Professors' perceptions of distance education in virtual environments: The case of the Education Faculty of University of Al-Yarmouk (Jordan)

Oassim Mahmoud Oassim-Al-shboul

qassim.alshboul@yahoo.com

High School Teacher. Irbid, Jordan

Clemente Rodriguez Sabiote

clerosa@ugr.es

José Álvarez-Rodríguez

alvarez@ugr.es

Professor of Department of Research Methods and Diagnosis in Education. University of Granada, Spain

Abstract

The goal of this study is to determine the perceptions that the teaching staff of the Faculty of Education at University of Al-Yarmouk (Jordan) have of the implementation of distance learning in virtual environments, more specifically, the professors' opinion of the potential and limitations of this educational strategy. To fulfil this goal, we developed a survey study. The main findings indicate that, overall, distance education in virtual environments has earned a good opinion among the professors who participated in the study, although the potential benefits of distance education are the most highly valued dimension. The professors rank the dimensions of goals and difficulties in implementing this educational strategy second, and planning the third and lowest dimension. Further, some identifying variables (e.g., department, gender) show statistically significant differences relative to the dimensions of the scale used.

Key words

Educational Technology, Distance Education, Virtual Environments

La percepción del profesorado sobre la educación a distancia en entornos virtuales. El caso de la Facultad de Educación de la Universidad de Al-Yarmouk (Jordania)

Oassim Mahmoud Oassim-Al-shboul

qassim.alshboul@yahoo.com

High School Teacher. Irbid. Jordan

Clemente Rodriguez Sabiote

clerosa@ugr.es

José Álvarez-Rodríguez

alvarez@ugr.es

Professor of Department of Research Methods and Diagnosis in Education. University of Granada. Spain.

Abstract

El objetivo de este estudio es determinar las percepciones que los miembros del profesorado de la Facultad de la Educación de la Universidad de Al-Yarmouk (Jordania) poseen acerca de la implementación de la educación a distancia en entornos virtuales, centrando su opinión en las posibilidades y limitaciones de dicha estrategia. Para este fin, se ha desarrollado un estudio de encuesta, cuyos principales hallazgos indican que, globalmente la educación a distancia en entornos virtuales ha obtenido una buena opinión entre profesorado objeto de estudio. No obstante, son las potenciales ventajas de una educación a distancia la dimensión mejor valorada. En segundo lugar, encontramos a las dimensiones de metas y dificultades de la implementación de dicha estrategia educativa. Finalmente, la dimensión peor valorada es la planificación. Por otra parte, algunas de las variables identificativas (departamento de procedencia, género…) del profesorado marcan diferencias estadísticamente significativas al ser cruzadas con las dimensiones de la escala administrada.

Palabras clave

Tecnología Educativa, Educación a Distancia, Entornos Virtuales

I. Introduction

In recent decades, the rapid development and qualitative leap in all technology standards has affected all facets of everyday life, particularly in the field of education. All kinds of connections (telecommunication and communication) have been simplified, making it easier to overcome barriers of time and space and transforming the world into a global village where people can connect and interact with each other face to face or voice to voice, despite being thousands of miles apart.

Human beings worldwide are also undergoing many changes, as observed in the lifestyle of populations, with new needs emerging to transform traditional methods of teaching and learning. According to Ayzemberg (2009, p.23), these needs stem from a number of issues:
- Issues of time, as many people cannot get to the teaching centre according to the schedule established between teachers and students.
- Issues of distance, which decrease the possibility that those who live in remote places far from schools can access education.
- Issues of demand, as the typical format of training courses makes it difficult to create and offer them in small towns, where the small number of potential students makes it hard to justify the courses.

These barriers create other, smaller problems that become obstacles to traditional learning, yet such barriers have been overcome using continuous updating of e-learning systems. Today, virtual learning systems provide advantages that may justify their rapid expansion- for example, the possibility of using multimedia materials, easy updating of content, interactivity, and access to courses anytime anywhere.

Despite the great potential of virtual education, we agree with Ayzemberg (2009) that one must guard against the illusion that the virtual education system is a panacea. The system in itself, as the only method of learning, does not guarantee higher quality or faster, more effective learning.

Although the technology of e-learning is considered to be effective, this medium it cannot be conceived as a learning space in which one simply reads or receives information from the computer screen as was formerly done with paper or multimedia methods (animation, sound, images, videos ...). In the context of e-learning, teacher and students are still the main characters, and computers should be used as technological tools, not as the ultimate solution. Learning and virtual education are both linked to the principle of motivation essential to students, the need to be able to apply learning in one's work life, the quality of a human and pedagogically responsive teacher, and the appropriateness of the learning materials and teaching method.

To achieve pedagogical effectiveness in e-learning, Gallego & Martinez (2008, p.1) argue that the following issues that must be considered:
- E-learning alone is not sufficient as a learning tool; it merely transmits knowledge and does not create content.
- Since training is addressed to someone who expects quality, the content of the training materials is particularly important.

