-A., Oveneri-Ogbomo, G., Charwe, D.D., Goson, P.C., Ekpenyong, B.N., Abu, E.K., Langsi, R., Oloruntoba, R., Ishaya, T., Agho, K.E. (2023) Acceptance of COVID-19 vaccine among sub-Saharan Africans (SSA): a comparative study of residents and diasporan dwellers. *BMC Public Health*, 23(1), art. no. 191. <https://doi.org.10.1186/s12889-023-15116-w>
- Oda Abunamous, M., Boudouaia, A., Jebril, M., Diafi, S., Zreik, M. (2022) The decay of traditional education: A case study under covid-19. *Cogent Education*, 9(1), art. no. 2082116. <https://doi.org.10.1080/2331186X.2022.2082116>
- Pashkov, M.V., Pashkova, V.M. (2022) Problems and Risks of Digitalization in Higher Education. *Vysshee Obrazovanie v Rossii*, 31(3), 40-53. <https://doi.org.10.31992/0869-3617-2022-31-22-3-40-57>
- Perea, S., Tretina, K., O'Donnell, K.N., Love, R., Bethlendy, G., Wirtz, M., Hidalgo, M. (2023) Saliva-Based, COVID-19 RT-PCR Pooled Screening Strategy to Keep Schools Open. *Disaster Medicine and Public Health Preparedness*, 17(5), art. no. e70. <https://doi.org.10.1017/dmp.2021.337>
- Pinter, E., Fenyvesi, E., Pinter, T. (2021) Sustainability aspects of distance learning in higher education during the COVID-19 epidemic in a Hungarian University. *Economic Annals-XXI*, 190(5), 58-74. <https://doi.org.10.21003/EA.V190-06>
- Prayogo, D., Suspendi, Antoro, D., Huda, S., Fitriainingsih, A., Surjaman, F., Purwantono, Choeroni, M., (2022) Sugiyarto Maritime Education after COVID-19 Era. *TransNav*, 16(2), 227-231. <https://doi.org.10.12716/1001.16.02.04>.
- Qvortrup, A., Lykkegaard, E. (2023) Building back better: lessons learned from a year with COVID 19 caused changes to school and teaching. *Education* 3-13. <https://doi.org.10.1080/03004279.2023.2186975>
- Sanusi, M.S. (2022) Action research to reassess the acceptance and use of technology in a blended learning approach amongst postgraduate business students. *Cogent Education*, 9(1), art. no. 2145813. <https://doi.org.10.1080/2331186X.2022.2145813>
- Seyffer, S., Hochmuth, M., Frey, A. (2022) Challenges of the Coronavirus Pandemic as an Opportunity for Sustainable Digital Learning in Vocational Education and Training (VET). *Sustainability (Switzerland)*, 14(13), art. no. 7692. <https://doi.org.10.3390/su14137692>
- Sharma, Y.K., Jarikre Amos, O. (2020) Experiences and perspectives of information technology-enhanced learning and teaching in higher education - Ghana case. *International Journal of Advanced Science and Technology*, 29(2), 3739-3747.
- Singhal, R., Kumar, A., Singh, H., Fuller, S., Gill, S.S. (2021) Digital device-based active learning approach using virtual community classroom during the COVID-19 pandemic. *Computer Applications in Engineering Education*, 29(5), 1007-1033. <https://doi.org.10.1002/cae.22355>
- Sokout, H., Usagawa, T. (2021) Improving Academic Performance Through Blended Learning: The Case of Afghan Higher Education. *International Journal of Emerging Technologies in Learning*, 16(11), 104-120. <https://doi.org.10.3991/ijet.v16i11.20757>
- Sruthi, P., Mukherjee, S. (2020) Byju's the learning app: An investigative study on the transformation from traditional learning to technology based personalized learning. *International Journal of Scientific and Technology Research*, 9(3), 5054-5059.
- Stoain C., Fărcașiu, M., Dragomir G., Gherheș V. (2022) Transition from Online to Face-to-Face Education after COVID-19: The Benefits of Online Education from Students' Perspective. *Sustainability (Switzerland)*, 14(19), art. no. 12812. <https://doi.org.10.3390/su141912812>
- Ulla, M.B., Perales, W.F. (2022) Hybrid Teaching: Conceptualization Through Practice for the Post COVID19 Pandemic Education. *Frontiers in Education*, 7, art. no. 924594. <https://doi.org.10.3389/feduc.2022.924594>
- Vyas, M.N. (2022) Traditional learning: students insights. *Journal of Pharmaceutical Negative Results*, 13, 3986-3995. <https://doi.org.10.47750/pnr.2022.13.S07.502>
- Wang, C.-Y., Zhang, Y.-Y., Chen, S.-C. (2021) The Empirical Study of College Students' E-Learning Effectiveness and Its Antecedents Toward the COVID-19 Epidemic Environment. *Front. Psychol.* <https://doi.org.10.3389/fpsyg.2021.573590>
- Zhang, W., Zhu, C. (2020) Blended learning as a good practice in ESL courses compared to F2F learning and online learning. *International Journal of Mobile and Blended Learning*, 12(1), 64-81. <https://doi.org.10.4018/IJMBL.2020010105>



Zheng, Y. (2021) Research on Hybrid Teaching Mode Based on Digital Teaching Resource Computer Platform. *Journal of Physics: Conference Series*, 1992(2), art. no. 022025. <https://doi.org/10.1088/1742-6596/1992/2/022025>