II. Primary studies of the perception of distance education in virtual environments, from the perspective of those involved in the teaching-learning models

This section presents some of the main findings of studies from the 90s to the present on the perception that teachers and other agents in education have of distance education in virtual environments. We include studies by Tsui, Zhang, Jedede, Fowie & Kwok (1999); Garman, Crider & Teske (1999); Schifter (2000); Melody, Heidi, Lila & Jensen (2002); Gary (2002); Lynne & Joseph (2003); Weerakoon (2003); Langley, Marriott, Belcher, Wilson & Lewis. (2004); Jones, Linder, Murphy & Dooly (2005); Tsai (2005) and Sharon & Fesna (2005). These studies show that professors have a very good overall perception of distance learning programs. These studies also show that distance education (or distance learning) is, an important step in developing human resources to discover new opportunities for students, as well as in achieving improved communication among colleagues. Its value lies not only in transcending limitations of time and space but also in enabling exchange of information and new experiences.

Distance learning programs also establish links between scientific expertise, on the one hand, and real life, on the other. Further, studies by Tsui, Zhang, Jegede, Fowie & Kwok (1999); Schifter (2000); Gary (2002); Meyers, Bannet, Brown & Henderson (2004) and Tsai (2005) indicate that lack of knowledge of the many advantages these programs provide and lack of time to apply these programs are the most important obstacles to benefitting from them.

Many studies also show interesting differences in teachers' acceptance of distance education programs. Stephen & Chris (1999) find empirical evidence to support a moderate degree of acceptance toward distance learning programs, whereas Jones, Linder, Murphy & Dooly (2005) indicate that faculty oppose them.

Other, more recent studies-for example those by Taylor & Newton (2013); McConnell, Parker, Eberhardt, Koehler & Lundeberg (2013) and Rubi, Avgerinou & Fernandes (2013)-stress the need to provide advanced technological methods for better design of training program content and ongoing assessment. In this context, studies by Steinbeck (2011); Castañedo (2003); Anderson (2013); Schmid, Bernard, Borokhovski, Tamim, Abrami, Surkes & Woods (2014); Gronn, Romeo, McNamara & Teo (2013) and Barr & Miller (2013) emphasize the importance of reflecting on these elements of the learning process when implementing a distance program in the network, particularly of diversifying the teaching methodology to enable teachers to monitor activities and student preparation, as well as to perform ongoing assessment.

As to the students' perspective, the studies by Kuo, Walker, Belland & Schroder (2013) and Kuo, Walker, Schroder & Belland (2014) conclude that one of the most significant reasons students choose the distance learning method is the self-confidence they can acquire. Students prefer choose the face to-face learning method, however, due to the very real need for the teacher's physical presence to answer questions, resolve doubts, and clarify connections in the material.

Studies by Hu, Yang & Chen (2014) and Agdas, Washington, Ellis, Agdas & Dickrell, (2014) conclude that teachers feel more optimistic than students about distance learning programs. Students feel that school projects are less useful when tasks are performed through the distance learning method. Studies by Hinojo, Aznar & Caceres (2009); Cabero, Llorente & Puentes (2010); Gómez-Escalonilla, Santin & Mathieu (2011); Christopher, John, Dawn, Keith & Kenny (2004) and Zheng (2014) show that students feel great encouragement when

using electronic programs as a strategy for distance education. This result contrasts with teachers' opinion, which is less enthusiastic about this strategy, as teachers lack confidence in its application (results,benefits...).

Finally, the study by Lynne & Joseph (2003) indicates that teachers spend less time training and preparing distance education courses. Teachers also constantly repeat the same learning strategies in the same learning environment. There is, however, a lack of Arabic studies on the effectiveness of distance learning programs. Our study agrees with all previous studies on the advantages of distance learning. It differs from the studies mentioned above, however, in that it explores the kind of infrastructure and resources needed to implement the strategy of distance education and its objectives in Jordanian universities from the professors' point of view.

III. Methodology

This section presents the type of methodology to position our study in the methodological framework of the literature. It also explains the participants and the statistical method by which they were selected, the instrument used, the method of survey and the quality criteria (reliability and validity).

a. Research Objective

The main objective of this research is to determine the views of the professors of the Faculty of Education at University of Al-Yarmouk (Jordan), highlighting the possible limitations and viability of distance learning in university teaching. This study thus uses the descriptive method (more precisely, a survey with a prior causal-comparative study).

b. Participants

The study includes all professors of the Faculty of Education at the University of Al-Yarmouk (Jordan) in the academic year 2013-2014 (115 members). After defining the reference population, we calculated the sample size using an online server with the following assumptions: Confidence level (1-_) = 0.95, Sampling Error = ± 5%, Proportions p = q = 0.5. The results are shown in the following image captured from the online applications used:

Figure 1. Results obtained by calculating sample size using online application.
Source: http://www.berrie.dds.nl/calcss.htm

The minimum sample size is 89 participants, and our study had slightly more 91 participants between the ages of 25 and 50. The majority (84.6%) were men and 15.4% women. Most participants had considerable and consolidated professional experience (34.1% had 7-10 years; 31.9%, 11-20 years; 14.3%, 4-6 years and the remaining 19.8%, 1-3 years). The breakdown by departmental affiliation was Department of Psychology (58.2%), Teaching (34.1%), Educational Organization (6.6%) and Primary Education (1.1%).

After estimating the sample size, we chose professors through a simple random sampling process and finally selected 91 professors (male and female).

c. Data Collection

To achieve our research objective, we developed an *ad hoc* Likert-type scale of 48 items with the responses (1: little, 2: somewhat, 3: fairly well, and 4: absolutely), organized into in 4 dimensions:
- First: goals of distance education programs in virtual environments.
- Second: distance education planning programs in virtual environments.
- Third: difficulties of using distance education programs in virtual environments.
- Fourth: advantages of distance education programs in virtual environments.

d. Quality parameters of the data collection instrument

i. Validity of the data collection instrument
To ensure content validity of the survey instrument, it was reviewed by 14 qualified and experienced experts, 6 of whom specialized in Educational Technology, 3 in Information Technology, 2 in Psychology, 1 in School Organisation and 2 in Teaching and Training Curriculum. These 14 experts were asked to assess each item's degree of relevance to the corresponding dimension and its clarity of formulation. Both dimensions, relevance and clarity, obtained approval percentages over 80% from the 14 experts who validated the measurement instrument.

ii. Reliability of the data collection instrument
Since, we had a single survey instrument, we tested the scale's internal consistency and reliability. The coefficient to indicate acceptable measure utility and robustness is the Cronbach´s ±. The results of total scale and dimensions are shown below:

Dimensions	Cronbach α
Goals of distance education programs in virtual environments.	0.81
Distance learning planning programs in virtual environments.	0.76
Difficulties in distance education programs using virtual environments.	0.74
Advantages of distance learning programs in virtual environments.	0.71
Total Scale	**0.84**

Table 1. Cronbach ±1. Introduction

As shown above, all Cronbach ± coefficients are higher than 0.70, for both the individual dimensions and the total scale. This result indicates that the scale analysed is moderately stable and consistent for our measurement.

IV. Analysis and Discussion of Results

To analyse the information collected, we used the data analysis program SPSS v.22. We implemented analysis of descriptive and inferential nature appropriate for our research objective.

First, because they violated some of the parametric assumptions, we compared related samples pairwise to determine whether there were statistically significant differences between the 4 dimensions that make up the scale. We now report the results of this comparison, first presenting the main descriptive results for each dimension:
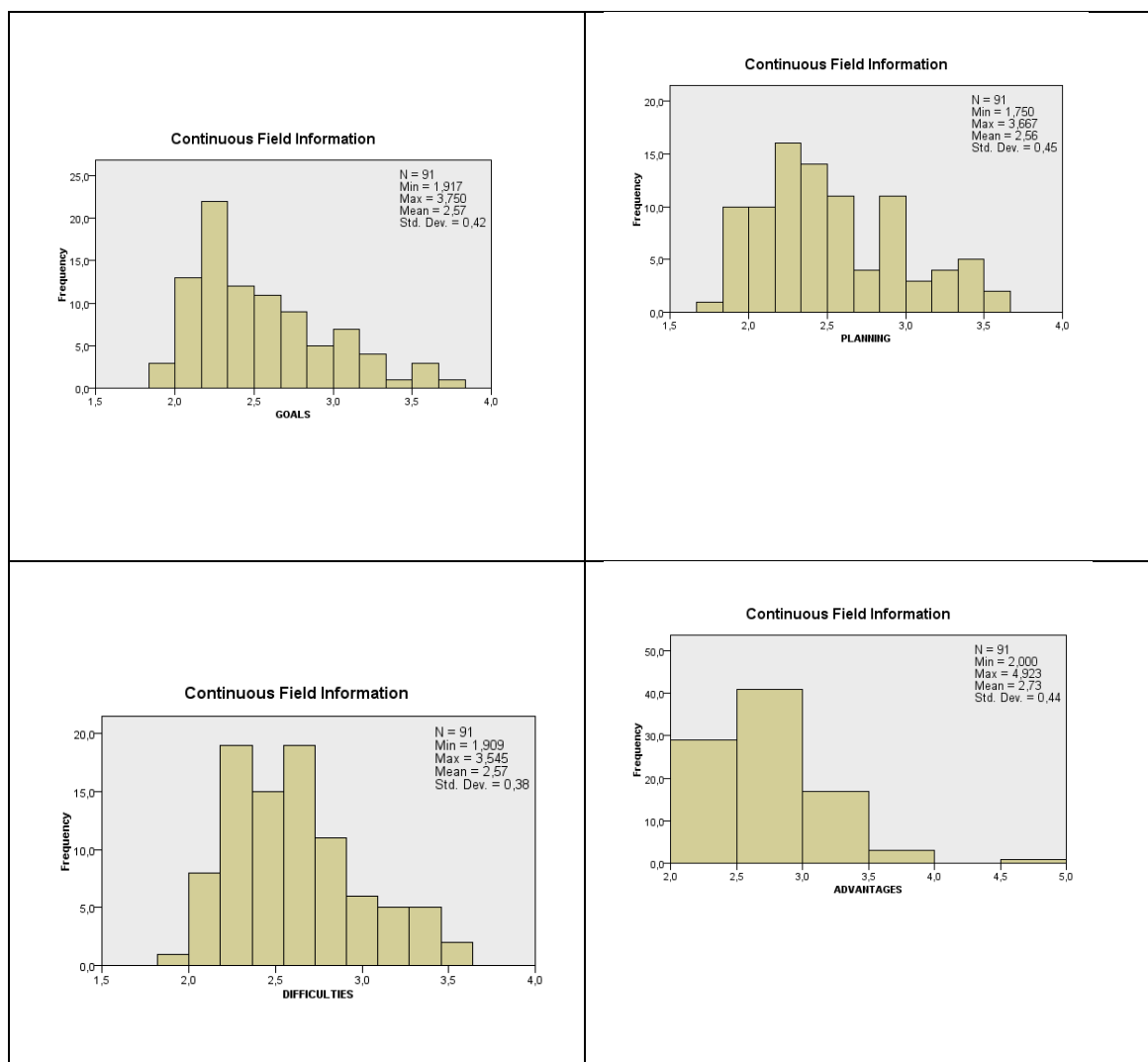

Figure 2. Histograms with descriptive statistics obtained for the four dimensions of the scale.

As may be observed in Figure 2, three of the four dimensions show very similar arithmetic means: Planning (mean = 2.56), Goals and Difficulties (both with mean = 2.57). In all three cases, these averages place the views of pupils between the step-response categories "Somewhat" and "Fairly well". Standard deviations not exceeding 0.45, indicate the homogeneity of the teachers' scores. In contrast, the dimension Advantages yields a mean significantly higher than the other three dimensions, an average of precisely 2.73, situated between the step-response categories: "Somewhat" and "Fairly well", though somewhat

closer to the latter ("Fairly well"). We thus attempt to determine whether the average level differs to a statistically significant degree between the four dimensions described above.

The results of Friedman's two-way Analysis of variance by ranks enable us to contrast the hypotheses as follows:

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	Distributions of GOALS, PLANNING, DIFFICULTIES and ADVANTAGES are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.000**	Reject the null hypothesis.
Asymptotic significances are displayed. *p< .05* *p<.01*** *p<.001****				

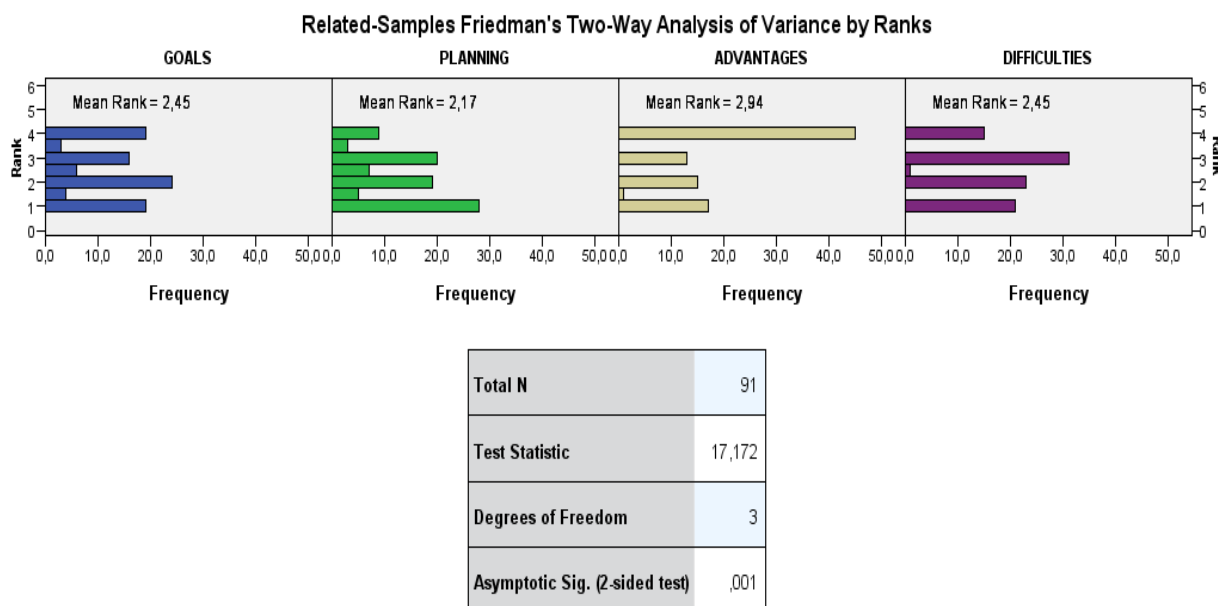Table 2. Summary of related-sample Friedman's Two-Way Analysis of Variance by Ranks.

Figure 3. Histograms with mean and frequency of ranks obtained for the four dimensions of the scale using Friedman's Two-way Analysis of Variance by Ranks for Related Samples and main results of the test.

As may be observed in the preceding table 2 and figure 3, there are statistically significant differences *p<.001* in the means of the four dimensions. In this case, the dimension "Advantages" has a magnitude of most faculty support to discounts the possibility of random chance in the study. It is quite different to determine whether or not, statistical differences are generated between the four dimensions of our study and compared in binomials or pairs. The results achieved are:

Pairwise Comparisons
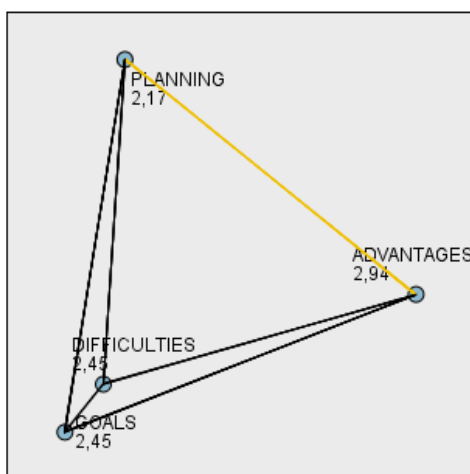
Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
PLANNING-GOALS	,275	,191	1,435	,151	,907
PLANNING-DIFFICULTIES	-,275	,191	-1,435	,151	,907
PLANNING-ADVANTAGES	-,769	,191	-4,019	,000	,000
GOALS-DIFFICULTIES	,000	,191	,000	1,000	1,000
GOALS-ADVANTAGES	-,495	,191	-2,584	,010	,059
DIFFICULTIES-ADVANTAGES	,495	,191	2,584	,010	,059

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is ,05.

Figure 4. Results obtained from the four dimensions pairwise comparisons.
Source: Developed by the author

Of the six comparisons (combinations) of the four possible dimensions taken in pairs, three are statistically significant (*p<.05*) and three are not (*p>.05*). As expected, the dimension "Advantages" showed statistically significant differences from the other three dimensions, if we consider the unadjusted asymptotic significances obtained (planning *vs* advantages with *p<.001*; goals *vs* advantages with *p<.05* and difficulties *vs* advantages with *p<.05*). This means that, professors participating in our study are more favourable to the potential benefits of distance education than they are sceptical of disadvantages it might entail, such as planning, goals and difficulties. We must not forget that the four dimensions of our study have obtained favourable levels of opinion among the teachers surveyed.

Another research goal was to determine whether the independent attributive variables-sex, age, years of experience and department-played a differentiating role in the way the participating teachers assessed the dimensions of the questionnaire, e.g., distance education

goals, planning, difficulties of use and advantages of use. To determine this, we implemented a set of non-parametric tests.

a) Gender-related dimension

Gender	Dimensions	Means
Male	Goals	2.55
	Planning	2.53
	Difficulties	2.55
	Advantages	2.72
Female	Goals	2.67
	Planning	2.68
	Difficulties	2.66
	Advantages	2.71

Table 3. Summary of means obtained by dimensions and gender.

Summary of hypothesis tests				
	Null hypothesis (Ho):	Test	Sig.	Decision
1	The distribution of Goals is the same between gender categories.	Independent-Samples Mann-Whitney U Test	.233	Retain the null hypothesis.
2	The distribution of Planning is the same between gender categories.	Independent-Samples Mann-Whitney U Test	.215	Retain the null hypothesis.
3	The distribution of Difficulties is the same between gender categories.	Independent-Samples Mann-Whitney U Test	.326	Retain the null hypothesis.
4	The distribution of Advantages is the same between gender categories.	Independent-Samples Mann-Whitney U Test	.825	Retain the null hypothesis.
Asymptotic significances are displayed. *p< .05* p<.01** p<.001***				

Table 4. Summary of Mann-Whitney U-Test for Independent Samples across the four dimensions of the scale with the variable gender.

As the table shows, the variable Gender did not generate statistically significant differences in the four cases. The bilateral asymptotic significance associated with the contrast is higher than $p>.05$. In all cases, we therefore accept the null hypothesis and can conclude that

being a professor in the Faculty of Education at the University of Al-Yarmouk has no impact on how faculty members evaluated each of the four study dimensions.

b) Age-related dimension

Age Range	Dimensions	Means
25-30 years	Goals	3.58
	Planning	3.41
	Difficulties	3.27
	Advantages	3.46
31-35 years	Goals	3.00
	Planning	3.05
	Difficulties	2.86
	Advantages	2.93
36-40 years	Goals	2.87
	Planning	2.83
	Difficulties	2.74
	Advantages	2.84
41-45 years	Goals	2.44
	Planning	2.44
	Difficulties	2.50
	Advantages	2.72
Over 50 years	Goals	2.30
	Planning	2.26
	Difficulties	2.37
	Advantages	2.50

Table 5. Summary of means obtained by dimensions and age range.
Advantages

Summary of hypothesis tests			
Null hypothesis	Test	Sig.	Decision
1 The distribution: Goals is the same among the age categories.	Kruskal-Wallis test for independent samples	.000***	Reject the null hypothesis.
2 The distribution: Planning is the same among the age categories.	Kruskal-Wallis test for independent samples	.000***	Reject the null hypothesis.
3 The distribution: Difficulties is the same among the age categories.	Kruskal-Wallis test for independent samples	.000***	Reject the null hypothesis.
4 The distribution: Advantages is the same among the age categories.	Kruskal-Wallis test for independent samples	.003**	Reject the null hypothesis.
Asymptotic significances are displayed. *p< .05* p<.01** p<.001***			

Table 6. Summary of Kruskal-Wallis tests implemented across the four dimensions of the scale with the variable age range.

As Table 6 shows, the variable age has generated statistically significant differences, as in the four cases, with bilateral asymptotic significance associated at *p<.05*. According to these results, the younger professors assess the four dimensions analysed more positively than do older professors.

c) Department-related dimension

Department	Dimension	Means
Primary Education	Goals	2.58
	Planning	2.33
	Difficulties	2.63
	Advantages	2.61
Educational Organization	Goals	2.98
	Planning	3.00
	Difficulties	2.81
	Advantages	2.88
Teaching and Curriculum	Goals	2.72
	Planning	2.73
	Difficulties	2.67
	Advantages	2.77

	Goals	2.43
Psychology	Planning	2.40
	Difficulties	2.47
	Advantages	2.68

Table 7. Summary of means obtained by dimensions and departmental affiliation.

Summary of hypothesis tests			
Null hypothesis	Test	Sig.	Decision
1 The distribution: Goals is the same among the different departments.	Kruskal-Wallis test for independent samples	.005**	Reject the null hypothesis.
2 The distribution: Planning is the same among the different departments.	Kruskal-Wallis test for independent samples	.002**	Reject the null hypothesis.
3 The distribution: Difficulties is the same among the different departments.	Kruskal-Wallis test for independent samples	.059	Retain the null hypothesis.
4 The distribution: Advantages is the same among the different departments.	Kruskal-Wallis test for independent samples	.140	Retain the null hypothesis.
Asymptotic significances are displayed. $P< .05*$ $p<.01**$ $p<.001***$			

Table 8. Summary of Kruskal-Wallis tests implemented across the four dimensions of the scale with the variable of departmental affiliation.

As shown by the results obtained in Table 8, the variable "Department" generated statistically significant differences in two of the four cases listed, that is, in the dimensions "Goals" and "Planning" ($p<.05$). This variable does not generate similar statistical differences in the dimensions "Difficulties" and "Advantages".

In the first two dimensions, the Departments of Educational Organization and Teaching and Curriculum assess these dimensions intensively, whereas all departments obtain similar averages for the dimension "Advantages", yielding $p>.05$ in the hypothesis contrast implemented.

d) Dimensions related to years of experience

Years of teaching experience	Dimension	Means
	Goals	2.68
1-3 years	Planning	2.69
	Difficulties	2.67
	Advantages	2.83

4-6 years	Goals	2.56
	Planning	2.60
	Difficulties	2.70
	Advantages	2.98
7-10 years	Goals	2.51
	Planning	2.49
	Difficulties	2.48
	Advantages	2.65
11-20 years	Goals	2.56
	Planning	2.51
	Difficulties	2.53
	Advantages	2.61

Table 9. Summary of means obtained by dimensions and years of teaching experience of the professors surveyed

Summary of hypothesis tests			
Null hypothesis	Test	Sig.	Decision
1 The distribution: Goals is the same among the categories for years of experience.	Kruskal-Wallis test for independent samples	.549	Retain the null hypothesis.
2 The distribution: Planning is the same among the categories for years of experience.	Kruskal-Wallis test for independent samples	.406	Retain the null hypothesis.
3 The distribution: Difficulties is the same among the categories for years of experience.	Kruskal-Wallis test for independent samples	.081	Retain the null hypothesis.
4 The distribution: Advantages is the same among the categories for years of experience.	Kruskal-Wallis test for independent samples	.184	Retain the null hypothesis.
Asymptotic significances are displayed. *p< .05* p<.01** p<.001***			

Table 10. Summary of Kruskal-Wallis implemented across the four dimensions of the scale with the variable years of teaching experience

Finally, we see that the variable "Years of teaching experience" indicates no statistically significant differences ($p>.05$) in any of the areas assessed.

We can thus say that the amount of teaching experience of the teachers analysed did not influence their assessments of the same dimensions-Goals, Planning, Difficulties and Advantages-of distance learning in virtual environments. We notice, however, that faculty with a lower level of teaching experience evaluate the four study dimensions more strongly

than their colleagues with more teaching experience, although, as mentioned above, these differences are due merely to chance.

V. Conclusions

The main conclusion that can be drawn from the study results is that the participating Arab faculty members at the University of Al-Yarmouk (Jordan) express a very favourable opinion of distance education in virtual environments, a result consistent with those obtained in other studies in other countries across many continents and endorsed by many researchers, such as Christopher, John, Dawn, Keith & Kenny (2004); Meyers, Bannet, Brown & Henderson (2004); Jones, Linder, Murphy & Dooly (2005); Tsai (2005) and Sharon & Fesna (2005).

We would also stress the four dimensions that the study measured. In other words, distance learning in virtual environments has achieved outstanding support. Indeed, the significance test implemented shows significant differences ($p<0.05$) when we compare the four dimensions with each other and by pairs (binomial comparison). The dimension Advantages in the distance education in virtual environments has more support than the other three dimensions (Planning, Goals and Difficulties).

Other studies-e.g., those by Melody, Heidi, Lila & Jensen (2002); Gary (2002); Lynne & Joseph (2003) a complete strategy that can become an important factor in the development of human resources, revealing new opportunities for students and achieving improved communication among teachers in collaborative problem solving. We would also mention many other advantages, such as the construction of shared knowledge, including access to work materials and study anytime anywhere. It should also be noted, however, that the other three dimensions analysed obtained a moderately favourable perception.

We can also conclude that distance learning in virtual environments has achieved significant support for the goals and aims that this education method pursues in its planning and the many obstacles that teachers may encounter when implementing it. In our study, which agrees with many others-e.g., Gary (2002); Meyers, Bannet, Brown & Henderson (2004) and Tsai (2005)-we highlight multiple obstacles, such as knowledge of the services provided by these programs and lack of time for them. Other authors, such as Taylor & Newton (2013); McConnell, Parker, Eberhardt, Koehler & Lundeberg (2013) and Rubi, Avgerinou & Fernandes (2013) include other obstacles, such as the need to provide advanced technological methods to enable teachers to design teaching guides on which to base their teaching performance. Other findings include the influence of different traits characterizing the sample of teachers in the research, such as gender, age, teaching experience and departmental affiliation.

We can conclude from the statistical significance tests implemented that the variables Gender and Teaching Experience were not relevant in assessing the four dimensions of distance learning in virtual environments. ´These results ensure that both male and female professors and those with less vs. greater experience assessed the four dimensions analysed in our study in a similar way. We cannot assure similarity with the same degree of certainty for the variables Age and, to a lesser extent, Department. In this cases (Age and Department), statistically significant differences occur, showing greater support for distance learning in virtual environments among the younger faculty members and less support among older faculty. Moreover, professors belonging to the Departments of Educational Organization and Knowledge of Teaching and Curriculum show greater support for the four dimensions of distance education in virtual environments than do those from the Departments of Psychology and Primary Education.

References

Agdas, D., Washington, S., Ellis, R. D., Agdas, S. & Dickrell, P. (2014). Analysis of distance learner value assessment of distance education in engineering. *Journal of Professional Issues in Engineering Education and Practice*, 140(1), 201-220. (DOI 10.1061/(ASCE)EI.1943-5541.0000174).

Anderson, T. (2013). Open access scholarly publications as OER. *International Review of Research in Open and Distance Learning, 14*(2), 81-95. Retrieved from http://search.proquest.com/docview/1413414233?accountid=14542 (10-01-2014)

Ayzemberg, C. E. (2009). *Análisis de las estrategias de aprendizaje/enseñanza en un contexto de educación a distancia: E-learning*. Published Doctoral Thesis (University of Granada). Retrieved from http://digibug.ugr.es/bitstream/10481/2198/2/17914085.pdf.txt. (12-01-2014)

Barr, B. A. & Miller, S. F. (2013). *Higher education: The online teaching and learning experience.* (Report). Retrieved from http://search.proquest.com/docview/1413415711?accountid=14542 (11-01-2014)

Cabero, J., Llorente, M. C. & Puentes, A. (2010). La satisfacción de los estudiantes en red en la formación semipresencial. *Comunicar*, 35, 149-157.

Castañedo, C. (2003). El rol del profesor en la transición de la enseñanza presencial al aprendizaje «on line». *Comunicar*, 21, 49-55.

Langley, C. A.; Marriott, J.F.; Belcher, D.; Wilson, Keith A.; Lewis, P. (2004).The attitudes of students and academic staff towards electronic course support-are we convergent? *Pharmacy Education* 4(2):57-61. (DOI: 10.1080/15602210410001727236).

Gallego, R. A. & Martínez, E. (2008). Estilos de aprendizaje y e-learning. Hacia un mayor rendimiento académico. Retrieved from www.um.es/ead/red/7/estilos.pdf (14-01-2014).

Garman, J. F., Crider, D A. & Teske, C. J. (1999). Course selection determinants: A comparison of "distance learning" and "traditional" wellness and physical education programming. Retrieved from http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED430479 (11-01-2014).

Gary, W. (2002).Satisfaction, academic rigor and interaction: Perception of online instruction. *Education Journal*, 125(3), 460-468.

Gómez-Escalonilla, G., Santín, M. & Mathieu, G. (2011). La educación universitaria on-line en el periodismo desde la visión del estudiante. *Comunicar*, 37, 73-80.

Gronn, D., Romeo, G., McNamara, S. & Teo, Y. H. (2013). Web conferencing of pre-service teachers' practicum in remote schools. *Journal of Technology and Teacher Education*, 21(2), 247-271.

Hinojo, F. J., Aznar, I. & Cáceres, M. P. (2009). Percepciones del alumnado sobre el blended learning en la universidad. *Comunicar,* 33, 165-174.

Hu, J., Yang, C. & Chen, C. (2014). R&D efficiency and the national innovation system: An international comparison using the distance function approach. *Bulletin of Economic Research*, 66(1), 55-71. (DOI: 10.1111/j.1467-8586.2011.00417.x).

Imbernón, F., Silva, P. & Guzmán, C. (2011). Competencias en los procesos de enseñanza-aprendizaje virtual y semipresencial. *Comunicar*, 36, 107-114.

Jones, T. E., Linder, R. J., Murphy, H.T. & Dooley, K. (2005). Faculty philosophical position towards distance education: Competency, value, and educational technology support. *Journal of Distance Learning Administration Contents*, 2(1), 1-10.

Kuo, Y., Walker, A. E., Belland, B. R. & Schroder, K. E. (2013). A predictive study of student satisfaction in online education programs. *International Review of Research in Open and Distance Learning*, 14(1), 16-39.

Kuo, Y., Walker, A. E., Schroder, K. E. E. & Belland, B. R. (2014). Interaction, internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. *Internet and Higher Education*, 20, 35-50.

Lynne, M. P., Joseph, P. & Jurczyk, M. B. A. (2003). Perceptions of faculty on the effect of distance learning technology on faculty preparation time. *Journal of Distance Learning Administration*. 1(111), 1-10.

McConnell, T. J., Parker, J. M., Eberhardt, J., Koehler, M. J. & Lundeberg, M. A. (2013). Virtual professional learning communities: Teachers' perceptions of virtual versus face-to-face professional development. *Journal of Science Education and Technology*, 22(3), 267-277.

Melody, A., Heidi, P., Lila, W. & Jensen, Z. (2002). Distance education issues as perceived by faculty and students, OSRA Conference Beo, 1-12 Retrieved from http://files.eric.ed.gov/fulltext/EJ904063.pdf. (11-01-2014).

Meyers, C.B.; Bennet, D.; Brown, G. & Henderson, T (2004). Emerging online learning environment on study learning: An analysis of faculty perceptions. *Educational Technology & Society*, 7 (1), 78-86.

Schifter, C. (2000). Faculty participation in asynchronous learning networks: A case study of motivating and inhibiting factors. *Journal of E-Learning*, 4(1), 15-22.

Schmid, R. F., Bernard, R. M., Borokhovski, E., Tamim, R. M., Abrami, P. C., Surkes, M. A. & Woods, J. (2014). The effects of technology use in postsecondary education: A meta-analysis of classroom applications. *Computers and Education*, 72, 271-291.

Sharon, S. & Fesna, B..(2005).Graduate faculty perceptions of online teaching. *The Quarterly Review of Distance Learning*, 6(2), 155-160.

Steinbeck, R. (2011). El «design thinking» como estrategia de creatividad en la distancia. *Comunicar*, 37, 27-35.

Taylor, J. A. & Newton, D. (2013). Beyond blended learning: A case study of institutional change at an Australian regional university. *Internet and Higher Education,* 18, 54-60.

Tsai, C. (2005). Preferences to word internet-based learning environments: High school students' perspectives for science learning. *Educational Technology & Society*, 8(2), 203-213.

Tsui, C., Zhang, W., Jedede, O. J., Fowie, F. & Kwok, L. (1999). Perception of administrative styles of open and distance learning institutions in Asia: A comparative study, Hong Kong: Hong Kong University Press, 1-10. Retrieved from http://www.ouhk.edu.hk/CRIDAL/papers/tsuic2.pdf (14-01-2014).

Vélez, J.B. (2009). *Entorno de Aprendizaje Virtual Adaptativo Soportado por un Modelo de Usuario Integral*. Doctoral thesis. University of Girona. [Online]. Retrieved from: http://tdx.test.cesca.es/bitstream/handle/10803/7583/tjbvr.pdf?sequence=1 (16-01-2014).

Weerakoon, P. (2003). Evaluation of on-line learning and students' perception of workload. The University of Sydney, Lidcombe, NSW, Australia, 1-15. Retrieved from http://surveys.canterbury.ac.nz/herdsa03/pdfsref/y1194.pdf (16.-01-2014).

Zheng, C. S. (2014). *Research on optimal communication methods in long-distance education networks*. (Conference paper). Retrieved from www.scopus.com (16-01-2014).

Recommended citation

Copyright

Subscribe & Contact DER

In order to subscribe to DER, please fill the form at http://greav.ub.edu/der